



Population and Climate Change: What are the links and priorities for action?

Population projections

The world population is projected to increase from today's 7.2 billion to 9.6 billion in 2050, and to reach 10.9 billion by the end of the century, according to the medium variant of the latest UN population projections. Almost all of the additional 3.7 billion people from now to 2100 will enlarge the population of developing countries, from 5.9 billion in 2013 to 9.6 billion in 2100.¹ Much of this growth will take place in the world's poorest countries; between 2013 and 2100, the populations of 35 countries, most of them least developed countries, could triple or more.¹ Developing countries are also the most vulnerable to the effects of climate change and face the challenges of adapting to these effects, and minimising their impact at the same time as needing to provide for and lift growing numbers of people out of poverty.

Population projections are contingent on fertility declines in developing countries

Fertility in the less developed regions as a whole is expected to drop from 2.69 children per woman in 2005-2010 to 1.99 in 2095-2100, closer in line with fertility in the more developed regions which is expected to be 1.93 in 2095-2100.¹ To achieve such reductions however, it is essential that access to family planning expands, particularly in the least developed countries.¹ In 2013, the use of modern contraceptive methods in the least developed countries was a low 38% among women of reproductive age who are married or in a union, and a further 23% had an unmet need for family planning.¹ The urgency of realising the projected reductions of fertility through ensuring access to voluntary family planning services is such that, if fertility were to remain constant at the levels estimated for 2005-2010, the world population by 2100 could increase by nearly six times as much as currently expected.¹

Climate Change

The Intergovernmental Panel on Climate Change (IPCC) has concluded that human interference with the climate system is occurring and climate change poses severe risks for human and natural systems. The increase in greenhouse gas emissions over the last 150 years has already significantly changed the climate. The long term trend of warming is predicted to continue and as carbon dioxide (CO₂) levels in the atmosphere double, the earth is expected to warm by between 1.5°C and 4.5°C.

We also know that:

- The first decade of the 21st century was the hottest since records began.²
- The oceans are warming and sea levels rising. Over the last 2 decades, sea levels have risen by more than 3mm per year.²
- The polar ice caps are melting. The loss of Arctic sea ice has occurred at a rate of around 3.5 to 4.1% over the last three decades.²
- Climate change is increasing the frequency and intensity of extreme natural events and disasters.² Currently one third of the world's population lives within 60 miles of a shoreline and thirteen of the world's twenty largest cities are located on a coast; hundreds of millions could be displaced in environmental mass migration.³
- The least developed regions are most vulnerable to climate change, have contributed least to it, and have the fewest resources available to them for adaptation.⁴

Population and climate change links

According to the IPCC, climate change poses risks for human and natural systems and interacts with population dynamics in many interconnected ways:

Availability of 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.⁵
- Each degree of warming is projected to increase water scarcity by at least 20% for an additional 7% of the global population. This will exacerbate competition for water among agriculture, ecosystems, settlements, industry and energy production, affecting regional water, energy and food security.⁵

¹ UN Population Division (2013) *World Population Prospects: The 2012 Revision*. New York: UN. Available at: <http://esa.un.org/unpd/wpp/index.htm>

² Intergovernmental Panel on Climate Change (IPCC) (2013) *IPCC Fifth Assessment Report: Climate Change 2013 (AR5)*. Geneva: IPCC.

³ Costello, et al. (2009) "Managing the health effects of climate change". *The Lancet*, 373, 9676, pp.1693-1733.

⁴ Intergovernmental Panel on Climate Change (IPCC) (2007) *IPCC Fourth Assessment Report: Climate change 2007 (AR4)*. Geneva: IPCC.

