

# India: looking ahead to one and a half billion people

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India's population passed one billion in 1999 and is growing by nearly 1.8% annually. The United Nations' "medium" projection has the country's population exceeding 1.5 billion in 2050 and reaching over 1.6 billion before it stabilises.<sup>1 2</sup> The assumptions underlying the projections can be questioned: fertility is certainly falling and this may accelerate, and the course of mortality may not be smooth. But clearly substantial growth lies ahead, and a population of 1.5 billion at some point in the next century is plausible.

One might ask how can India possibly cope? But India's population has almost trebled in the past 50 years. Perhaps a more useful question is whether the future will resemble the past. Will adding half a billion in the next 50 years be harder to manage than adding just over 650 million in the past 50?

## Methods

This article is based on background research for a three year research project on population issues in India which we have just started with other colleagues. We have used electronic literature searches and also drawn on our past research and publications.

## Is the growth sustainable?

The past five decades of population growth in India were accompanied by considerable progress. Living standards and life expectancy rose; the proportion of poor people fell from over 50% to just over 30%, although the actual numbers virtually doubled.<sup>3</sup> Fertility fell from over 6 children per couple to about 3.2 today.<sup>4</sup> The economy grew and diversified. Food production more than kept pace with population growth—in fact India moved from frequent food crises and dependence on imports to self sufficiency. But India's environment worsened greatly in this period, and looking ahead inevitably requires examining the links between population growth and natural resources. There must also be concerns about what will happen to the quality of life: how will the huge additions to the labour force be employed; how will the additional numbers of children be educated, and the old looked after; what will happen to health, housing, and urban amenities, etc.

In general it is hard to avoid the conclusion that the progress made in the past 50 years would have been greater had India's population grown more slowly. But it is difficult to get the argument right. Many effects attributed to population growth are caused by other things. Probably the soundest way to understand the role of population is to treat it and its age distribution as long term underlying factors, influencing the scale and composition of demand for goods, services, and resources as well as the supply of labour. How demands are met, and how useful more labour is, are functions of innumerable influences, including technology, markets (or lack of markets), social structure and social conditions, politics, and institutions.

## Summary points

India's population has risen by 650 million in the past 50 years and could rise to 1.5 billion in the next century

Many of India's problems are due to social and economic conditions and policy failure rather than to rises in population

More environmentally friendly food production, more efficient use of water, and reduced pollution are urgently needed and for the most part affordable

The fertility decline needs to be accelerated by improving literacy and child survival and extending family planning services; there is no case for draconian measures

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A key question is the macroeconomic role of population itself. In the past few years, increasing numbers of studies have found that population growth can have a negative effect on savings and capital formation,<sup>5</sup> and even on the incidence of poverty.<sup>6</sup> Future fertility decline and associated changes in age composition may generate higher savings and growth and reduce poverty.

## Health and education

High fertility itself contributes to mortality, given the high rates of maternal mortality (570 per 100 000 live births in 1990<sup>7</sup>) and the negative health and nutritional effects of large families.<sup>8</sup> Population growth also dilutes health services and their infrastructure; if the population grew more slowly, it would be easier to raise per capita expenditure and improve quality. Nevertheless, many of India's health problems arise from policy failings and the difficulty of extending services to its 3700 urban centres and 600 000 villages in the context of widespread poverty, malnutrition, and poor hygiene and sanitation. Infant mortality fell from 225-250 per 1000 in the 1940s to 72 in 1997, but is 45 in urban areas. Similarly, average life expectancy is now about 63 years, compared with 32 in the 1940s, but is 6.5 years higher in urban than in rural areas.<sup>4 9</sup>

India has had some success in controlling communicable disease: smallpox and guinea worm have been eradicated, and polio may be in the next two years. But malaria is still a major threat—the successful control regimen of the 1950s was allowed to weaken too early,<sup>10</sup> as in many other countries, and insecticide resistant mosquitoes and chloroquine resistant strains of the disease are prevalent. Annual deaths from tuberculosis are estimated at 0.5 million, and AIDS deaths are expected to rise to a similar magnitude before long.<sup>11</sup> (These figures should be set against annual

deaths in excess of 8 million.) Control programmes for these two diseases face familiar difficulties: it is hard to ensure that tuberculosis patients follow the drug regimen, and limitation of the spread of AIDS is hampered by widespread ignorance and the fact that the control programme is still weak.

