

CL 155/3 - Review of FAO's Strategic Framework

ANNEX 2. Regional Trends

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Regional Trends and Challenges

1. Synthesis of Regional Trends¹

Eight recurrent trends and challenges for food and agriculture emerge from a synthesis of the regional documents and reports of the Regional Conferences: youth employment; urbanization; migration and displaced populations; innovation and technology; value chain development and trade; transboundary animal and plant pests and diseases; data, information and statistics to improve evidence-based policies and monitoring; and building resilience for vulnerable populations.

Youth employment

Providing opportunities for decent employment and addressing vulnerabilities for youth that already have employment pose great challenges, particularly in agriculture and related sectors where the majority of the rural youth are employed. Rural youth are often employed in the informal economy as contributing family workers, subsistence farmers, home-based micro-entrepreneurs or unskilled workers and often not counted. They typically earn low wages, are employed under casual or seasonal work arrangements and face unsafe, often exploitive working conditions that compel many to migrate to urban areas. Re-engaging youth in agriculture requires addressing the numerous constraints that they face when trying to earn a livelihood. Among others, they include insufficient access to skills development and education; limited access to resources such as land; and low levels of involvement in decision-making processes. Rural youth are also typically excluded from those institutions that provide access to financial services – such as credit, savings and insurance – which further hinders their ability to participate in the sector.

Developing an enabling environment in which young women and men can thrive and seize current and future decent rural employment opportunities is crucial in addressing youth unemployment and underemployment. Identification of constraints facing rural youth in accessing decent work and designing and implementing strategies that more effectively target rural youth are key areas of action which include, *inter alia*, improvement of skills through educational and vocational training, facilitating access to land, credit, and business development services, as well as improving conditions of employment in agriculture and the rural economy.

Urbanization

Besides a new spatial configuration, urbanization and migration out of rural areas bring about opportunities, as well as challenges for global food security and nutrition. Better coverage of basic services and density of infrastructure could help improve both access to, and utilization of food. However, spontaneous processes of urbanization can create negative side effects such as congestion, excessive sprawl. Slum growth can exacerbate urban poverty, and derail efforts at poverty reduction and ending hunger and malnutrition. Close to one billion people live in urban slums in developing countries with fastest growth in sub-Saharan Africa and South-Eastern Asia.

Urbanization is putting upward pressure on global food demand through increased incomes and changes in diets towards more animal protein. Increased livestock production, which tends to be more intensive in the use of natural resources (land and water in particular), including in peri-urban areas.

¹ This section draws from FAO document [PC/119/2](#), [Add.1](#), [Add.2](#) and [Add.3](#)

Growing cities also need more water (for drinking and sanitation facilities) causing conflicts for access to resources with peri-urban agriculture and rural areas in general.

Migration and displaced populations

Internal and international migration poses both challenges and opportunities for rural areas and process of rural transformation. Migration poses human development costs and risks through weakening of family and social cohesion and a decrease in human capital quality as those leaving rural areas to seek employment and income in the cities or overseas are usually younger, better educated and more skilled members of the family, often leaving children, the elderly and women behind. Agriculture is characterized by already low productivity levels in many countries and distress migration from rural areas may lead to further deterioration of the quality of rural livelihoods and agricultural production potential.

At the same time, migration can reduce pressures on local labour markets and resources, and increase local human capital, through skills and technology transfers, knowhow and social networks. Migration can also bring social change, especially by changing gender roles, while diaspora groups can help rural areas in countries of origin, through capital investment and assistance. Migration results in large inflows of remittances that can play an important role in reducing poverty in rural areas, particularly where migration is overseas to higher-income countries. Remittances invested in rural areas can generate positive impacts on agricultural production, by enabling farmers to buy inputs, improved seeds, and adopt more sustainable land management practices, and by stimulating farm and off-farm businesses.

The challenge is how to leverage more of the benefits from migration for agriculture and rural development and to address the root causes of distress migration, *inter alia* by creating better economic opportunities for rural youth, fostering rural-urban linkages and investing in resilience of rural livelihoods.

Innovation and technology

There is a need to review the current state of the environment for innovations to identify constraints that limit the creation of agricultural innovations and technologies and to define possible future directions and action paths to spur a culture of innovations. There are many challenges to address, including, lack of coherence along the entire Research and Development (R&D) life-cycle – from research design to adoption of new technologies and evaluation - which leads to waste of scarce resources and opportunities; mismatch between the technologies and processes developed by research institutes or private sector and what is required by farmers, and lack of effective extension services. Formal R&D organizations (private or public) have generally prioritized research to identify technologies and processes to increase productivity and in intensive forms of agriculture, but largely neglected farmers' requirements, especially those of smallholders and women farmers.

Value chain development and trade

Along with its potential benefits, increased participation in international trade can bring various challenges. The growing interdependence of markets can result in wider repercussions of global economic or health-related crises, influencing domestic food prices and potentially contributing to food safety issues. Alignment of trade and sanitary and phytosanitary measures (SPS) to meet World Trade Organization (WTO) commitments can create challenges for countries in accessing international markets. Many import-dependent countries are vulnerable to price and supply risks. Regions such as Africa and the Near East and North Africa which have persistent food-import dependency face serious problems and low-income countries are particularly vulnerable when high and rising food import bills

take money away from other important development agendas further aggravating food insecurity. The problem is compounded for countries that rely on agricultural exports where the revenues from traditional exports such as cocoa, coffee and spices are less certain and affected by volatile international market prices. Limited intraregional food trade and weak integration to global food markets are further risk factors.

Transboundary animal and plant pests and diseases

Well organized transboundary animal and plant pest and diseases monitoring systems are weak in most middle- and low-income countries. Enhanced surveillance facilities at strategic locations to monitor spread of pests and diseases, as well as coherent response mechanisms are key for efficient monitoring and timely action. The cost of inaction can be huge, particularly for low-income countries highly dependent on local production to ensure adequate nutrition and on exports of agricultural products where bans related to pests or disease occurrence can cause losses in export revenues and nutrition quality. In some instances animal-diseases can be a source of infection directly to humans (zoonotic diseases), necessitating a more integrated approach such as One Health approach. In aquaculture (fish farming), disease challenges, affecting the shrimp aquaculture sector, caused mostly by viral pathogens and most recently by non-viral agents [e.g. Acute hepatopancreatic necrosis disease (AHPND) and *Enterocytozoon hepatopenaei* (EHP)] calls for urgent attention.

