

## **Two statements on population and sustainable development produced by global scientific panels in 2002 and 2012**

*Wolfgang Lutz\**

When discussing the involvement of demographers in the analysis of population and climate change interactions, it is useful to remind ourselves that within the last 15 years there were two major attempts to summarize the state of the art on the role of population in sustainable development by high-powered international panels, and to communicate them to decision-makers at the highest levels. Such efforts were made in the context of decadal conferences of heads of states and governments convened by the United Nations System under the broad topic of ‘Sustainable Development’. The first of these conferences, the ‘Earth Summit’, was held in 1992 in Rio de Janeiro under the chairmanship of Maurice Strong. Among the outcomes of this conference was the ‘Framework Convention on Climate Change (FCCC)’, which is the only binding global agreement on climate change that has been reached so far. Even the recent Paris climate change agreement of December 2015, in which countries agreed to limit global warming to relatively safe levels of less than two degrees Celsius (°C), is only partially legally binding.

In 2002, the leaders of the world gathered again in Johannesburg to assess the progress made since Rio, and to adjust their policy priorities. In preparation for this summit meeting, IIASA (International Institute for Applied Systems Analysis), together with the UNU (United Nations University) and the IUSSP (International Union for the Scientific Study of Population), and with financial support from the UNFPA (United Nations Population Fund), assembled a group of leading scholars working on population-related issues to produce a statement, which is given below. This Global Science Panel was under the joint patronage of Maurice Strong and Nafis Sadik, and was coordinated by Wolfgang Lutz and Mahendra Shah. A shortened version of this statement was also published in *Nature* (Lutz and Shah 2002). The members of the panel are listed as authors below.

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Ten years later, in preparation for the Rio+20 Conference in 2012, another high-level scientific panel was convened by IIASA with support from the UNFPA. The task was to re-assess, confirm, or complement the earlier statement to reflect the most recent state of research in this field. It was coordinated by Wolfgang Lutz and William Butz. The resulting statement is given below the first one. A shortened version of this statement was published in *Science* (Lutz et al. 2012).

The theme of this Special Issue is essentially in line with these two statements, which emphasize how population dynamics and demographic differences influence both human impacts on the environment and people's capacity to adapt to environmental change. The current issue of the *Vienna Yearbook of Population Research* includes vigorous empirical contributions that help us better understand the role of demographic challenges in achieving sustainable development, and that may be of use in designing differentiated policy responses that address the specific needs of population subgroups.

## **1 Population in sustainable development: Statement of a Global Science Panel in preparation of the Johannesburg Summit on Sustainable Development 2002**

### **Members:**

R. E. Bilborrow, J. Bongaarts, P. DasGupta, B. Entwisle, G. Fischer, B. Garcia, D. J. Hogan, A. Jernelov, Z. Jiang, R. W. Kates, S. Lall, W. Lutz, F. L. MacKellar, P. K. Makinwa-Adebusoye, A. J. McMichael, V. Mishra, N. Myers, N. Nakicenovic, S. Nilsson, B. C. O'Neill, X. Peng, H. B. Presser, N. Sadik, W. C. Sanderson, G. Sen, M. Shah, M. F. Strong, B. Torrey, D. van de Kaa, H. J. A. van Ginkel, B. Yeoh, and H. Zurayk. 2002.

*If we do not put the human population at the core of the sustainable development agenda, our efforts to improve human well-being and preserve the quality of the environment will fail. The Johannesburg Summit must heed the first principle of the 1992 Rio Declaration – that “human beings are at the centre of concern for sustainable development” – by taking full account of how population and society interact with the natural environment.*

Sustainable development aims at improving human well-being, particularly by alleviating poverty, increasing gender equality, and improving health, human resources, and stewardship of the natural environment. Because demographic factors are closely linked to these goals, strategies that consider population have a better chance of success.

The International Conference on Population and Development in Cairo in 1994 recognized that population policy should be oriented toward improving social conditions and expanding choices for individuals. The key recognition was that

focusing on people – their rights, capabilities, and opportunities – would have multiple benefits for individuals, for society, and for their sustainable relationship with the environment. Hence in Johannesburg, consideration of sustainable development policies must include population growth and distribution, mobility, differential vulnerability, and the empowerment of the people, especially women.

