

Population and environment in the twenty-first century

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Abstract In the past 50 years global population grew by 3.7 billion. There is a large unmet need for family planning and wherever women have been given the means and the information to decide if or when to have the next child, then family size has fallen, often rapidly. However, since the UN 1994 Cairo conference on population and development, support for international family has collapsed and fertility declines in many of the poorest countries have stalled. Amongst some of the most vulnerable groups family size has risen. The investment made in voluntary family planning will largely determine whether, in the next 50 years, the global population grows to something less than 8 billion or to over 10. The trajectory taking us to the higher figure could jeopardize any possibility of transitioning the global economy to a biological sustainability. Much precious time has been lost. Almost all the additional growth in population will take place in the world's poorest countries, and it is imperative that the international community act to improve access to family planning in those countries, within a human rights frame framework.

Keywords Population growth · Conservation · Contraception · Cairo conference · Sustainable economy

Introduction

The twenty-first century has opened with increasing competition for natural resources, sharp rises in the price of oil, rapid deforestation and catastrophic over-fishing of once seemingly inexhaustible oceans.

Barring nuclear war—and there is increasing evidence that civil strife and perhaps military conflict are linked to population growth and structure (Cincotta et al., 2003; Kahn, 2006)—the greatest challenge of the new century is going to be

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Table 1 Demographic change and predictions over 100 years

Year	Population (billions)	Difference (billions)
1955	2.757	
2005	6.464	1955 to 2005 = 3.707
2050 (high projection)	10.646	
2050 (low projection)	7.679	2050 high–low = 2.967
2050 (medium projection)	9.075	2005 to 2050 = 2.664

that of moving from the current profligate use a natural resources to an environmentally sustainable economy.

In terms of increments of people, the medium projection of global population growth for the next 50 years is almost exactly the same as the growth that took place in the last 50 years (United Nations, 2005). The difference between the UN high and low projections for 2050 are slightly greater than the total growth in population that occurred between 1955 and 2005 (Table 1). Whether we reach 6.4 or 10.6 billion by 2050 could make the difference between whether humankind has the space to develop a biologically sustainable economy, or continues to outrun the capacity of the biosphere to support human life as we know it. This paper, and those that follow,¹² argue that the investment made in international family planning will be a significant factor determining whether the high or low figures are reached.

Ninety-nine percent of the projected global population growth between now and 2050 will be in developing countries and 90% of this will be in the least developed. By and large, the low fertility already industrialized countries and the emerging markets of Asia and Latin America will continue to consume a disproportionate amount of the world's natural resources and contribute most of the green house gases and pollution. In order to confront the challenge of moving to an environmentally sustainable economy, efforts must be made to reverse the developed economies obsession with consumption as well as meeting the proven desire of the less developed countries to have fewer children.

The population policy pendulum

In the 1950s and 1960s, when the global population was projected to grow by 3 billion in 50 years, the term “population explosion” captured the attention of scientists as well as the general public. Now, when another 3 billion people may be added to the world's population, the response is a collective yawn. Yet, as John Harte points out, the consequences of population growth are not linear, and the second 3 billion may well prove much more damaging to the environment than the previous 3 billion.³

¹ Prata N [this volume].

² Vahidnia F (2006). [this volume].

³ Harte J. Human population as a dynamic factor in environmental degradation. [this volume].

In 1993, a summit of the world's scientific academies in New Delhi concluded, "if current predictions of population growth prove accurate and patterns of human activity on the planet remain unchanged, science and technology may not be able to prevent irreversible degradation of the natural environment and continued poverty for much of the world" (Graham-Smith, 1994). The world's scientific academies, including the American Academy of Sciences and the British Royal Society of London, stated that, "In our judgment, humanity's ability to deal successfully with its social, economic, and environmental problems will require the achievement of zero population growth with the lifetime of our children." The academies saw humanity "approaching a crisis point with respect to the interlocking issues of population, environment, and development."

The following year, the Programme of Action agreed upon at International Conference on Population and Development (ICPD) at Cairo recommended that governments "meet the family-planning needs of the populations as soon as possible and should, in all cases by the year 2015, seek to provide universal access to a full range of safe and reliable family-planning methods." Unfortunately, some of the lobbying groups at Cairo saw family planning budgets as a possible source of support for broader aspects of reproductive health and cast discussion of population in pejorative terms, implying everything done before 1994 had involved coercion.⁴ It was a canard, which proved politically influential, but it rebounded to the detriment of poor women.

