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The Population Challenge: Key to Global Survival

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Acronyms

APPG	All Party Parliamentary Group (UK)
CPIA	Country Policy and Institutional Assessment
DRC	Democratic Republic of Congo
FAO	Food and Agricultural Organization (UN)
FfP	Fund for Peace
GDP	Gross domestic product
IDA	International Development Agency
LICUS	Low Income countries under stress
MDG	Millennium Development Goal
MMRs	Maternal mortality ratios
NOAA	National Oceanic and Atmospheric Administration (US)
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United National Population Fund
UNICEF	United Nations Children's Fund
WHO	World Health Organization



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THE POPULATION CHALLENGE: KEY TO GLOBAL SURVIVAL

Neglecting the Human Connection

Stabilizing the growth of the world's human population is a goal that must be achieved if we are to preserve our options for the future and improve the odds for the world's sustainability. Challenges such as climate change and global warming, fragile and failed states, migration and refugee crises, food and water insecurity, poverty, disease, debt, and illiteracy are caused or exacerbated by unchecked rapid population growth.

Discussions on addressing these challenges, however, often neglect serious consideration of high fertility and family planning. Former U.S. President Bill Clinton singled out population growth as the key issue that candidates in the 2008 presidential election were avoiding.¹ This is puzzling and troubling, as population growth is the single world issue that binds all the others together; it is the root of many problems affecting the tree of humanity.

Indeed, trees provide an apt analogy to the current global reality: In countries with quality reproductive health services and policies serving as the roots, the branches—including economics, health, and education—are stable. As this paper will demonstrate, in countries with poor reproductive health services and policies for their roots, many branches are not healthy and cannot thrive; the tree may even fail. Just as the health and even the survival of a tree rely on strong roots, the health and viability of a country and indeed the planet can be traced to population.

Still, unlike many other global problems and crises, the technology to meet the population challenge is readily available and extremely cost effective, if we have the will to supply it to those in need.

By the year 2050, world population is projected to grow from its current 6.7 billion to 9.3 billion²; less optimistic calculations, based on fertility not declining from 2006 rates, place the figure at nearly 12 billion.³ Practically all growth is estimated to occur in the developing countries, especially in the poorest of those countries, which already produce virtually all of the world's human numbers.

While many nations have reduced rapid population growth, more than 3 billion people currently under 25 years old will soon enter their prime reproductive years. Providing this largest youth generation in history with appropriate sexual and reproductive health services and education is essential to ease poverty, increase educational opportunities, preserve the environment, improve health, and provide political security. Meeting this challenge will be especially important in developing countries considered "fragile states," wherein booming populations would further stress already limited resources.

For population growth to slow and birthrates decline, Christopher Flavin, President of the Worldwatch Institute, has said, "It is essential that women and men

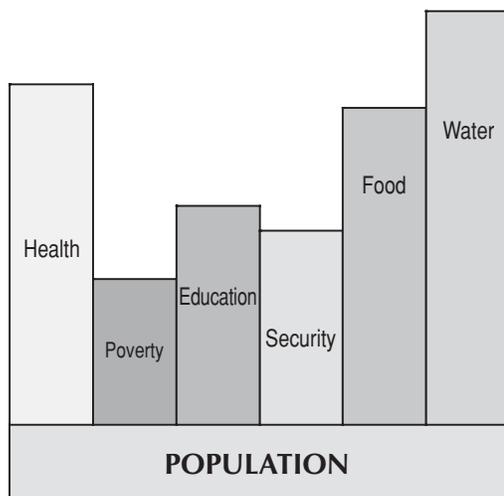
around the world have increased access to sound information, a range of contraceptive options, and related health services. Access to voluntary family planning allows women and couples to time their births and choose the size of their families.”⁴

But at this critical moment, international support for family planning services faces ongoing annual reductions as the political climate has chilled and funds from many sectors are diverted to HIV/AIDS programs. In many countries, contraceptive use has risen only slowly or has stalled.⁵

Ironically, in many developing countries, sexual and reproductive health education and services, especially meeting family planning needs, presents a cost-effective component in mitigating any of the above-mentioned issues.

The Challenge of Unmet Need

Population is the foundation that enables succession in other sectors



At the core of addressing population growth is managing unmet need. There is well documented unmet need for family planning, especially among the 2 billion people living on less than \$2 a day.

Slower population growth offers a demographic dividend, allowing a country to invest more in education and health, thus serving the broader agendas of social and economic development.^{6,7}

It is also recognized that women are at the center of reproductive health efforts and addressing unmet need. As demographer Ruth Dixon-Mueller explains:

Population control policies and programs would probably be unnecessary if women could exercise their basic economic, political and social rights and genuine reproductive choice. In addition, programs need to address the widespread unmet need in many countries for reproductive health services that would enable women to regulate the timing of their childbearing and, in particular, help women to avoid unwanted and mistimed pregnancies and unsafe abortion. ⁸

The definition of unmet need has undergone refinements over 25 years of discussion, but the basic objective is to estimate the proportion of women not using contraception who either want to cease further childbearing or want to postpone the next birth at least two years.⁹ The greatest need is in sub-Saharan Africa, where an average of 26 percent of married women are in the unmet need category.¹⁰ Other reports estimate the need among never-married women at 9 percent.¹¹

One calculation shows 113.6 million women (both married and unmarried) have an unmet need for contraception in the developing world.¹² The World Health Organization (WHO) estimates that over 120 million couples worldwide do not use contraceptives, despite wishing to limit or space their children.¹³

While unmet need has lessened globally in recent decades, there are many more women now, in absolute numbers, than in years past, and many more younger women. Today there are almost 3 billion people under the age of 25, the largest generation of young people in history, 87 percent of whom live in the developing world. Meeting their sexual and reproductive health needs is central to their well being, as well as to population stabilization, poverty reduction, and sustainable development. The decisions of this “critical cohort” in the timing, sizing and spacing of their families will be a key factor in whether world population growth will be stabilized.¹⁴

Where the need is met, family planning services work. In the 28 most populous countries receiving U.S. family planning assistance, the average number of children per family has dropped from 6.1 in the 1960s to 4.2 in 2003. In Colombia, Indonesia, and Mexico, the family average is three children, and in Taiwan and Thailand, early recipients of U.S. assistance, the average is two children.¹⁵

The West African country of Ghana made family planning a public health priority in the early 1980s, and since then modern contraceptive use among married women has risen from 5.2 percent in 1988 to 18.7 percent in 2003. Ghana’s rate of 64 infant deaths per 1,000 live births stands out from the regional average of 100 deaths, and the rate of HIV infection (2.2 percent) is half the West African average.¹⁶

Further, one estimate shows that family planning services are preventing three-quarters of the induced abortions that would otherwise occur in the developing world.¹⁷ In addition, if every woman in the developing world with unmet need for a modern method used one, 52 million unintended pregnancies could be avoided annually.

Of the 46 million pregnancies that are terminated every year, only 60 percent are carried out under safe conditions. Almost all unsafe abortions take place in the developing world, with South America having the highest ratio. Although age patterns differ regionally, two-thirds of unsafe abortions occur among women aged 15 to 30.¹⁸

The Cost-Effective Alternative

Prevention would seem a better policy. The cost to provide the services and supplies is estimated at \$3.9 billion annually, but the savings would be much greater.

One example cited is a typical low-fertility Latin American country where every dollar spent on family planning saves \$12 in health and education costs.¹⁹ Unfortunately, inflation-adjusted family planning spending has fallen since the mid-1990s. In the United States, President Bush's requests for overseas family planning

program funding have been reduced from \$425 million during the tenure of Secretary of State Colin Powell to \$357 million under Secretary Condoleezza Rice.

