



# Are More People Necessarily a Problem?

As world population surges, debate surrounds studies suggesting that population growth can have economic and environmental benefits

**Intense shift.** Some researchers argue that population growth made possible land use and farm productivity improvements in Kenya's Machakos region.

bers alone don't determine the consequences of population growth, and that a complex mix of culture, socioeconomic, and biology also plays a role. The findings are also renewing interest in the work of a pioneering Danish economist who challenged conventional notions about the dire consequences of more people—and are raising hopes that even the poorest, fastest-growing regions could, with the right mix of policies, ride out the global population tsunami.

Along with this cautious optimism, however, come profound doubts. Some experts wonder whether the “Machakos miracle” can be replicated elsewhere or sustained in regions experiencing unprecedented population growth. “Although local successes offer hope, it is dangerous to generalize,” warns Jules Siedenberg of the University of East Anglia in Norwich, U.K. “We need to be sure we are drawing the right lessons, since people's lives are at stake.”

## Doomsters and boomsters

The question of whether population growth poses a dire threat or a potential opportunity is an old one. Not long after Thomas Robert Malthus made his now-famous 1798 prediction that more people would doom us to “gigantic inevitable famine,” an opposing camp of population “boomsters” emerged, highlighting the potential benefits of reproduction. More people, they argued, meant more labor, technological innovation, and economic growth. Ever since, the rhetorical doomster-versus-boomster battle lines have barely shifted: Today,

for instance, even as many experts warn that more people threaten to exacerbate hunger, poverty, and environmental problems, others respond by noting that nations with some of the world's highest population densities—such as Singapore and the Netherlands—also have some of the world's strongest economies and environmental commitments.

One recurring flashpoint in the debate has been the ultimate impact of population growth in the world's “drylands,” the driest and often poorest farming areas of Africa, Asia, and Latin America. They hold nearly one-third of Earth's people, and some of these populations, especially in Africa, are grow-

IN 1937, A BUREAUCRAT SERVING IN THE British Empire's Kenya Colony penned an alarming memo to his bosses about conditions in the Machakos Reserve, a hilly, drought-prone farming region 50 kilometers south of Nairobi. “Benevolent British rule” had encouraged the explosive “multiplication” of the “natives,” he reported, leading to massive environmental degradation. “Every phase of misuse of land is vividly and poignantly displayed in this Reserve, the inhabitants of which are rapidly drifting to a state of hopeless and miserable poverty and their land to a parching desert of rocks, stones and sand.” The apocalyptic warning came as the region's population approached 250,000.

Today, more than 1.5 million people call Machakos home. Rather than a cautionary example of the perils of overpopulation, however, for some experts Machakos has become a symbol of something very different: the idea that rapid human population growth, even in some of Earth's driest, most challenging environments, is not necessarily a recipe for disaster—and can even bring benefits. They argue that, over the past 75 years, population growth in Machakos

and nearby Nairobi has triggered social and economic shifts that have made it possible for residents to regreen once-barren hillsides, reinvigorate failing soils, reduce birth rates, and increase crop production and incomes. “A landscape that was once declared good for nothing is now like a garden when the rain falls,” says Michael Mortimore, a geographer with Drylands Research, a United Kingdom-based nonprofit organization, who helped document the turnaround in *More People, Less Erosion*, a 1994 study that is still influential—and controversial—today. “Too many people still have the simplistic notion that too many people is a problem,” he says. “What happened in Machakos challenges that pessimism.”

And Machakos isn't alone. In other hard-pressed regions, researchers are finding that even explosive population growth can be accompanied by some surprising trends—such as increased tree cover, more productive farms and economies, and improved well-being. Such results are adding new fuel to long-standing arguments that sheer num-



