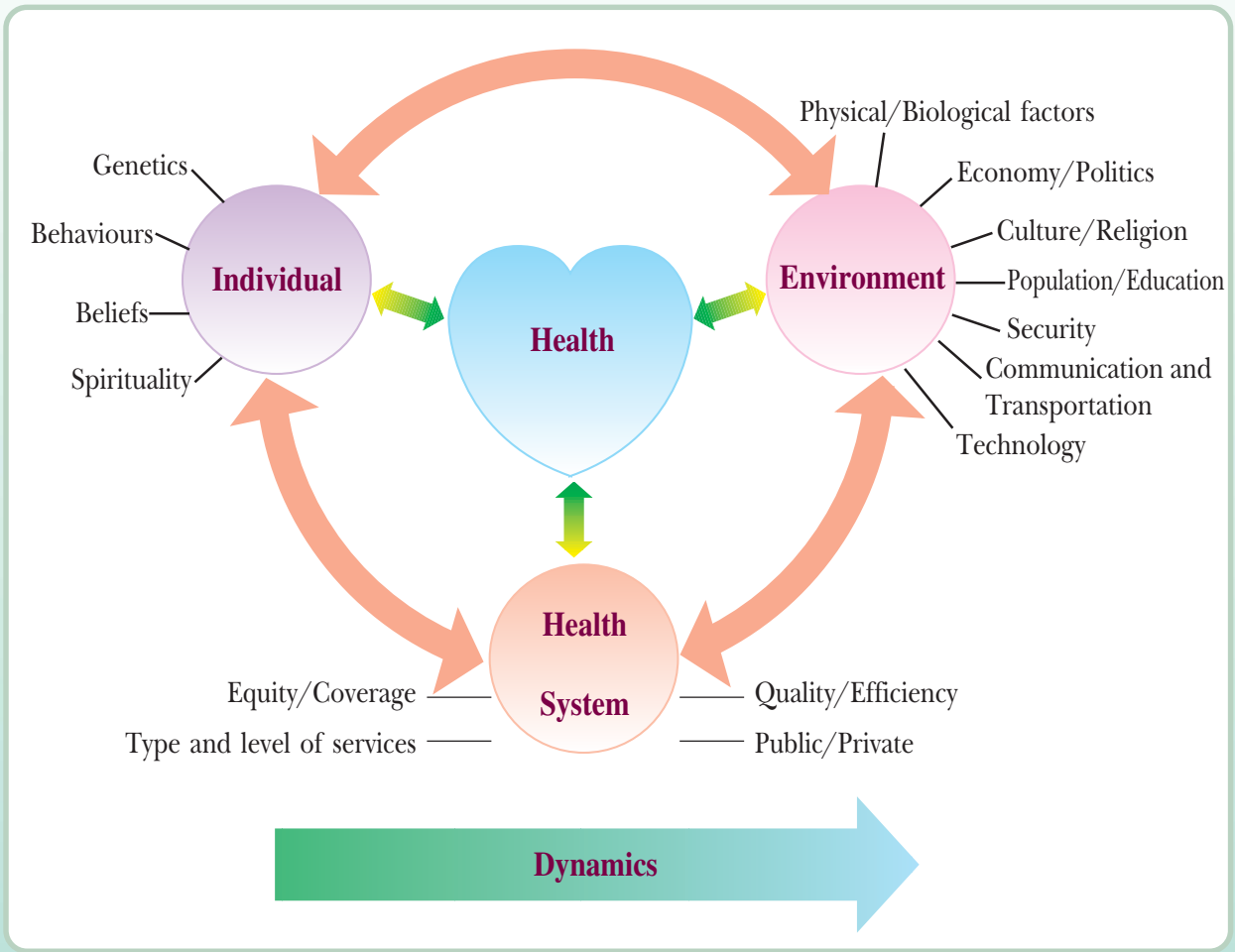
# CHAPTER 4
# Situations and Trends of Health Determinants

As health becomes more complex due to its association with numerous factors, Thailand's health situations and trends require a wider range of analysis and synthesis of changes in individual and environmental factors of all dimensions that determine health problems as well as the health services system (Figure 4.1).