The \$34 million appropriated by Congress annually to the United Nations Population Fund (UNFPA) but blocked by the Bush administration, by one estimate, could have prevented 2 million unintentional pregnancies, nearly 800,000 abortions, 4,700 maternal deaths, and 77,000 infant and child deaths.²⁰

The planet now carries more people of child-bearing age than ever before, and yet a desired and cost-effective component in addressing the world's booming population is largely ignored in most policy discussions. The funds invested now in population programs will prevent conflicts, benefit the planet, and yield higher returns than any other investments in humanity's future. A convergence of potential calamities looms; offering couples the freedom to determine their own fertility is perhaps the only practical, the only realistic, option.

Population and the Millennium Development Goals

Millennium Development Goals

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development

Note: A complete list of goals and targets is at the end of this report.

One notable example of how population growth is being overlooked in international development discussions comes through the Millennium Development Goals (MDGs) of the United Nations (UN). Eight MDGs (with 18 individual targets), based on the Millennium Declaration adopted in September 2000 by all 189 member states of the UN General Assembly, outline critical

areas to be addressed by 2015, but did not originally cite population growth. One population researcher efficiently sums up the oversight: "Although reproductive health was not specifically included as an independent goal or a measurable target in the MDGs, for years experts have provided evidence that investing in reproductive health services is integral to meeting them all."²¹

A 2007 report from the All Party Parliamentary Group (APPG) on Population, Development and Reproductive Health in the United Kingdom explores the impact of population on the first seven goals, and concludes "The evidence is overwhelming: the MDGs are difficult or impossible to achieve with the current levels of population growth in the least developed countries and regions."²²

The last half of the twentieth century provides the foundation for this conclusion:

On the whole, those countries and regions where information and contraceptives were made available saw a moderate to rapid decline in the birth rate. In addition, there was an improvement in the economy, the health of women and their families, and the autonomy, education and status of women. The countries where many pregnancies remained unwanted and the birth rate did not fall are now seeing an explosive growth of urban slums, a failure of the state to keep pace with educational demands and, in some cases, the continuing oppression of women.²³

On a positive note, the APPG report states that the UN has approved a new target of universal access to reproductive health care by 2015, to be placed under Goal 5, Improve Maternal Health.

Still, “It is clear that the MDGs are difficult or impossible to achieve without a renewed focus on, and investment in, family planning.”²⁴ The recommendations in the report include targeting 10 percent of international development aid to population and reproductive health, putting the availability of contraceptive supplies as a top priority, and eliminating barriers to family planning.

Rising from Poverty

One country claims to have already met the first MDG target. The People’s Republic of China reported to the APPG that through a combination of lowered birth rates and economic reform, 150 million people have been lifted out of abject poverty, thus meeting the MDG for poverty reduction a decade earlier than the target date.²⁵ Nonetheless, controversy surrounding China’s “One Child” policy will make others uncertain of the means to achieve the end. In fact, China is one case cited by population experts as having created an unwarranted stigma among critics and commentators on the topic of reproductive health.

Economists acknowledge that the link between slower population growth and economic development is complex and does not always result in an escape from poverty. Still, a “demographic dividend” occurs when family sizes drop rapidly, leaving relatively more people of working age with fewer dependents, and the ability to invest more resources in those dependents in terms of health and education. In developing countries where the birth rate has fallen, between 25 and 40 percent of economic growth is attributable to the demographic change.²⁶

Population Growth Outpacing Education

The second MDG, achieving universal primary education, seems especially daunting in the face of rising population pressures. In Tanzania, literacy rates fell from 90 percent in 1986 to 68 percent in 1995, attributed to increased school fees as the government was unable to keep pace with public service costs for its growing population.²⁷ The country’s population during the period grew from just under 22 million to nearly 30 million.²⁸

Almost 30 percent of the world population is under age 15, and the United Nations Children's Fund (UNICEF) estimates there are 115 million children of primary school age who are not in school.²⁹ In high growth countries, the number of school-aged children doubles every 20 years. Assuming a class size of 40, an extra 2 million school teachers per year are required just to meet existing needs.³⁰

According to one World Bank report, the annual cost of meeting the MDG education goal ranges from \$10 to \$30 billion.³¹ In another report, World Bank researchers estimate the annual costs in low-income countries would be \$9.7 billion annually, of which \$3.7 billion would be needed from international assistance, many times higher than actual aid flows. Africa, for example, would need 75 percent of their total from external support.³²

While hope comes from countries that have registered an improvement of 20 percent or more within a decade in the primary school completion rate (e.g., Brazil, Nicaragua, Cambodia, South Africa, The Gambia), progress is fragile, and other countries, even some with strong financial resources, have lost ground (e.g., Albania, Zambia, Qatar, Bahrain, United Arab Emirates, Kenya, and Venezuela).³³

Success in achieving universal primary education nonetheless raises an interesting series of questions. Should countries meet the goal, will they have follow-on capacity to meet the needs of the large numbers of students who would like to continue their education to various levels? Do they have the capacity to satisfy the employment options for newly educated students? Would a brain drain result as students go abroad seeking higher education? No doubt many students would not be satisfied to return to a simple or subsistence lifestyle, but it is doubtful that most countries would have the capacity to build yet more schools and train enough staff to accommodate the greater ambitions of their students.

A slowing of the exponential rate of increase in the population of young people would allow countries to more realistically over time create the infrastructures to accommodate their numbers and ambitions. Thus the attainment of access to education for all children presents a powerful argument for the immediate and urgent need to extend access to family planning.

Although there may be potential local obstacles, the curricula for these children should include health education, and reproductive health education should be considered as students enter reproductive age.

Gender Educational Parity Missing Mark

The second and third millennium goals are closely intertwined. The first part of the target for MDG 3 has already passed without being met: "Eliminate gender disparity in primary and secondary education preferably by 2005." While 125 countries, both developing and industrialized, were on course to eventually achieve gender parity, overall enrollment remains low.³⁴

Some 94 countries missed the 2005 target for gender parity, and 86 may not achieve this by 2015, according to the United Nations Educational, Scientific and Cultural Organization (UNESCO). By contrast, Iran (where family size has

declined to replacement level fertility) has already achieved a 90 percent gender balance, and more women than men enter Iran's universities.³⁵

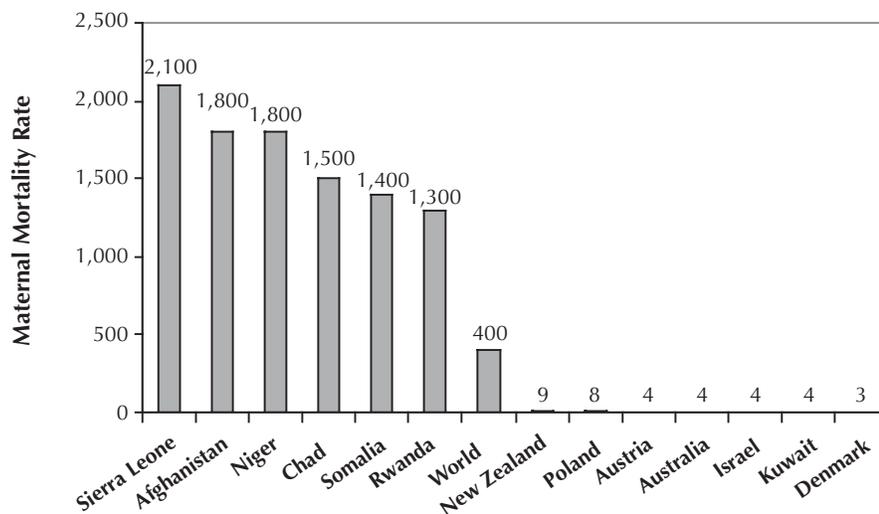
High Fertility and Child, Maternal Mortality

Reducing child mortality and improving maternal health, MDGs 4 and 5, respectively, are essential aspects in addressing population stability. High fertility is strongly associated with child mortality and greatly increases a woman's lifetime risk of dying from pregnancy-related causes. Women will never be empowered until they achieve full control over their reproductive health.