Data, information and statistics to improve evidence-based policies and monitoring

The SDG framework brings an additional challenge to tracking progress on the SDGs, which will increase demands on national statistical systems to collect and analyze data in new areas. This will create a need for increased resources for data and information systems to monitor and evaluate progress toward achievement of relevant SDGs, through the development of appropriate indicators and robust data collection systems and multidisciplinary analytical capacities.

Building resilience for vulnerable populations

Global mean temperature is rising, rainfall patterns are changing and extreme weather events such as floods, heat waves and droughts, have increased in number and intensity. Some regions and groups of countries – such as the low-lying deltas and small island developing countries – are extremely vulnerable to these changes, but they often have the least capacity to cope. At the same time, in many regions of the world, and particularly in the Near East and North Africa conflict situations are displacing populations with profound implications on human capital. Building resilience of affected populations require immediate humanitarian assistance, as well as long-term measures to improve livelihoods and ensure a path to long-term development.

In this regard, social protection measures are powerful interventions to improve lives and strengthen the resilience of rural households to shocks and crises. In the long-term policies, strategies and action plans need to ensure sustainable food security and nutrition within an integrated rural-urban framework where resilience of both cities and rural areas are ensured. At the regional level, cooperation and integration in response to crises and long-term food security needs and development of risk management instruments to mitigate shocks are of crucial importance.

2. Trends and challenges in each region

A. Africa²

Over the past decade, Africa recorded sustained and impressive economic growth rates. In 2014, growth rates averaged around 5 percent almost double the global average. One quarter of countries in the region grew at about 7 per cent or more, and 7 out of the ten fastest growing economies in the world are in Africa. This impressive growth, however, presents a puzzling paradox. Notwithstanding the glowing gross domestic product (GDP) figures, Africa has the lowest levels of human and social development with a large part of the population trapped in poverty, facing rampant unemployment and inequality. Consequently, while most regions report successes in reducing hunger, undernourishment and other forms of malnutrition remain at overall high in Africa.

The State of African Agriculture and its Global Context

Despite its vast agricultural potential, Africa as a continent has remained a net importer of agricultural products (food and non-food) in the last three decades. Africa lost its status as a net exporter of agricultural products (food included) during the late 70s to early 1980s when prices of raw commodities (mainly coffee, cocoa, and spices), which constituted the bulk of its agricultural export revenues, tumbled and local food production grew sluggishly. Africa has since the 1980s become a net importer of food products; it has also become the world's leading recipient of food aid.

Persistent food import dependency is a serious problem for many African countries, especially when high and rising food import bills take money away from other important development agendas without resolving food insecurity. The problem is compounded for countries where exports rely mainly on agriculture while the revenues from traditional exports such as cocoa, coffee and spices are less certain and at the mercy of volatile international market prices and unfair trade practices by Africa's principal trading partners.

Basic food consumption patterns seem to favour growing external dependence: wheat production in Sub-Saharan Africa is failing to keep pace with growing demand. In the early 1990s, per capita maize consumption was 2.5 times greater than wheat; by the late 2000s, this difference has declined to 1.7 times. Meanwhile, there is also a deepening structural deficit for rice as well as deficits in maize in every year but one between 1997 and 2010. SSA is thus increasingly dependent upon imports for all three staple grains.

Agricultural deficits reflect widespread low productivity in Africa. Africa's low-input/low-output agriculture causes far more forest degradation per unit of food than more productive agriculture. There is widespread agreement that increasing yields on existing agricultural land would, by limiting further expansion of agricultural land (especially cropland), be a key component for minimising rapid destruction of forests and woodlands. Foremost among underlying causes of poor agricultural performance and consequent food insecurity are fast population growth and conflict. Regarding conflict, when currently or recently conflict-ridden countries are excluded, Africa's food production has for some time now been growing faster than population.

² Section largely draws from FAO documents [ARC/16/3](#) and [ARC/16/5](#)

Common trends across Africa's Sub-Regions

Food Security and Nutrition in Africa

Progress towards improved food security in sub-Saharan Africa has been slow overall where 23.2 percent of the population is estimated to be undernourished in 2014–16. This is the highest prevalence of undernourishment for any region in the world and, with about 220 million hungry people in 2014–16, the second highest burden in absolute terms. The number of undernourished people even increased by 44 million between 1990–92 and 2014–16.

There are differences across the subregions: in West Africa, prevalence of undernourishment (PoU) has consistently fallen whereas in the Central African subregion, the number of undernourished people more than doubled between 1990–92 and 2014–16. Eastern Africa remains the hungriest subregion, having 124 million undernourished people. As in Central Africa, the region continues to experience rapid population growth. A more favourable picture emerges in Southern Africa, where the PoU has fallen by 28 percent since 1990–92 and a little more than 3 million people remain undernourished – the El Niño drought of 2015/16 will significantly reverse this.

Trends and levels of undernourishment in Northern Africa are very different from those in the rest of the continent. The region has attained PoU levels below 5 percent according to the projections for 2014–16. The low PoU indicates that, based on current trends, the region is close to eradicating severe food insecurity. However, these are being achieved due to subsidized access to food, a central policy element in the region. While the sustainability of these measures can be questioned, they have helped keep levels of undernourishment low, by supplying large amount of calories affordably.

Energy security and scarcity

Over 75 percent of the African population is without electricity and 81 per cent depend on solid traditional biomass fuels for cooking. Only about a quarter of the population in Africa has access to electricity, versus about half in South Asia and more than 80 percent in Latin America, the Middle East and North Africa. There is just enough electricity generated now to power one light bulb per person for three hours per day. The population without access to electricity is projected to increase to 655 million (44 per cent) and those without clean cooking facilities to 883 million (59 per cent) by 2030 out of an estimated population of 1.5 billion under the “business-as-usual” scenario.