**Figure 4.1** Health Linkage and Dynamics



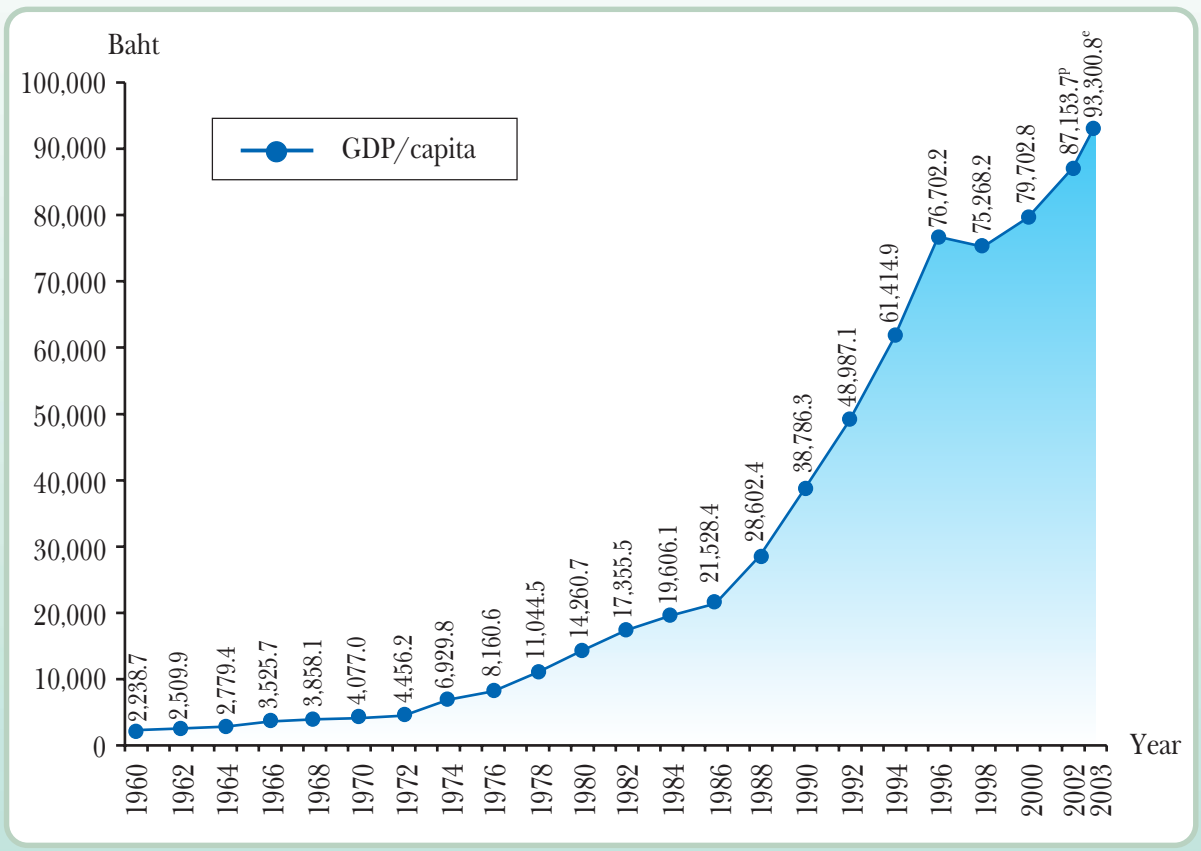
# 1. Economic Situations and Trends

## 1.1 Economic Growth

Over the past three decades, the average annual economic growth was higher than 7% and before 1997 the gross domestic product (GDP) per capita increased 28-fold, in particular after 1986 (Figure 4.2). Such a rapid economic growth resulted in a decline in poverty, as evidenced in the drop in the proportion of the indigent from 57% in 1962 to 17.0% in 1996.

In 1997, Thailand experienced a serious economic crisis, resulting in a sharp decline in the annual economic growth from 7% before the crisis to -1.7% in 1997 and -10.8% in 1998 (Figure 4.4). The crisis drastically affected the GDP per capita (Figure 4.2). Moreover, the devaluation of the baht against US dollars has resulted in a greater decline in the exchange rates and GDP per capita in dollar terms (Figure 4.3). Simultaneously, the proportion of the poor has climbed from 17.0% in 1996 to 21.3% in 2000 (Figure 4.5). As the economic recovery began in 2002, the proportion of people living under the poverty line has dropped steadily to 15.5% in that year (Figure 4.5).

