

# PART

# 1

## The setting

### Introduction

Well over half of the developing world's population – 3.1 billion people, or 45 percent of all humanity – live in rural areas. Of them, roughly 2.5 billion derive their livelihoods from agriculture. For many economies, especially those of developing countries, agriculture can be an engine of economic growth. Approximately two-thirds of the world's agricultural value added is generated in developing countries, and in many of them the agricultural sector contributes as much as 30 percent to the Gross Domestic Product (GDP) and is a source of employment for two-thirds of the labour force. According to the World Bank, growth in the agricultural sector can be up to 3.2 times more effective at reducing US\$1/day poverty than growth in other sectors. Importantly, agriculture can provide a haven of resilience against global economic and financial turmoil, often more effectively than other sectors.

A look back through history reveals that growth in agriculture has tended to be the antecedent of wider economic development. From the Industrial Revolution that began in England in the 18th century and spread to other now-developed countries, through to more recent examples of China or Viet Nam, agriculture has always been the precursor to the rise of industry and services. In many poor developing countries, primary activities such as agriculture still constitute the backbone of the economy. Inadequate infrastructure, incomplete markets and a large presence of subsistence producers are

frequent characteristics of these economies. Strategies to promote economic growth must be firmly anchored in agriculture. Increasing productivity in the sector is a necessary condition for resources to migrate towards non-agricultural activities, thus gradually diversifying the economy.

Yet, a profound and prolonged lack of investment in agriculture is evident in many countries. Notably, infrastructure is missing or weak in rural areas, agricultural productivity is stagnant and the lack of opportunities for income diversification combines with poor functioning markets to undermine economic growth.

These conditions, however, can be changed. There is now a growing recognition among governments and donor agencies that agriculture must be the mainstay of any development agenda and of policies towards economic growth. The reaffirmation of the sector's role in this context provides fresh impetus for fostering investment and raising productivity in agriculture.

## Key Resources

### The State of Food and Agriculture

The State of Food and Agriculture, FAO's major annual flagship publication, aims at bringing to a wider audience balanced science-based assessments of important issues in the field of food and agriculture. Each edition of the report contains a comprehensive, yet easily accessible, overview of a selected topic of major relevance for rural and agricultural development and for global food security. This is supplemented by a synthetic overview of the current global agricultural situation.

2009: Livestock in the balance

2010-11: Women in Agriculture: Closing the gender gap for development

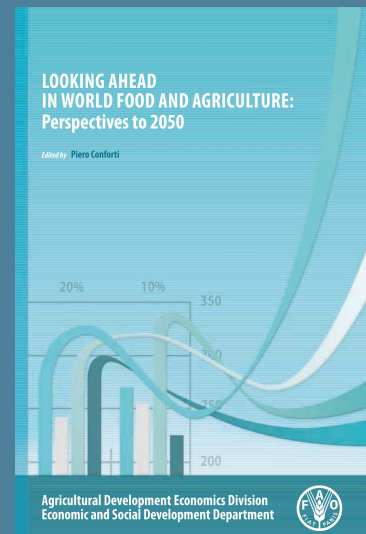
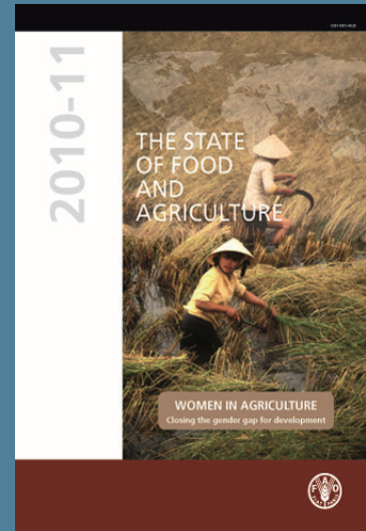
Publication cycle: Annual

Webpage: [www.fao.org/publications/sofa](http://www.fao.org/publications/sofa)

### Looking Ahead in World Food and Agriculture

How will the world feed itself in 2050? This volume, which is a compilation of papers authored by world-class experts, addresses this very question. Agricultural and food demand is expected to slow over the next decades, following slowing population growth and rising incomes. However, population will still grow considerably in the coming decades, and require world agricultural production to increase substantially by 2050. Other areas explored in the volume are natural resources – notably land and water – as well as capital, investment and technology.

Webpage: <http://www.fao.org/economic/esa/esag/en/>



## People and demography

Even though growth rates have been slowing since the late 1970s, the **world's population** has nevertheless doubled since that time to 6.9 billion, and is projected to increase considerably over the next decades. In many developing countries, a combination of declining mortality rates, prolonged life expectancy, youthful age structures and high fertility warrant considerable population increases that are likely to continue until the end of the twenty-first century. Of concern is that where population growth is the highest, income levels are the lowest. For poor population groups, consumption tends to be heavily influenced by local production. This may lead to the emergence of "Malthusian Islands", particularly in parts of sub-Saharan Africa, where population growth is outstripping the current productive capacity of the land.