Vulnerability to Climate Change and Disasters

Exposure to natural hazards and disasters is a major cause of food insecurity, a problem exacerbated by climate change. Between 2003 and 2013, natural hazards and disasters in the developing regions affected more than 1.9 billion people and resulted in nearly half a trillion US dollars in estimated damage. Through a review of post-disaster needs assessments in 48 developing countries, FAO estimated that the agriculture sector absorbs approximately 22 percent of the total economic impact of these disasters. This damage and loss to agriculture sector increases to 25% if only the climate related disasters are considered. Populations in Africa are increasingly exposed to natural hazards, human induced crises and protracted crises that can wipe out years of development. Agricultural growth and comprehensive food and nutrition security cannot be attained without increasing the resilience of vulnerable livelihoods to disasters and crises. High poverty levels mean that in Africa there is a need to combine agricultural productivity ambitions with social protection measures. The social protection will have to be production-friendly, should enable the poorest start to be part of the market, and should be mainstreamed into policies and practices that do not change with every election. In Africa, achieving agricultural surpluses is an important and sustainable form of social protection because it draws upon the energy of the poor themselves.

Conflict-related food insecurity

Food insecurity can be a direct result of violent conflict and political instability as well as an exacerbating factor. For instance, sudden and unforeseen food price rises, or the reduction or removal of subsidies on basic foodstuffs, can be a catalyst for civil and political unrest. Natural disasters and competition over scarce natural resources are believed to also be capable of contributing to political unrest and conflict.

Urbanization

Although Africa is the least urbanized region of the world, with an urban population of only 39 per cent, it has the fastest urban growth rate of 4.5 percent. The United Nations' projections indicate that Africa will become 50 per cent urban by 2035, and that this figure may rise further to nearly 60 per cent by 2050, if "moderate" growth-rate projections materialize. Between 2010 and 2050, the number of Africa's urban dwellers will increase from about 400 million to 1.3 billion. Rapid urbanization is changing the way food is accessed (through the market and with a greater share processed).

Supermarkets are making inroads and their preference for buying from large-scale farms brings these (or efficient cooperatives) into the market which can marginalize small farms if the latter are not organized to deal with them either as contract farmers or market suppliers. International campaigns for gender equality and equity are also affecting the roles of women in agricultural value chains.

Youth employment and migration

With almost 200 million people aged between 15 and 24, Africa has the youngest population in the world. According to the World Bank the number of young people in Africa will double by 2045.

While national populations in most parts of the world are aging, young people are now in the majority in many African countries.

The share of youth in the labor force in Africa is the highest in the world and projections indicate that 60 percent of the world's labor force growth between 2010 and 2050 will be in Africa. Today more than half of the African population are under 25 and approximately 11 million Africans, most of whom are new entrants seeking their first job will join the labor market every year for the next decade. If the employment situation is to improve in the long run, the next two decades appear to be absolutely critical. There is need to transform the rhetoric on engaging youth in agribusiness and agro-processing into concrete action.

Control of transboundary plant and animal pests and diseases

According to FAO, plant pests and diseases account for an estimated 30 per cent of global crop production losses across the world. In 2015 total forest area affected by forest insect pests was more than 85 million hectares. Animal, aquatic and forestry diseases if not controlled can kill a large number of livestock, aquatic and forest species. The rate of loss is exceptionally high in Africa due to the pervasiveness of many animal (including aquatic), and plant pests and diseases affecting major food security crops, livestock, fisheries and aquaculture, forest products that provide substantial income for millions of smallholder farmers in rural and peri-urban regions. The impact of the Ebola epidemic and other transboundary diseases like the Avian influenza, peste des petits ruminants and contagious bovine pleuropneumonia (CBPP) are still widely felt in the affected countries and beyond. Less visible in the media – but nonetheless essential to address- are threats to livelihoods and natural resources from forest insect pests and diseases, which can cost billions of dollars to address and can wipe out millions of hectares of forests as was seen in North America, Near East and Africa in 2015.

Private sector investment in agriculture including from developing and emerging economies

Although there is ample evidence to show that during periods of high volatility in global business cycles (either through high or low prices), the agriculture sector receives a surge in private investment that often fizzles out when business cycles stabilizes, the recent trend in agro-investment since the

2008 global economic turmoil has come with significant implications for the sustainability of ecosystems and for assuring food and nutrition security for host communities, as some of the key areas of this surge in investment involves large-scale land acquisition. In addition, an emerging trend is the interest in south-south agro-investment flows which were very minimal in the past.

B. Asia and the Pacific³

One of the most visible global developments of the last three to four decades is the rapid economic growth and transformation experienced by the Asia Pacific Region (APR). Between 1990 and 2014, the APR grew at an annual rate of 7.3 per cent (PPP 2011 international \$), but over the next two to three decades, economic growth is projected to be consistently lower than their historical levels. The growth benefitted millions of people, but also created large income gaps within and across countries and between those engaged in agriculture versus non-agriculture because of large labour productivity gaps. The process of economic transformation saw a large proportion of ‘surplus labour’ absorbed into productive employment in non-agricultural sectors in some countries, but this failed in others. These trends are likely to be further accentuated in the future, unless remedial actions are taken. The APR will need to overcome several critical challenges to make growth processes more inclusive and sustainable and eradicate hunger and poverty.

Regional trends

Land fragmentation

With economic growth, agriculture in Asia and the Pacific region has undergone rapid structural transformation. Asia has historically been a region dominated by smallholder agriculture, and over time average land size has dropped to 1 hectare in 2000, the lowest in the world. Of the estimated 500 million smallholders worldwide, 87 per cent live in Asia and the Pacific. Of this, China (196 million) and India (117 million) together contribute to 75 per cent of the world’s total estimated smallholder family farms holding less than 2 hectares of land.

