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Sustainable Population Australia welcomes the opportunity to submit views with regard to information which should be considered at the workshop at SB38, relevant to the review of the adequacy of the long-term global goal and overall progress towards achieving it.

Population Growth as a Variable providing the single most powerful lever for minimising the extent of climate change and the negative impacts of climate change

SBSTA should consider the impact of different possible population outcomes on the likelihood of avoiding dangerous climate change, and on the human cost of climate change.

We argue that non-coercive measures aimed at reducing population growth are an appropriate, cost-effective and development-enhancing contribution to climate change response. We highlight the contribution of population growth to emissions growth and to vulnerability of communities to future climate change impacts.

Not including population growth reduction in the climate change response constitutes a moral hazard, by accepting much greater climate change than could otherwise be achieved, and by abandoning the goal of sustainable development.

Introduction:

Recent neglect of reproductive rights and family planning programs has contributed to the global failure to make adequate progress toward avoiding dangerous climate change.

Since the mid-1990s, family planning efforts have declined precipitously¹ while success in reducing mortality has exceeded earlier expectations. Consequently, the global population has been growing faster than anticipated.² Each new revision of the UN's projection since 1998 has seen an upward adjustment.

A peak human population in line with the UN's low projection of 8.1 billion would be readily achievable, if attention to family planning were restored. The most important requirement is political will in those nations with rapid population growth – both developing and developed. Such political will would be greatly supported by an assessment by SBSTA detailing the extent of benefit.

If the UNFCCC continues to ignore the population factor, avoidable climate change and greater human suffering will result. This is a morally indefensible stance.

¹ Sinding, S.W. (2009) 'Population, poverty and economic development.' *Phil. Trans. R. Soc. B* 364: 3023-3030.

² Bongaarts J. 2008. Fertility transitions in the developing world: progress or stagnation? *Studies in Family Planning* 39(2), 106-110.

False moral objections to population measures must be set aside.

“Family planning could bring more benefit to more people at less cost than any other single technology now available to the human race.” UNICEF Report 1992

A taboo exists around the discussion of population growth reduction, perpetuated by specific lobby groups who make false moral claims to distract from their own narrow agenda. It is necessary to address this taboo in order to open the subject for discussion. There is abundant evidence to support the above statement from UNICEF, yet no UN agency has dared to say as much since 1994, when population-focused family planning was falsely associated with coercive programmes at the UN Conference on Population and Development in Cairo.

We are asking for an objective, scientific approach to be taken, setting aside emotive accusations. SBSTA provides an ideal context for such a discourse. It does not require parties to agree to inclusion of population measures, only to be better informed on the issue. Not to include assessments of different population outcomes, and the measures likely to achieve them, would constitute scientific censorship.

Population growth is the main impediment to economic development

Many nations which implemented voluntary (non-coercive) family planning programs succeeded in reducing birth rates much faster than is required by the remaining high fertility countries to meet the UN's low projection. All of these nations have received substantial economic benefit from this reduction. All have achieved greater freedom for women, with higher education levels and workforce participation, than their non-family planning neighbours. Ask the women of South Korea, Thailand, Indonesia, Bangladesh, Tunisia, Costa Rica or Chile if they feel that their rights have been diminished by family planning.

All nations which have failed to reduce birth rates to near-replacement levels languish in economic malaise. It is impossible to generate sufficient economic surplus to sustain 2-3% per annum growth in modern infrastructure and service provision to keep pace with population growth, except through aggressive and short-lived exploitation of mineral wealth. Nations which fail to keep pace with population growth with respect to provision of basic services and food risk becoming failed states.

The economic burden of population growth is poorly recognised in economic theory, because that theory is focused on GDP, a measure that counts many negatives as positives. Road accidents, natural disasters and chronic sickness all benefit GDP by requiring more spending. In the same way, creating ever more housing and public infrastructure to accommodate more people is seen as adding to GDP, although it is a dead-weight burden which diverts available revenue from providing better services and opportunities to the existing population.

Conventional economic theories also do not appreciate the role of the fixed natural capital of a nation as distinct from mobile financial capital. No significance is placed on diluting the per capita endowment of fertile land, fresh water and renewable energy capacity with more people. Hence overpopulation cannot be defined by these theories, although it can be felt in real life, in terms of environmental degradation, rural-urban migration, hunger, unemployment and civil unrest.