According to the most recent revision of the UN's World Population Prospects, countries with low **fertility** rates – that is, most developed countries and much of East Asia – currently account for around 40 percent of the world's population. In these countries, each woman does not have enough children to ensure that, on average, she will be replaced by a daughter who survives to the age of procreation. Another 40 percent is situated in intermediate-fertility countries, where each woman has, on average, between 1 and 1.5 female offspring. The remaining 18 percent – in much of sub-Saharan Africa, parts of the Near East and South Asia – is located in high-fertility countries where the average woman has more than 1.5 daughters. These countries provide the highest potential for future population growth.

The trajectory of the world's future population rests heavily on assumptions about fertility rates. If rates in high-fertility countries continue to grow unabated, an additional two billion people will need to be fed by the turn of the century. This underscores the importance of empowering women and couples through education and promoting family planning, especially in the poorest countries where population growth rates are currently the fastest. Indeed, though most people would like to and do have smaller families than they did in the past, many in fact have more children than they desire. According to the United Nations Population Fund, approximately 215 million women who would use **contraceptives** lack access to them. At the same time, there are contexts in which poverty can be a reason for high fertility, given the role of children in providing a labour force for the household and support for the elderly.

Worldwide, people can expect to live longer than ever before. In the past two decades alone, global **life expectancy** has risen approximately five years to nearly 69 years. In all countries, the wealthy live longer than the poor, and in most populations women usually outlive men. In 2011, people in those least-developed countries characterized by high fertility rates are expected to live on average 58 years, some 20 years less than their counterparts in developed countries. Nevertheless, this average marks a significant increase when compared to life expectancy in 1990, which stood at only 50 years.

Map 1:



Source: World Population Prospects - the 2010 Revision (UNESA)

Metalink: [P1.DEM.UN.WPP.POP.TOT](https://doi.org/10.18095/UNWPP/P1.DEM.UN.WPP.POP.TOT), p. 73 

- 6896 million people living in the world in 2010
- Virtually all global population growth centred in developing countries
- However, world population growth today is half of what it was in the 1960s

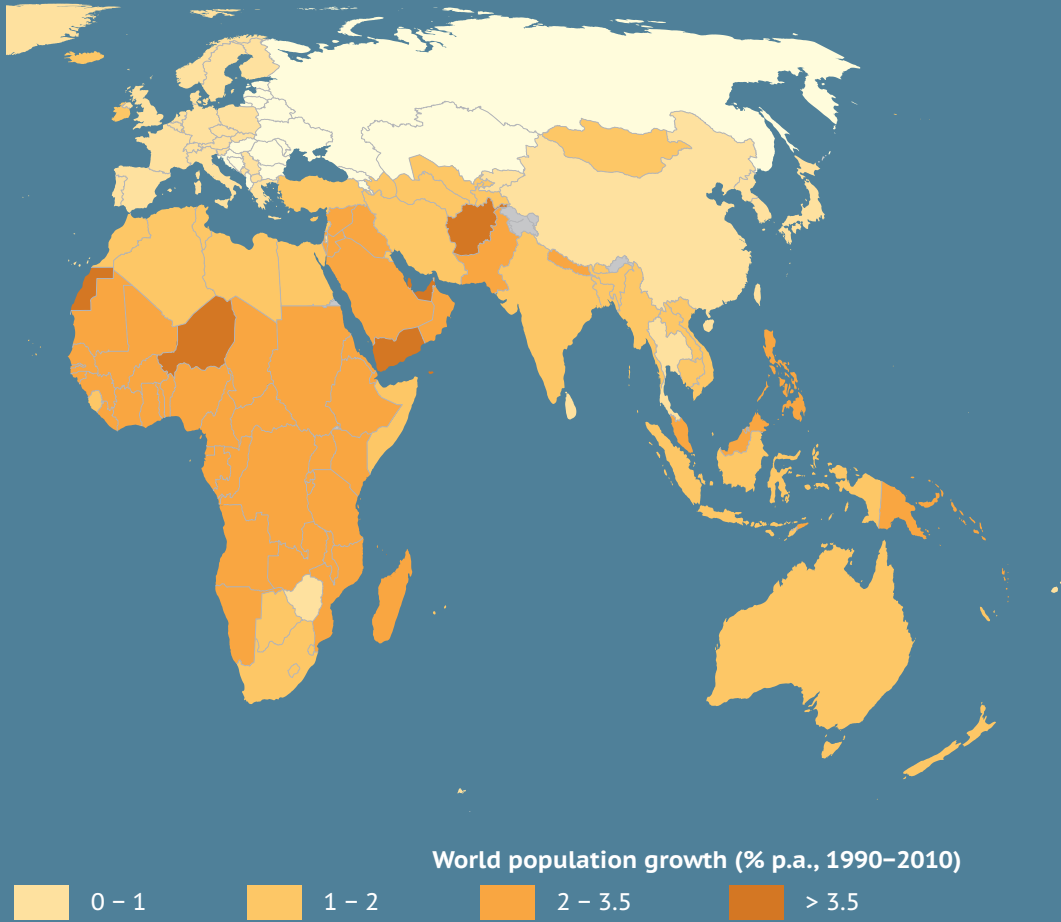
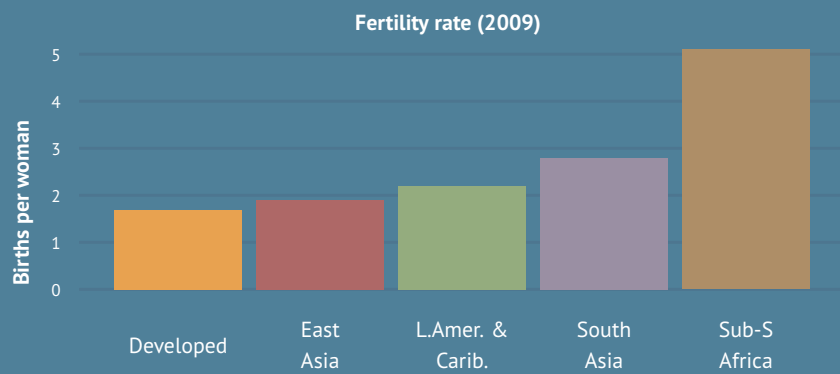