Despite the size of their landholdings, smallholders often account for a large share of agricultural production. The poor and marginalized groups are largely excluded from productive resources and services and likely to be disproportionately affected by growth slowdown. Smallholders and disadvantaged communities are marginally integrated with local, regional and national value chains and markets. The main challenge for the region is to translate economic growth into socially inclusive and environmentally sustainable process within already identified global agreements and frameworks as identified above.

Structure of Agricultural Output

Along with changes in agricultural production, the composition of agricultural output in developing Asian economies has changed significantly over the years. In parallel with shifting agricultural production and output patterns, agriculture in Asian developing countries has begun to undergo an ‘agribusiness transformation’ involving input providers (farm equipment producers, logistics firms, and other business service providers), agribusiness processors, distribution companies, and retailers (ADB, 2013).

The livestock sector is undergoing an ‘industrial revolution in livestock,’ particularly in the pig and poultry sectors, in which smallholder production is transforming itself into large-scale operations so much so that in some cases the industry is dominated by large scale commercial operations.

³ This section draws from FAO document [APRC/16/7](#)

Reduced poverty and increased inequality

Economic growth across sub-regions in the APR and other major regions differ significantly. In real per capita GDP of PPP international dollar terms, the APR has performed far better than all other regions during the last quarter century, with the exception of Oceania. Economic growth enabled the region to lift millions of people out of poverty, but it accentuated income gaps across sectors and among countries. The shares of agriculture in GDP and agricultural employment in total employment, have declined over time, but the share of agricultural value added has declined faster than the share of agricultural employment in total employment in some countries. This means that a relatively smaller agricultural GDP is shared among a larger agricultural labour force. In relative terms, this implies that agricultural workers are becoming relatively poorer compared to those in non-agricultural employment. In addition, leading sectors based in urban areas of some Asian countries, such as India and the Philippines, are finance and ICT-based industries, where a relatively small number of highly educated workers are employed. Thus, the uneducated poor in rural areas will not receive much benefit from economic development, contributing to widen the income gap.

There is an emerging consensus that the recent period of historically unprecedented very rapid growth in this region may have come to an end, in particular following the growth slowdown in China (related to the shift in its development strategy to the 'New Normal' of more consumption driven balanced growth path as well as to the wider changes in global economic prospects since the global financial crisis). Growth slowdown has important implications, both positive and negative for demand and supply of food and agricultural products, food and nutrition security, poverty alleviation, environmental degradation, urbanization and the growth of the Asian middle class, and other issues.

Demographic change and food security

Demographic change is a globally relevant transformation process with significant implications on poverty reduction and food security. In the APR, both population growth and the share of working population is declining; the share of adults aged 65+ is rising and the share of children aged 0-14 is declining; and countries are urbanizing fast. Across countries and sub-regions, the direction and pace of demographic change and its impacts vary significantly. Demographic change affects growth prospects; food demand and supply dynamics; and demand for land, water and natural resources.

Food production and availability

The combined effect of population growth, urbanization and the rising middle class will exert a strong influence on the overall food demand, demand for high-quality and protein rich food. The region managed to increase food supplies faster than its population growth in the last quarter century, and there are no reasons to believe that the region will fail to increase food supplies to meet the growing population in the future. The challenge is to ensure the region does it in more sustainable ways and also enabling it to meet food requirements of all to eliminate the hunger from the present and the future generations without further undermining the regenerative capacity of the environment.

Access to food (poverty, inequality, exclusion)

The potential slowdown of economic growth is likely to fall disproportionately on poor communities, further eroding their access to food. Thus, not only do we need to identify alternative mechanisms to maintain or increase agricultural productivity but also to ensure the poor have their livelihood security. The APR is rapidly urbanizing and it is changing many aspects related to food security. The urban share of the population was 46 per cent in 2013, and it is expected to rise to 56 per cent by 2030 and 64 per cent by 2050. Rapid urbanization has brought with it changes both in urban and rural areas.

Future directions and possible action pathways

Development in agriculture and rural areas cannot be found solely within the agriculture sector; it requires an integrated development strategy that provides remunerative high productive employment in non-farm activities (Jayasuriya, 2015). The new growth scenarios in the APR point to the need for broadening the lens through which we view on avenues to realize a world free from hunger and malnutrition. It is fairly clear that productivity growth in agriculture alone cannot be relied upon to address the most fundamental, structural impediments to realizing sustainable food security for all. Inclusive and sustainable growth requires breaking the sectoral and institutional boundaries within which solutions are sought. Seeking convergence of labour productivity across sectors rather than productivity growth in agriculture appears to be the path that countries took where successful transformations took place.

Towards this end, it may be useful to:

- Identify and implement mechanisms to integrate agriculture with industry and services sectors; realize labour productivity convergence across sectors, and to root out structural and institutional impediments to realize equity and food price and income stability;
- Facilitate member countries to adopt better business models to integrate smallholders and other marginalized farming communities into markets, other sectors and seek avenues to improve their living standards; and
- Identify efficient mechanisms and facilitate the adoption of social insurance schemes to ensure that the most vulnerable communities and those who fall out of growth processes due to structural weaknesses of economies and social failures are not adversely affected.

Demographic transition is likely to have different impacts on forests and forestry depending on the stage of development of the country where the direct population pressure on forests and land will decline in developed and most of the developing countries whereas it may increase in SIDS, and that land use intensity will change as people move from rural to urban areas with the potential to slow conversion of forests.

In an environment characterized by high population density and close interactions between animals and humans and their environment, prevention and control of animal diseases transmitted to humans such as highly pathogenic avian influenza (HPAI) require multidisciplinary and integrated approaches (One Health). Also the need to contain the spread of trade limiting animal diseases such as the foot and mouth disease (FMD) and pestes des petits ruminants (PPR) is becoming a challenge.

Challenges associated with demographic transition include:

- Potential of the demographic change to alter the trajectory of growth and development, thus impacting efforts towards poverty reduction and food security;
- Emerging labour shortages in agriculture and rural areas and its impact on labour productivity, land consolidation and fragmentation processes, mechanization and food supply capacity; and
- Inadequate focus on demographic transition in policy formulation processes, in developing methods and analytical tools, and in data collection efforts.