## A demographically diverse world

We live in a world of unprecedented demographic change. Global population increased by 2 billion during the last quarter of the 20th century, reaching 6 billion in 2000. Despite declining fertility rates, population is expected to increase by another 2 billion during the first decades of the 21st century. Nearly all of this growth will occur in developing countries and will be concentrated among the poorest communities and in urban areas.

We also live in a world of unprecedented demographic diversity. Traditional demographic groupings of countries are breaking down. Over the next 25 years increases in population in sub-Saharan Africa, South Asia, and the Middle East are expected to be larger than in the past quarter century, and growth in North America will be substantial as well. In contrast, in most European countries and in East Asia, population growth has slowed or stopped, and rapid population aging has become a serious concern. Mortality also varies widely across regions, with the burden of infectious disease, including HIV/AIDS, being particularly heavy in Africa. In addition, levels of mobility, urbanization, and education differ substantially among and within regions, affecting economic and health outlooks.

This diversity presents different challenges requiring differentiated responses. The most urgent of these occur where rapid population growth, high levels of poverty, and environmental degradation coincide.

## Population matters to development and environment

Research has shown that changes in population growth, age structure, and spatial distribution interact closely with the environment and with development. Rapid population growth has exacerbated freshwater depletion, climate change, biodiversity loss, depletion of fisheries and other coastal resources, and degradation of agricultural lands. Fertility decline in high-fertility countries, by slowing population growth, can make many environmental problems easier to solve. It can also have important economic benefits by reducing the number of children relative to the working-age population, and creating a unique opportunity to increase investments in health, education, infrastructure, and environmental protection.

In high-income countries, the environmental impact of population growth and distribution must be considered jointly with high consumption rates. Even in countries where little growth is envisioned, unsustainable patterns of consumption

have global implications for the environment and human well-being, and must be addressed with appropriate policies.

Before the end of this decade, the majority of the world's population will live in urban areas. Urbanization can improve people's access to education, health, and other services. But it also creates environmental health hazards, such as water and air pollution, and by increasing consumption levels, can have environmental impacts in distant rural areas as well.

The mobility and spatial distribution of populations, especially at local and regional scales, is a significant determinant of sustainability. Where the population lives and works relative to the location of natural resources affects environmental quality. The expansion of the agricultural frontier and other human activity is encroaching on fragile ecosystems in many parts of the world.

### Policy must account for differential vulnerability within populations

Deteriorating environmental conditions and extreme events do not affect all countries, populations, or households in the same way. Even within a household, the effects may differ by age and gender. Consideration of vulnerability must therefore focus not only on countries but also on the most vulnerable segments of the population within countries.

Many factors contribute to vulnerability, including poverty, poor health, low levels of education, gender inequality, lack of access to resources and services, and unfavorable geographic location. Populations that are socially disadvantaged or lack political voice are also at greater risk. Particularly vulnerable populations include the poorest, least empowered segments, especially women and children. Vulnerable populations have limited capacity to protect themselves from current and future environmental hazards, such as polluted air and water and catastrophes, and the adverse consequences of large-scale environmental change, such as land degradation, biodiversity loss, and climate change.

Vulnerability can be reduced by promoting empowerment, investing in human resources, and fostering participation in public affairs and decision-making.

### Empowerment through education and reproductive health benefits people and the environment

Two policies have multiple benefits for individual welfare, for social and economic development, and for the environment. One is investment in voluntary family planning and reproductive health programs. Since research has shown that many women in high fertility countries have more children than they actually want, these programs allow couples to have the number of children they desire, thus reducing unwanted childbearing and lowering fertility rates. Lower fertility leads to slower

population growth, allowing more time for coping with the adverse effects of that growth, and easing stress on the environment.

The other top policy priority is education. Education enhances individual choice, fosters women's empowerment, and improves gender equality. Better-educated people are in better health, and often contribute to greater environmental awareness. The increased economic productivity and technological advance that education induces can lead to less pollution-intensive production. It may also reduce vulnerability to environmental change by facilitating access to information and the means to protect oneself. Furthermore, in countries with rapid population growth, the fertility-depressing effect of education contributes to reducing the scale of human impact on the environment.

These two policies – education and reproductive health programs – are in high demand by individuals almost universally because their multiple benefits are clear. They also empower individuals to make informed choices. Efforts to achieve sustainable development should give them the highest priority.