**Figure 4.2** Gross Domestic Product per Capita, 1960-2003 (Market Prices)

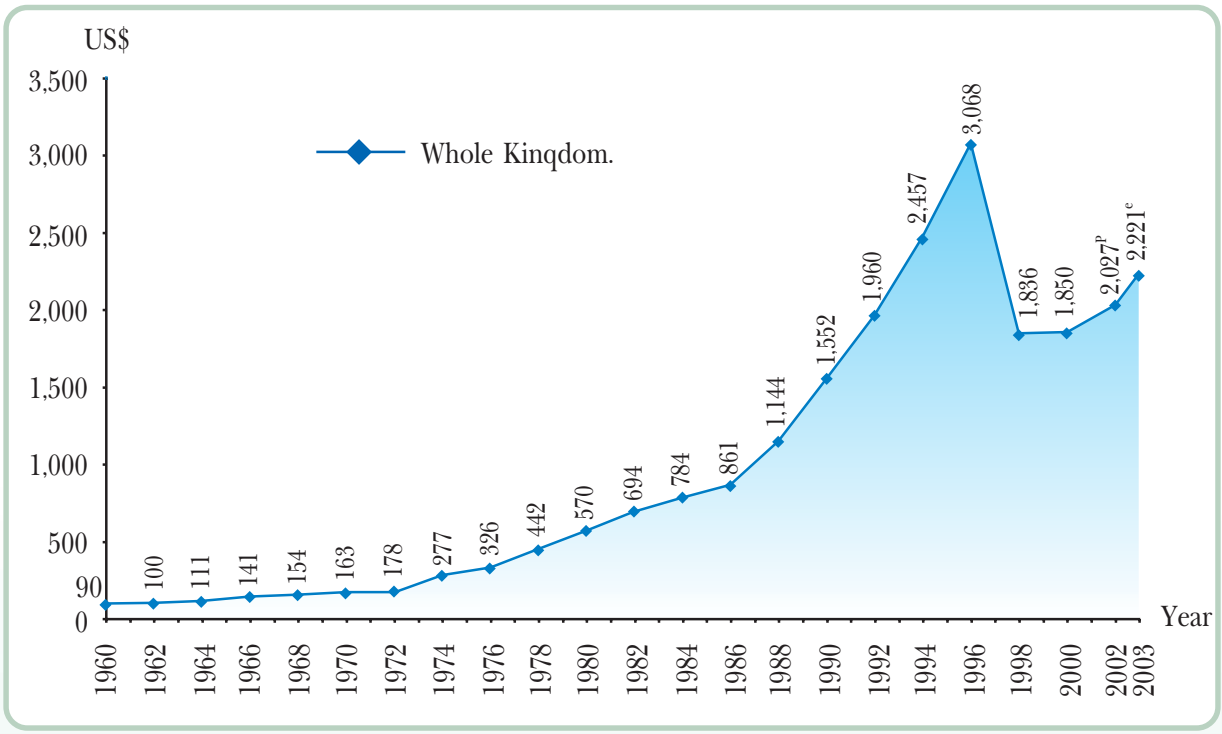



**Source:** Office of the National Economic and Social Development Board (NESDB).

**Notes:** 1. [P] Preliminary figure; [e] estimated figure.

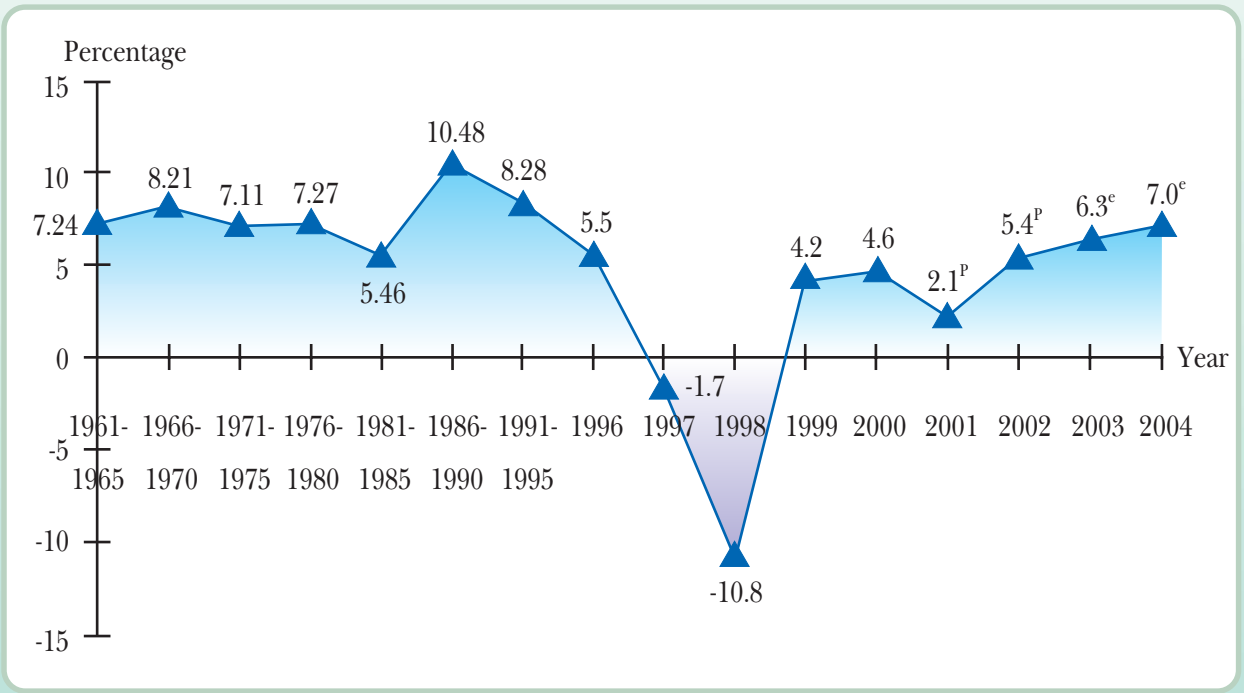
2. Since 1994, the data on GDP have been adjusted.