The data indicate that much progress is required. Since 1990, there has been less than a one percent annual decline in deaths of women from pregnancy and childbirth complications. In 2005, 536,000 women—one each minute—died of maternal causes.³⁶ The world's poorest countries account for 99 percent of these, the vast majority of which are preventable with at least minimal prenatal care and the assistance of skilled birth attendants. According to estimates, access to voluntary family planning could reduce maternal deaths by 20 to 35 percent.³⁷

Figure 1 shows UNFPA estimates of disparities in maternal mortality ratios (MMRs) for some of the highest and lowest countries, and the world average. Maternal mortality ratios, the number of maternal deaths per 100,000 live births, show the greatest gap between rich and poor countries of all health indicators. The MMR is declining too slowly to meet the fifth MDG; an annual drop of 5.5 percent is needed, whereas the actual figure is less than 1 percent.³⁸

FIGURE 1
Countries with High and Low Maternal Mortality,
Estimates for 2005



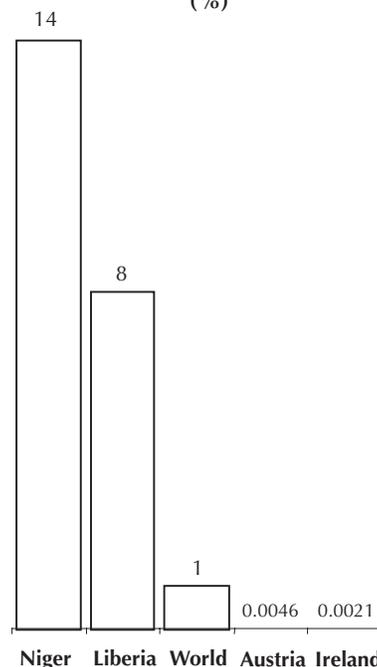
Source for both figures: United Nations Population Fund, 2007

Not surprisingly, the lifetime risk of maternal death also varies exponentially from poor to rich countries. Figure 2 shows the dramatic disparity between countries with the highest and lowest risk of estimated lifetime risk of maternal death.

Maternal mortality can be substantially reduced by ensuring such factors as women's equity, literacy empowerment, reproductive health, and access to family planning information, education, and methods. These viable interventions not only reduce maternal death but in turn combat poverty and enhance development.

Unfortunately, these and additional challenges to meeting the MDGs continue unimpeded. New diseases confound specialists in their number and distribution, and existing diseases remain as vexing as ever. Environments already left vulnerable by climate change face continued degradation of their forests, waters, agricultural lands, flora and fauna. Growing energy consumption, industrialization, and use of fossil fuels will only get worse as a new generation steps forward to enjoy the lifestyle expectations created by the prior generation.

FIGURE 2
Estimated Lifetime Risk of Maternal Death, Highest and Lowest Countries (%)



Population and Fragile/Failed States

The issues affected by population range well beyond those promoted by the MDGs. In recent years the term “fragile states” has been used by the World Bank and other prominent international organizations, not without some controversy, to describe countries at risk from a mix of internal and outside factors.

The World Bank publishes a list of low-income countries under stress (LICUS), or fragile states, from among the 82 International Development Agency (IDA) borrowing countries. In fiscal year 2007 there were 34 countries on the list, up from 25 in 2005. The designation refers to countries scoring 3.2 and below on the Country Policy and Institutional Assessment (CPIA), which is the primary tool to assess the quality of country policies and the main input to IDA's Performance-Based Allocation system.³⁹ In general terms, they are states that lack either the capacity or the will to deliver on core state functions, and where international partners find it difficult to engage.

Although country contexts vary considerably, the fragile states are home to almost 500 million persons, with child mortality rates twice as high as other low income countries, life expectancy 12 years lower, maternal mortality rates some 20

percent higher, and gross domestic product (GDP) rates typically half that of the others. Additional challenges these fragile states must confront are extreme poverty, low levels of human and social development, weak institutional capacity, and slow growth. Three out of four are affected by ongoing armed conflicts.⁴⁰

In a policy and principle strategy document for dealing with fragile states, Europe's Organization for Economic Cooperation and Development expressed its intent to focus on state building as the central objective, including "ensuring security and justice, mobilizing revenue, establish an enabling environment for basic service delivery, strong economic performance, and employment generation."⁴¹ The document notes that efforts must recognize the interdependence of political, security, economic and social spheres, and that gender equity, social inclusion, and human rights must be consistently promoted.

However, a special focus on population stabilization is needed as well. A state's natural resources are usually known and finite: arable land, port access, available water and forest lands, as well as infrastructure: roads, bridges and major buildings, which take medium to long-term planning to develop. However, population growth may often be much more difficult to quantify. What is known is that if a state is having trouble delivering services to its existing citizens, rapid population growth will surely hamper development planning and strategies. And common among nearly all the fragile states is high population growth.

A separate list of countries in a precarious state is compiled by the Fund for Peace, a Washington, D.C.-based nonprofit organization, and published in conjunction with Foreign Policy magazine. In 2007 the Fund for Peace and Foreign Policy published their third annual Failed States Index, a list compiled by scanning tens of thousands of press and research documents for keywords and phrases. Twelve indicators provide rankings of some 170 countries, the weakest (and thus more highly ranked) of which are said to be in danger of failure.

Without denoting specifically when "failure" is achieved, the weakest states are said to have similar problems: loss of physical control of territory or the legitimate use of force, the erosion of legitimate authority to make collective decisions, an inability to interact with other states, and an inability to provide public services. Other characteristics include rampant corruption, predatory elites with a monopoly on power, an absence of the rule of law, and severe ethnic or religious divisions.⁴²

There was significant overlap between the World Bank fragile states and the Fund for Peace/Foreign Policy Failed States Index; 18 of the 20 most populous countries on the World Bank list are also listed within the Index's top 50.

Table 1 shows the 20 most populous states from the World Bank List of Fragile States 2007, along with the rank assigned to each from the Fund for Peace/Foreign Policy index (if they fell within that list's top 50). Also, six randomly selected developing countries with roughly the same population range have been included.

Additional columns show the 2005 population for each country, along with the annual growth rate, the anticipated percentage of population increase by 2050, the current total fertility rates, adolescent fertility rates, the percentage of births attended by skilled health personnel, and the contraceptive prevalence rates. World averages for these categories are also noted for comparison purposes.