The "epidemiological transition" is, however, in evidence, with a rising proportion of deaths due to degenerative and cardiovascular disease and cancers. As longevity has increased and fertility fallen, the proportion of elderly people has risen, producing acute needs for geriatric medicine where these trends are most advanced.

The story of education has many parallels with that of health. Growing numbers have made it harder to improve schooling. But India has had a poor outcome even with the low educational expenditures it manages. Mean years of schooling among India's population aged  $\geq 25$  were 3.5 years for men and 2.4 for women in 1992<sup>12</sup>; only two thirds of children aged 6-14 attended school in 1992-3,<sup>13</sup> and a large proportion of those who do attend drop out early or complete without learning a great deal.<sup>14 15</sup> Only just over half the population completes more than four years of education, and the average quality of education is low.

Since health and education are important factors influencing productivity,<sup>16</sup> declining fertility offers prospects of improvement both in the social sectors and in economic growth. It remains to be seen whether the opportunities will be taken.

## Food and water

The population argument is clear in the case of food. If India's population were growing more slowly, there would be less demand for food: about 90% of food demand comes from population growth, 10% from growth in incomes (which also changes the composition of food demand).<sup>17</sup> Increases in food production since the 1950s initially came mainly from increasing the area under cultivation; but in recent decades the increase has been from improved yields. This has been achieved by new seeds, higher chemical application,

more irrigation and credit, and improved farm management but at growing environmental cost.<sup>18</sup>

The environment may pose the greatest challenge for India's future. Can India meet the growing demand for food sustainably? One choice is to export more of other goods and import more food. But for reasons of employment and food security India will probably want to remain broadly self sufficient in food. The key issues are therefore whether new, more environmentally friendly, crop varieties can be developed and whether past environmentally damaging practices can be changed. Some of the difficulties here can be illustrated by considering the supply of water.

If India faces an acute problem anywhere arising from population growth, it is likely to be with water. Availability of fresh water does not change much, although climate change will add some uncertainties.<sup>19</sup> By the middle of the next century, it will be down to some 1400 m<sup>3</sup> per person (simply as a result of population growth), well below the 1700 m<sup>3</sup> per person commonly accepted as the threshold of water scarcity.<sup>20</sup> But current water problems have much to do with policy and practice.

Agriculture takes 80% or more of the nation's fresh water. As water is largely unpriced there is no economic incentive for conservation. Irrigation water is charged for, but at rates which do not allow the major irrigation schemes to pay for essential maintenance. So canal systems are leaky, and a lot of water is simply lost. Some farmers use too much water and end up with waterlogged land; some do not get enough. Where water is scarce, such as in parts of western India, matters have been made much worse by several things. Most of the water used for irrigation comes from tube wells. But until recently development of tube wells was virtually unregulated; those who could afford it dug deeper wells, often emptying their neighbours' shallower ones as water tables dropped. Power and fuel prices have been kept low so that pumping is too cheap, and water is often overpumped. Crops such as sugar, which might not even be grown if water was properly priced, bring farmers high returns. Overall the results have been socially inequitable and environmentally dangerous.<sup>21 22</sup> India's rivers are also highly polluted by agricultural chemicals and dumping of human and industrial wastes.<sup>23</sup>

Urban water presents a similar picture. A commonly used standard of need is 100 litres per person per day. But better off consumers already use over 250 litres a day, while the poor make do with 10 litres or less. Many water users, including the better off with piped household supplies, pay nothing for their water whereas poor people often pay for drinking water supplied by tanker.<sup>24</sup> As India's population grows and becomes more urban, these issues will become more prominent. Pollution with industrial and human waste is rife. Coliform bacteria in the river Jumna have been measured at 75 000/l as it enters Delhi and 3 000 000/l as it leaves.<sup>25</sup> Obviously the availability and quality of water supplies will have an important effect on health.

Clearly with better management and pricing policies, India could have done a lot better and could still solve many of its future problems. As much as 30% of irrigation water has been estimated to be wasted, so great potential exists for more efficient use. New plant varieties requiring less water, shifts to less water inten-



Reduction of water wasted through inefficient irrigation systems will be essential if India is to have enough for its growing population