**Figure 4.3** Gross Domestic Product per Capita in US Dollars, 1960-2003




**Source:** Office of the National Economic and Social Development Board.

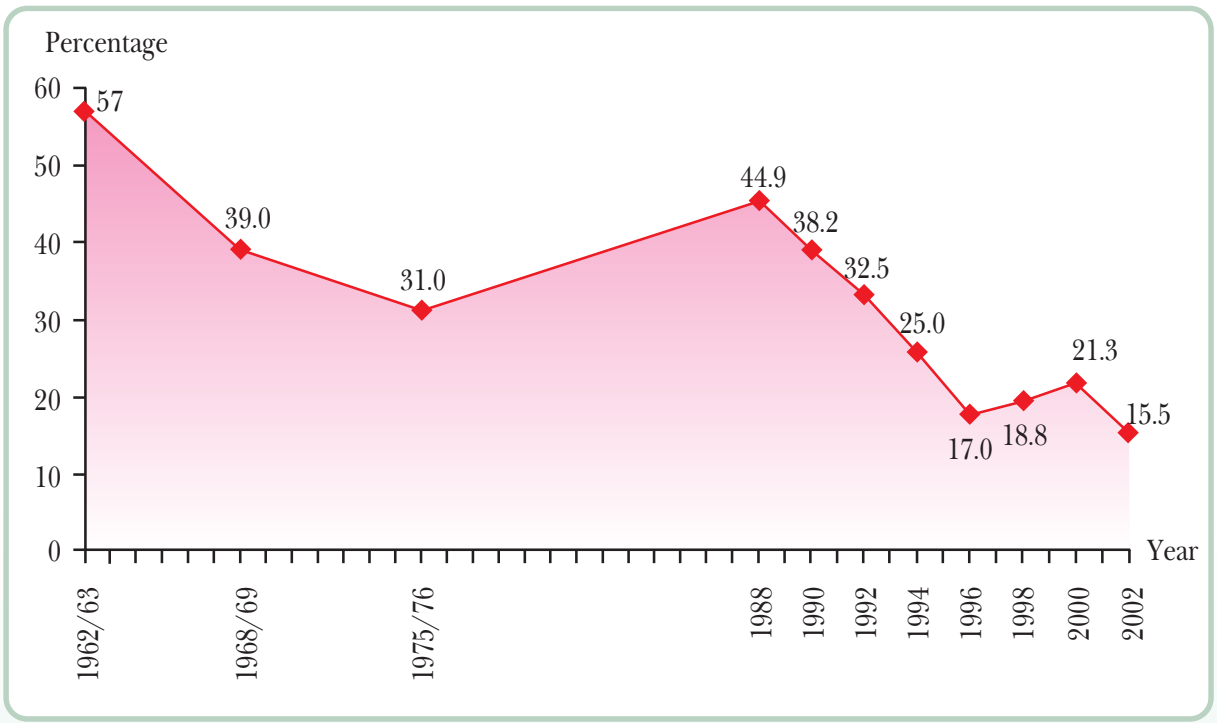
**Figure 4.4** Economic Growth Rate in Thailand, 1961-2004




**Source:** Office of the National Economic and Social Development Board.

**Notes:** P Preliminary figure; e estimated figure

**Figure 4.5** Proportion of People Living below Poverty Line in Thailand, 1962-2002




**Sources:** Data for 1962/63-1975/76 were derived from Ouay Meesook. Income, Consumption and Poverty in Thailand, 1962/63 to 1975/76.

Data for 1988-2002 were derived from the Household Socio-Economic Survey of the National Statistical Office(NSO), analyzed by the Bureau of Economic Development and Income Distribution, Office of the National Economic and Social Development Board.

**Notes:** 1. The study on poverty in each period had a different assumption.

2. As a result of the revision of the poverty line computation method for the period 1988-2002, the poverty level is higher.

The 1997 economic downturn mainly resulted from an infrastructure drawback and its influential determinants, which were not efficiently managed; and there were no suitable measures to cope with such problems. Major determinants included large amounts of short-term foreign debts, private sector investments in non-productive businesses (particularly in the real estate sector, automobile industries, petrochemical industries and **private hospitals**), weak production structure and foreign capital dependence, liberalized monetary policy without any effective monitoring and inspection system, including inefficiency of the public sector management system.

To maintain overall economic stability, Thailand adopted the managed float exchange rate system on **2 July 1997** and requested financial and technical assistance from the International Monetary Fund (IMF) on **14 August 1997.** That was the beginning of the financial crisis, which rapidly affected neighbouring countries and other regions due to globalization effects. Since the economic crisis, Thailand has adopted measures for stabilizing exchange rates, maintaining the optimum interest and inflation rates, and pursuing active fiscal policy and financing measures for liquidity problem alleviation, such as budgeting measures, cost-cutting and spending control measures, etc. These measures, therefore, resulted in economy recovery, i.e. in 1999 the economic growth was recorded at 4.2%, and slowed down to 2.1% in 2001, but rose again to 5.4% and 6.3% in 2002 and 2003, respectively. Such growth resulted from three major driving forces: the implementation of