Chart 1: Very high fertility rates behind faster population growth in developing regions



Source: World Population Prospects - the 2010 Revision (UNESA)

Metalink: P1.DEM.UN.WPP.FER.TOT, p. 72 

Improved access to clean water, better nutrition, living and working conditions, and greater access to health services can account for the increase in life expectancy. These factors, in tandem with higher life expectancy, have led to the decline in **infant mortality** rates.

The world's population is **aging**. Today, roughly 27 percent is below the age of 15 and approximately 8 percent is 65 years or older. In the past two decades these statistics stood at 33 and 6 percent, respectively. This aging profile is being shaped by rising longevity twinned with low fertility rates in the more developed countries.

Unprecedented change has also occurred in where people reside. During 2008, the world's **urban** population turned, for the first time, larger than the rural population. But only part of this trend was caused by increased rural-urban migration. Other reasons include the transformation of rural settlements into urban areas and, most importantly, natural urban population growth. Essentially, much of the global population growth has taken place in less developed countries (LDCs), predominately in poor urban areas and slums. Urbanization rates in LDCs reached 4 percent per annum in the last decade. The three fundamental dimensions of food security: availability, access and utilization differ in urban and rural contexts and across urban socio-economic groups. A greater diversity of both local and imported food products is available in cities although, most of the food is not produced within city boundaries. Access to food in urban areas is dependent on cash exchange, with some exceptions, where urban food production contributes directly to household intake. Reliance on purchased food is a leading factor in household food insecurity of poor urban populations, who lack a fixed income.

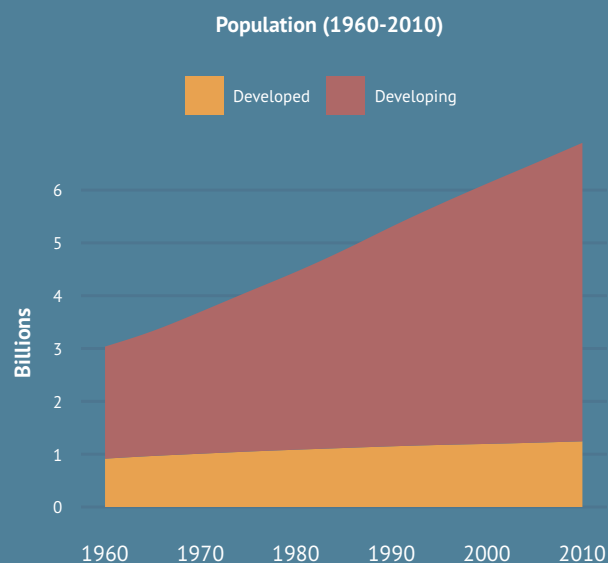
Allied to rising urbanization is an increase in **population densities**. At the world level, there are on average 50 people living in every square kilometre. At 68 persons per km<sup>2</sup>, densities in developing countries are three times as high as those in developed countries. In south East Asia, for instance, population density stands at 132 per km<sup>2</sup>.

Beside birth and death rates, **international migration** is the only other factor that directly accounts for a country's population growth. Immigration from developing to developed countries over the period 1990 to 2010 amounted to 45 million people. Presently, around 214 million people (over 3 percent of the world population) officially live outside their home country.

