

Problem Solving in Africa: How Female Education Can Help Keep the Planet on a Sustainable Trajectory

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Justification:

As the head of UN DESA, Mr. Zhenmin acts as an advisor to the Secretary-General on both Social and Environmental issues, as well as being responsible for nurturing key partnerships with governments. This enables him to pitch these suggested policies to the targeted countries, as well as arguing for their importance in the UN headquarters.



EXECUTIVE SUMMARY

As the world is facing a possible population increase of more than 20 billion people in the coming 70 years, our species is putting an increasing pressure on the world's natural resources. So far, our ability to overcome natural limitations to growth by technological advancements has made this exponential increase possible, an example being the Haber-Bosch process facilitating the use of nitrogen fertilizers for our crops. Yet even our technological inventions have started to reach a scale where a negative impact on the planet is inevitable, causing scientists to introduce the concept of Planetary Boundaries as an attempt to find sustainable limits to our growth. Yet if our current growth rates would continue, it is highly unlikely that any of the boundaries will stay intact. Thus, if we want to ease the pressure we put on this planet, a reduction in our current population growth is vital. However, as the right to have a family is a core human right, this is a morally difficult and often avoided topic, even more after the subsequent gender discrimination following China's One-Child Policy. Thus, by introducing indirect ways to limit population growth to the governments of countries where the rates are currently the largest, the negative stigma surrounding reduced female fertility can be avoided. This can be done by implementing policies offering conditional cash transfers to families sending their children to school, as especially increased female literacy rates have proven to reduce fertility, while simultaneously improving other SDGs related to education and gender equality.

EMPIRICAL ANALYSIS

Over the last twelve years the world has added approximately one billion people, reaching 7.3 billion as of mid 2015 (DESA, 2015: 2), Figure 1 shows four fertility scenarios over the next 80 years, stating that if the population growth of today would be constant (red line), world population in 2100 would be 28.6 billion, which is four times higher than today.

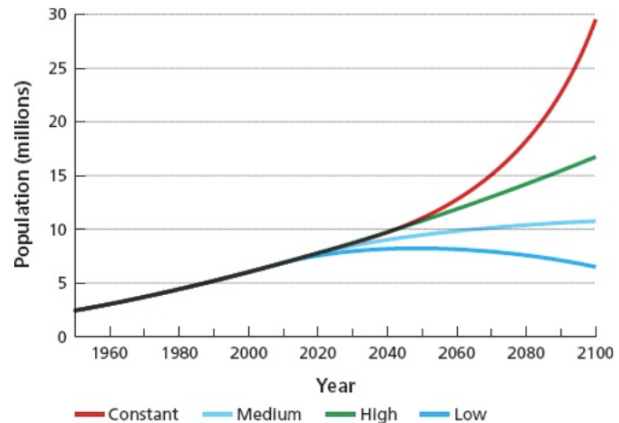


Figure 1 (DESA, 2012, cited by Sachs, 2015: 209)

According to Ecologists studying the distribution and abundance of organisms this data suggests that our species is flourishing like never before (Townsend et al., 2008). Normally, population growth is limited by ecological determinants like resource availability and environmental conditions, yet a possible explanation for humanity's current success is our ability to overcome these limits to growth by technological inventions such as the Green Revolution (Leigh, 2004: 329) or the Haber-Bosch process, enabling us to maximize our resource production by synthesizing nitrogen fertilizer for our crops using the nitrogen in the atmosphere (Smil, 1999).

The Haber-Bosch process has been vital for our growth and it has been estimated that 40% of the world's population is completely dependent on this process for food (Leigh, 2004: 332). Yet this human ability to manipulate our environment to suit our growing needs has put immense pressure on the planet, to the point where "abrupt global environmental change can no longer be excluded" (Rockström, 2009: 1). This phenomenon has been explained by scientist Johan Rockström in the form of **Planetary Boundaries**, aiming to recognize the global threats to the planet and define limits below which humanity can operate safely (2009).