⁵ Intergovernmental Panel on Climate Change (IPCC) (2014) *Climate Change 2014: Impacts, Adaptation, and Vulnerability (WGII AR5)*. Geneva



- Changes in population will generally have a greater effect on changes in resource availability than climate change will. Climate change would, however, regionally exacerbate or offset the effects of population pressures.⁶

Coastal systems and low-lying areas:

- Coastal risks to populations are expected to rise as human pressures on coastal ecosystems will increase significantly in the coming decades due to population growth, economic development, and urbanisation.⁵
- 10% of world's population and 65% of the world's cities are located in low lying coastal zones (LCZs). The population living in LCZs is increasing. More than 270 million people in 2010 were already exposed to flooding.⁵

Human health:

- Although population growth rates and total population size do not alone determine the level of CO² emissions, population size is an important factor.⁵
- By 2100, CO² emissions could be lowered by 30% if access to contraception was provided to those women expressing a need for it.⁷
- Programmes 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.⁵

Human security:

- Climate change over the 21st century is projected to increase displacement of people; sea level changes have been projected to lead to permanent displacements as coastal areas become uninhabitable.⁵
- Climate change will have significant impacts on forms of migration that compromise human security.⁵

The connection between population growth and climate change is:

Complex: Research has shown that increased investment in access to voluntary family planning programmes could have a positive impact on mitigation and adaptation strategies, but it must be recognised that the key driver of climate change is the relatively high level of carbon emission in the developed world, where population growth is not, for the most part, a major issue. Demographic variables such as household size, age and sex composition and population density influence per capita consumption levels and intensify the complexity of the relationship between population growth and climate change.⁸

Controversial: Developing countries themselves are increasingly identifying population as exacerbating vulnerability to climate change and undermining adaptation. Yet, given that the industrialised North is not radically reducing its carbon emissions, advocating reduced population growth in the South risks appearing to blame that growth for climate change, in a context within which Southern countries have contributed the least to climate change but will suffer the most from its impact. It is also important to advocate family planning programmes that respect and protect human rights: historically those which have been oriented towards reducing fertility have not always reflected these values in the ways that services have been offered; coercive family planning programmes have no place in international development.⁸

Critical: Developing countries already experiencing the impact of climate change themselves identify population dynamics, including population growth, high population density and migration, as exacerbating their vulnerability.⁸ Additionally, population dynamics are relevant to mitigation. While regional differences in per capita carbon emissions must be recognised, addressing current unmet need for modern contraception would slow population growth and reduce global average fertility to 1.65 children per woman (below replacement level) by 2050, and achieve 8-15% of the global carbon emissions reduction necessary to avoid dangerous global warming of more than 2°C by 2050.⁹

Priorities for Action

More research is needed to clarify the relationship between population dynamics and climate change. Increasing access to voluntary family planning services can play a role in resilience-building, adaptation strategies, and could also contribute to mitigation, and would respond to needs identified by developing countries themselves. Climate-related funding streams must be flexible enough to support integration of reproductive health programmes with climate adaptation interventions. The high unmet need for modern methods of contraception is a major cause of the persistence of high fertility in less developed countries. Investments in family planning are cost effective because of the strong synergistic effects of longer inter-birth intervals and lower fertility with other development goals. For every dollar spent on family planning, up to 6 dollars can be saved in interventions aimed at achieving other development goals.¹⁰ International co-operation will be vital in reducing carbon emissions and devising and funding adaptation strategies that will help the world's population to adapt to climate change.

⁶ Intergovernmental Panel on Climate Change (IPCC) (2014) *Climate Change 2014: Synthesis Report (AR5)*. Geneva

⁷ O'Neill, B., B. Liddle, L. Jiang, K.R. Smith, S. Pachauri, M. Dalton, and R. Fuchs, 2012: Demographic change and CO₂ emissions. *Lancet*, 380(9837), 157-164.

⁸ Newman, K. and Fisher, S. (2010) *Population Dynamics and Climate Change: A PSN Briefing Paper*. Population and Sustainability Network. Available at: <http://populationandsustainability.org/wp-content/uploads/2014/10/Population-and-Climate-Change-Briefing-Sheet.pdf>

⁹ The Aspen Institute (2010) *What's Good for Women in Good for the Planet*, citing O'Neill et al (2010) and Futures Group (2010).

¹⁰ Moreland, S. & Talibard, S (2006). *Achieving the Millennium Development Goals: The contribution of fulfilling the unmet need for family planning*. Washington D. C: USAID.