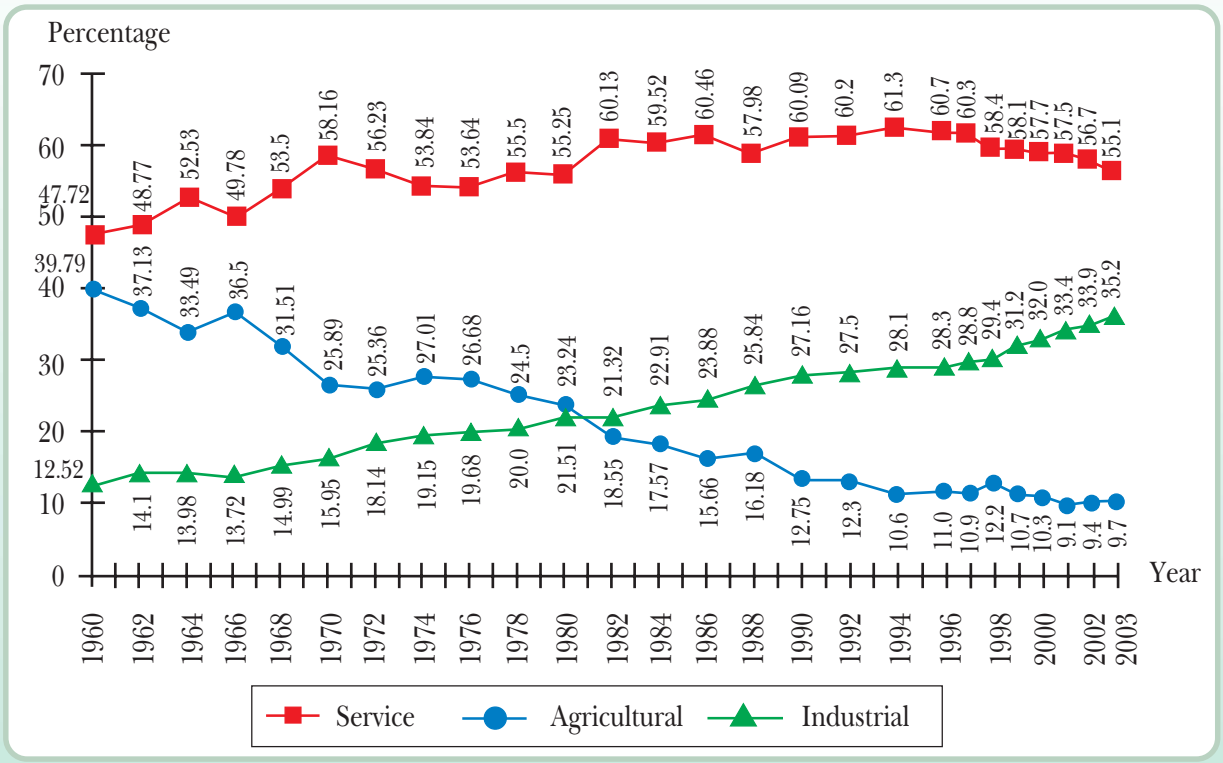
domestic economic stimulus policy and measures, grassroots-level financial support for enhancing the potential and opportunity of the poor, and increased exports. The National Economic and Social Development Board has projected that Thailand's economy will continue to grow at 7.0% in 2004 (Figure 4.4).

## 1.2 Economic Structure

The Thai economic structure has been transformed in the industrial and service sectors more than in the agricultural sector (Figure 4.6). It is noted that since 1990 until the 1997 crisis, the production structure of the agricultural, industrial and service sectors had almost never changed.

As a result of the economic crisis, a severe shrinkage of the industrial sector led to a greater mobilization of labour force to the agricultural sector, i.e. the expansion rate in the agricultural sector dropped by 3.2% only, while that in the industrial sector declined by 11.1% in 1998. But in 1999-2000, there was a recovery sign of the agricultural and industrial sectors as seen from the expansion rates of 2.0-4.9% and 6-12.3% in the two sectors, respectively. For 2003, the agricultural sector growth rose by 10.3%, whereas that for the industrial sector rose by 6.8%.

**Figure 4.6** Proportion of Economy in the Agricultural, Industrial and Service Sectors, as a Percentage of GDP, 1960-2003




**Source:** National Income of Thailand, 4th Quarter (4/2003). Office of the National Economic and Social Development Board.

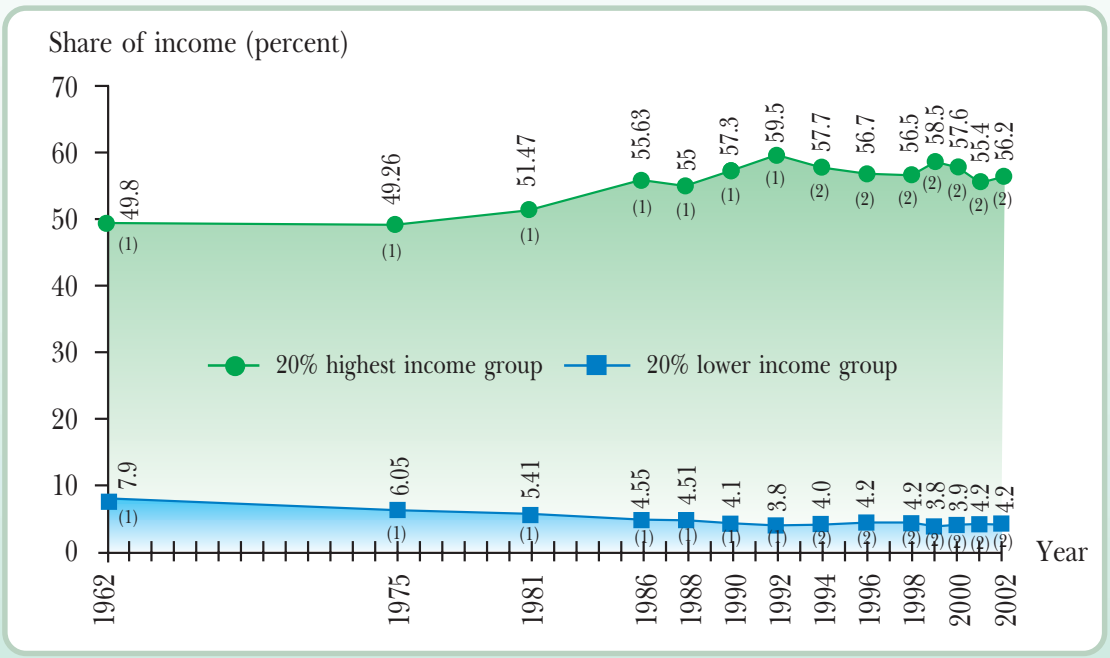
## 1.3 Income Distribution and Poverty

Although the Thai economy is expanding, the gap between the rich and the poor is widening. In 1962, the highest income group (one-fifth of the entire population) had a 49.8% share of the national income. Such a share rose to 56.7% in 1996, while the lowest income group (one-fifth of the entire population) had a national income share of only 7.9% in 1962, falling to 4.2% in 1996 (Figure 4.7). The income distribution was slightly better during 1994-1996.