Table 1
Population Figures From Among the Most Populous Fragile States

2007 Fragile States (20 most populous)	"Failed States" Rank (top 50)	2005 Population (000s)	Annual Growth Rate (%)	2050 Population ^(a) (% increase)	TFR ^(b)	AFR ^(c)	Birth Attendance ^(d) (%)	CPR ^(e)
Afghanistan	8	29,863	3.7	157	7.3	9.3	14	4.8
Angola	nr	15,941	2.6		6.6	na	45	6.2
Burundi	19	7,548	2.1	233	6.8	6.2	25	15.7
Cambodia	48	14,071	2.2	78	3.9	2.2	44	23.8
Chad	5	9,749	3.3	173	6.7	19.3	15	2.8
D.R. Congo	7	57,549	2.5	198	6.7	11.9	61	31.4
Cote d'Ivoire	6	18,154	2.1	80	4.8	na	63	15.0
Eritrea	50	4,401	3.6	136	5.3	8.5	28	8.0
Guinea	9	9,402	2.3	142	5.7	15.3	38	9.1
Haiti	11	8,528	1.4	59	3.8	8.0	25	28.1
Lao PDR	44	5,924	2.4	102	4.6	na	19	32.2
Myanmar	14	50,519	1.3	18	2.2	2.9	68	37.0
Nigeria	17	131,530	2.4	95	5.6	12.6	35	12.6
Papua N. Guinea	nr	5,887	2.3	76	3.8	6.7	42	na
Sierra Leone	23	5,525	2.9	103	6.5	16.2	42	4.3
Somalia	3	8,228	2.7	180	6.2	5.5	25	na
Sudan	1	36,233	2.1	89	4.2	9.2	57	na
Togo	46	6,145	3.1	113	5.1	9.1	49	25.7
Uzbekistan	22	26,593	1.5	40	2.6	4.0	96	67.7
Zimbabwe	4	13,010	1.0	43	3.4	1.1	80	53.5
Mean Ave.		23,240	2.4	113.3	5.1	8.7	43.5	22.2
Global Ave.			1.3		2.6	5.0	63	61.9
Comparison States								
Algeria	nr	32,854	1.5	47	2.4	2.7	90	64.0
Peru	nr	27,968	1.6	40	2.7	5.9	71.0	70.5
South Africa	nr	47,432	1.2	14	2.7	6.5	92.0	56.3
Thailand	nr	64,233	1.0	5	1.9	3.5	99	72.2
Tunisia	nr	10,102	1.2	29	1.9	1.3	90	63.0
Turkey	nr	73,193	1.6	20	2.4	5.6	83	63.9
Mean Ave.		42,630	1.4	25.8	2.3	4.3	87.5	64.9

Sources: Population Reference Bureau; World Bank; Fund for Peace/Foreign Policy Magazine; World Health Organization

Notes:

- a. Projected percentage of population increase by 2050
- b. Total fertility rate
- c. Adolescent fertility rate
- d. Percentage of births attended by skilled health personnel
- e. Contraceptive prevalence rate

The numbers reveal high levels of population growth in most of the fragile states, along with high total and adolescent fertility rates, and low contraceptive prevalence. While anecdotal, the comparison with the other states shows much higher rates of fertility and population growth among the fragile states. In addition, the birth attendance percentages are only half those of the other countries noted, demonstrating a lack of access to trained health professionals. Contraceptive prevalence rates are only a third of the other countries, showing a wide unmet need for contraception in the fragile states.

Considering that fragile states tend to have younger populations, it is also instructive to note the adolescent fertility rate is double that of the randomly selected states. The women in those countries will begin their childbearing earlier, making the need to create family planning programs all the more urgent.

Population and the Environment

Any modern consumer of mass media is familiar with climate change and interrelated topics such as global warming, greenhouse gases, environmental degradation, and pollution. Of the challenges discussed so far, expanding population is perhaps most closely intertwined with climate change, and yet population is routinely ignored in most discussions. As such, population growth should become a second front in the battle against climate change, as one of the easiest and least costly, yet most neglected, options available.

It is recognized that the industrialized world, especially the United States, is among the major contributors to global warming through the burning of fossil fuels. No real progress can be made until industrialized countries address their high consumption and resulting effects on the planet. Least developed countries produce only a fraction of the emissions of the industrialized world. Total emissions from the developing world are expected to exceed those from the industrialized world by 2015.

Nonetheless, programs addressing the various issues of climate change that neglect the incorporation of population growth strategies are seriously flawed. In March 2007 the Associated Press reported that the head of the U.S. National Oceanic and Atmospheric Administration (NOAA) said the biggest challenge facing the world is population growth and people's desire to live in coastal areas where they can be endangered by storms.⁴³

Although wealthier, industrialized countries with large populations account for much of the consumption and greenhouse gases, environmental degradation in many less-industrialized countries is increasing as their rising populations struggle to survive, and this will have serious, long-term consequences. Such activities as clearing forests for grazing, crops, and living space, chopping wood for fuel, overfishing and abuse of local marine ecosystems, diversion and overuse of fresh water systems, illegal strip mining and forestry, and unchecked burning for agriculture will only increase as populations grow. The environments in resource-poor countries will be especially at risk.

Addressing population growth is not an issue of limiting numbers of specific groups of human beings. But it is clear that many regions will remain at risk

until their populations are stabilized and the capacity to adequately support more people is created. One economic report notes the evidence shows that ignoring climate change will eventually damage economic growth, but that tackling it does not cap the aspirations for growth for rich or poor countries.⁴⁴

The Intergovernmental Panel on Climate Change reports that many human systems are sensitive to climate change, including water resources, agriculture and forestry, fisheries, human settlements, energy, industry, insurance and other financial systems, and human health. The IPCC projects adverse impacts such as a general reduction in potential crop yields in most tropical and subtropical regions; decreased water availability for populations in many water-scarce regions; an increase in the number of people exposed to vector-borne and water-borne diseases; an increase in heat stress mortality; and increased energy demand for space cooling.⁴⁵

Nonetheless, population seems to be missing from many environmental discussions. Of the few voices making the connection between population and global warming, perhaps the most well known is Chris Rapley, head of the Science Museum in London. Quoted in a July 2007 *Telegraph* newspaper article, Rapley said, “My position on population is that I am disturbed that no one will talk about it.”⁴⁶ Among other things, Rapley told the newspaper that saving a gigaton of carbon emissions through education for women and birth control programs would cost 1,000 times less than any of the other technical options available, such as nuclear power, renewables, or increased car efficiency.

A year earlier, Rapley opined on a British Broadcasting Corporation website that population was a “Cinderella” subject, rarely visible in public or even private, and noting that it is in fact “. . . A bombshell of a topic, with profound and emotive issues of ethics, morality, equity and practicability.”⁴⁷

Along with the issues discussed in international global warming meetings, Rapley noted that attention is merited by a much broader range of human impacts contributing to global warming, such as land cover, the water cycle, the health of ecosystems, and biodiversity, as well as the release of other chemicals into the environment, the massive transport and mixing of biological material worldwide, and the unsustainable consumption of resources. All of these effects interconnect and add up to the collective footprint of humankind on the planet’s life support systems:

Although reducing human emissions to the atmosphere is undoubtedly of critical importance, as are any and all measures to reduce the human environmental “footprint,” the truth is that the contribution of each individual cannot be reduced to zero. Only the lack of the individual can bring it down to nothing. So if we believe that the size of the human “footprint” is a serious problem (and there is much evidence for this) then a rational view would be that along with a raft of measures to reduce the footprint per person, the issue of population management must be addressed.⁴⁸

In describing how environmental writers are part of the problem for not mentioning population growth in their discussions, environmental writer and activist John Feeney notes that it is well known among scientists that the size and

growth of the global population is a root cause of environmental degradation, including climate change. He comments on one author who avoids the subject because it is “political poison,” stemming from negative reactions to news of coercive family planning policies in some countries, free market capitalism that stresses growth, and political wrangling by concerned groups.⁴⁹

In an online article about peak oil and carrying capacity, Canadian writer Paul Chefurka calls population the “elephant in the room:”

At the root of all the converging crises of the World Problematique is the issue of human overpopulation. Each of the global problems we face today is the result of too many people using too much of our planet’s finite, non-renewable resources . . . The true danger posed by our exploding population is not our absolute numbers but the inability of our environment to cope with so many of us doing what we do.⁵⁰

Car ownership offers insight on the convergence of population and carbon emissions in the future. Over the next 25 years, more cars are expected to be sold than in the entire history of the automotive industry.⁵¹

In an A.C. Nielsen survey of 28 countries in Europe and Asia, as well as the U.S., seven countries ranked “high” on an “Aspirational Index,” or future intent to buy a vehicle. All were in Asia, and of those, three are in the top four most populous countries (China, India, and Indonesia). In addition, less environmentally friendly sport utility vehicles (SUVs) were selected by 19 percent of those in Asian regions as the design of choice,⁵² a preference that is on the rise.