Recent economic analyses have shed light on the difference in development rate among nations in a way that earlier theoretical arguments have not. It has been estimated that, for each 1% per annum population growth rate, around 10% of GDP must be diverted to provide

the infrastructure, equipment and training needed by the added people.³ At 3% per annum population growth, public infrastructure requirement probably exceeds total government revenue. Even a small reduction in growth rate quickly frees up resources to allow services to be improved. This, and the long-recognised “demographic dividend” effect of increasing the proportion of people of working age, is why birth reduction has invariably been followed by economic advance, as seen in the following charts.

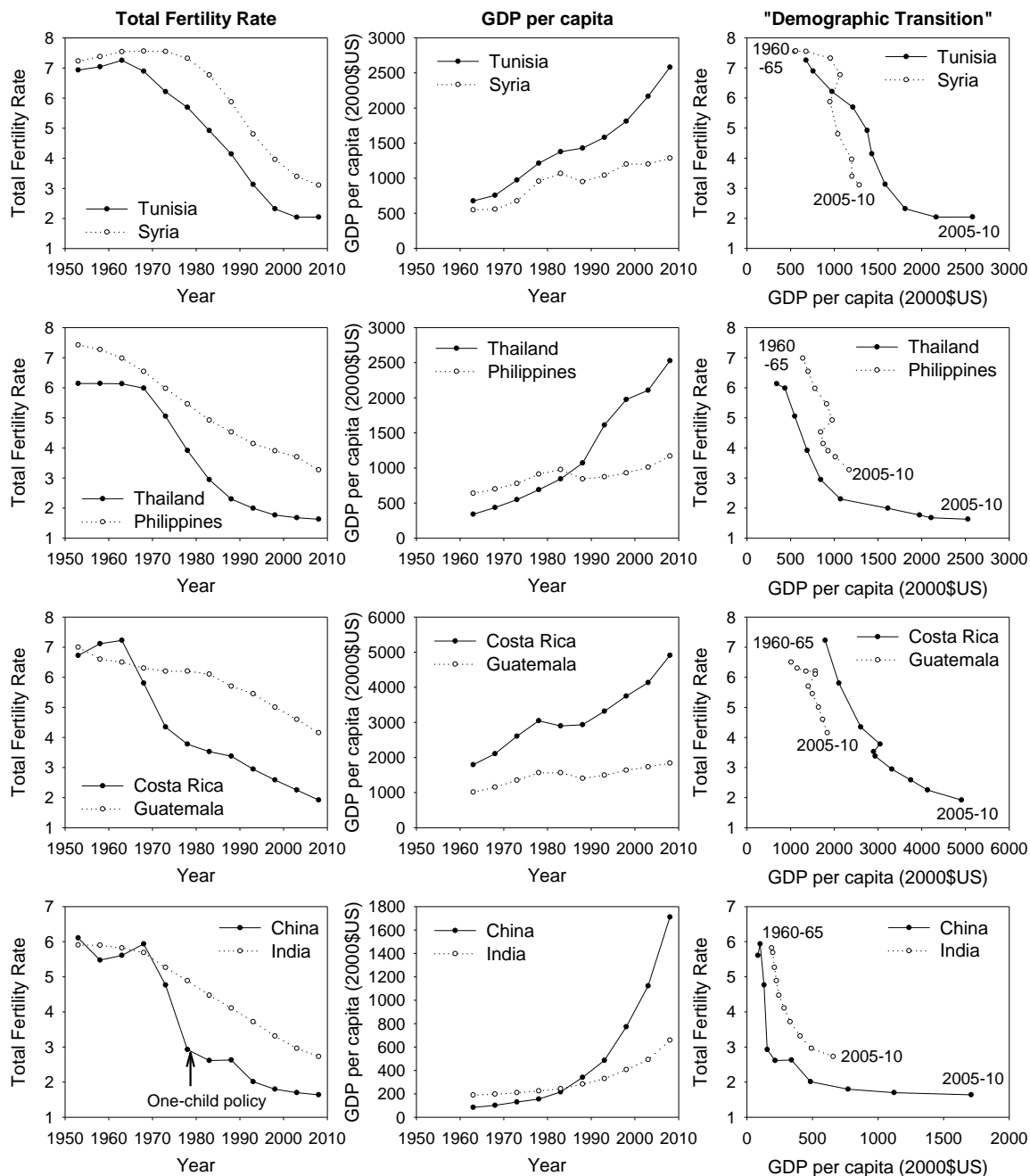


Figure 1. Demographic and economic outcomes for four nations which adopted family planning (solid lines) in contrast with comparable countries in the same region (dotted lines) which adopted family planning more weakly, later or not at all. Left: the change in Total Fertility Rate (TFR, the average number of children born to each woman over her lifetime) over the period 1950 to 2008 (UN Population Estimates, 2010 Revision), middle: the average GDP per capita over 5-year intervals from 1960 to 2008 (adjusted to constant year 2000 US\$, ppp (purchase price parity), from World Bank World Development Indicators), and right: the relationship between TFR and GDP per capita.

³ O’Sullivan JN. 2012. The burden of durable asset acquisition in growing populations. *Economic Affairs* 32(1): 31-37. <http://onlinelibrary.wiley.com/doi/10.1111/j.1468-0270.2011.02125.x/abstract;jsessionid=9079E4E881757354969065CEA605CD52.d04t04>

The above charts show that 1) the rate of fertility reduction is strongly influenced by family planning programs; 2) the fertility reduction generally precedes substantial wealth increase, 3) wealth tends not to accelerate until fertility is substantially reduced (regardless of other aid efforts) but invariably does accelerate when fertility reaches 2-3.

