

4.1 Population growth

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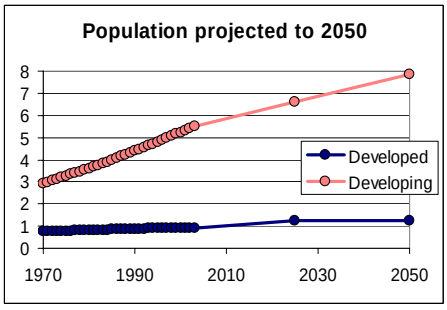
The expansion of human population is expected to continue at least a couple of decades, or maybe one Century on. It occurs chiefly in the developing countries. The relative growth rates are gradually going down in most parts of the world, and this development is expected to continue. At present, the absolute growth is still linear, but is likely to start to decline within one generation from now. Still, the population growth is a heavy burden on the development possibilities of impacted countries, as well as on the planet's natural resources.

Overview

It was only around the first quarter of the 19th Century, that the size of human population first hit the one billion limit. One hundred years was needed to double its size, and break the second billion limit. The third one was reached around 1960 and the fourth by 1975. From those days on, it has been observed and estimated, that the next 3 billions require only around one dozen years each. After that, the absolute growth per year would start to go down, and approach zero during some decades from that time (Figure 4.1a). What that level of the population would be, is naturally highly obscure, but many of the recent population projections suggest it to be around 10 billion, in about one Century from now on.

Figure 4.1a
Population grows in developing countries
Data and projections by UN (2002a).



Such projections are based on numerous assumptions about population parameters such as fertility, mortality, and migration rates, on the assessment difficulties of the current and historical population structures, and many more.

Every two years, the United Nations Population Division produces its population projections. They change each time to some extent. Fortunately, most of the corrections have been downwards. For instance the 1994 forecast for 2050 was 9.8 billions, whereas the 2002 projection had gone down to 9.1 billions. This direction is a very positive thing, and declining projections has been a clear tendency in population studies during recent decades. But the "balanced" rate of growth in the global scale still far ahead.