However, our increased population growth and dependence on Nitrogen Fertilizers for the subsequent intensification in food production has led to its related planetary boundary already being crossed (Rockström, 2009). Excess input of nutrients from agricultural run-off, both nitrogen- and phosphorus- based, has caused many lakes to become eutrophic, leading to elimination of large plants and deaths of marine life, also creating large 'dead zones' typically associated with industrialized nations subsidizing their agriculture and encouraging farmers to use more fertilizer (Townsend et al., 2008).

Thus, the technological advancements by which we have managed to overcome our species' natural limitations to growth have also **created vast environmental problems which seem to erode global ecosystem stability** (Ehrlich & Holdren, 1971). Ecologist Garret Hardin defined a technological solution as one that "requires a change only in the techniques of the

natural sciences, demanding little or nothing on the way of change in human values or ideas of morality” (1968: 1243), yet it is now clear that with regard to our rapidly increasing population and limitations to growth proposed by the planetary boundaries, the technological solutions are limited and short-term, instead **demanding a change in our collective behavior**.

Figure 2 shows the already unsustainable usage of nitrogen and phosphorus fertilizers being projected to increase by around 150% by year 2050 (green line). This together with the projected population increase from Figure 1 introduces a serious issue which needs to be acknowledged if we wish to stay within the planetary boundaries and ensure the survival of our environment. However, sexual and reproductive rights of women are recognized as core human rights (UNFPA, 2017), and thus the need to limit population growth is a sensitive topic, as the choice lies entirely within the families. This complicates an already pressing issue, making it globally known as the **“population problem”** (Townsend et al., 2008: 391).

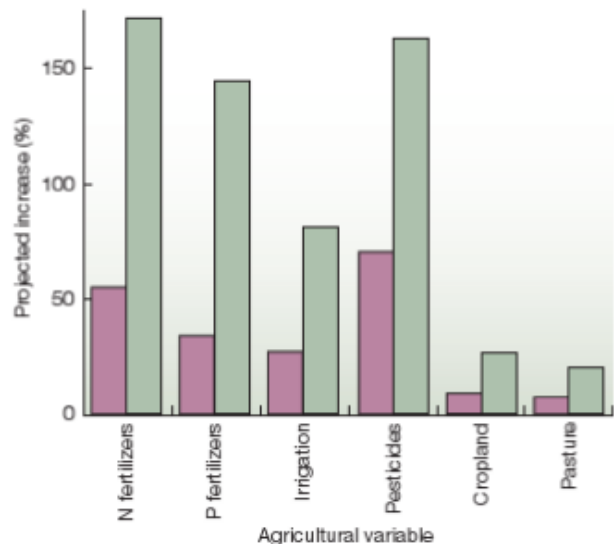


Figure 2 (Townsend et al., 2008: 420)

ASSESSMENT/ANALYSIS OF EVIDENCE

One country daring to acknowledge the strains of a rapidly increasing population on the general wellbeing of its people and environment is China, as their One Child Policy introduced in 1979 is globally known when discussing population reduction (Kane & Choi, 1999). People were legally required to have only one child, which was also encouraged through financial incentives and access to housing, while larger families received sanctions for each additional child as well as possible limited career prospects (Kane & Choi, 1999: 992). This reduction did ease some of the pressures off Chinese communities and environment, successfully reducing the country’s (and the world’s) population growth by 250 million (p. 994), yet has been heavily questioned especially with regard to the subsequent sex discrimination, as male children got preferred over females (p. 994).

Thus, China being a common example of an actual attempt to limit population growth, it carries with it the negative emotions surrounding the moral aspects of the issue. It is clear that in order to tackle the population problem we are facing today a different approach is necessary, and as stated by author Sachs **“reducing the fertility rates voluntarily, while respecting human rights and family desires, is therefore essential to sustainable development”** (2015: 208).

Looking at the increasing population growth reported by United Nations, we see that fertility rates are increasingly unequal in different parts of the world (UN, 2015). Fertility in all European countries is currently below replacement rate, meaning that each woman gets less than around 2.1 children, and in most countries this has been the case for several decades (UN, 2015: 4). However, Africa contains 19 of the world's 21 high-fertility countries (each woman having 5 or more children), and **more than half of global population growth between now and 2050 is expected to occur in this continent** (p. 4), causing it to “play a central role in shaping the size and distribution of the world's population over the coming decades” (p. 4).