## Strengthening interdisciplinary training and research

To facilitate the joint consideration of population, development, and environment, more interdisciplinary research and education addressing these topics is necessary at all levels. The different disciplines should also conduct their studies in ways that make the results mutually accessible. Training about the nature of these interactions is a priority issue for the policy-making community, media, and scientists.

## 2 Demographic challenges for sustainable development

### The Laxenburg declaration on population and sustainable development

#### **Members:**

W. Lutz, W. Butz, M. Castro, P. DasGupta, P. Demeny, I. Ehrlich, S. Giorguli, D. Habte, A. C. Hayes, L. Jiang, D. King, D. Kotte, M. Lees, P. Makinwa-Adebusoye, G. McGranahan, V. Mishra, M. Montgomery, K. Riahi, S. Scherbov, P. Xizhe, B. Yeoh. 2011.

Statement of a Global Expert Panel (October 2011).

*Human beings are at the centre of concern for sustainable development.*

This was the view expressed in the 1992 Rio Declaration on Environment and Development, which we reaffirm. Therefore, consideration of the changing numbers, characteristics, and distributions of human beings on the planet must be at the core of any serious analysis of challenges and opportunities for sustainable development.

Any analysis of sustainable development must recognize the differences among people in terms of their impacts on the environment and their vulnerabilities to risk, which depend on their age, gender, location, and other socioeconomic characteristics. New evidence indicates that human capital, enhanced through education and health (including reproductive health), can make a substantial difference in people's contributions to sustainable development and their capacity to adapt to environmental change.

Only by accounting for and addressing demographic factors will it be possible to achieve sustainable development. Investments in human capital should be emphasized alongside other measures to promote sustainable development, a 'green economy', and adaptation to environmental change.

## The current demographic divide

Over the last half century, world population has more than doubled, from 3 billion in 1960 to 7 billion today. Because of the young age structure in low- and middle-income countries, continuing population growth in the coming decades is a virtual certainty, even in the unlikely event that birth rates fall precipitously in these countries. Consequently, the world's population will very likely be between 8 and 11 billion by 2050, depending primarily on the speed of future fertility decline. But this population growth will not occur evenly across the globe.

Indeed, traditional demographic groupings have broken down. While the population of sub-Saharan Africa is likely to increase by a factor of three to five over the course of this century, Eastern Europe is already on a declining trajectory. China, due to its very rapid recent fertility decline, is likely to reach a peak population in 10–20 years and then enter an era of population decline. Along with China and other developing countries with low fertility, the industrialized countries face the challenges of population aging and changing living arrangements, including the adjustments that need to be made to social security and health care systems. Meanwhile, life expectancies are on the rise in most countries, even those worst hit by HIV/AIDS. Mortality decline is a long-term trend that research indicates will likely continue, both in countries where people now live the longest and in those where life expectancy is much shorter. Levels of mobility, urbanization, and education also differ substantially among and within regions, adding significant dimensions to the demographic divide.

Nearly all of the world's population growth will occur in the cities and towns of today's poor countries, primarily because of rural-to-urban migration combined with high national population growth. Meanwhile, the populations of many low-fertility countries will be declining. The demographic divide between rapidly growing urban populations in poor countries and slow growth or decline in industrialized countries is historically unprecedented.

These demographic differences fundamentally affect people's contribution to environmental burdens, their ability to participate in sustainable development, and

their adaptability to a changing environment. Different demographic challenges require differentiated responses. The developmental challenges are by far the most significant where population growth and poverty are the highest, education is the lowest, and vulnerabilities to environmental change are the greatest. Negative impacts on the environment tend to be the most significant where people's material consumption levels are at their highest.

