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Column: World View

Dubious assumptions prime population bomb

The United Nations says there could be 10 billion people on Earth by the end of the century. Fred Pearce finds problems in its analysis.

Fred Pearce

The latest global population projections, published by the United Nations last week, say that the world will be awash with 10.1 billion people by 2100, a billion more than previously supposed. Already, there is talk again of a ticking population time bomb.

But a closer look at the assumptions behind this scenario shows it to be perverse and contradictory. In fact, it looks more like a political construct than a scientific analysis.

The heart of the problem is this: the new UN estimates record that both world population and global fertility rates are currently slightly lower than presumed when the last projections were made two years ago. Yet, they project significantly higher growth rates than those estimated two years ago.

This paradox is created by a seemingly arbitrary change in assumptions about future fertility that requires a proper explanation. And quickly. Plans to cope with an increasing array of global challenges — not least climate change and food policy — are predicated on the UN's demographic projections. The past few years have seen a plethora of scientific papers asking 'can the world feed 9 billion?' It won't be long before the work is revisited to see whether we can feed 10 billion.

We are doing quite well at defusing the population bomb. Women today, on average, have half as many babies as their grandmothers did. World fertility has fallen from 4.9 children per woman in the early 1960s to an expected 2.45 between 2010 and 2015, a projection revised down from the 2.49 figure of two years ago.

The trend is near-universal. With childhood diseases such as measles and tetanus in retreat, for the first time in history most children get to grow up. Population quadrupled in the past century as this happened. But now women are learning to adjust to falling infant mortality and having

fewer children. Other factors include urbanization. On a peasant farm in Africa, young children are an economic asset, minding the goats or fetching and carrying. Once families move to the cities, children are a liability, requiring years of education to get a job. Fertility rates are much lower in cities.

Falling fertility doesn't instantly translate into fewer babies. That is because of the huge demographic bulge of twentieth-century baby boomers — now adult and fertile. But as they age, and if fertility rates continue to fall, population growth must subside and could go into decline.

The key questions are how fast and how far fertility will fall. As the UN notes, "small variations in fertility can produce major differences in the size of populations over the long run". That is why the assumptions built into the new projections are so crucial.

The UN's previous 'medium variant' projection, published in 2008, concluded that world population would rise from the present 7 billion and peak in mid-century at around the 9.15 billion expected in 2050. The new projection finds no peak. Instead, world population reaches 9.3 billion in 2050 and 10.1 billion in 2100, with further growth still in the works.

The UN has yet to publish its detailed reasoning, but a collection of frequently asked questions issued alongside the new projections says that most of the difference is due to an upward revision of its fertility forecasts — a revision unrelated to current trends.

There is history to this. For many years, demographers reckoned that world fertility was headed inexorably for the rich-world replacement level of about 2.1 children per woman. But in the past 30 years, this has looked increasingly like too high a number. In almost all developed countries, fertility rates have fallen to well below replacement levels. Despite a minor bounce-back in recent years, most of Europe remains below 1.5.

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With much of Asia and Latin America on the same path, almost a decade ago the UN rethought the 2.1 end point. In 2003, its UN population division, under then-director Joseph Chamie, decided that its 'medium variant' projection should instead assume convergence at 1.85. It was a compromise, Chamie told me. Some argued for 1.6, whereas others wanted to retain 2.1. The latter group, he said, feared that a low estimate would send the 'wrong message' that our population worries were over.

The projections made in 2008 retained the figure of 1.85, but it has now reverted to 2.1 — the predominant reason for the leap from 9 billion to 10 billion. The assumption now is that countries with higher fertility rates will fall to the 2.1 figure and not below, while those below will rise to reach it.

Is this realistic? As Joel Cohen, a demographer at Columbia University in New York, put it in 2002: "No case is yet known of a population with fertility above replacement level that converged to replacement level and then stayed there." That remains the case. Chamie this week said he had seen "no compelling evidence" to justify a return to the 2.1 figure.

The UN boasts that its new projections have incorporated a more probabilistic approach into the model. That is good. But, as the UN makes clear, the model "incorporated the additional assumption that, over the long run, replacement-level fertility would be reached". In other

words, the crucial new fertility end point of 2.1 did not emerge from the new probabilistic analysis. It was imposed on it, and the UN should explain why.

Fred Pearce, environment consultant for New Scientist, is author of Peoplequake (Eden Project Books, 2010) and is speaking at a conference on population footprints at University College London on 25–26 May (http://www.populationfootprints.org). e-mail: pearcefred@hotmail.com