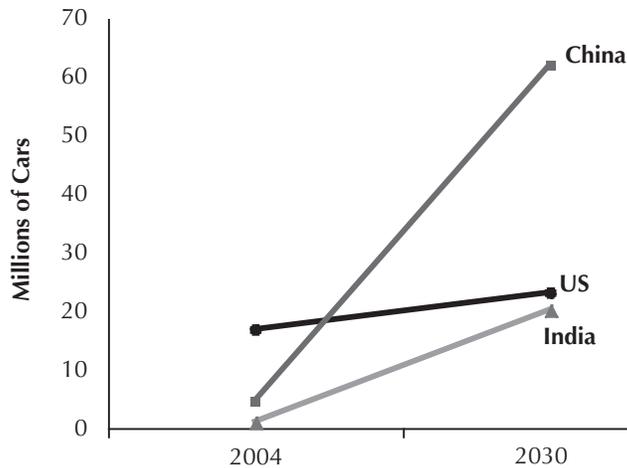
In terms of overall emissions, while many developing countries account for far less per capita emissions, their overall population will offset the per capita imbalance. The Netherlands Environmental Assessment Agency calculated that China surpassed the United States as the world leader in carbon dioxide emissions in 2006.⁵³

According to a U.S.-based report, over the next quarter century, car sales in China may reach 62 million. India will reach 20 million, just behind the U.S. at 23 million.⁵⁴

Thus, in India, with more than 1.1 billion people and a rapidly growing population, a curb on population growth would have a significant impact on future automobile emissions. (It is also compelling to consider how India, which subsidizes fuel prices to its citizens, will manage to continue keeping fuel prices artificially low as its share of global oil demand rises from its current 3 percent to 10 percent by 2030.⁵⁵)

Another troubling intersection of population growth and climate change is found in the Democratic Republic of Congo (DRC). The country, one of the most fragile on the planet, also has some of the world’s highest population growth figures. Its population is projected to soar by nearly 200 percent by 2050, from a current level of 62.6 million to 186.8 million. The rate of natural increase (3 percent) is one of the highest in the world, as is the total fertility rate (6.7 children per married woman), although the country has one of the world’s lowest per capita incomes (US\$720).⁵⁶

FIGURE 3
Top Three World Car Markets and Sales
Estimates for 2030



The DRC is also home to the world's second largest tropical woodlands, which act as a planetary "second lung" along with the Amazon forest, to trap carbon that would otherwise become carbon dioxide in the atmosphere. Logging companies now control about one-quarter of the forests, but the DRC largely lacks a functioning system of forestry control.⁵⁷ The country also ranks in the bottom six internationally for corruption on a Transparency International list.⁵⁸

Forest harvesting, especially in under-controlled environments, leads to a predictable pattern of initial access from road building (legal and otherwise) by the timber companies, followed by further subsistence cutting and burning, game hunters and often herds of domesticated animals, followed by subsistence farmers and others driven by poverty to further exploit the dwindling forests. The DRC will undoubtedly follow this pattern as the population climbs upward.

In addition, at the time of this writing, a delegation of pygmies from deep in the DRC rainforest was meeting with officials from the World Bank in Washington to request limitations on the activities of the Bank-supported timber companies. The pygmies assert the logging activities upset their subsistence patterns, tied closely to the forest, and allow future encroachment from outside, non-indigenous populations. A recent study by World Bank independent auditors found that logging was causing malnutrition in children and had led to local violence, that locals were not consulted, and that logging companies made incorrect claims about the value of timber.⁵⁹

An easing of the population pressure in the DRC would benefit the forests that retain carbon from the world's air as well as the indigenous groups who live therein, not to mention the various benefits to the country's overall population (e.g., healthier, better educated families).

That climate change is a complex, interconnected subject is borne out by "National Security and the Threat of Climate Change," a report prepared by several senior retired U.S. military officers, a cohort not generally known for environmental crusading.

In their report, the authors found that projected climate change poses a serious threat to U.S. national security, acting as a "threat multiplier" for instability in some of the most volatile regions of the world. According to their report, climate change, national security and energy dependence are a related set of global chal-

lenges for the U.S., and they include recommendations that the U.S. should commit to help stabilize climate change and commit to global partnerships to help less developed nations build the capacity and resilience to better manage climate impacts.⁶⁰

Populations and the environment, no matter where on the globe, are inextricably intertwined, and must be considered together if forces damaging the planet are to be mitigated.

Population and Clean Water/Sanitation

Of the conflicts between population and resources, the one which will emerge the soonest and perhaps most dramatically will involve clean drinking water and a scarcity of water for sanitation, agriculture, and other uses. In the most tragic of circumstances, humans can survive in war zones and through natural disasters, they can bear disease and live marginally without shelter. Even a lack of adequate food does not mean a quick death. But humans can survive a lack of potable water for only a few days at most.

The United Nations has stated that more than 2.7 billion people will face severe water shortages by 2025 if world consumption of water continues at current rates, and another 2.5 billion will live in areas where it will be difficult to find sufficient fresh water to meet their needs.⁶¹ However, the UN also predicts consumption rates will increase by up to 12 percent per decade until 2025.

The head of the UN agency tasked with promoting socially and environmentally sustainable housing has warned that water will become the dominant issue of this century and its availability could threaten the world's social stability.⁶² Indeed, the UN Development Programme made the issue of water scarcity the subject of its 2006 Human Development Report.

The box at the bottom of the following page highlights just a few of the specific problem areas around the globe. According to the UN, water use is predicted to rise by 50 percent in developing countries, and 18 percent in the developed world. At the same time, water quality is declining because of pollution from causes such as chemicals, microbial pathogens, and excessive nutrient runoff.

Globally, contaminated water remains the single greatest cause of human disease and death. In developing countries, some 3 million people, most under five, die annually from water-borne diseases. An estimated 2.6 billion people, over a third of the world's population, lack improved sanitation services. In urban areas, the poor are often not connected to municipal supplies, and thus must pay many times more for water from private vendors. Although the planet is covered by water, only 2 to 3 percent is fresh water, and most of that is frozen at the poles or inaccessible in deep underground aquifers. Some 70 percent of the water that is available is used for irrigation, and thus the potential for conflict is clear. Of the world's major rivers, 10 percent fail to reach the sea for at least part of each year due to irrigation demands. There are 216 rivers flowing through two or more countries, and 31 nations that receive more than a third of their water from rivers that cross international borders. Two-thirds of Arabic-speaking peoples receive water from sources that begin in non-Arabic countries.⁶³

International development funding has not responded to this rising need and may not always reach those who need it most. The share of water as part of total official development assistance has remained at about 5 percent, while spending for education, health, and emergency aid has risen sharply. In addition, between 1990 and 2004, 60 percent of development assistance for water went to 20 countries and is still being distributed unequally between countries, according to a World Water Council report.⁶⁴

The implications of water needs and population growth are troubling. Of the top 20 recipient nations for water sector funding, 11 are in the top 20 overall in terms of world population rankings. However, only seven are rated by the UN as being least developed or other low income countries. According to the World Water Council, the three predominant factors when it comes to receiving aid are being demographically small, politically stable, and geopolitically “visible.”⁶⁵

As Table 2 shows, populous and poor states not among the top 20 recipient will need to address their water risks without the bulk of international support. Family planning would be a very effective component in helping them manage the future.