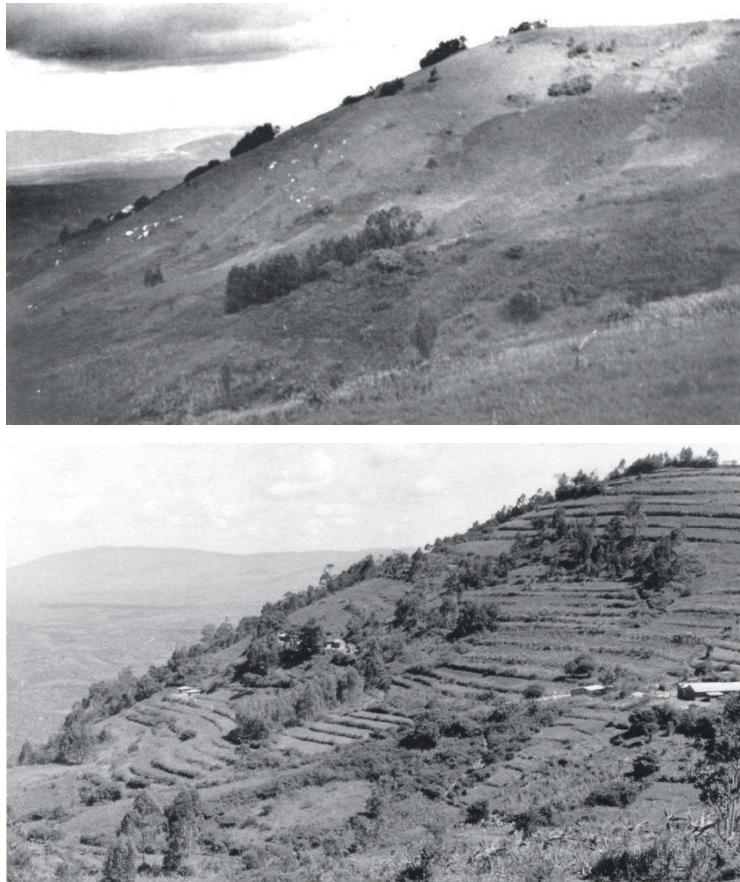
Video featuring author David Malakoff.  
[www.scim.ag/nY4t8K](http://www.scim.ag/nY4t8K)

ing rapidly at 2% to 3% per year. Many see crisis looming in those numbers for people and the environment. Others, however, see some hope for a transition to more sustainable livelihoods and cite Ester Boserup, a Danish economist who died in 1999, as one source of their optimism.

In 1965, the then-little-known Boserup, who spent most of her career consulting for international development institutions, published a slim volume titled *The Conditions of Agricultural Growth: The Economics of Agrarian Change under Population Pressure*. It examined the history of subsistence farming and offered a theory that essentially turned Malthus upside down. Instead of rising population density leading to barren fields and starvation, Boserup suggested it could naturally trigger “intensification”: the use of new technologies and more labor to get bigger harvests from less land. “The idea was that people weren’t just mouths to feed but

also brains that could think and hands and legs that could work very hard,” Mortimore says. So, for instance, a farmer who once might have been able to weed a field just once during the growing season could now justify using more abundant labor to weed it three times, increasing yields and maybe even providing the income needed to dig an irrigation ditch or haul in animal manure to restore soil fertility.

Boserup’s work carried some provocative implications. One was that “underpopulation,” not overpopulation, was a barrier to development. Another was that, contrary to the conventional wisdom, dry areas might not have a fixed “carrying capacity”; instead, with more labor, they might be able to sustain more people over time and thus hasten the “demographic transition” to lower birth rates. Finally, her work suggested that dryland farmers, given the right incentives, could be counted on to invest in and take care of their land, solving, rather than aggravating, natural resource damage. Still, many were skeptical: Was this another beautiful theory destined to be destroyed by ugly facts?



**Rebirth.** By the 1990s (*bottom*), extra labor had enabled Machakos farmers to terrace and revegetate hillsides that were barren and eroded in the 1930s (*top*).

### Malthus controverted?

In the 1990s, such questions prompted the World Bank and other institutions to launch a range of studies, including the one that enabled a large team led by Mortimore and Mary Tiffen of the U.K.’s Overseas Development Institute and Francis Gichuki of the University of Nairobi, to spend 2 years dissecting what had transpired in Machakos between 1930 and 1990, as its population roughly quadrupled. Drawing on a trove of data—including historical documents and photos, field surveys of everything from soil fertility to household finances, and numerous interviews—the team charted the demographic and socioeconomic forces that had buffeted Machakos households and how they responded. The researchers documented how, for example, farmers built terraces to control erosion, stepped up their use of animal fertilizers, and began selling food to burgeoning markets in nearby Nairobi. They also examined the growing influence of women, the impact of the end of colonialism, and how local

men who went off to fight in World War II brought new ideas back home. In 1994, the researchers distilled their conclusions into a detailed, nuanced, and often provocative 300-page compendium with a bold, counterintuitive bottom line: *More People, Less Erosion*.

The book “hit the policy world with a storm,” the Association of American Geographers noted in giving Mortimore a major award in 2008. In particular, the study “controverted” Malthus and backed Boserup, concluding that “increasing population density has had positive effects.” In Machakos, more people had provided both the labor and the “necessity” for a transition to intensification and better land stewardship. Rising populations had also created a rich social milieu for innovation, information-sharing, and political involvement. Meanwhile, in nearby Nairobi, more people had helped create demand for the farm products grown

in Machakos and also seasonal jobs for young people from the region. This provided Machakos with income for further, capital-intensive improvements. Greater economic stability also led families to have fewer children and invest more in education. Politicians had helped out by mostly getting out of the way and letting markets create the right incentives for farmers. What’s more, the authors argued, “Machakos is not unique.” Other places in Kenya, and communities in Nigeria and Indonesia, had also experienced restoration miracles despite growing populations, they noted in a 1994 follow-up paper in the journal *World Development*. It was a message, Mortimore says, “very out of step with the doom and gloom about population at the time.”