Clearly, the argument of the development industry that poverty reduction is the best contraceptive is not supported by the data. If this were true, the right-hand charts would show convex curves, with wealth increasing before fertility declines. Invariably, the curves are steeply concave. It would appear that contraception is the best economic stimulus, far more than the other way around.

Note that most of China's fertility decline occurred during the non-coercive phase before the one-child policy. Coercion has not been shown to be effective, and is by definition *not* family *planning*, which must be about facilitating the informed choice of prospective parents. Note also that family planning is more than keeping a supply of contraceptives in health clinics. It includes any combination of measures to assist women and couples achieve the number, timing and spacing of children they want, and to inform that choice. Thus increasing and enforcing the legal age of marriage (ending child marriage) contributes to family planning, as does educating husbands about the economic benefits of smaller families and women's access to work outside the home, and raising community awareness about the impacts of population pressure on their food and water security and employment opportunities.

The UN Population Division has estimated that each dollar spent on family planning programmes saves between \$2 and \$6 on other health development assistance.⁴ Consequently, if the small budget needed for family planning is diverted from programs such as agriculture, education or renewable energy, the end result is to *increase* food security, education access and energy per capita.

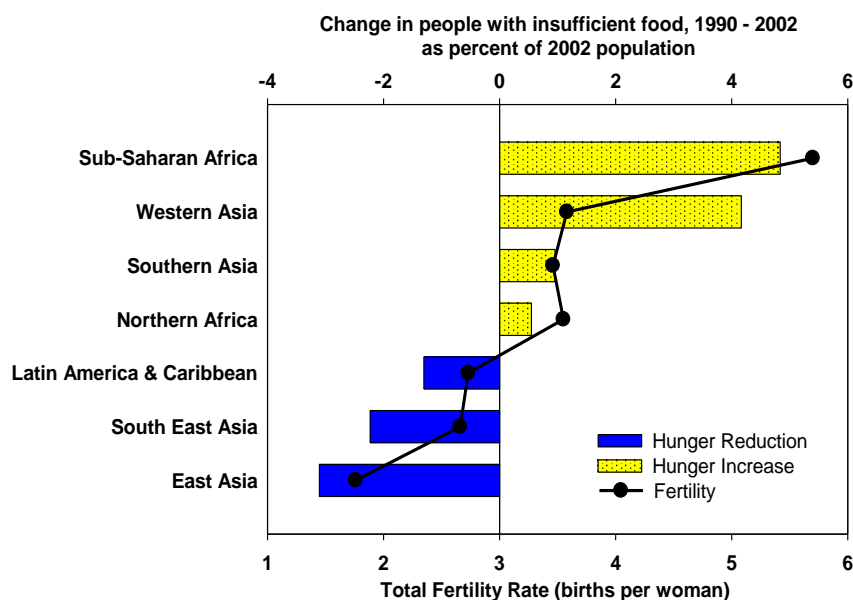


Figure 2. The change in proportion of the population receiving insufficient food (derived from World Health Organisation), and the Total Fertility Rate (UN Population Estimates, 2010 Revision) in major developing regions.