During the economic crisis, the income distribution became more inequitable. The 20% lowest income group had their income proportion declining from 4.2% in 1996 to 3.9% in 2000, while the 20% highest income group had their income proportion rising from 56.7% to 57.6% during the same period. But in 2001-2002, the trend of income distribution improved slightly (Figure 4.7). The income disparity between the richest and the poorest groups dropped from 14.8-fold in 2000 to 13.4-fold in 2002. Regarding poverty, even though the proportion of poor people dropped steadily, such a proportion in the rural areas is 3 times greater than that in the urban areas (Table 4.1). It was evident that most of the indigent people were farmers and farm workers. The rising proportion of the indigent in Thailand was however lower than that of other Southeast Asian countries (Table 4.2). Nonetheless, in terms of income distribution inequalities, Thailand's is higher than those in many other countries in Southeast Asia (Table 4.3).

As a result of the economic crisis, the people's income reduced, especially in the low-income groups. But after the economic recovery in 2002, the rate of income growth in the low-income group was higher than that among the high-income group (Report on National Economic and Social Development: Two Years of Changes. NESDB, 2003).

**Figure 4.7** Share of Income of Thai People, Classified into 5 Groups by Income Level




| | Year | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1962 | 1975 | 1981 | 1986 | 1988 | 1990 | 1992 | 1994 | 1996 | 1998 | 1999 | 2000 | 2001 | 2002 |
| 20% lowest income group | 7.9 | 6.05 | 5.41 | 4.55 | 4.51 | 4.1 | 3.8 | 4.0 | 4.2 | 4.2 | 3.8 | 3.9 | 4.2 | 4.2 |
| 20% highest income group | 49.8 | 49.26 | 51.47 | 55.63 | 55.0 | 57.3 | 59.5 | 57.7 | 56.7 | 56.5 | 58.5 | 57.6 | 55.4 | 56.2 |
| Income disparity value | 6.3 | 8.1 | 9.5 | 12.2 | 12.2 | 14.0 | 15.6 | 14.4 | 13.5 | 13.5 | 15.4 | 14.8 | 13.2 | 13.4 |

**Sources:** (1) Data for 1962-1992 were derived from NESDB and TDRI.

(2) Data for 1994-2002 were derived from the Household Socio-Economic Survey of the National Statistical Office, analyzed by the Bureau of Development Evaluation and Dissemination, Office of the National Economic and Social Development Board.

**Table 4.1** Proportion of Population Living below Poverty Line by Locality, 1962-2002

| Year | Urban area | Rural area | Whole country |
|---|---|---|---|
| 1962/63 | 38 | 61 | 57 |
| 1968/69 | 16 | 43 | 39 |
| 1975/76 | 14 | 35 | 31 |
| 1988 | 25.2 | 52.9 | 44.9 |
| 1990 | 21.4 | 45.2 | 38.2 |
| 1992 | 14.1 | 40.3 | 32.5 |
| 1994 | 11.7 | 30.7 | 25.0 |
| 1996 | 7.3 | 21.3 | 17.0 |
| 1998 | 7.5 | 23.7 | 18.8 |
| 2000 | 8.7 | 27.0 | 21.3 |
| 2002 | 6.7 | 19.7 | 15.5 |

**Sources:** Data for 1962/63-1975/76 were derived from Oey Meesook. Income, Consumption and Poverty in Thailand, 1962/63 to 1975/76.

Data for 1988-2002 were derived from the Report on Household Socio-Economic Surveys of the National Statistical Office, analyzed by the Bureau of Development Evaluation and Dissemination, Office of the National Economic and Social Development Board.

**Note:** For 1988-2002, the proportion of people with poverty was higher due to changes in the computation method.

**Table 4.2** Thailand's Proportion of Population Living below Poverty Line Compared to Those in Other Southeast Asian Countries

| Country | Poverty proportion (percent) | | | |
|---|---|---|---|---|
| | Year of survey | Based on each country's definition of poverty | Year of survey | Based on PPP of <$1/day |
| Cambodia | 1999 | 35.9 | 2000 | 34 |
| Indonesia | 2002 | 18.2 | 2000 | 8.0 |
| Laos | 1998 | 46.0 | 2000 | 31.5 |
| Malaysia | 1999 | 8.1 | 2000 | 0.0 |
| Philippines | 2000 | 34.2 | 2000 | 12.7 |
| Thailand | 2000 | 14.2 | 2000 | 3.5 |
| Vietnam | 1998 | 37.0 | 2000 | 9.1 |

**Sources:** 1. Data on proportion of population living below poverty line for each country were derived from "Key Indicators 2003": Education for Global Participation. Asian Development Bank, 2003.