Over the past decade funding for family planning has collapsed. The ICPD assumed that two thirds of the cost of implementing the cost of the Programme of Action would be met by the developing countries themselves and one third by international donors. The estimate for the annual cost of family planning in 2005 (adjusted for inflation) was \$5.2 billion, but in reality only \$0.5 billion or less had been made available (Spiedel, 2005). As the focus shifted away from family planning, previous increases in contraceptive prevalence stalled. In Africa, the richest economic quintiles continued to find ways to limit family size, but the total fertility rate (TFR) of the poorest 20% remained unchanged, or in some places rose by one child. In Kenya the poor have three times more children than the rich and the three times the unmet need for family planning (Report of the All Party Parliamentary Group on Population, 2007). Between 1998 and 2003, the proportion of births reported as unwanted rose from 11% in 1998 to 21%. As a result of a stall in the previous decline in fertility, the UN has projected the population of the country in 2050 will be 83 million instead of the previous projection of 44 million (Cleland et al., 2006). This increase will have a huge adverse impact on education, housing and the health of families, and also no doubt on the range and diversity of wildlife for which the country is famous.

It is the poorest families who are suffering most as a result of the increasing disparity between the rich and poor within countries and across continents. Two years after the ICPD, Harte warned, "As dreadful as is the current inequity in the distribution of resources between north and south, rich and poor, it pales in comparison with the impending inequality between us, living today, and those who

⁴ Campbell MM (2006) [this volume].

will be born tomorrow and who under current trends, are destined to inherit a rapidly deteriorating planetary life support system” (Harte, 1996). By not acting on the 1994 warning of the world’s scientific academies, or heeding expert warnings such as Harte’s, individuals and the planet face an increasingly ominous situation.

Reproduction in primates

Unlike most mammalian species, *Homo sapiens* have intercourse hundreds, or sometimes thousands, of times more often than is needed to procreate. It is a behavior we share with chimpanzees. As Jane Goodall and other primatologists have shown (Goodall, 1986; Jolly, 1985) the great apes, including human beings are large, slow breeding mammals in which endocrine changes (associated with long intervals of lactation) suppress ovulation and lead to the natural spacing of pregnancies several years apart. Human beings and the other great apes were evolved to have a TFR of between 4 and 8 and in the environment to which evolution adapted our ancestors, half or more of all offspring died before they could reproduce (Diggory et al., 1988). Population growth was slow and periodically cut back by diseases or famine.

With settled agriculture the age of puberty began to fall, and natural, long intervals of breastfeeding began to be shortened as animal milk became available. Both these factors raised the TFR. However, the main driver of population increase has been a decline in infant mortality resulting from better food, cleaner water and vaccinations.

Given the natural frequency of human sexual intercourse, the only way a modern woman can control when and how often to have children is by the use of artificial contraception. Patterns of childbearing cannot reflect a rational choice to have a child unless a couple have some means to turn off fertility, otherwise repeated pregnancies will occur (Potts & Campbell, 2005). The large number of unintended pregnancies, especially in the least developed countries and the frequent resort to unsafe abortion testify to the problems women have accessing the methods of contraception they need. The Guttmacher Institute has found that the induced abortion rate per 1,000 women is “strikingly similar” in developed (39/10,000) and developing (34/1,000) countries, “impl[ying] a lifetime average of about one abortion per woman” (The Alan Guttmacher Institute, 1999).

A paradigm shift

Numerous exceptions exist to the classic theory of the demographic transition based on “the role of socioeconomic development in accounting for fertility decline” (Bongaarts & Watkins, 1982). In 1997, Karen Mason, then president of the Population Association of America, pointed out that “Exceptions to all the major theories of fertility transitions have been found.” Reviewing a number of family planning programs in 1992, the Operations Evaluation Department of the World Bank concluded, “it is possible for fertility decline and contraceptive use to

increase without much change in those social, economic, and health variables generally believed to be crucial pre-conditions for demographic change” (A World Bank Operations Evaluation Study, 1992). The demonstration that fertility decline is driven more by the ease of access to essential fertility regulation choices than by socio-economic change (Potts, 1997) is beginning to reframe the whole discussion of population growth in relation to the environment. Instead of an insoluble problem, it has become an opportunity to help individuals, their families and the environment simultaneously.