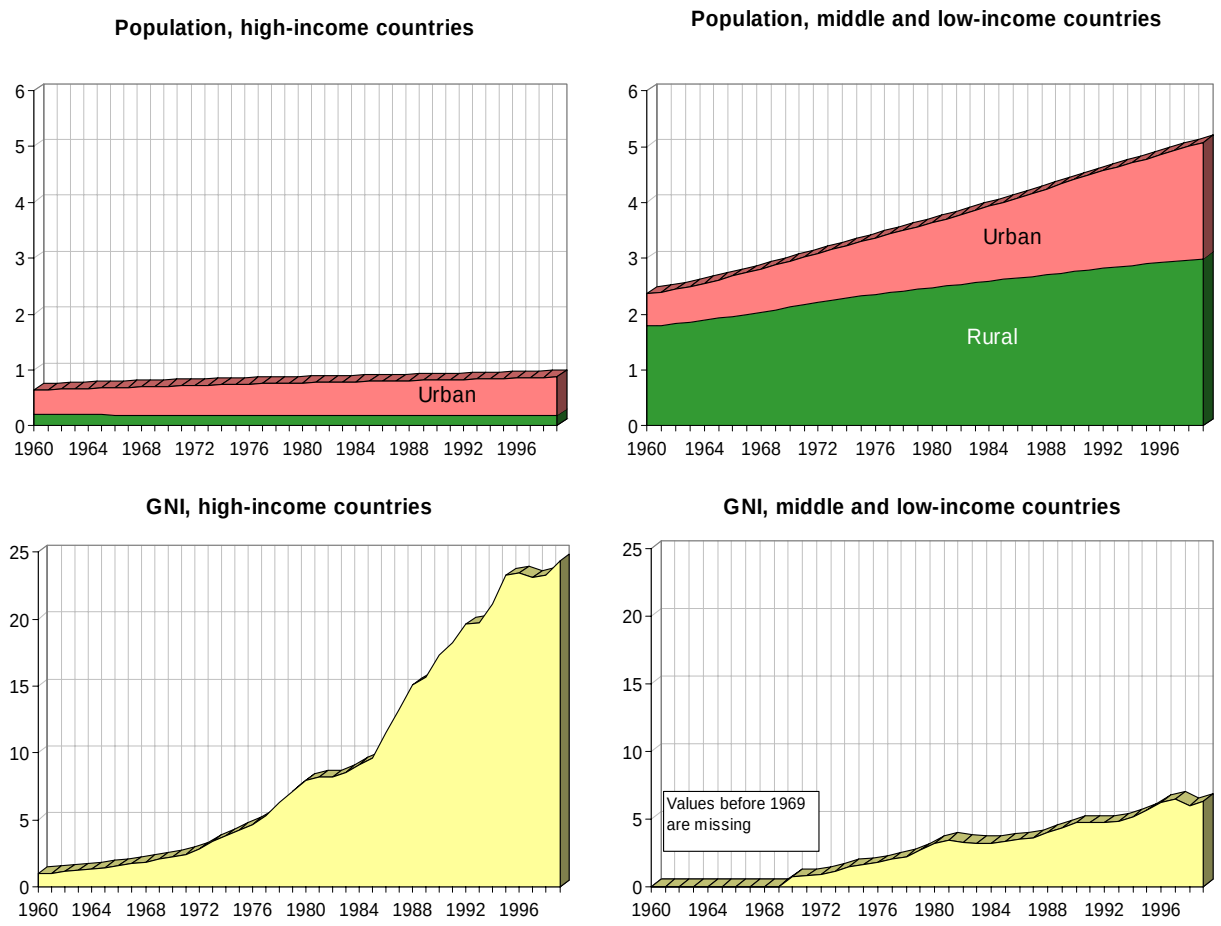
The growth is now linear and declining

The population grows now in a linear way. Each year, the population is added with around 80 million. This linear rate is expected to continue still for one generation ahead, and then the absolute growth rate would start to go down. This implies, that the relative rate has already shown notable decrease; from the all-time peak of 2.3% per year in the 1970s, it has already gone down to 1.7% of the 1990s.

The growth rates tend to be the higher the poorer the economy is. Therefore, most of the population growth takes place in developing countries (Figures 4.1a and b). Sub-Saharan Africa tops the world with around 3% a year—a rate that has continued for a few decades, and is projected not to slow down very dramatically. Near East and N Africa range around 2.5% and S Asia around 2%. However, they are on the way down with some 0.2-0.3% per decade. All the other regions of the world show notably lower growth rates, and their rates also show a clear declining tendency.

Population growth in a country is principally an indication of unbalance between fertility and mortality. For various means, the life expectancies are higher and mortality rates are lower than they used to be over a millennia, in most parts of the world. The problem is that fertility rates have not gone down as rapidly. This phenomenon is known as the demographic transition (see Chapter 7.1).

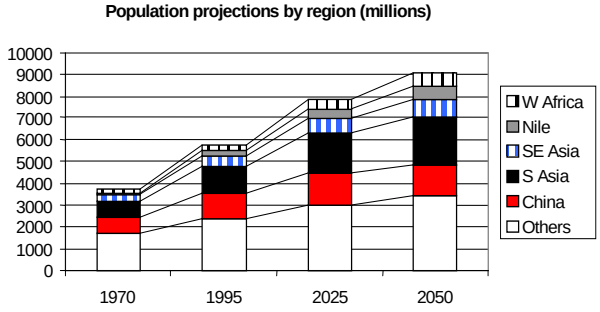
Figure 4.1b
The population vs. wealth disparity
Population (millions) and GNP (10^{12} US$ per year) in high-income countries, and in middle and low income countries (source: World Bank 2001).



Regional analysis

Two of the study regions scrutinized in Chapter 2 are remarkably more populated than the others (Figure 4.1c). They are China and S Asia, that both had around 1.3 billion inhabitants in 2000. They account together for around 40% of the world's population. The other study regions (SE Asia, Nile Region and W Africa) together approached 1 billion people by the turn of the millennium.

Figure 4.1c
Population by regions
Source: World Bank (2001).



African regions have clearly higher rates than the Asian ones (Figure 4.1f). Those of the Nile Region and the W Africa Region have varied around 2.6-2.8% over decades, and according to the UN projections, they are expected not to come down soon. The regions in Asia, in contrary, show remarkable decline in population growth rate since 1970. According to UN (2002a), this tendency is projected to continue.

The UN (2002a) projections for each country are summarized in Table 4.1a. Disregarding of the positive signs of growth rate decrease within the Asian regions, the population sizes projected for 2025 and 2050 are phenomenal, compared with the present situation. Only China, and to a lesser extent SE Asia appear to be able to stabilize their populations within a few decades. The other regions will be in steady and momentous growth over decades (Figure 4.1f).

This growth, which is faster than the world average, means that their proportion of the world total is in growth (Figure 4.1e). The share of the African regions together grows from 6.3% to 14.1% in 1970-2050, and that of S Asia from 18.6% to 24.3%. In the

same period, the total proportion of the study regions grows from 54.6% to 62.4%, given the projections of UN (2002a).