According to the Fourth World Water Forum, to achieve the MDG Target 10—“Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation”—would require yearly funding of \$12 billion, instead of the current \$3.5 billion.⁶⁶

With the world’s sanitation coverage only 38 percent in rural areas, and half the population of the developing world lacking basic sanitation, we can anticipate the continued suffering of millions from preventable diseases, as well as impediments to gender equity and economic growth, as populations rise in the poorest countries.

Prudence suggests not anticipating a sudden, exponential increase in funding for water programs. The effect of climate changes on global weather and

- More than half the world’s people live in countries where water tables are falling.
- The depletion of aquifers and the resulting harvest cutbacks could come at roughly the same time, creating potentially unmanageable food scarcity.
- Irrigated land accounts for close to three fifths of harvests in India and four fifths in China.
- Large dams in Turkey and Iraq have reduced water flow to the once fertile crescent, helping to destroy more than 90 percent of the formerly vast wetlands.
- In Yemen, the water table under most of the country is falling by roughly 2 meters a year as water use outstrips the sustainable yield of aquifers.
- In Mexico, 51 percent of all the water extracted from underground is from aquifers that are being overpumped.
- Observation wells in parts of Pakistan, a country growing by 3 million annually, show a fall in the water table from 1 to nearly 2 meters a year. Tables around Quetta are falling by 3.5 meters per year.
- In Tamil Nadu, a state with more than 62 million people in southern India, falling water tables have dried up 95 percent of the wells owned by small farmers, reducing the irrigated area in the state by half over the last decade.

From “Emerging Water Shortages” in Lester R. Brown, *Plan B 2.0: Rescuing a Planet under Stress and a Civilization in Trouble*

Table 2
Development Funding Assistance for Water,
Principal Recipients (1990–2004)

Recipient Country	Recipient Rank	Percent of All Funds	World Pop. Rank	Annual Assistance (per capita in \$US)	Least Developed Or Low Income
India	1	8.1	2	0.24	Yes
China	2	8.0	1	0.19	No
Egypt	3	5.3	15	2.49	No
Viet Nam	4	4.8	13	1.85	Yes
Indonesia	5	3.3	4	0.48	Yes
Turkey	6	3.2	17	1.44	No
Morocco	7	2.6	35	2.75	No
Palestinian Admin. Areas	8	2.3	< top 50	21.23	No
Philippines	9	2.2	12	0.85	No
Jordan	10	2.1	< top 50	12.42	No
Bangladesh	11	2.1	7	0.47	Yes
Ghana	12	2.1	48	3.13	Yes
Peru	13	2.0	41	2.30	No
Iraq	14	1.9	39	2.48	No
Pakistan	15	1.9	6	0.41	Yes
Sri Lanka	16	1.8	< top 50	2.98	No
Tunisia	17	1.7	< top 50	5.45	No
Tanzania	18	1.6	30	1.40	Yes
Thailand	19	1.5	19	0.77	No
Mexico	20	1.4	11	0.46	No
Other Populous Countries					
Nigeria		< 1.4	9	0.26	Yes
Ethiopia		< 1.4	16	0.42	Yes
Iran		< 1.4	18	0.003	No
DR Congo		<1.4	20	0.12	Yes

Source: World Water Council, 2006

related patterns of rainfall cannot be accurately calculated, although poorer, tropical countries, often those most reliant on rainfall, are expected to become drier; the outlook is ominous.

Population pressures will only increase the stresses on societies and potential conflict areas as water scarcity increases. For example, in raw numbers, the United Nations Food and Agriculture Organization (FAO) notes that by 2025 approximately 480 million people in Africa, one of the most vulnerable regions, could be living in water scarce or water stressed areas.⁶⁷

Paradoxically, meeting the MDG on hunger would require a doubling of water use for crops by 2050.⁶⁸ Where funding is available, sexual and reproductive health components of water management programs would provide a significant and cost-effective contribution to program success. Family planning programs in their own right would also contribute to stabilization in countries most at risk.

Population and Food Security

Food security is closely tied in many ways to climate change and water scarcity. Several additional factors affect the dynamic, however, including global food production (and the uncertainty over shifts from harvesting corn to producing more corn for ethanol), domestic subsidies, food aid, world prices for fertilizers and pesticides, and genetically modified crops.

In an interesting twist that clearly outlines the complex and troubling inter-relationship between population growth, agriculture and climate change, while agriculture is a victim of climate change, it is also part of the problem. Livestock accounts for 18 percent of global greenhouse gas emissions, while forestry and deforestation is responsible for 18 percent of carbon dioxide emissions. Rice production is perhaps the main source of anthropogenic methane, emitting some 50 to 100 million metric tons per year.⁶⁹

Growing populations in states with at-risk agricultural production will only exacerbate the potential for both internal and cross-border conflicts. Lester R. Brown, president of the Earth Policy Institute, writes "...achieving an acceptable worldwide balance between food and people may now depend on stabilizing population as soon as possible, reducing the unhealthy high consumption of livestock products in industrial countries, and restricting the conversion of food crops to automotive fuels."⁷⁰

Writers participating in a special multi-part *Science* magazine series examining critical worldwide resources note that global food security will remain a worldwide concern for the next 50 years and beyond; crop yields have fallen in many areas because of water scarcity and declining investments in research and infrastructure, and climate change and HIV/AIDS are other crucial factors affecting food security in many regions. The situation is dependent on several interconnected factors, including education and investments in ecosystems, but is in need of increased investment and policy reforms.⁷¹

The Intergovernmental Panel on Climate Change reported that the pressures of climate change on the world's food system are better understood than most other impacts. While there may be beneficial effects for more industrialized countries due to higher yields, there will be strong negative effects for crops and people in poorer and hungrier regions, as well as for those poorly connected to regional and global trading systems. Overall, the number of hungry and malnourished in the world may increase by 10 percent, or an additional 80-90 million people, later in the 21st century.⁷²

Once again, the poorest countries will suffer the most. In sub-Saharan Africa, the population may increase by 80 percent by the year 2020,⁷³ setting the stage for potentially dramatic consequences. During the same time period, agriculture fed by rainfall could decline 50 percent in some African countries. As a whole, over 95 percent of Africa's agriculture depends on rainfall.

"Climate change in Africa is a life or death situation," said Menghestan Haile, weather expert for the World Food Program. "I think global warming will affect everyone. The difference is our capacity to respond and adapt to it."⁷⁴

At the same time, shifts in living patterns will complicate planning strategies. About 850 million people lack access to sufficient food to lead healthy and productive lives, and about 170 million children are seriously underweight for their age.