Family planning—successes and failures

Over the past 50 years a great deal has been learnt about what works and what fails in family planning. No society has lowered the birth rate with a single method of family planning, and all societies with a TFR of two or below have de facto access to safe abortion.

In general, family size falls most rapidly when couples have access to the widest practical range of reversible and permanent methods of contraception linked to appropriate, accurate, easily understood information about effectiveness and side effects, delivered through a variety of channels of distribution, and backed up by safe abortion. It is a recipe for success that has hardly changed in 30 years (Potts, 1974), but which all too often continues to be distorted beyond recognition by political and religious biases and restrictive medical practices (Campbell et al., 2006).

A competitive industry holds the price of oral contraceptives, condoms and injectables low, but even so the full cost of manufacturing, promoting and distributing modern reversible contraceptives is beyond the reach of those living on less than two dollars a day (Potts, 2001). The supply of subsidized contraceptives is not keeping pace with demand. There is no generic hormone releasing IUD, even though these particular devices are the most effective and acceptable IUDs ever developed.

In the least developed societies, the poorest economic quintiles either have no access to medical services, or they use the private informal sector. Not surprisingly, social marketing, which uses existing retail outlets—be they small kiosks or tiny shops—to market contraceptives, backed up by professional advertising. This is often both the most cost-effective and cultural appropriate way to deliver pills, injectables and condoms (Harvey, 1999).

When medical services have to be given, such as voluntary surgical sterilization or an IUD insertion, then the best method of support may be through output-based assistance, sometimes called ‘smart aid’ (Janisch & Potts, 2005).

It has been apparent for some time, that serious shortfalls are arising in the resources available for family planning in low-income, resource-scarce settings, (Potts et al., 1999) but even so there has been a reluctance to adopt policies that would make the limited budgets available reach as many people as possible (Potts & Walsh, 1999). The controversies surrounding family planning and the biases against making fertility regulation options rationally available on a large scale is sufficiently

widespread across a variety of cultures that it is reasonable to speculate that it may, in part, represent a deep-seated predisposition of men to control reproduction in women (Potts, 2005)

Partnerships between conservation and family planning

Access to family planning and action to preserve the environment both depend on empowering a community with the knowledge and making available easy to use technologies. As the work of the Jane Goodall Institute in Tanzania demonstrates,⁵ the inspiration, logistics and community involvement for improving the environment and for offering family planning overlap and can be mutually supportive.

In Thailand, the Population and Development Association (PDA) has combined family planning and conservation in a number of imaginative and successful ways. In the 1970s, Khun Mechai Viravaidya, PDA's founder and leader, saw that rural Thailand might not escape from poverty unless population growth could be slowed. PDA empowered villagers to sell pills and condoms for a tiny profit, and family size fell from over six to two or fewer. Once family planning was in place the village entrepreneurs became the nucleus of what Mechai called, "fertility-led development." The contraceptive distributors added micro-credit, new irrigation techniques and intensive chicken rearing to their repertoire of activities (D'Agnes, 2001). In the dry north-east to the country a major conservation effort was made, planting 3.5 million trees, building over 13,000 water storage tanks, launching 250 environmental projects and educating half a million students on the need to care for the environment (PDA, 2005).

Conclusions

Family planning is not about coercion. It is about meeting a demonstrable unmet need for family planning in voluntary, respectful ways.

In 1993, the world's scientific academies warned that "With each year's delay the problems become more acute" and it urged the ICPD, which was held the following year, "to take incisive action now and to adopt an integrated policy on population and sustainable development on a global scale."⁶ The international community did not rise to that challenge and precious time has been lost. The evidence that a rapid and forceful response is needed is even more compelling today than it was in 1994.⁷

Realistic access to family planning lowers birth rates, and investment in family planning has multiple and synergistic benefits empowering women and enabling them to reach their full potential. It saves infant and maternal lives; smaller families are often better educated; and a falling birth rate accelerates economic development

⁵ refer to Mawanza paper this volume.

⁶ quote 6 again

⁷ quote The Return of the Pop factor again.

and helps create a stable, less conflict ridden world (Kahl, 2001). Slowing population growth through voluntary means is a necessary although not sufficient step for protecting the fragile biosphere on which all life depends from irreversible and large-scale damage. Family planning is wanted and it works.

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