China's share has decreased from 22.1% of 1970 to the present 21.0%, and is expected to decrease to 15.3% till 2050, while the Nile region's share grows from 3.2% to 6.6%. The number of people in China will grow 1.7-fold in 80 years (1970-2050). The corresponding figure for W Africa is 5.9-fold, for the Nile region 5.1, for S Asia 3.2, and for SE Asia 2.8-fold.

World's population is expected to grow 2.5-fold within the period of 1970-2050 (UN 2002a).

With these growth rates in recent past and at present, the African study countries almost double their population within one generation (Figure 4.1f). The rates are expected to decrease only after one generation from now.

Population density

The population size must be related to the size of the region. Figure 4.1d shows that S Asia has a far more dense population than the other regions. It has already passed the density of 300 people per km^2. China has less than half of that density, and the African regions not more than one-tenth. However, the African regions have large deserted areas and the average figure is somewhat misleading.

Particularly condensed countries by region are shown in Table 4.1b. This list is again biased because countries such as Egypt with a very uneven spatial distribution of population are left out, because their average figures remain relatively low.

Figure 4.1d
Projected population density by regions
People by km^2. Sources: World Bank (2001) and UN (2002a).

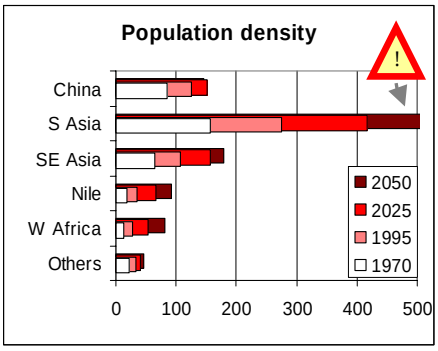


Table 4.1a
Population by country
UN (2002a) data and projections, in millions. The region totals are given in Figure 4.1f.

	1970	1995	2025	2050
China	**818**	**1200**	**1455**	**1394**
S Asia	**687**	**1200**	**1819**	**2208**
Bangladesh	67	120	178	205
India	548	929	1363	1628
Nepal	11	21	36	43
Pakistan	61	130	242	332
SE Asia	**285**	**476**	**705**	**799**
Cambodia	7	10	18	22
Indonesia	118	193	282	316
Lao PDR	3	5	9	11
Malaysia	11	20	36	46
Myanmar	27	45	60	69
Philippines	38	69	116	136
Singapore	2	3	8	10
Thailand	36	58	72	72
Vietnam	43	73	104	117
Nile region	**119**	**229**	**433**	**603**
Burundi	4	6	12	20
Egypt	33	58	96	115
Eritrea	29	56	8	13
Ethiopia			118	173
Kenya	11	27	33	37
Rwanda	4	6	8	9
Sudan	14	27	50	64
Tanzania	14	30	60	88
Uganda	10	19	48	84
W Africa	**115**	**228**	**454**	**679**
Benin	3	5	12	18
Burkina Faso	6	10	22	34
Cameroon	7	13	25	35
CAR	2	3	5	6
Chad	4	6	18	33
Cote d'Ivoire	6	14	26	36
The Gambia	0	1	3	4
Ghana	9	17	27	32
Guinea	4	7	14	21
Guinea-Bissau	1	1	2	3
Liberia	1	3	6	10
Mali	5	10	22	36
Mauritania	1	2	5	7
Niger	4	9	26	52
Nigeria	53	111	205	304
Senegal	4	8	17	23
Sierra Leone	3	4	11	15
Togo	2	4	8	10
Regions total	**2019**	**3337**	**4866**	**5683**
World total	**3697**	**5716**	**7859**	**9104**

Figure 4.1e

Population projections by regions

Population data and projections by UN (2002a).