This statement provides a base for investigating any possibilities to limit the fertility rates of the women of the rapidly growing continent without infringing on their personal rights. A common approach worldwide is the introduction of family planning services and modern contraception, yet of 206 million pregnancies in developing regions in 2017, 43% were unintended (Guttmacher Institute, 2017: 1). This has been targeted by the family planning 2020 global partnership, aiming to provide contraceptive services to an additional 120 million women in developing regions by 2020 (UNFPA, 2017: 1). Yet, the countries targeted are often too poor to implement successful programs for safe pregnancy and family planning, or the institutions are not stable enough to implement programs they have been committed to (Sachs, 2015: 208). Another less common approach, yet which has recorded high success rates in limiting female fertility is improved female education (Dreze & Murthi, 2001), and returning to Africa, we can see that **of the 15 million girls of primary school age who will never enter a classroom globally, half of them are in sub-Saharan Africa (UNESCO, 2016: 3).**

This introduces a **possible opportunity to indirectly limit fertility rates**, without removing the rights of the women and instead improving the futures of children in the countries which will matter the most to the sustainable future of our planet.

CONCLUSIONS, RECCOMENDATIONS AND OUTLOOK

This population problem threatening the sustainable future of our planet is as urgent as morally difficult, yet by focusing on other areas of development the reduction goals can be reached indirectly.

Data on female literacy rates having “negative and highly significant effects on fertility rates” have been found in India (Dreze & Murthi, 2001: 54), where estimates after recording data states that an increase in adult female literacy from its base level in 1981 of 22 percent of the population to about 65 percent would reduce the total fertility rate by almost one child per woman (Dreze & Murthi, 2001: 55). Also in Nigeria an analysis of the causal relationship suggests that increasing education for women by one year reduces fertility per each woman under 25 years by 0.26 births (Okonkwo Osili & Terry Long, 2007: 23). This increase in literacy rates was made available by the Universal Primary Education (UPE) program introduced in 1976, providing tuition free primary education and teacher-training facilities

(Okonkwo Osili & Terry Long, 2007: 2). Another successful policy aiming to make schooling more accessible in Africa is Kenya's introduction of free school uniforms, reducing school absenteeism by 62% for students who did not previously own a uniform (Evans et al., 2009: 1).

These incentives are successful examples of policies facilitating education leading to increased female literacy rates in developing countries, and thus supposedly also to reduced fertility rates, making them possible options to consider on the search for a reduced population growth in Africa.

However, looking to other policies in developing countries, a known success story is the **Bolsa Família Program** introduced in Brazil in 2003, offering small cash transfers in return for families keeping their children in school and attending regular health care visits (Wetzel, 2013). Apart from halving Brazil's extreme poverty (p. 1) this program helped especially promote the autonomy of poor women, accounting for over 90% of the beneficiaries, as well as increasing the chances of a 15-year-old girl being in school by 21% (p. 1).

Thus, **introducing conditional cash transfers to families in developing countries in sub-Saharan Africa for sending their children to school** could promote both reduced poverty rates, as well as increased incentives for parents of poorer families to let their children receive an education. If this incentive could increase the years of average female education with at least a year, the data from Nigeria suggests that fertility per woman would show significant reductions already.

As an additional extension of the incentive with regard to female literacy, an amended version **providing specific subsidies for female students** could be introduced. Yet, keeping the gender specific discrimination caused by the one-child policy in China in mind, more research would be needed regarding this possibility. As the Bolsa Família Program suggests that even the non-gender specific incentives benefitted primarily the women/girls, a similar program targeting all children would be a sufficient start, which perhaps could be followed up by more female-specific policies if fertility rates are showing no decrease.

This policy direction offers an **indirect way to tackle the global population problem caused by our growing species**, as we are currently pushing the planetary boundaries and threatening the sustainable future of our planet. It is a heavily stigmatized issue which has been called a problem with no technical solution. Yet, by targeting the regions with the highest levels of population growth and promoting other areas of sustainable development, we can offer governments in developing countries in Africa ways to limit their fertility rates, while simultaneously improving the life standards of their women and children, also putting our planet on a more sustainable trajectory.

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