2. Data on proportion of population with an income of less than US$ 1 per day (PPP) were derived from "Situation and Data on Poverty". Office of the National Economic and Social Development Board.

**Note:** Purchasing power parity (PPP) is the adjustment of purchasing potential so that each country has an equal purchasing power.

**Table 4.3** Income Share of the Population in Southeast Asian Countries, 2000

| Country | 20% highest income group | 20% lowest income group | Discrepancy (times) |
|---|---|---|---|
| Thailand | 57.6 | 3.9 | 14.8 |
| Singapore | 48.9 | 5.1 | 9.6 |
| Malaysia | 54.3 | 4.4 | 12.3 |
| Indonesia | 41.1 | 9.0 | 4.6 |
| Philippines | 52.3 | 5.4 | 9.7 |

**Source:** IMD. The World Competitiveness Yearbook, 2003.

## 1.4 Global and Regional Economic Cooperation

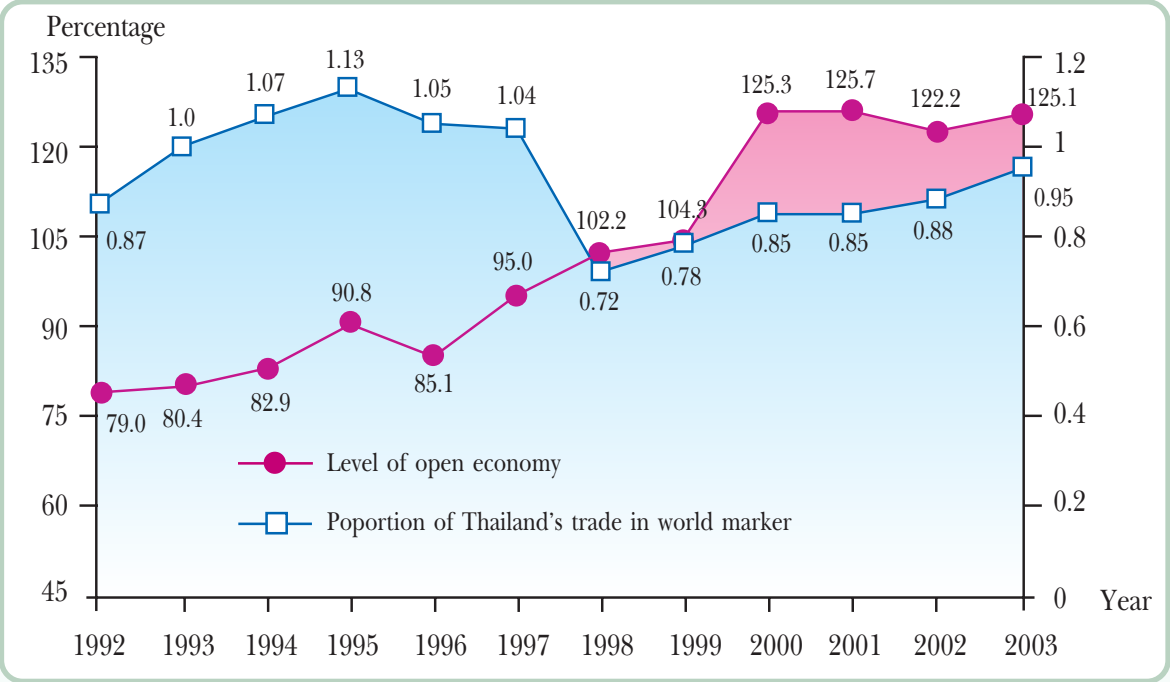
In the globalization era, the world has entered into the free trade system and consolidated regional trade organizations so as to establish negotiating power for competition. This has resulted in movements in establishing economic cooperation mechanisms, in which Thailand is involved, such as the ASEAN Free Trade Area (AFTA), the Asia-Pacific Economic Cooperation (APEC), the Asia-Europe Meeting (ASEM), the Southern Triangle Economic Cooperation, and the Mekong Committee (for development cooperation among six countries). In other regions, such organizations include the North America Free Trade Area (NAFTA) and the European Community (EC). At the global level, there are international trade agreements coordinated by the World Trade Organization (WTO). This has tremendously led to greater liberalization and competition. In particular, developed countries have generated new non-tariff barriers, such as environmental measures, child labour employment, human rights, anti-dumping duty (AD) or countervailing duty (CVD).

The Asian economic crisis has led to the increased economic cooperation among Asian countries such as the Bangladesh-India-Myanmar-Sri Lanka-Thailand Economic Cooperation (BIMST-EC) and the Forum for East Asia-Latin America Cooperation (FEALAC). In particular, Thailand has focused on the expansion of free trade policies in the form of bilateral agreement with several other countries to minimize trade barriers such as the Thailand-China, Thailand-India, Thailand-Bahrain, Thailand-Australia, and Thailand-Japan bilateral trade agreements.

## 1.5 International Trade

The volume of Thailand's international trade has risen markedly taking into account the rapidly rising levels of trade liberalization. The proportion of export/import/service values to GDP has risen from 79.0% during the pre-crisis period to 125.1% after the crisis (Figure 4.8) as a result of trade liberalization and the production for export promotion policy, which has been implemented continuously for over three decodes. Due to such liberalization, the share of Thai goods in the world market is only 0.9% of the world market values, resulting in an imbalance in the Thai economy being vulnerable to variation of the world economy as it has to rely mainly on the markets in only a few other countries. Thus, Thailand needs to urgently review its new production sectors with high potential in the world market such as medical and health care, particularly health care business, so as to generate more revenue for the nation.