### Further reading

- World Population Prospects: the 2010 revision ([www.un.org/esa/population/](http://www.un.org/esa/population/))
- UN Population Fund ([www.unfpa.org/](http://www.unfpa.org/))
- FAO Food and Nutrition Security in Urban Environments ([www.fao.org/ag/agn/nutrition/urban\\_security\\_en.stm](http://www.fao.org/ag/agn/nutrition/urban_security_en.stm))

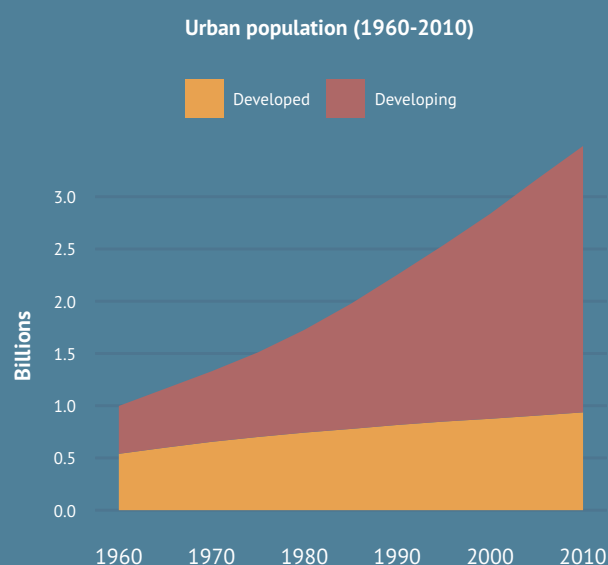
Chart 2: Virtually all population growth centred in developing countries



Source: World Population Prospects - the 2010 Revision (UNESA)

Metalink: [P1.DEM.UN.WPP.POP.TOT](#), p. 73

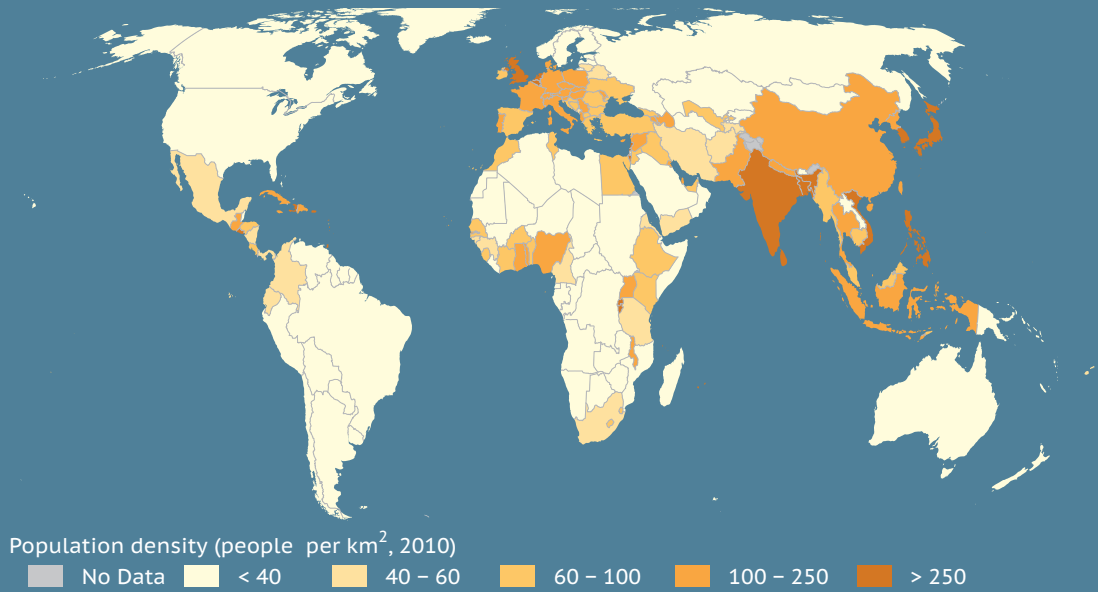
Chart 3: ... and in cities



Source: World Urbanization Prospects (UNESA)

Metalink: [P1.DEM.UN.WUP.POP.URB](#), p. 73

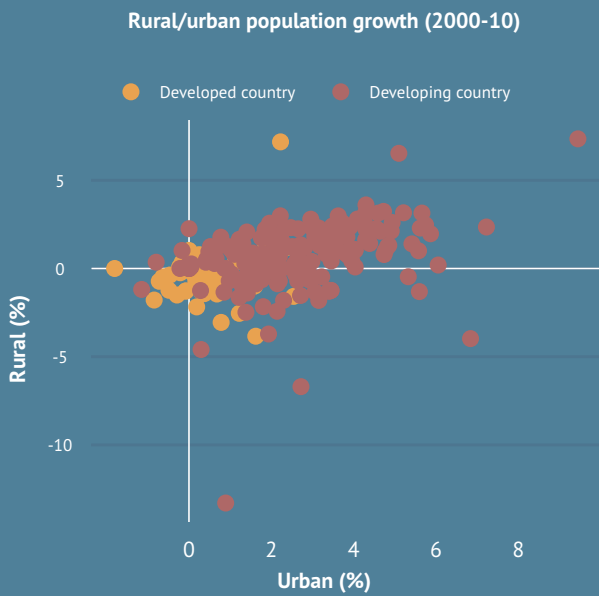
Map 2: Population density highest in Asia and Europe but rising in coastal Africa