⁴ Department of Economic and Social Affairs, UN, 2009. What would it take to accelerate fertility decline in the least developed countries? UN Population Division Policy Brief No. 2009/1.

The close correlation between fertility rate and change in hunger (Figure 2) suggests that prior investment in family planning had more impact on food sufficiency than agricultural development. Western Asia and North Africa present a more complex relationship – in Western Asia a number of ex-Soviet states with relatively low fertility were affected by the collapse of the soviet economy over this period, while in North Africa the higher fertility countries had significant oil income. The vulnerability of rapidly growing nations to hunger as they run out of oil income (eg. Egypt, Syria, Yemen) is a major concern for their political stability.

Those who have argued against family planning, falsely linking it to coercive birth control and abortions, have done a great disservice to development, and particularly to the women whose rights they pretend to defend. These false arguments must no longer hold the poor to ransom.

Globally, population growth is primarily driven by *coercive pregnancy*: where women and couples are not given informed choice to avoid pregnancy. Mortality reduction has contributed greatly in the past, but its effect has diminished. Reducing unintended births and reducing incentives for large families are now the keys to rapid stabilisation of populations.

Historical contribution of population growth to emissions growth

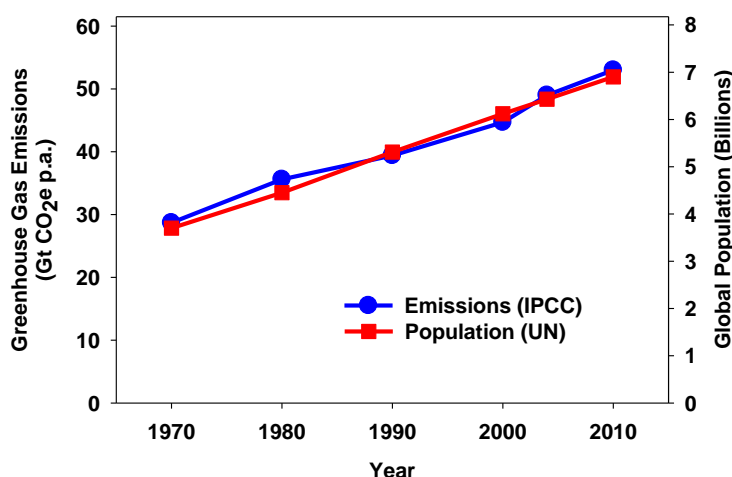


Figure 3. Global greenhouse gas emissions, as estimated by the IPCC, and global population estimated by the United Nations Population Division, since 1970.

The chart above shows that *greenhouse gas emissions have been directly proportional to global population over the past forty years*. Both have grown in a linear fashion, with relative growth rate diminishing in tandem and showing no relationship with economic growth. Per capita emissions globally were effectively unchanged. Other studies have shown that per capita emissions have been constant over this period in individual developed countries and regions.⁵ The growth in per capita emissions in rapidly developing countries has been off-set by the dilution of national emissions by population growth in least developed countries.

It is often claimed that growth in affluence has had a greater impact on emissions growth. The IPCC discusses the ‘Kaya Identity’ composed of four contributing factors: total

⁵ Meyerson, F (2008) in Climate Change Science and Policy (eds Schneider, S., Rosencrantz, A. & Mastrandrea, M.) Ch. 17 (Island Press, Washington, D.C.). Cited in Smith K (2008) The population problem. Nature Reports Climate Change, 15 May 2008 | doi:10.1038/climate.2008.44, <http://www.nature.com/climate/2008/0806/full/climate.2008.44.html>

population (p), economic output per capita (\$GDP/p), energy intensity of the economy (J/\$GDP), and emissions intensity of energy production (CO₂e/J).⁶ The problem is that the last three terms are self-affirming, in a circular logic. Regardless of the real relationship between economic activity and emissions, these three terms would tell you that emissions rise in proportion to GDP, except to the extent they are mitigated by reducing energy intensity of the economy and the emissions intensity of energy. In fact the emissions intensity of meeting each person's physical requirements has changed little, while measured economic activity has been inflated by counting activities which did not previously involve monetary transaction and, via debt-generated capital, counting future production as wealth today – all emissions-free 'froth' on the macroeconomic data. In fact, the relationship between emissions growth and economic growth over time is weak, and the change in 'energy intensity of the economy' is a measure of this weakness, not a measure of mitigation success. This is not to say that per capita emissions can't be substantially reduced in the future, only that we should not draw false comfort from the 'progress' to date on emissions intensity of the economy.