But while countries grapple with how to feed their populations, increasing urbanization will change the types of foods demanded; lifestyle changes may well involve replacing basic staples such as sorghum, millet and maize with cereals that require less preparation such as rice and wheat, in addition to livestock products, fruits, vegetables, and processed foods.⁷⁵ For example, there will be a general decline in sorghum in Sudan, Ethiopia, Eritrea, and Zambia, maize in Ghana, millet in Sudan, and groundnuts in the Gambia.⁷⁶

In addition, as middle-income countries develop and grow more affluent, the demand for meat will almost certainly increase. As the conversion of units of vegetable matter to meat and dairy products averages 10 to 1 (and can go as high as 25 to 1), the growing demand for meat will mean a decrease in grains available for the very poor.⁷⁷

According to UN experts, more food will have to be produced in the next 50 years than has been produced during the past 10,000 years combined. At the same time, some 40 percent of the world's agricultural land has been degraded. The worst affected regions are Central America, where 75 percent of land is infertile; Africa, where a fifth of the soil is degraded; and Asia, where 11 percent of land is now unsuitable for farming.⁷⁸ Globally, in developing countries, 11 percent of available arable land could also be affected by climate change, including a reduction of cereal production in up to 65 countries.⁷⁹

Reserves of food stocks are also dwindling. The United Nations Food and Agriculture Organization forecasts overall declines in world cereal stocks,⁸⁰ and recent per capita grain yields are already the lowest in more than 30 years. Throughout the early 1960s, world grain reserves were equal to at least one year's global demand, but in recent years reserves have fallen to just 20 percent of annual consumption.⁸¹

Ironically, a further contributor to global food insecurity and uncertainty is food aid. As agricultural pressures mount, it was reported in the fall of 2007 that U.S. food assistance fell to its lowest level in a decade, amounting to less than half the food purchased in 2000 (2.4 million metric tons versus 5.3 million metric tons; the U.S. is the largest contributor to the U.N. World Food Program). In part this decline is driven by increased corn and soybean prices (due to the demand for ethanol) and record-high wheat prices (due in part to droughts in Australia and demand in India).⁸²

Meanwhile, one of the world's largest humanitarian assistance organizations, CARE, announced in 2007 that it will no longer accept donations of food aid from the U.S. In the controversial decision, CARE said that U.S. food aid was not only inefficient but that it may also hurt the poor it aims to help. Under the system, the U.S. buys goods from U.S. agribusiness and ships it abroad primarily on U.S.-flag carriers. The goods are then donated to charities who sell them on the local market. In some cases these goods compete with and undercut struggling local farmers.⁸³

Food security is not only a matter of production. The world produces enough food to feed its entire population. There is simply not enough funding and political will to distribute the food evenly. In addition, although food production and imports in some countries might be at sufficiency levels, the poor in those countries are unable to afford it (e.g., Zimbabwe, Eritrea, Ethiopia, North Korea, and Guinea).⁸⁴

By comparing several relevant figures, a sense of urgency and priority becomes apparent. Table 3 shows several developing countries—all among the world's 40 most populous. The fourth and fifth most populous nations, Indonesia and Brazil, respectively, have similar rates for total fertility, population increase, and unmet need for family planning. However, Indonesia has less than half the gross domestic product (GDP) of Brazil, and is close to utilizing all of its arable land. Brazil has a much lower population density and cultivates a much smaller percentage of potential agricultural land.

Egypt and Ethiopia are similar in many respects—including population, density and percentage of cultivated land; however, Egypt has exponentially more irrigated land and four times the GDP as Ethiopia, greatly reducing risks of drought. Ethiopia has much higher fertility and triple the unmet need for family planning, as well.

Bangladesh has reasonable numbers for several categories, yet its astounding population density puts it at significant risk; natural disasters frequently place the country in the headlines. Uganda, which utilizes its available land relatively well, has very little irrigated land, exposing its vulnerability to drought. In addition, while Uganda has a relatively favorable GDP for the region, it has relatively high population density and very high unmet need.

Table 3
Populous Countries, Agriculture, Income and Population Factors

Country	Population (in millions) ^[a]	World Rank	Arable Land (%) ^[b]	Land Cultivation of Permanent Crops (%) ^[b]	Irrigated Land (sq. km.) ^[b]	GDP per capita (\$US) ^[b]	Population Density (per sq. km.) ^[c]	Rate of Natural Increase ^[a]	TFR ^[a]	Unmet Need (%) ^[d]
Indonesia	231.6	4	11	7	45,000	3,900	117	1.4	2.4	9
Brazil	189.3	5	6.9	0.89	29,200	8,800	22	1.4	2.3	7
Bangladesh	149.0	7	55.4	3.08	47,250	2,300	1,045	1.9	3.0	11
Nigeria	144.4	9	33	3.14	2,820	1,500	142	2.5	5.9	17
Philippines	88.7	12	19	16.7	15,500	5,000	277	2.1	3.4	17
Egypt	73.4	15	2.9	0.5	34,220	4,200	74	2.1	3.1	10
Ethiopia	77.1	16	10	0.65	2,900	1,000	70	2.5	5.4	34
Tanzania	38.7	33	4.2	1.16	1,840	800	41	2.6	5.4	22
Kenya	36.9	34	8.0	.97	1,030	1,200	59	2.8	4.9	25
Uganda	28.5	39	21.6	8.9	90	1,900	120	3.1	6.7	35

Sources: [a]: Population Reference Bureau; [b]: Central Intelligence Agency World Factbook; [c]: United Nations; [d]: Guttmacher Institute (for married women aged 15-49)

Comparing Nigeria and Philippines is instructive. The two countries have both large populations and the same rate of unmet need for family planning. Nigeria's much higher fertility, lack of irrigation, and lower GDP seem to indicate less favorable conditions. Although the Philippines, which in the past received significant family planning assistance, has higher density and cultivates nearly all of its available land, its lower population growth will provide for more internal stability.

Once again, manageable population growth, or the lack thereof, is the key difference in food security. Clearly, more countries are on a trajectory to feed fewer of their citizens. Stabilization of population growth will be a component in ensuring fewer victims of malnutrition and hunger.

Population and Global Security

Population growth was an underlying if not a primary cause of the largest conflict in human history, the Second World War. In Germany, Adolf Hitler's principle of *lebensraum*, or "living space" for the growing German population, was a central component of his justification for the Nazi invasions into neighboring countries.

In Japan, an island nation with high population density in many areas, the need for resources for a growing population and economy was a part of the drive to invade Manchuria and other parts of China, as well as much of the rest of the Pacific region, beginning in the 1930s. Public policy researcher Jack Goldstone notes that population-related conflicts have been going on for centuries.⁸⁵

Growing populations in areas of dwindling resources have caused or intensified conflicts in many corners of the world. The situation in Sudan's Darfur region is one of the better-known of these. According to Kenyan environmentalist Wangari Maathai, 2004 Nobel Peace Prize recipient, "Darfur is an example of a situation where a dire scarcity of natural resources is manipulated by politicians... At its roots it is a struggle over controlling an environment that can no longer support all the people who must live on it."⁸⁶

Another key issue in conflict is rapid urbanization and the "youth bulge" in many countries. A spike in the numbers of young people can create strains on public services, such as education and health, and other resources, exacerbated by a lack of jobs, leading to increased poverty, overcrowding, frustration, alienation and unrest. Alternatively, as the proportion of young adults decreases, so does political instability, for example in Japan, South Korea, Thailand, and Sri Lanka.⁸⁷

Along these same lines, researchers have demonstrated that in countries with low birth rates and low infant mortality, the likelihood of civil conflict is less than in those with high birth rates and high infant mortality. As birth rates and infant mortality increase, the likelihood of civil conflict increases in a clear progression.⁸⁸

Population researcher Katherine Weiland has argued: "Family planning programs should be implemented as an essential component of national security for developing as well as developed countries. Achieving global security requires a worldwide commitment, through global cooperation, to attacking the social and

economic problems that lead to insecurity.”⁸⁹ This cooperation and commitment is critical because,

In today’s interconnected world, conflict in less developed countries affects not only one country or region but has dangerous implications for global security. Globalization has created a world where stable countries are no longer isolated from their unstable neighbors and civil strife can easily move across borders and erupt into war.

Demographers and both social scientists and military experts have linked global security and population, which was regarded as a non-traditional security issue just a decade ago.