Climate change related trends have been observed across the APR. This includes an increase in the number of warm days and strong variability of precipitation; increased frequency and intensity of climate related extreme events; increased water scarcity amidst high demand arising from improved standard of living and high population; changes in variability of plant growth and the distribution of organisms at different elevations; and increased stress on coastal and marine ecosystems due to rising sea levels, saltwater intrusion, seawater inundation, damage to coral reefs and increased water temperatures. Climate change poses several challenges to the APR:

- Difficulty in predicting potential impacts of climate change on localized food and agricultural production and productivity and food security;

- Lack of consensus on the frequency of extreme climate events, natural disasters and changes to the carrying capacity of terrestrial, coastal and marine ecosystems;
- Limited efforts to gather and analyse spatially disaggregated micro-level data, and manage water, land, forests and ecosystems more effectively;
- Inadequate focus of R&D on long-term agricultural sustainability; and
- Limited use and adoption of socially, environmentally and economically sustainable food production and dietary habits including agro-ecological approaches.

Agricultural innovation and technologies (AITs) have made remarkable contributions to increasing agricultural production and productivity, but have been less successful in expanding livelihoods and avoiding unintended economic, environmental and social consequences of agricultural activities. National agricultural research systems (NARS) have been the main contributor to AITs. The public expenditure on R&D has been rising in recent years, but the share of R&D expenditure in agricultural GDP is still lowest in the APR. Private sector investment in R&D has not significantly increased, but considerable effort has been made to improve networking arrangements, attract non-conventional funding and identify better institutional arrangements to spur AITs. AITs pose several challenges:

- Widening capacity gaps across countries for generating, adapting and adopting AITs across key sectors;
- Technology has reached a plateau in the crops sector, but there are inadequate efforts to close yield gaps in livestock, fisheries and aquaculture, and natural resources;
- Limited investment in R&D in parallel with growing economic prosperity thus limiting the capacity to push the frontier knowledge and technologies in agriculture;
- Inadequate efforts towards identifying better technologies and processes for managing land, soil, water and other natural resources; and
- Neglect of rainfed agriculture, secondary crops and smallholders in technology development efforts.

Policies and institutions governing food and agriculture have evolved in recent decades in response to economic growth and volatile food and fuel prices. Food policy in the APR has been primarily concerned with food self-sufficiency, food price stabilization and the rate and distribution of economic growth and per capita income. Some governments have pursued a policy of establishing an enabling environment and leaving price formation to market forces, whereas the large majority of countries have actively engaged in price stabilization and increasing agricultural production. Some countries have pursued policies to consolidate land, but in others land fragmentation is continuing. Increased mechanization throughout agricultural value chains is observed. New forms of anti-competitive corporate structures are emerging through mergers and acquisitions in agricultural markets. The APR will have to overcome several policy and institutional challenges to make a significant impact on food security:

- Inadequate focus on the link between government policies and markets as essential elements in integrating poor households into the growing economy;
- Short-term nature of food policies with limited view of the time it takes for a policy to make an impact on poverty reduction and food security;
- Inadequate attention to agriculture and non-agriculture links in food policy and poverty reduction;
- Complexity of food policies making policy harmonization and alignment more difficult within and across countries (e.g., food self-sufficiency, free trade, grain stockpiling);
- Limited focus of policies on food and agricultural sustainability.

C. Europe and Central Asia⁴

Most of the ECA countries are developing, middle-income economies, with the exception of the Russian Federation, which is a high-income country. All these countries, except for Turkey, have been through a transition of institutions and governance structures after the dissolution of the Soviet Union and Yugoslavia in the early 1990s. The ECA region is divided into three subregions: Caucasus and Central Asia (CCA),² Western Post-Soviet Countries (WPSC), South-Eastern Europe (SEE),⁴ in addition to the countries of the European Union and Andorra, Iceland, Israel, Monaco, Norway, San Marino, Switzerland.

By 2020 the majority of the CCA and WPSC countries will experience a slowing down in economic growth compared to 2014, while economic growth rates in SEE countries are expected to be significantly higher. Unemployment rates remain relatively high across the region, particularly in the SEE and Central Asian countries. Unemployment of youth is troubling for all subregions, especially in the SEE countries, where it averages 41 percent.

Regional drivers of change

Rural livelihoods, migration and rural poverty

In most ECA countries the share of rural population in total population remains substantially higher than the average for OECD economies. On average 45.4 percent of the ECA population lives in rural areas, though there are variations from country to country. By 2030 the share of people living in rural areas will drop by only two percentage points, to an average of 43 percent throughout the region. The pace of decline, however, will differ across countries, being much slower in the Caucasus and Central Asia (CC) countries as opposed to the SEE and WPSC countries. As such, the state of rural livelihoods has profound implications for food security, agricultural development and overall well-being of a large number of rural dwellers in ECA countries.

Farm structure

Family farms in the ECA region account for the bulk of agricultural production, and therefore play a critical role in both agricultural and rural economies. Changes in the farm structure are still ongoing across the region. In most CCA countries (except for Uzbekistan and Kazakhstan) and SEE countries there is an ongoing trend of further land fragmentation. At the same time, Kazakhstan, Russia and Ukraine have been experiencing an opposite trend – a rapid consolidation of farm land in the hands of mega-sized agriholding companies (often larger than 100 000 ha). These companies have been a conduit for substantial capital investments from outside the sector.

Sustainability of food production and food systems

A complex driver of change in the region is sustainable food production and food systems. A food system encompasses all elements and activities as they relate to production, processing, distribution and consumption of food. Its three dimensions include economic resilience, environmental integrity and social well-being.

Economic resilience. Economic sustainability of food systems in the ECA countries is influenced by two factors: ongoing changes on the demand side of food agricultural systems, driven by changes in food, feed and bioenergy demand; and the ability of the agricultural system to successfully adapt to these changes.