We do not aim to detract in any way from the importance of changing consumption behaviour, energy technology and the protection of forests and soils. However, it is unlikely that sufficient change can be achieved in each of these areas to achieve the required emissions reductions, unless population growth is diminished as a matter of urgency. It is even less likely that such reductions will be achieved at the same time as lifting rapidly growing populations out of poverty.

Future population growth and climate change

Projections have mapped the likely climate change and its impacts under different assumptions of future population, technology and economic growth.

- In the Special Report on Emissions Scenarios (SRES) of the IPCC's fourth report, ***only projections assuming a low future population achieve less than 2°C warming.***⁷
- if the UN medium population projection prevails, ***only courageous projections of expanding food production avoid widespread famine*** in the coming decades, assuming all negative impacts on agriculture (including climate change, salination, desertification, topsoil erosion, groundwater exhaustion, nutrient depletion and urban encroachment) are overtaken by productivity gains by as-yet-undefined means.⁸

The relationship between population growth and vulnerability to climate change is evident in many instances. Floods in Pakistan are exacerbated by the clearing of uplands due to population pressure, and their social cost is proportional to the number of dwellings located on vulnerable flood plains which have only been settled due to crowding of higher land. Meeting the food demands of growing populations in north China and north India has led to depletion of groundwater supplies.

The rate of deforestation and desertification in West Africa is also related to population pressure. Furthermore, there is strong evidence that the reduction in rainfall in that region

⁶ Intergovernmental Panel on Climate Change (2007) Climate Change 2007: mitigation. Contribution of working group III to the fourth assessment, technical summary.

⁷ PAI 2009 "Projecting Population, Projecting Climate Change" <http://populationaction.org/reports/projecting-population-projecting-climate-change-population-in-ipcc-scenarios/>

⁸ Beddington J, Asaduzzaman M, Fernandez A, Clark M, Guillou M, Jahn M, Erda L, Mamo T, Van Bo N, Nobre CA, Scholes R, Sharma R, Wakhungu J. 2011. Achieving food security in the face of climate change: Summary for policy makers from the Commission on Sustainable Agriculture and Climate Change. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Copenhagen, Denmark. www.ccafs.cgiar.org/commission

over recent decades is due in larger part to regional vegetation change than to global climate change.⁹

Population growth (currently 2.5% per annum) **is decreasing agricultural potential per capita in sub-Saharan Africa around five times faster than climate change** (projected loss around 0.5% per annum to 2050).

It has been estimated that we will need another 20 Nile Rivers to generate the extra food needed by another billion people.¹⁰ As there is little scope to expand dryland cropping, most increases in crop production require irrigation. Consequently, water use is growing at more than twice the rate of population growth.¹¹ However, aquifers that irrigate a large proportion of current cropland are being pumped dry. Making sure the next billion people is the last billion would minimise this threat to global security.

Around 90% of future population growth is anticipated to occur in poor countries. For these countries, **the effect of population growth as a barrier to economic development and climate change adaptation is paramount**. A review of 41 NAPAs (National Adaptation Programmes of Action submitted to UNFCCC) in 2009 found that 37 of them linked climate change vulnerability to population density and growth rate. However, since reducing population growth did not fit within the sectoral guidelines for adaptation interventions, only six nations suggested interventions to reduce population growth would be relevant, only one included a reproductive health component in a proposed project, and none were funded.¹²

Although of secondary consideration for developing nations, additional people also cause additional greenhouse gas emissions. Investment in family planning and education for girls has been shown to reduce more emissions per dollar than renewable energy investment, even when the avoided births are in least developed countries.¹³

The *same dollar* reduces climate vulnerability and improves economic, health, education and environmental outcomes. The *same dollar*, as noted earlier, saves between \$2 and \$6 in unrequired health services for mothers and infants. The total funding required represents only around 5% of the amount currently promised for climate change adaptation, and would increase the impact of every other programme far more than the diversion of funds would limit them.