These include the promotion of a demographic transition of populations from high to low rates of birth and death; ensuring easily accessible reproductive health services for refugees, civilians in post-conflict environments, and all military personnel; and supporting improvements in the legal, educational and economic status of women to reach a “security demographic,” a distinctive range of population structures and dynamics that make civil conflict less likely.⁹⁰

According to Goldstone, there are six major population trends that are likely to pose significant security challenges to developed nations by 2025, among them being the rapid growth and predominant role of urban populations in developing countries, shrinking populations in Europe, opposing age shifts between aging developed and youthful developing countries, and increasing migration from developing to developed countries.⁹¹

A look at four of the 10 most populous nations in the world provide an interesting case, as their policies will have a significant impact on their neighbors and the world. Brazil, Indonesia, Nigeria and Pakistan are developing countries that have experienced various internal difficulties, levels of regional strife, and natural disasters.

**Table 4
Youthful Populations and Growth**

Country	Population Projections (in millions)			Population under 15 years (%)	Urban Population (%)	Rate of Natural Increase	TFR
	2007	2025	2050				
Indonesia	231.6	271.1	296.9	28	42	1.4	2.4
Brazil	189.3	228.9	259.8	28	81	1.4	2.3
Pakistan	169.3	228.8	295.0	40	34	2.3	4.1
Nigeria	144.4	204.9	281.6	45	44	2.5	5.9

Source: Population Reference Bureau

Pakistan in particular is expected to figure prominently on the global stage due to its population size (it is the world’s sixth most populous country with nearly 170 million people), as well as its geographic position, its relations with its

neighbors, and, not least, its possession of nuclear weapons. Also important is Nigeria, ranked eighth among the world's most populous countries with some 144 million people, as well as tenth in proven oil reserves and seventh for natural gas.

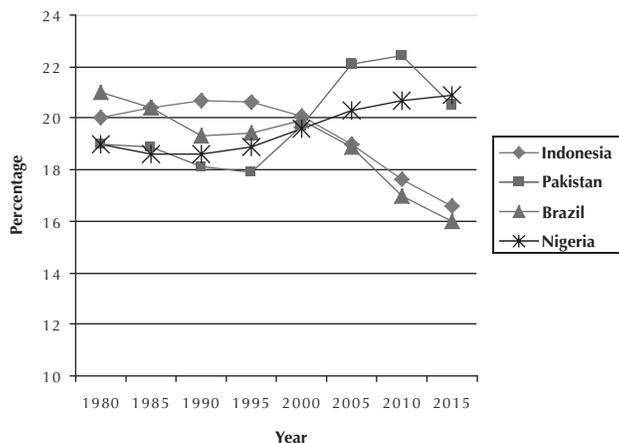
However, Brazil and Indonesia have relatively stable internal and regional political climates, with democratically elected presidents. Both have also enjoyed success with past family planning programs and policies. Conversely, Pakistan and Nigeria have not seen great success in family planning efforts in the past.

In addition, Nigeria and especially Pakistan are in uncertain climates; Nigeria's elections in April 2007 were seen as largely tainted, and Pakistan's president came to power in a coup. While all have large populations, Nigeria and Pakistan have significantly higher rates of total fertility and rates of natural increase, as well as percentages of younger population, forecasting a possibility of even greater future unrest.

Figure 4 shows the percentage of youth (15-24 years) for the same countries over a 35-year span. Brazil and Indonesia are currently seeing a reduction in youthful percentages, while Nigeria and Pakistan are undergoing a spike in percentages, which is projected to continue for roughly a decade. The figures reinforce the need to ensure that urgent family planning needs are met in these countries, as a matter of security for all countries.

If for no other reason than their own security, developed countries need to examine their development population policies and enhance their aid especially to those countries whose stability is potentially at risk.

FIGURE 4
Youth Ages 15–24 Years, 1980–2015
(As percentage of all population)



Source: UN Population Division, *World Population Prospects 2006 Revision*

growth will experience the most severe increases in diarrheal and infectious diseases caused by climate change.⁹² WHO has tied rising global population to an unprecedented number (39 in all) of emerging new diseases, including AIDS, Ebola, SARS, and bird flu.⁹³

Population and Other Issues

The convergence of the concerns described through this paper will, of course, have a shock wave effect on several other associated issues, such as migration, refugees, poverty, health, and education.

To touch briefly on one of these, scientists are already issuing alarms related to increased risks from disease as populations rise. For example, countries with high population

The many factors at the interface of human population growth and disease were explored in a 2007 paper in *Human Ecology*, and included health hazards such as poor vector control and sanitation, water and food contamination, air pollution, natural disasters, and chemical pollution.⁹⁴

Thus, the impact of population growth goes far beyond the issues covered here. But again, population is the root from which all issues and concerns are developed, and represents the obvious starting point in addressing realistic and practical resolutions.

Summary

The purpose of this paper has been to show the connections between population growth and several key, broad-ranging topical issues, whether meeting the Millennium Development Goals, resolving issues of climate change, addressing shortages of water and food, or examining aspects of global security. These connections are at times understood to various degrees by decision-makers, while at other times population has been overlooked or ignored.

A focus on population growth and international family planning programming, including commodities, distribution, and education, should be a part of any resolutions discussed for the myriad problems reviewed in this report. Family planning is one of the most proven and most cost-effective components for reaching real solutions to many of the world's more pressing problems.

It is recognized that reproductive health and family planning issues are complex and involve history, politics, local agendas, ethics, cultural norms and values, power relations, health, women's and human rights, economics, poverty, education and myriad other components and realities. All are urgent, and effective programs must include a comprehensive understanding of all issues.

Sexual and reproductive health, particularly family planning, is not a panacea in stabilizing global pressures. It also does not operate in a vacuum, any more than the other issues described. The potential solutions to each are also inextricably bound to each other. But as a component, population stability is a necessary and critical step in the effort to secure a positive future for all the earth's citizens; moreover, it is the key theme that binds them all.

There is reason for hope. Countries in which family planning is a routine part of health care have stabilized their populations, seen economic growth and political stability, and have provided education and health care for a greater share of their population. Tunisia, Egypt, Indonesia, and Mexico are just a few success stories for international family planning efforts.

Ultimately, the decisions of individual women will determine population growth. Given modern family planning knowledge, options, and access, women limit the size and spacing of their families. How well the world responds in providing information, education and supplies to those in need will be the key to managing the numerous, potential threats of the modern era.

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Millennium Development Goals and Target

1. Eradicate extreme poverty and hunger

Target 1: Reduce by half the proportion of people living on less than a dollar a day

Target 2: Reduce by half the proportion of people who suffer from hunger

2. Achieve universal primary education

Target 3: Ensure that all boys and girls complete a full course of primary schooling

3. Promote gender equality and empower women

Target 4: Eliminate gender disparity in primary and secondary education preferably by 2005, and at all levels by 2015

4. Reduce child mortality

Target 5: Reduce by two thirds the mortality rate among children under five

5. Improve maternal health

Target 6: Reduce by three quarters the maternal mortality ratio

6. Combat HIV/AIDS, malaria and other diseases

Target 7: Halt and begin to reverse the spread of HIV/AIDS

Target 8: Halt and begin to reverse the incidence of malaria and other major diseases

7. Ensure environmental sustainability

Target 9: Integrate the principles of sustainable development into country policies and programmes; reverse loss of environmental resources

Target 10: Reduce by half the proportion of people without sustainable access to safe drinking water

Target 11: Achieve significant improvement in lives of at least 100 million slum dwellers, by 2020

8. Develop a global partnership for development

Target 12: Develop further an open, rule-based, predictable, non-discriminatory trading and financial system. Includes a commitment to good governance, development, and poverty reduction—both nationally and internationally

Target 13: Address the special needs of the least developed countries Includes: tariff and quota free access for least developed countries' exports; enhanced programme of debt relief for HIPC's and cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction

Target 14: Address the special needs of landlocked countries and small island developing States

Target 15: Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term.

Target 16: In cooperation with developing countries, develop and implement strategies for decent and productive work for youth.

Target 17: In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries

Target 18: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications

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