⁴ This section draws from FAO document [ERC/16/7](#)

Changes on the demand side create opportunities for the development of agricultural and rural economies in ECA countries as they allow farmers to produce higher-value foodstuffs and engage in additional income-generating activities such as food processing and bioenergy production. Whether farmers can take advantage of these opportunities largely depends on how well they can integrate into modern value chains.

Agricultural policies affect how well ECA smallholder farmers are able to adjust to changes in demand. Another factor impeding agricultural productivity growth and consequently economic sustainability of agricultural systems within the region is lack of agricultural research and development (R&D) and extension services.

Environmental integrity. Demand for natural resources has been increasing in ECA countries, due to changing consumption patterns, accelerating urbanization and growing population (in CCA countries). Most of the Central Asian countries are located in arid climates, characterized by low rainfall and droughts. As such, four out of five Central Asian economies (except Kazakhstan) are highly dependent on irrigation for their agriculture. Land degradation remains relevant for most countries in the ECA region, though its severity and causes differ among countries.

Climate change constitutes another risk factor for the ECA countries with direct implications for agricultural and rural economies. Climate change has been manifesting itself in the region through an increased number of extreme weather events and natural hazards, such as floods and landslides, changes in water resources availability, natural resources degradation and loss of biodiversity. The extent to which climate change might affect agricultural production and rural livelihoods in ECA countries would largely depend on the level of resilience of the food and agricultural systems

Social well-being. The social aspect of sustainability of food and agricultural systems implies fair access to fundamental rights and requisite conditions of decent livelihoods. However, after the dissolution of the Soviet Union and Yugoslavia in the early 1990s, state support for agriculture and rural development declined or ceased entirely across ECA countries, which led to the breakdown of physical, economic and social infrastructure in rural areas, threatening social sustainability of rural areas. Women and children have been particularly affected by the collapse of social infrastructure, especially in the CCA countries.

Food insecurity and malnutrition

Micronutrient deficiencies, overnutrition and unhealthy diets in children and adults are major malnutrition concerns across ECA countries. The low quality of diets and micronutrient deficiencies have resulted in high levels of stunting, which is alarmingly high in Tajikistan, Azerbaijan, Albania and Armenia.

The problem of overnutrition is relevant to most countries in all three subregions. As a result, almost 48 percent of people in CCA countries and more than 50 percent in both WPSC and SEE countries are considered overweight or obese. According to FAO projections, less developed countries in the ECA region are expected to have some of the highest rates of obesity in the world by 2050.

Trade

Currently, 12 ECA countries are members of the WTO, including Albania, Armenia, the former Yugoslav Republic of Macedonia, Georgia, Kyrgyzstan, Moldova, Montenegro, the Russian Federation, Tajikistan and Ukraine. Azerbaijan, Belarus, Bosnia and Herzegovina, Serbia and Uzbekistan are still negotiating their accession. Continuous negotiations regarding tariff reduction schedules and limitations on distortionary agriculture support payments will continue in determining WTO integration processes for these countries.

Trade integration constitutes an important priority for SEE countries under EU accession. While tariffs and quotas for agricultural products have been eliminated between the EU and the SEE countries (except Turkey), the latter are still in the process of aligning their legislation and standards with those of the EU, which are expected to continue in the medium term. The future intensity of EU enlargement processes remains unclear, given an increasing number of economic and political challenges.

D. Latin America and the Caribbean⁵

The Latin America and the Caribbean region has experienced favourable economic conditions during the past 15 years with high GDP growth rates accompanied by important structural transformation in the economies of some countries. This growth cycle was a result of growing global demand, high food and agricultural commodity prices, and high prices of the raw materials exported by the region, and resulted in important achievements in many countries, both in economic and social terms. Support to public good and social programs increased, including legislation, which guarantees fundamental human rights. Poverty and inequality has declined overall, though efforts to reduce poverty in rural areas and for indigenous communities have been less successful than in urban areas.

Regional Implications of global trends

The evolution of the global economic cycle

Slowing global economic growth will continue for some years accompanying the cyclical downturn of the world economy and will negatively affect international demand for the main export products of the region. This downswing is driven by the poor performance of the economies of most developing countries and increasing difficulties seen in some of the large emerging economies like Brazil and China.

Climate change

The impact of further global warming on natural resources, disease and agriculture, is already being manifested and could intensify significantly. This impact will not be uniform across regions of the Latin American continent and will be higher for the poor populations and for subsistence farming (about 1/3 of the populations live in high risk areas to disasters). Most negatively impacted areas are in the middle of subtropical South America, Central America (Dry Corridor), Caribbean small island developing states and in parts of Mexico, as they would experience more drought and random rainfall patterns. Furthermore, agriculture, especially livestock, are important contributors to the issuance of GHG emissions, which will require agricultural production systems to make adjustments to lower emissions of GHG.

Growth and distribution of world trade

Three dominant structural trends in international trade are observed in the context of lower international demand and lower volume of agri-food trade. These are: (i) Multipolarity or fragmented globalization, including a weakening of the role of multilateral agreements and consolidation of large regional agreements (ii) Growing importance of intermediate products in international trade. This is accompanied by the emergence of global value chains and intra-company trade. (iii) Growing importance of a few countries, including several in Latin America and the Caribbean, which have become major net exporters of food. In relation to this trend, the Caribbean represents a particular case as a net importer of food with tourism as the main economic activity.

⁵ This section draws from FAO document [LARC/16/5 Rev.1](#)

Regional Specificities

Demographic trends and evolution of rural poverty

The rate of population growth has dropped to 1.6% per annum, and it is estimated that this rate will continue to decline but remain positive levels until at least 2050. Ageing is especially accentuated in rural areas as a result of rural-urban migration. Urbanization will be accompanied by a decreasing dominance of large cities and emergence of intermediate cities with growing importance in the distribution of population and economic activity.

The decline in poverty experienced in recent decades seem to have stabilized at 2009 levels and most of that poverty will, in the future, be concentrated in urban areas especially in the peripheries of large cities. More effort and careful analysis of public policies implemented during the last two decades will be necessary to effectively combat poverty in the region with focus in more structural issues, and in particular, rural poverty.