In the mean time, many wealthy low-fertility countries have adopted pro-natalist policies and have significantly increased their birth rate,¹⁴ despite each additional person in these countries having a large carbon footprint.¹⁵ This resurgence in births will reduce the capacity

⁹ Zeng N, Neelin JD, Lau KM and Tucker CJ. 1999. Enhancement of interdecadal climate variability in the Sahel by vegetation interaction. *Science* 286, 1537-1540.

¹⁰ InterAction Council 2012 "The Global Water Crisis: Addressing an Urgent Security Issue" http://www.inweh.unu.edu/WaterSecurity/documents/WaterSecurity_FINAL_Aug2012.pdf

¹¹ Reuters 2011 "Water use rising faster than world population" <http://www.reuters.com/article/2011/10/25/us-population-water-idUSTRE79O3WO20111025>

¹² Mutunga C and Hardee K 2009. Population and reproductive health in national adaptation programmes of action (NAPAs) for climate change. Population Action International working paper WP09-04.

¹³ Wheeler D and Hammer D. 2010. The economics of population policy for carbon emissions reduction in developing countries. Center for Global Development, Working Paper 229, November 2010.

¹⁴ Myrskylä M., Kohler H.-P. and Billari C.F. 2009 Advances in development reverse fertility declines. *Nature Letters* 460, 741-743. <http://www.nature.com/nature/journal/v460/n7256/abs/nature08230.html>

¹⁵ Murtaugh PA and Schlax MG. 2009. Reproduction and the carbon legacies of individuals. *Global Environmental Change* 19, 14-20.

<http://www.biologicaldiversity.org/campaigns/overpopulation/pdfs/OSUCarbonStudy.pdf>

of developed countries to accommodate immigrants, at the same time that climate change is anticipated to increase global movement of people.

The pro-natalist revival has also affected many developing countries, due to an ill-founded fear of demographic ageing. As discussed above, the cost of population growth far outweighs the cost of the age dependency it may off-set. Furthermore, productive natural resources *per capita* is a more important determinant of national wealth than working age people per capita – a wealth that is diluted and depleted by population growth. Nations with older age distributions tend to have higher workforce participation due to lower unemployment, and consequently lower inequality of income – a major determinant of social wellbeing.¹⁶

A recent study calculated that ***achieving the low population projection could provide 16-29% of the emissions reductions needed by 2050***, and could reduce fossil fuel demand by 37-41% by the end of the century.¹⁷ The researchers compare the UN low and medium population projections with respect to population size, age structure, household size and urbanisation. They found that the emissions intensity associated with urbanisation and smaller households was off-set by the lower consumption of older populations, so that population size was the main influence on emissions outcome.

Conclusions

Indefinite population growth is physically impossible on a finite planet. It must stop at some point: either sooner through fewer births by contraception and humane, pro-active population policy; or later through more deaths by famine, disease, war, and environmental collapse; or some combination of these.

The higher the peak human population, the lower quality of life can be sustained for each person. Climate change is one of the impacts of a global population beyond the planet's capacity to sustain. Much may be done through technological and behavioural change to reduce per capita impact, but to neglect our capacity to reduce the peak population is to attack the problem with one hand tied behind our back.

We argue that

1. sufficient emissions reduction is very unlikely to be achieved without measures to accelerate the stabilization of population numbers globally;
2. the impact of unavoidable climate change will be greatly reduced by minimizing the increase in populations living in harm's way.
3. a number of options exist to support reducing birth rates through the climate change response framework, that enhance the rights and wellbeing of women, children and communities;
4. inclusion of population growth mitigation does not compete with other areas of climate change response, but increases the impact of all other measures; and
5. not including population growth reduction constitutes a moral hazard, by accepting much greater climate change than could otherwise be achieved, and by abandoning the goal of ending poverty.

¹⁶ Wilkinson R. and Pickett K. 2009, *The Spirit Level: Why More Equal Societies Almost Always Do Better* (London: Allen Lane, 2009) ISBN 978-1-846-14039-6, <http://www.amazon.com/Spirit-Level-Equality-Societies-Stronger/dp/1608193411>

¹⁷ O'Neill BC, Dalton M, Fuchs R, Jiang L, Pachau S, Zigova K (2010) Global demographic trends and future carbon emissions. *Proc Natl Acad Sci* 107:17521-17526.