Source: World Population Prospects - the 2010 Revision (UNESA)

Metalink: P1.DEM.UN.WPP.POP.DEN, p. 72

Chart 4: Rural to urban population shift more prevalent in developing countries



Source: World Urbanization Prospects (UNESA)

Metalink: P1.DEM.UN.WUP.POP.URB, p. 73

Chart 5: Populations in developing regions getting younger, but aging in developed regions



Source: World Population Prospects - the 2010 Revision (UNESA)

Metalink: P1.DEM.UN.WPP.POP.AGE, p. 72

## Women in agriculture

Women make significant contributions to the rural economy in all developing country regions. Roles differ across regions, yet they consistently have less access than men to the resources and opportunities they need to be more productive. Closing the gender gap in agricultural inputs alone could lift 100–150 million people out of hunger.

Women comprise, on average, 43 percent of the agricultural labour force in developing countries, ranging from 20 percent in Latin America to 50 percent in Eastern Asia and sub-Saharan Africa. Their contribution to agricultural work varies even more widely depending on the specific crop and activity. But a gender gap is found for many assets, inputs and services – land, livestock, labour, education, extension and financial services, and technology – and it imposes costs on the agriculture sector, the broader economy and society as well as on women themselves.

Closing the gender gap in agriculture would generate significant gains for the agriculture sector and for society. If women had the same access to productive resources as men, they could increase yields on their farms by 20–30 percent. This could raise total agricultural output in developing countries by 2.5–4 percent, which could in turn reduce the number of hungry people in the world by 12–17 percent. The potential gains would vary by region depending on how many women are currently engaged in agriculture, how much production or land they control, and how wide a gender gap they face.

No blueprint exists for closing the gender gap, but some basic principles are universal: governments, the international community and civil society should work together to eliminate discrimination under the law, to promote equal access to resources and opportunities, to ensure that agricultural policies and programmes are gender-aware, and to make women's voices heard as equal partners for sustainable development. Achieving gender equality and empowering women in agriculture is not only the right thing to do – it is also crucial for agricultural development and food security.

### Further reading

- FAO The State of Food and Agriculture 2010-11: Women in Agriculture - closing the gender gap for development ([www.fao.org/publications/en/](http://www.fao.org/publications/en/))
- FAO Gender ([www.fao.org/gender](http://www.fao.org/gender)) en/)

Map 3:



Source: KILM (ILO)

Metalink: [P1.RES.ILO.LAB.GEND](https://www.fao.org/docrep/012/y5820e/y5820e.pdf), p. 77 

- Increasing women's access to land, livestock, education, financial services, extension, technology and rural employment would boost agricultural productivity
- Closing the gender gap in agricultural inputs alone could lift 100-150 million people out of hunger