Consumption patterns

Four major trends are observed:

- (i) decline in global and regional levels of food insecurity that accompanied the period of high economic growth and implementation of public policies over the past two decades level. The continuation of this trend will be hampered in the coming years as a result of the expected low economic growth worldwide.
- (ii) increase in protein intake particularly from animal sources. This increase results in additional pressure on agricultural natural resources and greater contribution of agriculture to global warming
- (iii) adoption of habits in which processed foods by the food industry are a major proportion of total consumption. This food trend seems to be associated with higher levels of obesity and malnutrition observed at the global and regional level
- (iv) increase in consumption of fresh foods that have special attributes related to safety, such as organic foods, expressed more strongly in high-income sectors and especially in more developed countries.

Availability of agricultural natural resources and changes in agricultural structures

The region has an extraordinary supply of agricultural natural resources (land, water, biodiversity) that is not yet fully exploited. The pressure for increased use of agricultural natural resources will increase over time.

Efficient and sustainable use of agricultural natural resources and contributions that agriculture makes to economic development, malnutrition and food security are related to the characteristics of agricultural structures. In a sample of 11 countries, five (Paraguay, Argentina, Uruguay, Chile and Venezuela) show, in descending order, a strong concentration of ownership of agricultural land with a decrease in the number of farms and an increase the average size of the same. By contrast, Brazil, Peru, Mexico, Costa Rica, Nicaragua and El Salvador had a reverse process with increasing fragmentation in land use and increased smallholding.

These processes are linked to technological change and public policies implemented in the past and have important consequences on economic development, the structure of agricultural production, income distribution and poverty within the agricultural sector. Understanding and supporting these processes appear to have a high priority, especially regarding the impact of these processes on the evolution and role of family farming as a source of production and rural incomes.

Trends in technological development and innovation.

Scientific developments in biology, computer science and communications are having a very important role in the set of technologies that have application in agricultural production and agro-industry impact. The productive impact of technologies in terms of volume, increased productivity and thus decrease the cost of food is evident from the statistics of production, consumption and prices. In contrast to these positive impacts, these technologies are associated with economic, social and biological changes which may be negative. Examples of these effects are changes in the production structure, concentrated agribusiness development, changes in eating patterns including malnutrition and increasing obesity, threats to biosecurity and ecology, possible technological dependence, etc.

Trade and regional integration.

During the last two decades the region experienced active processes of regional integration, both in political and economic dimension, but with a clear predominance of the first. In a multipolar global context and not very encouraging prospects in terms of the dynamism of international trade, regional agreements are crucial and are a major priority for public policy. Based on some recent political statements, it seems likely that, regional agreements that emphasize economic integration may be strengthened, so that the region is better prepared to tackle fragmented globalization. This could include a greater emphasis on developing complementarities in value chains and coordinate efforts in the process of trade negotiations with other regions.

Institutional dimensions and the role of the state.

During the last two decades in some countries in the region, governments have played a leading role in strengthening social inclusion programs which, in addition, education and health as traditional and essential public goods, including greater attention civil rights and social protection programs.

Social movements and the indigenous question.

During the last two decades, conditions and dominant political orientations in several countries in the region were conducive to the strengthening of social movements and their increased participation in the construction of social power and the conduct of public institutions. This was especially significant in relation to: programs aimed at reducing poverty and improving food security and the defense of territories, food sovereignty and environmental protection.

A particularly relevant case is that of indigenous peoples who have raised a struggle for recognition of their identities as subjects of collective rights including the collective ownership of their territories. The areas of increasing indigenous participation include strengthening processes of self-government for the establishment of autonomous regions and / or indigenous territorial reserves. In some countries like Bolivia, Nicaragua, Colombia and the Amazon in Brazil they have made significant progress in this direction.

Specificities and main challenges in the Caribbean Subregion

The Caribbean subregion is a geographically small region in relation to Central America and South America, but of great complexity and diversity. The economy is dominated by tourism (more than 20% in two-thirds of the countries), and while Trinidad and Tobago is a major producer of oil, agriculture is the main economic activity in Guyana, Dominica, Belize and Haiti. In 2011, most countries imported more than 80% of food. As an additional problem obesity is increasing in most countries.

The importance of tourism is expected to continue in the future, though affected by global economic conditions. Providing food for tourism from agriculture primarily of small family farms is a major problem and also a great opportunity for local agricultural production. In this sense, the development of technology, health and safety, transport infrastructure and agricultural trade, both in the Caribbean

and in some countries of Central America and South America in geographic proximity, poses an important challenge.

A second challenge is the increasing vulnerability of the region to climate disasters, which are increasing in frequency and intensity as a result of global warming. Prepare to meet this challenge is of great importance and urgency.

E. Near East and North Africa⁶

Regional implications of global trends

Worldwide, significant pressures and risks affect sustainable agricultural growth and productivity, and these are reflected in most Near East and North Africa (NENA) countries. Global factors include world demand and prices for agricultural products, and patterns of trade and the progress of WTO requirements on reducing subsidies and protection. NENA is prone to and affected by a combination of recurrent shocks such as conflict, drought, floods, economic crisis, trans-boundary animal and plant diseases and pests, among others, which are the main drivers of food insecurity in the region. The region as a whole has witnessed a significant setback in the fight against hunger with several countries being exposed to civil unrest, wars and protracted crises over the last years. Agricultural production in the region is sensitive to mainly water scarcity and energy prices, which affect both irrigation and the cost of inputs and (through transport costs) the price and market for outputs. In addition, production and markets are affected by conflict within the region. In many NENA countries, there are policy biases against rural areas, and incentives, services and infrastructure investment favour urban and modern sectors. Urbanization is encroaching on prime agricultural land, and inheritance patterns are leading to continuing land fragmentation.

