



What does the fifth IPCC report say about population dynamics?

The most recent IPCC reports (April and November 2014) identify changes in population as factors that exacerbate climate change vulnerability. The Fifth Assessment Report is the most comprehensive assessment of climate change ever undertaken. Here we present the reports' key messages about different population dynamics and access to reproductive health etc.

The second volume of the Fifth Assessment Report, released by the UN's Intergovernmental Panel on Climate Change (IPCC) in April 2014 noted that "human interference with the climate system is occurring, and climate change poses risks for human and natural systems".¹

This was confirmed by the synthesis report for the Fifth Assessment Report, released by the IPCC in November 2014 which outlined that, "human influence on the climate system is clear and growing, with impacts observed on all continents. If left unchecked, climate change will increase the likelihood of severe, pervasive and irreversible impacts for people and ecosystems".²

This document shares the reports' key references to population, with direct quotes.

Drivers of climate change and emissions:²

- **Anthropogenic greenhouse gas emissions have increased since the pre-industrial era, driven largely by economic and population growth, and are now higher than ever.** This has led to atmospheric concentrations of carbon dioxide, methane and nitrous oxide that are unprecedented in at least the last 800,000 years. Their effects, together with those of other anthropogenic drivers, have been detected throughout the climate system and are extremely likely to have been the dominant cause of the observed warming since the mid-20th century (pp. 4, lines 14-19).²
- **Globally, economic and population growth continue to be the most important drivers of increases in CO2 emissions from fossil fuel combustion. The contribution of population growth between 2000 and 2010 remained roughly identical to that of the previous three decades, while the contribution of economic growth has risen sharply (high confidence).** Between 2000 and 2010, other drivers outpaced emission reductions from improvements in energy intensity of GDP. Increased use of coal relative to other energy sources has reversed the long-standing trend in gradual decarbonisation (i.e., reducing the carbon intensity of energy) of the world's energy supply (pp. 47, lines 10-16).²
- **Key factors driving changes in anthropogenic greenhouse gas emissions are economic and population growth, lifestyle and behavioural changes, associated changes in energy use and land use, technology, and climate policy, which are fundamentally uncertain** (pp. 59, lines 3-6).²

¹ Intergovernmental Panel on Climate Change (IPCC) (2014) [Climate Change 2014: Impacts, Adaption, and Vulnerability](#) (WGII AR5). Geneva

² Intergovernmental Panel on Climate Change (IPCC) (2014) [Climate Change 2014: Synthesis Report](#) (AR5). Geneva

Future risks and impacts caused by a changing climate:² (pp. 69, lines 21-28).

1. Risk of severe ill-health and disrupted livelihoods resulting from storm surges, sea-level rise, and coastal flooding; inland flooding in some urban regions; and periods of extreme heat.
2. Systemic risks due to extreme weather events leading to breakdown of infrastructure networks and critical services.
3. Risk of food and water insecurity and loss of rural livelihoods and income, particularly for poorer populations.
4. Risk of loss of ecosystems, biodiversity, and ecosystem goods, functions, and services.

Water, food and urban systems, human health, security and livelihoods

- The fractions of the global population that will experience water scarcity and be affected by major river floods are projected to increase with the level of warming in the 21st century (pp. 74, lines 25-27).²
- Until mid-century, projected climate change will impact human health mainly by exacerbating health problems that already exist. Throughout the 21st century, climate change is expected to lead to increases in ill-health in many regions and especially in developing countries with low income, as compared to a baseline without climate change. Health impacts include greater likelihood of injury and death due to more intense heat waves and fires, increased risks from foodborne and waterborne diseases, and loss of work capacity and reduced labour productivity in vulnerable populations (pp. 75, lines 7-13).²
- **Changes in population, age structure, income, technology, relative prices, lifestyle, regulation, and governance are projected to have relatively larger impacts than climate change, for most economic sectors** (pp. 75, lines 34-37).²
- **Climate change is projected to increase displacement of people.** Displacement risk increases when populations that lack the resources for planned migration experience higher exposure to extreme weather events, such as floods and droughts. Expanding opportunities for mobility can reduce vulnerability for such populations. Changes in migration patterns can be responses to both extreme weather events and longer term climate variability and change, and migration can also be an effective adaptation strategy (pp. 76, lines 11-16).²

Freshwater resources

- **Non-climatic drivers such as population increase**, economic development, urbanisation, and land-use or natural geomorphic changes also **challenge the sustainability** of resources by decreasing water supply or increasing demand (Chapter 3, pp.234, lines 4-7).¹
- **Over the next few decades and for increases in global mean temperature of less than around 2oC above pre-industrial, changes in population will generally have a greater effect on changes in resource availability than will climate change.** Climate change would, however, regionally exacerbate or offset the effects of population pressures (Chapter 3, pp.250, lines 9-13).¹
- The fractions of the global population that will experience water scarcity and be affected by major river floods are projected to increase with the level of warming in the 21st century.²