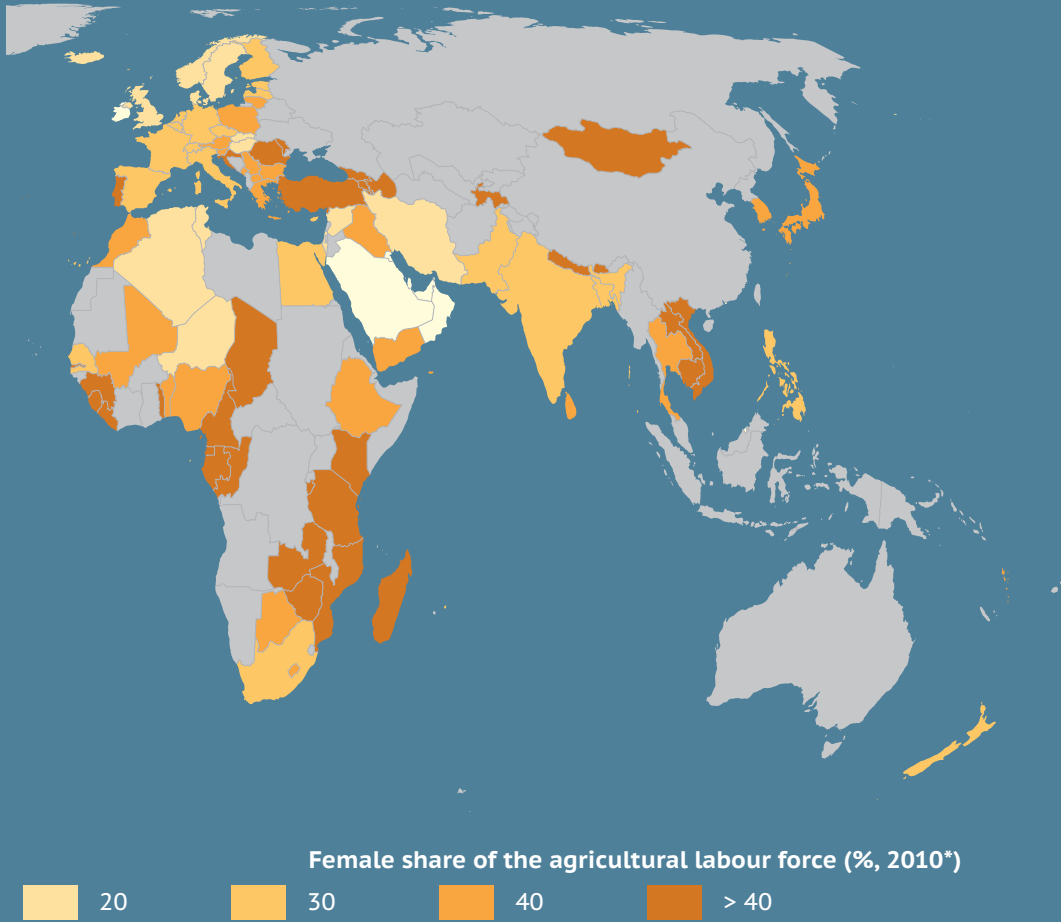
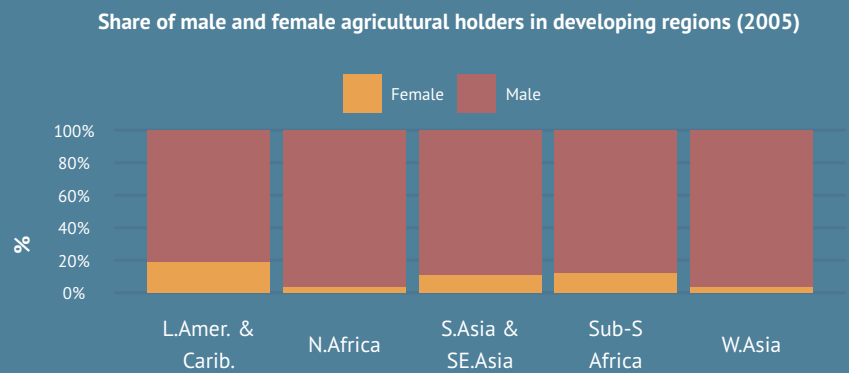


Chart 6: Stark gender disparities in land holdings are apparent in all regions



Source: FAO, Gender and Land Rights Database  
 Metalink: P1.RES.ILO.GEND.HLD, p. 77

## Land and water resources

At present, more than 1.5 billion hectares of the globe's **land surface** (about 12 percent) is used for crop production (arable land and land under permanent crops). According to FAO, there is little scope for further expansion of agricultural land. Despite the presence of considerable amounts of land potentially suitable for agriculture, much of it is covered by forests, protected for environmental reasons, or employed for urban settlements.

Potentially accessible agricultural land is very unevenly distributed between regions and countries. Some 90 percent is situated in Latin America and sub-Saharan Africa, and half is concentrated in just seven countries (Brazil, Democratic Republic of the Congo, Angola, the Sudan, Argentina, Colombia and the Plurinational State of Bolivia). At the other extreme, there is virtually no spare land available for agricultural expansion in South Asia, the Near East and North Africa.

So far, land and water management systems have been able to meet the rapidly rising demands placed on them. This was made possible through gains in yields thanks to increased use of inputs, technology and irrigation.

World agricultural production has grown between 2.5 and 3 times over the last 50 years while the cultivated area (permanent cropland and arable land) has grown by only 12 percent. More than 40 percent of the increase in food production came from irrigated areas, which have doubled in surface. These outcomes underscore the steady trend toward precision agriculture and commercialization of all types of food and industrial crops.

In the same period, **global cultivated land per person** gradually declined from 0.44 hectares to less than 0.25 hectares - a clear measure of successful agricultural intensification. But, the distribution of land suitable for cropping is skewed against those countries which have most need to raise production. In low-income countries, cultivated land area per person is less than half of that in high-income countries, and its suitability for agriculture is generally lower. Availability of land for cultivation does not necessarily equate to equitable access in reality, as women, indigenous people and ethnic minorities often lack access to land for farming enterprise.

The concentration of high-input irrigated agriculture on prime land has relieved pressure on land expansion to some extent. However, many irrigation systems are performing well below their potential, and there is considerable scope for improving the productivity and the efficiency of land and water use in agriculture. While much of the prime agricultural land suitable for irrigation has been developed, the global expansion of **irrigated area** has virtually stalled to 0.6 percent per year after growing twice as much in the 1990s. Growth remains fractional, even when the stagnation of irrigation-intensive rice cultivation in Asia is taken into account.