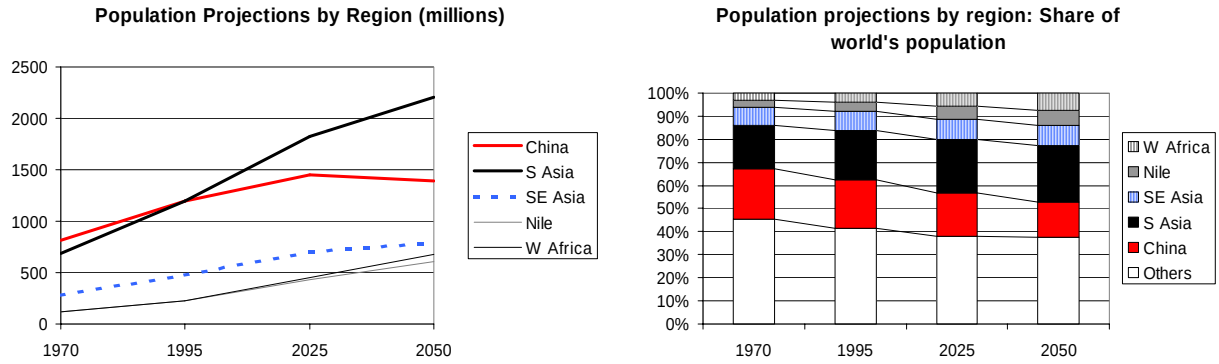


Figure 4.1f

The population doubles in one generation in many countries, particularly in Africa

The population growth rates adjusted for 25 years. Source: UN (2002a).

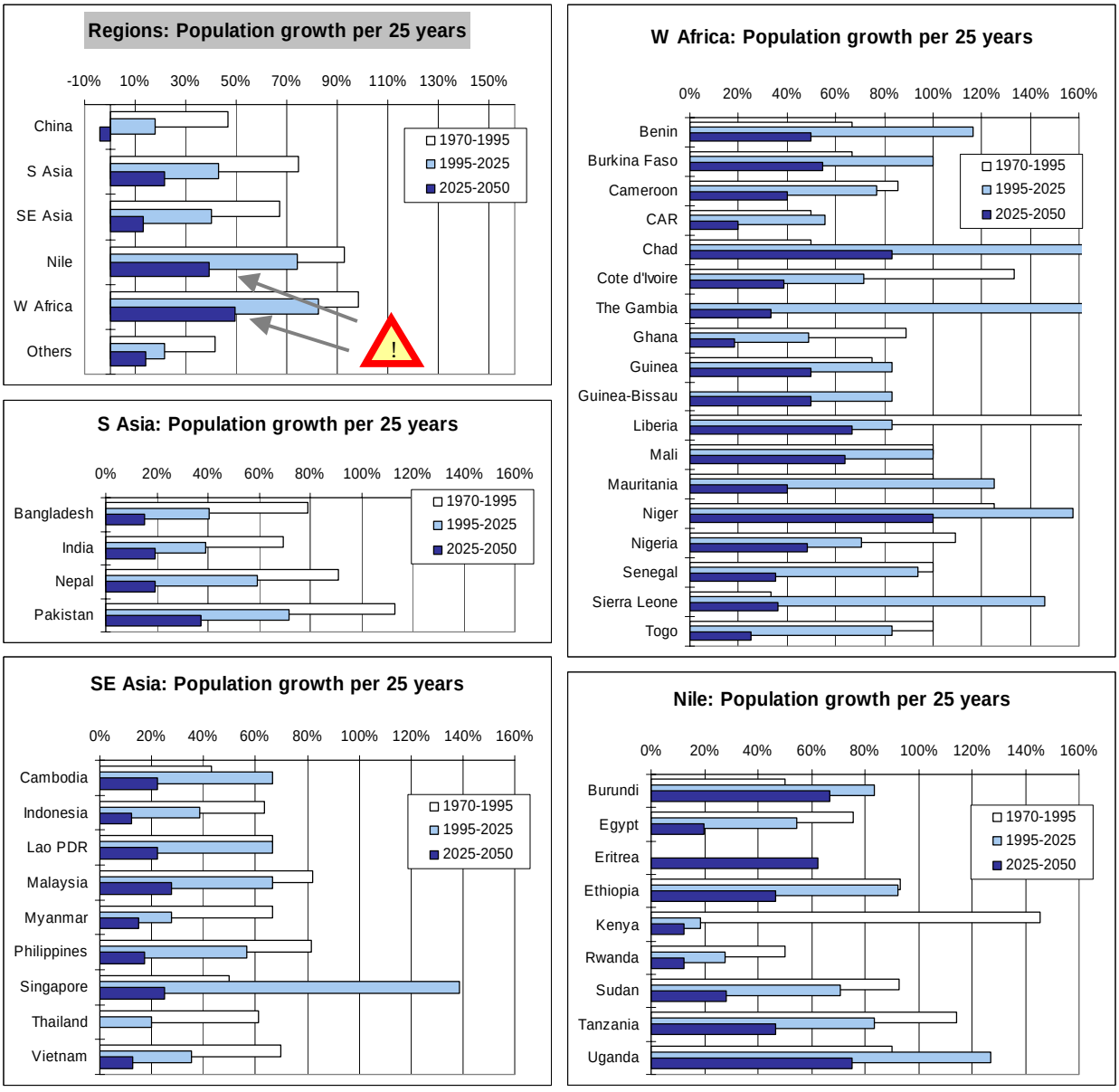


Table 4.1b
Densely populated study countries
All the study region countries with more than 100 people per km^2 in 2002 (Singapore excluded). Source: World Bank (2004).

