

Population Growth and Technological Development

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ABSTRACT

Human history can be viewed as a long series of technological changes. Just a few of the crucial ones are the discovery of the usefulness of fire at least 350 millennia ago, the appearance of food production more than 10 millennia ago, the construction of urban centers more than 5 millennia ago, the invention of mechanized large scale industry a few centuries ago, and the invention of nuclear power a few decades ago. Many of these inventions had important effects on the size and distribution of world population. The use of fire reduced mortality by providing better protection against wild animals and permitted settlement in areas with temperate and cold climates. Many later inventions also helped reduce mortality rates and promoted either decentralization or centralization of population. World population grew from very small numbers at the time when human beings began to use fire to more than four billion today; and the rate of growth accelerated as well, especially in recent centuries. This multiplication of world population would not have been possible without successive technological changes.

GROWTH OF POPULATION

India today possesses about 24% of the total land area of the world but she has to support about 17% of the world population. At the beginning of this century India's population was 236 million and according to 2001 census, the population of India is 1027 million. 2001-2011 census the population of India is 181 million. A study of the growth rate of India.

A study of growth rate of India's population falls into five phases

1891-1921-Stagnant population

1921-1951-Steady growth

1951-1981-Rapid high growth

2001-2011- The population of India has increased by more than 181 million during the decade

GROWTH OF POPULATION IN INDIA (1901-2011)

CENSUS YEAR	POPULATION IN MILLIONS	INCREASE OR DECREASE(IN MILLION)	PERCENTAGE INCREASE OR DECREASE
1891			
1901	236	0.0	0.0
1911	252	+16	+5.7
1921	251	--1	--0.3
(1891-1921)		+15	+0.19
1931	279	+28	+11.0
1941	319	+40	+14.2
1951	361	+42	+13.3
(1921-1951)		+110	+1.22
1961	439	+78	+21.5
1971	548	+109	+24.8
1981	683	+135	+24.7
(1951-1981)		+322	+2.14
1991	844	+161	+23.5
2001	1027	+183	+21.3
2006	1120	+93	+9.0
2011	1210.2	181	

TABLENO 1**POPULATION SIZE AND CHANGES OF TECHNOLOGY**

The interrelationship between population and technological change is a complicated one. Increasing population size may make life easier because there will be more people to share the burden of collective investments. But it may also make life more difficult because the ratio of natural resources to population decreases. At different periods and places one or the other tendency may prevail. In some periods society with a growing population may be motivated to import new technologies by the desire to draw from large collective investment. In other periods, the transmission of important new technologies may be a means to reduce or eliminate the disadvantages of a declining ratio of natural resources to population.

- Energy consumption percapita in kilograms of coal equivalent, representing technological levels in production, construction and transport
- Number of telephones per thousand inhabitants representing levels of communication with in the country
- Average life expectancy at birth, representing health technology and leves and quality of food supply percapita.
- Literacy among persons aged fifteen years and over representing levels of skills and know-how.
- If it is agreed that, although many technologies are unrelated to population size, others are inapplicable or uneconomic in areas with either a small or large population ,the next step is to ask whether it is feasible to draw up the approximate limits for the population size which permits or prevents the use of “population-linked” technologies.

POPULATION AND FOOD SUPPLY

Ever since Malthus wrote his celebrated essay on population attention was focused on the problem of population versus food supply. There is no doubt that percapita cultivated area is gradually on the decline in India between 1921 and 2001, the cultivated area percapita dropped from 1.11 acres to 0.32 acres, indicating a fall of 71 percent. To compensate for this fall in cultivated land-man ratio, it is imperative that efforts be made to raise productivity. The second world war has, I suppose, been one of the greatest tragedies in history so far. It was particularly tragic because, as Sir Winston Churchill has argued, it was avoidable. Yet during that war, and because it had not been avoided, one thing happened which, in retrospect, may perhaps come to be recognized as having been a happy turning point in history. During the second world war, for the first time, a political organization, acting for all mankind, took responsibility for ensuring that, in this great crisis, the whole of the living generation, in all parts of the world, should receive at least sufficient means of subsistence to keep it alive. The political organization that this historic action was the United Nations in its war time form. An agency – UNRRA – was set up to put it into effect and this agency was furnished with supplies and facilities.