Nearly 2 decades later, *More People, Less Erosion* has become an important—and contentious—scholarly classic. Recently, the head of the United Nations agency that deals with desertification paid homage to the study in a speech, hailing a promising trend of “more people, more trees, and less erosion” in some drylands. Critics, however, have

raised questions about the study's methods and conclusions and argued that it ignored or downplayed some issues, such as a coffee-planting boom in the 1970s that may have provided a one-time economic jolt. Although overall incomes are up and birth rates are now down in Machakos, some experts note that it still doesn't grow enough food to feed its population. And the poorest families may not have benefited from the "miracle," which appears to have favored families that already had land and other assets, British scholar John Murton concluded in a 1999 study published in *The Geographical Journal*. Conservationists, meanwhile, note that intensification can actually worsen problems like biodiversity loss and water pollution. Researchers have also added to the debate over whether Machakos is an exception or the rule in a string of technical papers. They have titles such as "Fewer people, less erosion: The twentieth century in southern Bolivia," and "More people, more soil degradation: The Malawi experience."

East Anglia's Seidenburg, for one, believes it is a mistake to assume that the Boserupian processes seen in Machakos are "an automatic result" of population growth. The study showed "solid outcomes" for one region but has perpetuated "unhelpful hyperbole," he argued in a 2006 critique in *Development Policy Review*. The problem, he says, is that there are countless instances where fast-growing farming communities have not been innovative enough and are suffering as a result. Some farmers lack the market demand created by a nearby city, whereas others lack access to capital, fertilizers, or information. He fears that "focusing on simple take-home messages, like 'farmers will figure it out,' distracts from addressing the barriers that often prevent scaling-up local successes."

Mortimore sees merit in some of the critiques and agrees that there is no single recipe for success. And many drylands experts believe that more people need not mean catastrophe. "The trick is getting good policy that addresses local conditions and recognizes the needs and knowledge of local people," Mortimore says. "Local 'win-win' outcomes are clearly possible," Siedenburg says.

**New synthesis**

At the same time, many scholars are developing a view of population impacts that fuses Malthusian and Boserupian perspectives. And, like realtors, they say one key factor in predicting consequences is location, location, location. "The dynamics play out differently, depending on where you are," says Erle Ellis of the University of Mary-

In some parts of Africa, meanwhile, researchers are documenting a notable, Machakos-like "regreening" of arid areas with fast-growing populations. Studies by geographer Chris Reij of the University of Amsterdam in the Netherlands and others have shown that in the Sahel, the tree- and shrub-growing trend has been boosted by policy changes, such as giving farmers ownership of trees that grow on their land and some technical assistance. There's some evidence that the extra greenery is helping to make poor farm communities more resilient to droughts and economic setbacks, but the long-term outlook remains at best unclear.

In the forest frontiers of South and Central America, researchers have found both Malthusian and Boserupian forces at work in deforestation. Depending on local circumstances, families faced with growing population densities have responded by both migrating to clear new farms in forested areas, the agricultural "extensification" predicted by Malthus, and intensified land use à la Boserup, a team led by David Carr of the University of California, Santa Barbara, reported in a 2009 study in *Population and Development*. Paradoxically, the result is that areas with relatively low population densities can have much higher deforestation rates than those with higher densities.

What's needed now, Carr's team argues, are careful, Machakos-like studies that "tease out the effects" of changing demographics in remote forest frontiers. Other research has found that a farmer's age, gender, and land tenure, for instance, can affect his or her willingness to put capital and labor into the land, with older male farmers sometimes deciding to forgo improvements. Understanding such nuances could help forge better forest-protection and land-use policies, experts say. And Carr and his colleagues predict that new studies "will surely test" what they say has become a Boserupian "orthodoxy of population density leading to agricultural intensification." If so, it will open a new chapter in the long and rich debate over how population growth affects the planet, and when and where more people are a problem. Maybe the book could be titled *Less People, More Deforestation*.

**—DAVID MALAKOFF**

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**Fruits of labor.** Machakos markets are now a source of produce for nearby Nairobi and surrounding areas.

land, Baltimore County. His own studies in China of areas that have been farmed for thousands of years, for instance, taught him that "Boserup was right." Intensification has supported extensive population growth and ultimately urbanization, which has led to the abandonment and revegetation of less fertile lands (a process experts call "land release"). But the trend "doesn't necessarily mean life is easier," he cautions. "People are working harder than ever," as Boserup predicted. And the specter of Malthus looms over China's coercive one-child policy—which implicitly recognizes the downside of population growth—and in the nation's growing environmental problems.