On a self-destructive mission

Anthropogenic environment change now threatens to wipe off the human race

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The earth's geological past has seen violent climate shifts. The extinction of the dinosaurs, the Neolithic Revolution that followed the retreat of the last ice age, and the sudden demise of ancient civilisations have been linked to climate change. While mankind has been altering the planetary environment ever since the Neolithic Revolution, it is only after the Industrial Revolution that it has attained the weight of numbers and technological capacity to majorly alter the climate through its own activities.

The origins of the anthropogenic environment change debate can perhaps be traced back to the 18th century English economist Thomas Malthus, who predicted that unconstrained population growth would outstrip man's ability to feed itself. In case the carrying capacity was exceeded, war, pestilence and famine would descend to wipe off the surplus population.

Malthus has been repeatedly proved wrong by history, as cereal production outstripped population growth on account of continuing technological progress, and mortality actually declined sharply through improvements in public health. Indeed, the Malthusian perspective was turned on its head by Esther Boserup, who postulated that population pressure acted as a catalyst for technological progress. As a result, the global population, which had inched its way upwards since Neolithic times to some half a billion by 1650, doubled by 1820, and doubled again to touch the two billion mark in 1930. Then the doubling to four billion took only 44 years. Current projections are alarming enough to trigger major environmental concerns regarding the ability of planet earth to sustain such vast numbers.

The neo-Malthusian school continues to have a wide following as it is feared that the speed and rate of population growth, combined with rapid economic advancements and per capita consumption, presage a Malthusian catastrophe that would wipe not just the surplus population but the entire human species through catastrophic climate change.

The Malthus-Boserup paradigms saw population and technology as independent prime movers, virtually glossing over distributional issues that are vital for understanding the way in which population impacts the environment. On the one hand, poverty, in tandem with rapid population increase, pushes poor people to encroach on forests and rely on firewood for fuel, which is a major reason for deforestation, and soil and water quality degradation.

On the other hand, there is an even stronger nexus between affluence and the environment that can be measured by multiplying the total population by the degree of affluence (or per capita consumption) and the level of technology (Ei = P x A x T). While populous, underdeveloped societies affect the environment more by the sheer weight of numbers, the impact of such degradation is mostly local. But it is the less populous but highly developed affluent societies that have the technological capability to majorly impact the global climate through plunder of the planet's resources.

The link between affluence and environmental change is complicated by the 'environmental Kuznet's curve (EKC)' identified by World Bank studies on Organisation for Economic Cooperation and Development (OECD) countries. This postulates that environmental hazards are an increasing function of GDP when GDP per capita is low, but a decreasing function when GDP per capita is high as environmental consciousness increases. Clearly, technology can be a force for both environmental damage as well as mitigation, although the applicability of EKC to greenhouse gas (GHG) generation is less clear.

The relative weights of population and affluence can be gauged from the following statistics: Between 1850 and 2002, the US, Canada, EU 25, Russia, Germany, Japan, France and the UK contributed 85 per cent of the stock of GHG. Despite the surge in growth in developing countries, the developed world contributed over 50 per cent of global greenhouse emission in 2000, even though it accounted for just about 20 per cent of the population. Moreover, much of the environmental degradation in least developed countries (LDCs) is due to the demand in industrialised countries that leads to a significant transfer of resources via trade flows. Thus, rainforests in Southeast Asia and the Amazon have been destroyed to supply Americans with beef and burgers.

The distribution of world population has already shifted heavily towards poorer countries. Consumption levels of today's poor will increase absolutely, if not relatively to rich countries. The interaction of these two factors can be used to illustrate how consumption and waste generation will increasingly shift to developing countries, greatly increasing their share in global environmental degradation. It is estimated that by 2015, developed and developing country contributions to GHG flows would be about equal.

The convoluted knot tying population, poverty, affluence and technology is perhaps best illustrated by four paradoxes that together constitute a classic catch-22 situation:

(a) At present, the major contribution to global environmental change comes from developed countries where population growth rates are near zero or negative.

(b) There is a close association between poverty and population growth. However, even as poverty generates environmental hazards of its own, such as deforestation, soil degradation, etc., it nevertheless effects economy in resource use. Poor people are not wasteful: per capita emissions of GHG was 3.9 tons of CO_2 equivalent in China and just 1.9 in India in 2000, compared to 24.5 in the US.

(c) While the process of economic development may mitigate under-developmental environmental hazards and stabilise the population, replicating the consumption behaviour of developed societies would only exacerbate the environmental problem. Potentially, therefore, the populous 'South' could contribute much more to future global environmental change than the North if we were to go by the equation P x A x T.

(d) By the time major developing countries cross the inflexion point on EKC, the stock of GHG may be too large to save the human species.

There is a fear that if vast areas of the developing world escape from the net of poverty and population explosion, they would simply end up adopting the wasteful lifestyles of the developed world, while simultaneously stabilising the global population at twice the present level. It is unlikely that the planet would be able to sustain such high levels of aggregate consumption.

The inescapable conclusion is to redefine 'development' in such a manner that the developed world adopts sustainable lifestyles which could be replicated by the developing world. This is perhaps the essence of what is sometimes termed the 'third (great) revolution' in man's evolutionary history. While the Neolithic and Industrial revolutions facilitated quantum demographic jumps through technological breakthroughs, the ultimate outcome in both cases was a quantum leap in aggregate consumption. What is required now is an attitudinal change to use technology to limit aggregate consumption to environmentally sustainable levels.

(The writer is a civil servant. The views expressed are his own)