## Demographic factors in the transition to a green economy

Efforts to meet the legitimate needs and aspirations of rapidly growing populations in developing countries and to reduce poverty will entail higher consumption and production; if inappropriately managed, these efforts will further increase pressure on the natural environment. As well as increasing carbon emissions through fossil fuel combustion with current technologies, population growth also often contributes to depletion and degradation of essential life-support systems, including deforestation, depletion of aquatic resources, air pollution, loss of biodiversity, and degradation of agricultural lands. It is important to reduce such negative impacts on the environment and the global climate in order to derive multiple benefits for local as well as global sustainable development. Fertility decline in high-fertility countries, by slowing population growth, makes many environmental problems easier to solve and development easier to achieve. Some of these benefits operate through the changing age structure that declining fertility induces. If the number of children relative to the working-age population is reduced, the demographic dependency ratio falls, creating an opportunity to increase investments in health, education, infrastructure, and environmental protection. It has been shown empirically that this demographic bonus, if properly utilized, can help propel countries out of poverty. Research in the last decade suggests that education increases people's life opportunities in general, greatly contributes to technological and social innovation, and creates the mental flexibility required for a rapid transition to a green economy. This applies to both low- and high-income countries. Hence, the enhancement of human capital from early childhood to old age through formal and informal education and life-long learning is now known to be a decisive policy priority. The majority of the world's population now lives in urban areas, and urbanization is certain to continue. As recent research has affirmed, urbanization often improves people's economic productivity and their access to education, health, and other services. However, urban population growth also presents challenges for urban planning and good governance: challenges that are especially acute in environmentally fragile locations. For the African and Asian countries where urban growth is most rapid, reducing vulnerability will require the urban transition to be achieved without the creation of undue environmental hazards or social inequality.

## Investing in the tide of global youth

A striking demographic challenge is the rapidly increasing tide of young people entering the labor markets of developing countries with high aspirations but limited

opportunities to find productive employment. Globally, there are 1.2 billion young men and women aged 15–24, the typical age for entering the labor market. And there are many more young people to come. In sub-Saharan Africa alone, the population aged 15–24 will likely increase from its current level of 170 million to 360 million by mid-century. With youth unemployment rates already high, assuring proper education and creating jobs for those hundreds of millions of young people are top priorities. If not given the chance for a decent life, these masses of young people without much hope for the future can pose a serious threat to social and political stability. But if they are provided with education and appropriate jobs, the young possess enormous potential for innovation, including the ability to adopt new technologies that accelerate economic progress and speed up the transition to a green economy. With a long life ahead of them, young people are likely to have genuine interest in sustainability because they themselves would experience the repercussions of unsustainable trends. Ages 15–24 are when people marry and begin to have children. Increasing education and employment will have a predictably major impact on fertility decline through postponed marriage and childbearing, thereby reducing future population growth in the developing world. Hence, ensuring appropriate investment in young people—which must begin in early childhood when the seeds of future development are planted—must be an essential component of broader policy packages to promote global sustainable development.

### Differential vulnerability of people must shape appropriate policy

Environmental degradation and climate change do not affect all countries and all geographic regions in the same way. Vulnerability also varies significantly among people living in the same region, according to their socioeconomic circumstances. Even within a household, effects can differ importantly according to age and gender. Policies to reduce vulnerability must therefore focus on the most vulnerable segments of the population within countries and regions. Region-specific or even urban/rural-specific policies alone no longer suffice. Ignoring the more particular demographic dimensions of vulnerability will misdirect the focus of policy and dilute its impacts. The spatial distribution of populations among regions, between village and city, and across cities is a significant dimension of sustainable development. Migration within and between countries has always been an integral part of the human response to changing economic, social, and environmental conditions. This pattern is likely to continue, not only due to increased economic opportunities facilitated by improved information and transport systems and globalization of production and labor markets, but also exacerbated by population displacement and relocation due to environmental degradation and civil conflict. The principal demographic factors that increase vulnerability are poverty, poor health, low levels of education, gender inequality, declining family support for the elderly, and unfavorable geographic location. Populations with these characteristics also often lack a political voice, putting them at even greater risk.

Within these populations, women and children are usually the poorest and least empowered. Vulnerability is reduced and adaptive capacity enhanced where there is investment in poor people's human capital, particularly their education, and most particularly the education of girls and women, whose importance in these adoptive and adaptive processes is now known to be especially great. Policies that do not include features focused on these people will likely not succeed.

## Five action implications for sustainable development

1. Recognize that the numbers, characteristics, and behaviors of people are at the heart of sustainable development challenges and of their solutions.
2. Identify sub-populations that contribute most to environmental degradation and those that are most vulnerable to its consequences. In poor countries especially, these sub-populations are readily identifiable according to age, gender, level of education, place of residence, and standard of living.
3. Devise sustainable development policies to treat these sub-populations differently and appropriately, according to their demographic and behavioral characteristics.
4. Facilitate the inevitable trend of increasing urbanization in ways that ensure that environmental hazards and vulnerabilities are under control.
5. Invest in human capital—people's education and health, including reproductive health—to slow population growth, accelerate the transition to green technologies, and improve people's adaptive capacity to environmental change.

## References

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