Map 4:



Source: FAO, Statistics Division (FAOSTAT)

Metalink: [P1.RES.FAO.ESS.LDAQ.ARL](https://www.fao.org/ess/land/land-use/land-use-availability-per-person), p. 75 

- 0.2 hectares of arable land available per person in 2009, less than half the amount 50 years ago
- Arable land availability per person lowest in Near East and many parts of Asia, but higher availability in developed regions and in South America
- In many low income countries, cropland per person is far more scarce, therefore bridging yield gaps will be needed to sustain production with high population growth



Although **rainfed agriculture** is the world’s predominant agricultural production system, increasing climate variability is bringing greater uncertainty in production levels. Current productivity in rainfed systems is, on average, reaching little more than half of its potential. In the poorest countries, only one-fifth of productivity potential is obtainable under conditions where the required agricultural inputs are available and appropriate management is applied.

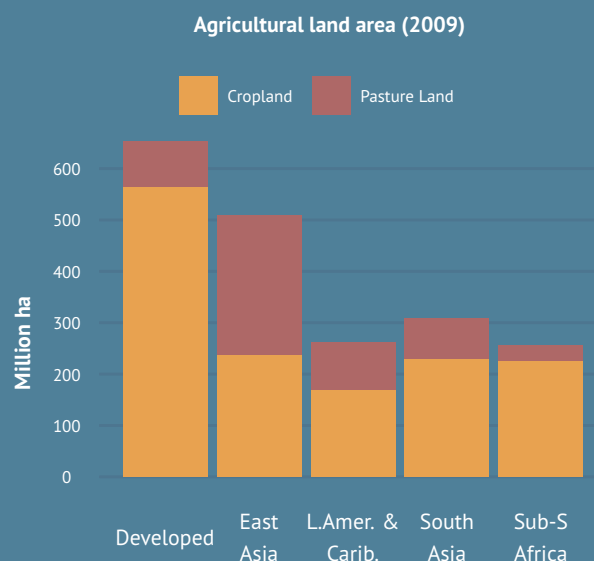
**Water availability** is a growing constraint in areas where a high proportion of renewable water resources is already used, or where transboundary water resource management cannot be developed because agreements on cooperative use are not in place. Overall, increasing water scarcity constrains irrigated production, particularly in the most highly stressed countries and areas. Because many important food production zones are dependent on groundwater, declining aquifer levels and abstraction of non-renewable groundwater present a growing risk to food production systems.

In the coming decades, climate change may bring further risks and unpredictability to harvests, whether from warming and related aridity, shifts in rainfall patterns, or the frequency and duration of extreme weather events. Water availability and its distribution may also be profoundly affected. While warming may extend the frontier of agriculture in higher-latitude areas (both northern and southern hemispheres), it is anticipated that key agricultural systems will have to cope with new temperature, humidity and water stress. This makes the need to increase the efficiency of land and water use even more urgent.

### Further reading

- [FAO The State of the World’s Land and Water Resources for Food and Agriculture \(SOLAW\): managing systems at risk 2011](http://www.fao.org/nr/solaw/solaw-home/en/) (www.fao.org/nr/solaw/solaw-home/en/)
- [Bruinsma \(2011\)](#)
- [FAO Natural Resources and Environment Department](http://www.fao.org/nr/) (http://www.fao.org/nr/)

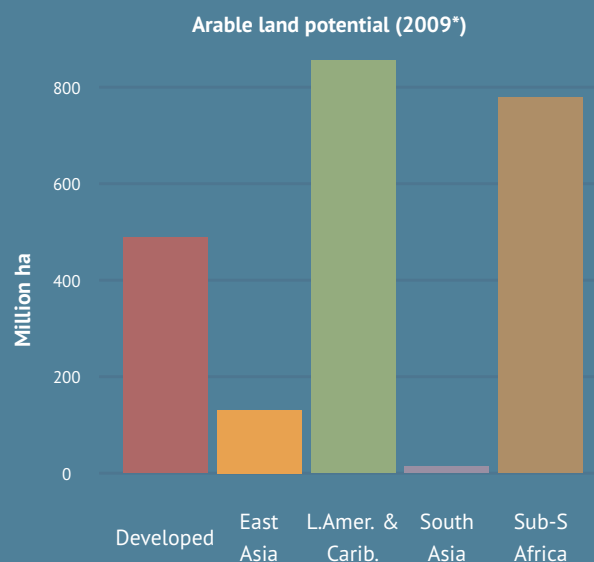
Chart 8: Agricultural land availability low in food-insecure regions



Source: FAO, Statistics Division (FAOSTAT)

Metalink: [P1.RES.FAO.ESS.LDAQ.ARPCL](https://www.fao.org/faostat/en/#data/AR), p. 75