Coastal systems and low-lying areas

- **The population and assets projected to be exposed to coastal risks** as well as human pressures on coastal ecosystems will **increase significantly in the coming decades due to population growth, economic development, and urbanisation** (Chapter 5, pp.364, lines 21-22).¹
- All the studies indicate high and growing exposure of low-lying coastal areas. **The Low Elevation Coastal Zone (LECZ) constitutes 2% of the world's land area but contains 10% of world's population (600 million) and 13% of world's urban population (360 million) based on year 2000 estimates** (Chapter 5, pp.372, lines 39-43).¹
- About **65% of the world's cities with populations of over 5 million are located in the LECZ** (Chapter 5, pp.372, lines 43-44).¹
- The population living in coastal lowlands is increasing and **more than 270 million people in 2010 are already exposed to flooding by the 1-in-100 year coastal flood. Population growth and land subsidence in coastal lowlands are the major causes;** therefore there is very low attribution to climate change (Chapter 5, pp.386, lines 19-23).¹
- Coastal systems and low-lying areas will increasingly experience submergence, flooding and erosion throughout the 21st century and beyond, due to sea-level rise. **The population and assets projected to be exposed to coastal risks as well as human pressures on coastal ecosystems will increase significantly in the coming decades due to population growth, economic development, and urbanization (high confidence).** Climatic and non-climatic drivers affecting coral reefs will erode habitats, increase coastline exposure to waves and storms, and degrade environmental features important to fisheries and tourism (high confidence). Some low-lying developing countries and small island states are expected to face very high impacts that could have associated damage and adaptation costs of several percentage points of GDP (pp. 74, lines 14-21).²

Food security and food production systems

- **Developing countries rely heavily on climate -dependent agriculture and especially in conjunction with poverty and rapid increase in population they are vulnerable to climate change.** While food insecurity is concentrated mostly in developing countries situated in the tropics global food supply may also be affected by heat stress in both temperate and subtropical regions (Chapter 7, pp.512, lines 21-27).¹

Human health and the role of family planning

- Although population growth rates and total population size do not alone determine emissions, population size is an important factor. One study showed that **CO2 emissions could be lower by 30% by 2100 if access to contraception was provided to those women expressing a need for it. Providing the unmet need for contraceptive services** in areas such as the Sahel region of Africa that has both high fertility and high vulnerability to climate **change can potentially significantly reduce human suffering as climate change proceeds.** This is important not only in poor countries, however, but also some rich ones like the US, where there is unmet need for reproductive health services as well as high CO 2 emissions per capita (Chapter 11, pp.740, lines 5-17).¹
- **Slowing population growth through lowering fertility, as might be achieved by increasing access to family planning, has been associated with improved maternal and child health – the co - benefit - in two main ways: increased birth spacing and reducing births by very young and old mothers** (Chapter 11, pp.740, lines 21-25).¹

- **Programs to provide access to reproductive health services for all women will not only lead to slower population growth and its associated energy demands, but also will reduce the numbers of child and maternal deaths** (Chapter 11, pp.742, lines 44-46).¹

Key economic sectors and services

- For most economic sectors, **the impacts of drivers such as changes in population, age structure, income, technology, relative prices, lifestyle, regulation, and governance are projected to be large relative to the impacts of climate change** (Chapter 10, pp.662, lines 4-7).¹

Human security

- **Climate change will have significant impacts on forms of migration that compromise human security.** Some migration flows are sensitive to changes in resource availability and ecosystem services. **Major extreme weather events have in the past led to significant population displacement, and changes in the incidence of extreme events will amplify the challenges and risks of such displacement.** Many vulnerable groups do not have the resources to be able to migrate to avoid the impacts of floods, storms, and droughts. Models, scenarios, and observations suggest that coastal inundation and loss of permafrost can lead to migration and resettlement. Migrants themselves may be vulnerable to climate change impacts in destination areas, particularly in urban centres in developing countries. (Chapter 12, pp.758, lines 15-20).¹
- **Sea level changes have been projected to lead to permanent displacements as coastal areas become uninhabitable** (Chapter 12, pp.770, lines 14-15).¹

Characteristics of mitigation pathways

- **Without additional efforts to reduce GHG emissions beyond those in place today, global emission growth is expected to persist driven by growth in global population and economic activities** (pp. 90, lines 36-37).²

Trade-offs, synergies, and integrated responses

- An integrated response to urbanization provides substantial opportunities for enhanced resilience, reduced emissions, and more sustainable development.²
- **Urban areas account for more than half of global primary energy use and energy-related CO2 emissions, and contain a high proportion of the population and economic activities at risk from climate change** (pp. 132, lines 42-46).²

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