Region	Country	Population density (people per km^2 in 2002)
China	China	137
S Asia	**Bangladesh**	**1042**
	India	353
	Nepal	169
	Pakistan	188
SE Asia	Indonesia	117
	Philippines	268
	Thailand	121
	Vietnam	247
Nile	Burundi	275
	Rwanda	331
	Uganda	125
W Africa	The Gambia	139
	Nigeria	146

China has a large territory, 9.6 million km^2, but most of it is very scarcely populated (Figure 4.1g). The average population density is 137 people per km^2. 90% of people are living in less than one third of the land area, with a density of 354 people per km^2. This is a higher density than in Japan or any European country except the Netherlands. 50% of Chinese live in a density as high as 740, and 30% (346 million) in 1,024. For comparison, the Bangladesh has 1042, island of Java has 870, and the Netherlands has 477 inhabitants per km^2 (World Bank 2004). Figure 4.1h relates the population density of selected Chinese provinces to some countries around the world.

Figure 4.1g
China's population is very concentrated
People are condensed in humid areas (source: Heilig 1999).

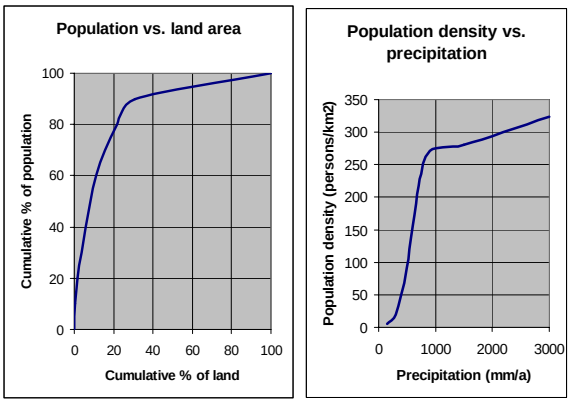


Figure 4.1i shows how dramatic the Chinese population growth has been in comparison to Europe. In 1950, the populations of those two areas were equal in size, but at present, Europe has only 60% of China's population size. In 2050, Europe is expected to have only 47% of China's population.

There are many reasons that explain the population concentration, but a very simple comparison of precipitation and cumulative population in China shows, that with precipitation higher than 900-1000 mm per year, the amount of rainfall does not have much effect on population density. This observation was drawn from the tables of Heilig (1999).

Figure 4.1h
China's population density in comparison
Population and its density in some Chinese provinces in comparison to selected countries of equal population size (source: Heilig 1999).

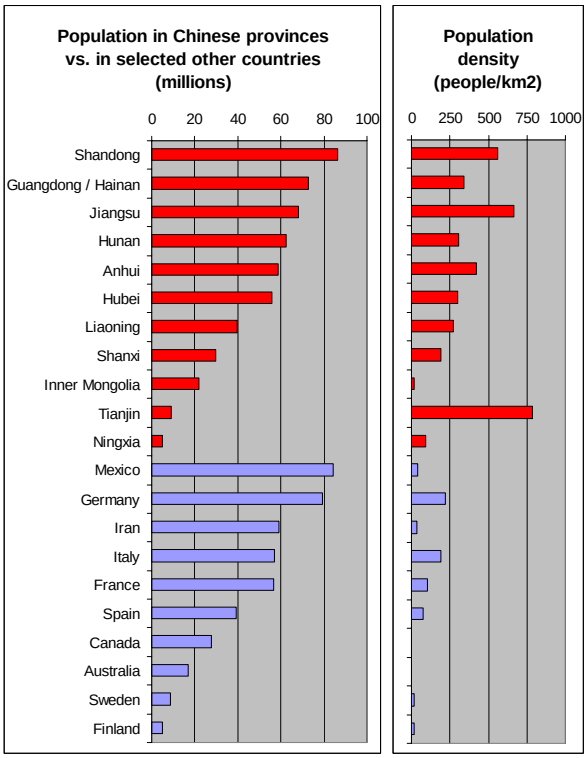


Figure 4.1i
China beats Europe in population growth
China's population growth has been rapid, but the growth rate is declining (sources: UN 2002a and Heilig 1999).