POPULATION GROWTH AND EDUCATION

Future trends in global population growth could be significantly affected by improvements in both the quality and quantity of education, particularly female education. Projections of future population trends that do not explicitly include education in their analysis may be flawed, according to research published in the 29 July 2011 issue of the journal *Science*. The study uses the multiple state population modeling approach to incorporate education attainment level, along with age and sex. The integration of education into the analysis adds a human quality dimension to projections of fertility, mortality, and migration. As education also affects health, economic growth, and democracy, these projections provide a more comprehensive picture of where, how, and under what conditions human well being is increasing. The research reinforces earlier findings that the level of formal education achieved by women is, in most cases, the single most important determinant of population growth. More educated women generally have fewer children, better general health, and higher infant survival rates. Education also appears to be a more important determinant of child survival than household income and wealth. The study also found that if concerted efforts were made to fast track education, the global population could remain below 9 billion by 2050. Thus the global population outlook depends greatly on further progress in education.

POPULATION GROWTH AND INCREASING EMPLOYMENT LEVEL

The basic technique of analysis that will be employed is simple. A schedule relating one of the principal components of national income to alternative levels of the total will be assumed with a given population. Our question will be how would the schedule be changed if the population differed in various ways. A word must be said about the demographic variables that will be considered. These will be various measures relating to the age composition of the population, and the growth rate of the population. It will frequently be convenient to treat age composition and growth independently, despite the fact that variations in the growth rate typically cause changes in age composition and that the growth rate in turn is powerfully affected by age composition.

POPULATION GROWTH AND HEALTH DEVELOPMENT

Moreover India spent only 0.9% of its GDP on public health expenditure. This is much below the level required for achieving the goals of removing malnutrition and control of diseases. The poor are specially affected, because they cannot incur higher out of pocket private expenditure on health. The burden of raising public health expenditure to 2-3% of GDP indicates the need to improve medical facilities. Not only that, the burden of providing housing to additional population also requires additional resources. Now technological development increasing so birth rate is increasing death rate is decreasing.

POPULATION GROWTH AND TRANSPORT DEVELOPMENT

The population density is 478 persons per sq.km whereas the national average is 267 persons. One out of three live in urban area. Tamil Nadu traditionally has a strong industrial base which contributes substantially for the industrial production of the country. There are about 19895 factories and 3,87,397 registered small scale industries. Tamil Nadu has a rail network of 4,181 km. It has a coastline of about 992 km. Out of the 5560 km long coastline of the country. There are three major ports (Chennai, Ennore, and Thoothukodi) and 14 major ports. There are five airports (Chennai, Coimbatore, Madurai, Trichy and Salem) in the Vedaranyam canal-identified as inland water transport systems. However, these two canals are not functioning effectively due to various reasons. Rail and road movement are the dominant modes of transport. Though railways provides truck services for bulk movement of commodities and passenger traffic, road transport also provides long distance services for commodities and passenger movement with safety, economy and quickest possible time. the road network is the one that gives connectivity to all habitations and modes of other complementary transport system in the state. Good rates are necessary for the movement of modern traffic. The vehicle population which was 27,325 in 1951 increased to 51,62,082 in 2001 registering an increase in 189 times.

CHANGES IN PRODUCTION AND DEVELOPMENT

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Population growth may also induce changes in the mix of products produced by farmers. Increases in labor to land ratios makes adoption of products requiring greater labor intensity and producing higher returns per unit of land likely. At lower levels of population density, population growth may induce a change from extensive livestock or cereal production to integrated crop-livestock systems that use labour more intensively and take advantage of complementarities between crop and livestock production .At higher levels of population density ,further population growth may induce a return to specialization as a result of increasing competition between crops and livestock for land and water, and development of infrastructure and markets making specialization more profitable. Adoption of highly labor intensive crops ,such as rice or vegetables under irrigated conditions ,may enable much fuller utilization of available land but leave less land or labor available for the maintenance of livestock .

1. CONCLUSION

Higher technological levels are reflected in higher production per head of population, and nearly all countries publish information about percapita production. To obtain a broad view of contemporary technological levels it, is therefore ,necessary to combine a number of statistical series .These should include indicators of different types of technology, not only production, construction and transport ,but also health technologies and availabilities of human skills.

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