Sluggish growth, poor fiscal outlook and low investor confidence

Two decades of rapid global expansion of demand drove widespread economic growth throughout the NENA region, supported by increasingly open economic policies in key agricultural exporting and tourist economies such as Morocco, Egypt and Tunisia. The oil exporting economies, particularly in the Arabian Peninsula, benefited from high oil prices. The increased level of economic activity allowed governments to increase the supply of public goods, including programmes for food security and social protection.

The global economic downturn since 2008 has led to the reversal of the favourable trend of the previous years. Poverty and food insecurity are again on the rise in many locations, a trend enormously affected in many states by political instability and by civil strife. Investor confidence is at a low ebb in many countries. Already, there has been a massive reduction in fiscal resources – 50% down in the case of Saudi Arabia – and the GCC countries are running huge fiscal deficits. The effect is felt far beyond the oil exporting countries, with remittances sharply down in Egypt, Lebanon and Jordan.

Beyond that, prospects for oil exporters remain weak, as oil prices are expected to stay low for some time, and this will have a knock-on effect throughout the region through reduced demand, lower employment and continued reduction in remittances. In addition, there are no clear solutions yet for the conflicts in Yemen, Libya, Syria or Iraq.

⁶ This section draws from FAO document [NERC/16/2 Rev.2](#)

Trade and food security

In an increasingly globalized and competitive world, the region is faced with the need to increase international competitiveness through the development of transport and communications infrastructure, technological innovation and trade policies. One pathway to this could be strengthening of regional trade agreements and greater economic integration. However, in recent decades NENA has made only limited moves towards regional economic integration. This has constrained the development of complementarities in value chains and coordination of efforts in trade negotiations.

At the same time, most countries of the region have seen a rising level of food import dependence and exposure to market shocks. With continued population growth, world demand for food continues to rise and changes in patterns of demand are combining with supply-side issues of quantity and price volatility to maintain a level of global risk. Supply risk is exacerbated in the region by threats from conflict and by weak regional integration. Domestic food production is affected by economic, technical and natural resource constraints limiting productivity, and many countries lack comparative advantage for expanding food production. Hence most NENA countries will be increasingly dependent on food imports and are consequently vulnerable to price and supply risks.

Political change

The wave of change dubbed the Arab Spring had initially a liberating effect but over the course of the last eight years has dissipated into contrasting fragments from which no region-wide picture emerges.

Natural resource constraints and climate change

Across the world, finite natural resources are under growing pressure from population growth, changes in land use, and competition amongst sectors for scarce resources. The pressures on land, water and biodiversity are exacerbated by degradation resulting from human use and by climate change. These pressures are felt more keenly in NENA than anywhere else, but particularly on water because NENA is the most water-scarce region in the world. Current per capita water availability is one tenth of the global average, and is declining fast; current levels are one third of those 50 years ago.

All NENA countries will be vulnerable to climate change which is likely to intensify existing water scarcity and aridity, bringing higher temperatures, more heat waves, lower and less reliable precipitation and more extreme rainfall events. This will lead to increased frequency of droughts and floods and increased erosion. The most marginal and affected systems – dryland and pastoral systems – are those for which fewest solutions are available and some areas may go out of production altogether.

Regional specificities and main challenges

In addition to the global trends which influence NENA or which are replicated in NENA, there are two striking trends which are more specific to the region: (1) demographic trends and pressures; and (2) conflict and issues of immiseration and food insecurity.

Demographic trends and pressures

The NENA region is characterized by a high population growth rate of about 2 percent per annum, with a population of roughly 400 million today which is expected to reach 600 million by 2050. Population growth, along with increasing urbanization and changing consumption patterns, will lead to an increased demand for food and land and water resources. The demographic bulge of young people aged 18-30 coming into the labour market is driving very high rates of youth unemployment (30%) and is a major push factor in migration. Despite advances in female education, NENA continues to have the lowest rate of female workforce participation in the world.

Conflict and issues of immiseration and food insecurity

The most pronounced and tragic regional trend of recent years has been the proliferation and escalation of conflict. Conflict is having a dramatic human and economic cost with economic losses, social disturbances and disruption to food supply and access threatening to reverse the gains in nutrition and poverty reduction that the region made in the last decade. Small farmers and the already poor are hit the hardest-losing the few assets they have, abandoning their lands and are undertaking exceptionally dangerous migrations within the country and across international borders. Four countries are currently locked in internecine struggles – Syria, Iraq, Yemen and Libya – and other regional economies are bearing the huge brunt of refugees and internationally displaced persons (IDP). There are, for example, 6.2 million Syrians in neighbouring countries – 1.5 million in Lebanon, where they now make up one quarter of the population, 1.4 million in Jordan, and 2.8 million in Turkey. Of the total of 12 million Syrians displaced (half the population), two thirds are within the country, and 4.6 million have fled, including more than 800,000 who have gone to Europe. In Iraq, there are 4 million IDPs, in Yemen 2.5 million, including 30% in female-headed households

The economic costs are large and multidimensional. In Syria, the war damage is immeasurable and the country is running a huge fiscal deficit. The cost of war to Syria and neighbouring countries in loss of output has been estimated at \$35 billion, equal to the entire Syrian GDP in 2007. Damage to capital stock in Syria 2011-2014 has been estimated at \$72 billion. In Libya, oil exports have collapsed, In Yemen, public debt and inflation are spiralling and damage in four cities is estimated to have cost \$4-5 billion. The cost to neighbouring economies is enormous. In Jordan, the cost of Syrian refugees is estimated at \$2.5 billion annually, 6% of GDP and one quarter of the Government budget. The consequent need for humanitarian assistance is overwhelming (see Chapter VI below). In addition, terrorism has taken a huge toll on the Egyptian and Tunisian economies where tourism is a major economic activity.

Control of transboundary plant, and animal pests and diseases

The risk of spread of high impact transboundary animal diseases such as Highly Pathogenic Influenza, Pest des Petits Ruminants, foot and mouth disease, lumpy skin disease and brucellosis remains a challenge in the region as a result of significant trade in live animals, political instability and breakdown of veterinary services in some countries. Coordinated surveillance and control programmes at the regional level are essential to mitigate the risk of diseases.