The World -- People and Pollution; A Greener Globe, Maybe

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WITH all the hand-wringing about the economic perils of falling populations, and the prospect of a spreading demographic shift from explosion to implosion, there could be one beneficiary: the environment.

For decades, the rise in human numbers has been seen as the chief force threatening rain forests, depleting fisheries, choking the air and polluting the waters. So would an end to humanity's growth spurt make possible a not-too-diminished world with enough room for some wild things, with reasonably breathable air and drinkable water, with a livable climate?

Many demographers, economists and ecologists are guardedly, often very guardedly, optimistic. On the plus side, it is becoming clear that the heedless polluting that accompanied 20th-century industrialization is unlikely to be repeated by today's industrializing countries. Globalization, often portrayed as an environmental villain, may help, some experts say, because multinational corporations, setting up factories in poor countries, tend to set higher environmental standards, prompting local communities to demand similar standards for home-grown industries. China, far and away the most important of the developing economies, is already pushing to reduce sooty emissions.

Increasing urbanization should also help the environment. Almost all of the extra three billion or so people expected by midcentury will live in or around cities, according to studies by the United Nations and the National Academy of Sciences. City dwellers tend to use energy and other resources more efficiently, and have less direct impact on untrammeled landscapes like forests.

Much depends, however, on how those urbanites live, and think. "An end to growing population pressure in rural areas could be good for protection of the environment," said Dr. Joel E. Cohen, the director of the Laboratory of Populations of Columbia and Rockefeller Universities. "But only if the people who live in the cities understand that it’s of interest to preserve watersheds, agricultural lands and wildlife areas."

On the minus side, some benefits of urbanization could be offset by a drop in the number of people per household. That means more households, more urban and suburban sprawl, and less efficient use of resources. Last year, Jianguo R. Liu at Michigan State, Paul R. Ehrlich at Stanford and other experts estimated in the journal Nature that by 2015, biological "hot spots" -- regions where human activity threatens habitat rich in rare species, as in South Florida and China’s panda preserves -- would have 233 million extra households because of declining numbers of people per dwelling.
Also on the minus side: Even if the human population begins to decline after 2050, global warming, which is caused by the buildup in the atmosphere of so-called greenhouse gases like carbon dioxide, is projected to cause major disruptions in the environment. Recent computer simulations, based on the current growth in energy use, estimate a 5 degree rise in the earth's average temperature in this century.

Without reduced use of current fuels, according to many scientists, the world population at midcentury -- 50 percent larger than today's but requiring three times as much energy -- will not be able to avert melting polar ice, shifting drought and flood patterns, and sea levels possibly rising a yard or more.

The environmental future depends on human behavior, not just human numbers. Clearly, it will be far easier to accommodate nine billion people than the 12 billion once anticipated. But not, many experts say, if all of them consume materials, energy and other goods at the rate Americans do now.

Some projections, however, offer some reason for optimism. In 2002, Paul E. Waggoner of the Connecticut Agricultural Experiment Station and Jesse H. Ausubel at Rockefeller University calculated that a 2 to 3 percent annual improvement in some combination of the efficiency of technologies used to make things or a decline in the waste produced in consuming things could offset the environmental damage from having 50 percent more people 50 years from now.

But in the end, some scientists argue, humanity cannot sustain the quality of the environment until it thinks of itself as part of, not separate from, the natural world.

"That may seem like pie in the sky," says Daniel B. Botkin, an ecologist and author of "Discordant Harmonies: A New Ecology for the 21st Century," but in the crowded, urbanizing world to come, he concludes, such an understanding will be essential.