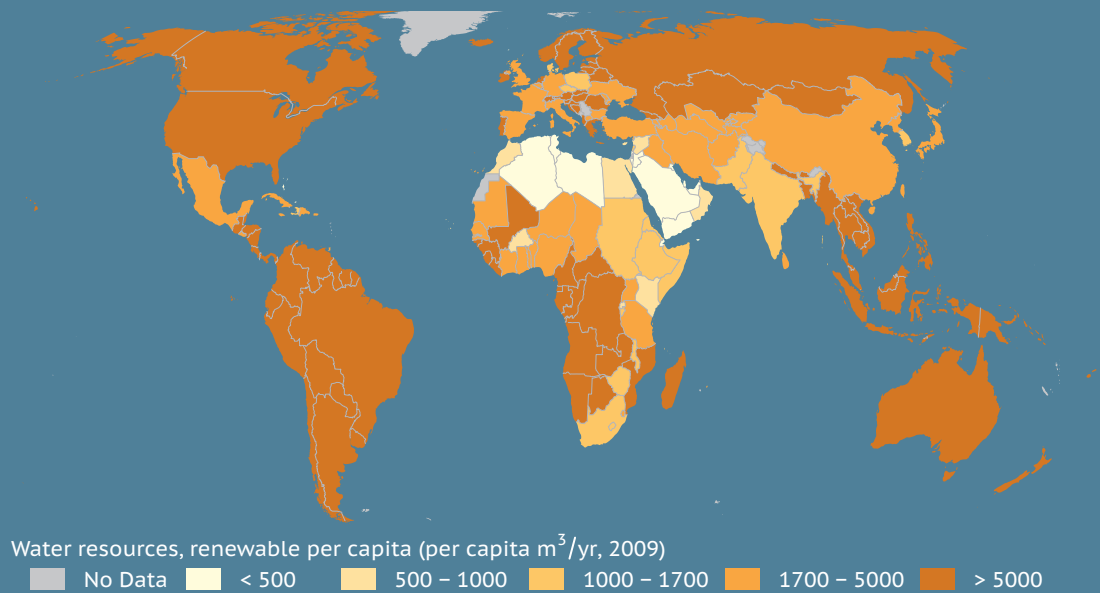
Chart 9: But large potential for arable land expansion in Latin America and in sub-Saharan Africa



Source: FAO, Statistics Division

Metalink: [P1.RES.FAO.LAN.ALP](https://www.fao.org/faostat/en/#data/AL), p. 76

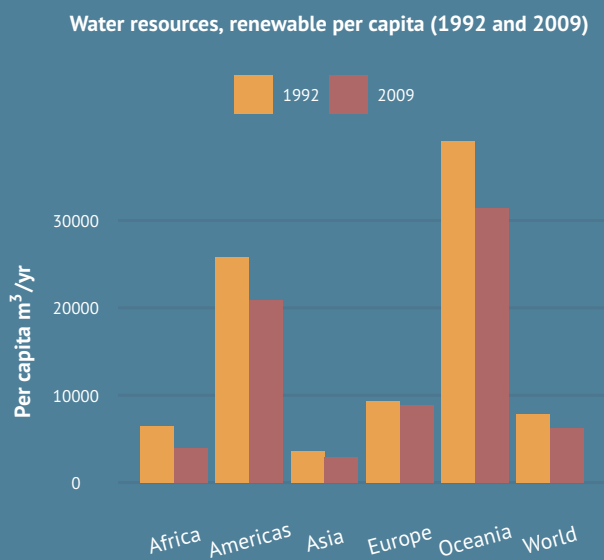
Map 5: Per capita renewable water resources lowest in North Africa and the Near East



Source: FAO, Land and Water Division (AQUASTAT)

Metalink: P1.RES.FAO.NRL.WTRpc, p. 76

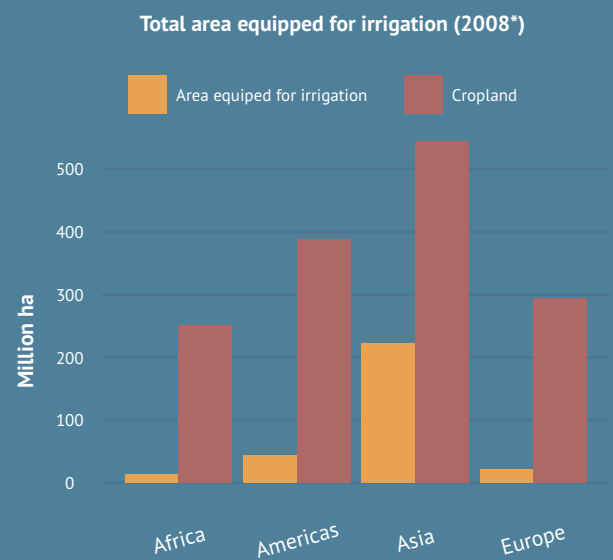
Chart 10: Greater abundance of water resources on a per capita basis in Oceania and the Americas



Source: FAO, Land and Water Division (AQUASTAT)

Metalink: P1.RES.FAO.NRL.WTRpc, p. 76

Chart 11: Africa lags behind other regions in the share of land equipped for irrigation



Source: FAO, Land and Water Division (AQUASTAT)

Metalink: P1.RES.FAO.NRL.TAEI, p. 76