**Figure 4.8** Level of Open Economy and Proportion of Thailand's Trade in the World Market, 1992-2003




**Sources:** (1) The Bank of Thailand.

(2) Department of International Trade Negotiations, Ministry of Commerce.

(3) Office of the National Economic and Social Development Board.

**Notes:** Level of open economy = (values of exports, imports and services / GDP) x 100

Proportion of Thailand's trade in world market = $\frac{\text{Values of Thai exports X 100}}{\text{Values of world exports}}$

Such economic changes affect the Thai health system as follows:

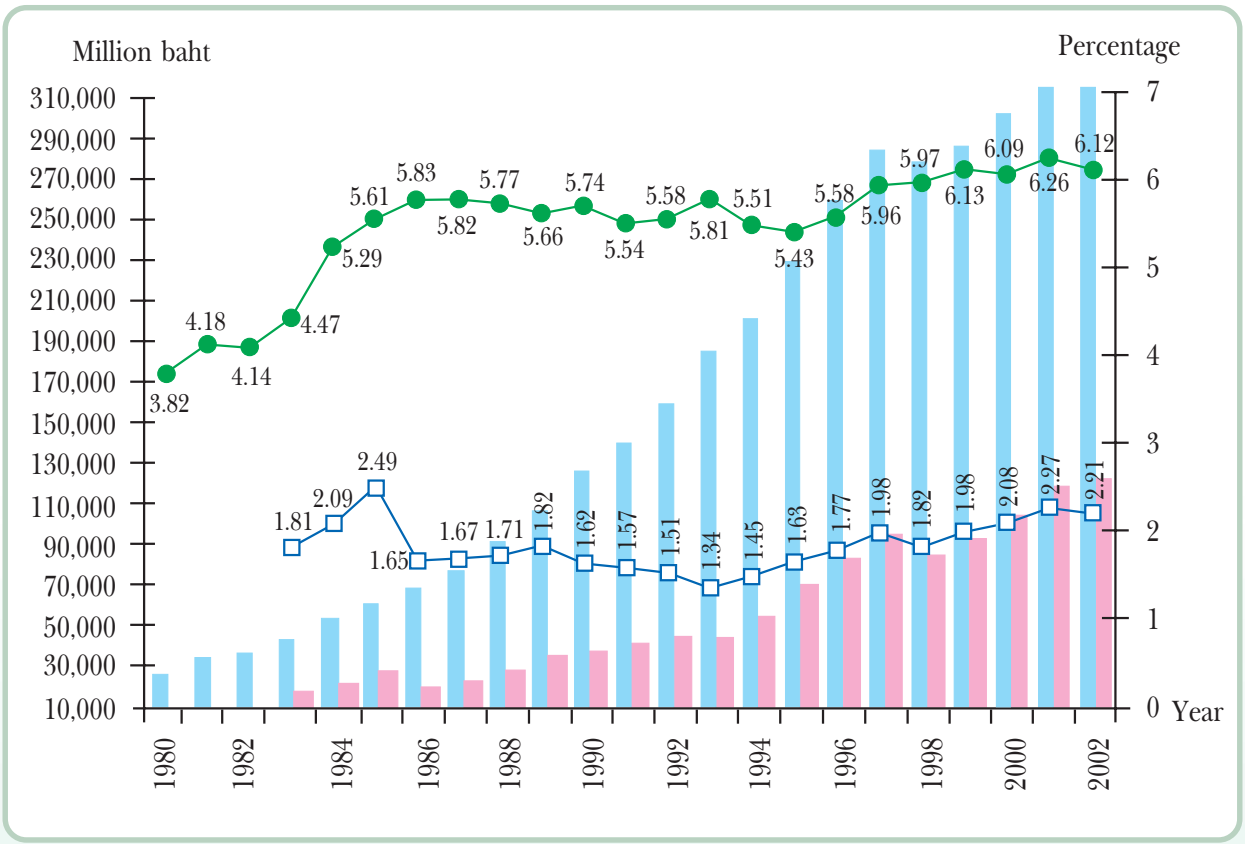
**(1) Rising Health Expenditure.**

Based on the overall national health account data derived from NESDB, the national health account has been rising from 3.8% of GDP in 1980 to 6.1% in 2002; 34.1% in the public sector and 65.8% in the private sector (Figures 4.9, 6.35 and Table 6.48). The 2001 study on the national health account of the International Health Policy Programme revealed that the expenditure on health accounted for 3.51% of GDP; 58.0% in the public sector and 42.0% in the private sector. Evidently, the discrepancy between these two systems was the expenses in the private sector. The estimates based on NESDB data would be almost twice those derived by using the survey data from the National Statistical Office (NSO).

In terms of equality of health spending burden, it was found that in 2002 the poor had a higher health spending burden relative to their income, **1.6 times higher than that of the rich.** This inequality has fallen from 6.4 times in 1992 as a result of the implementation of the universal health care scheme, started in 2001, resulting in a drop in household health spending (Figure 4.10). In particular, the decline was most apparent during the period 2000-2002.

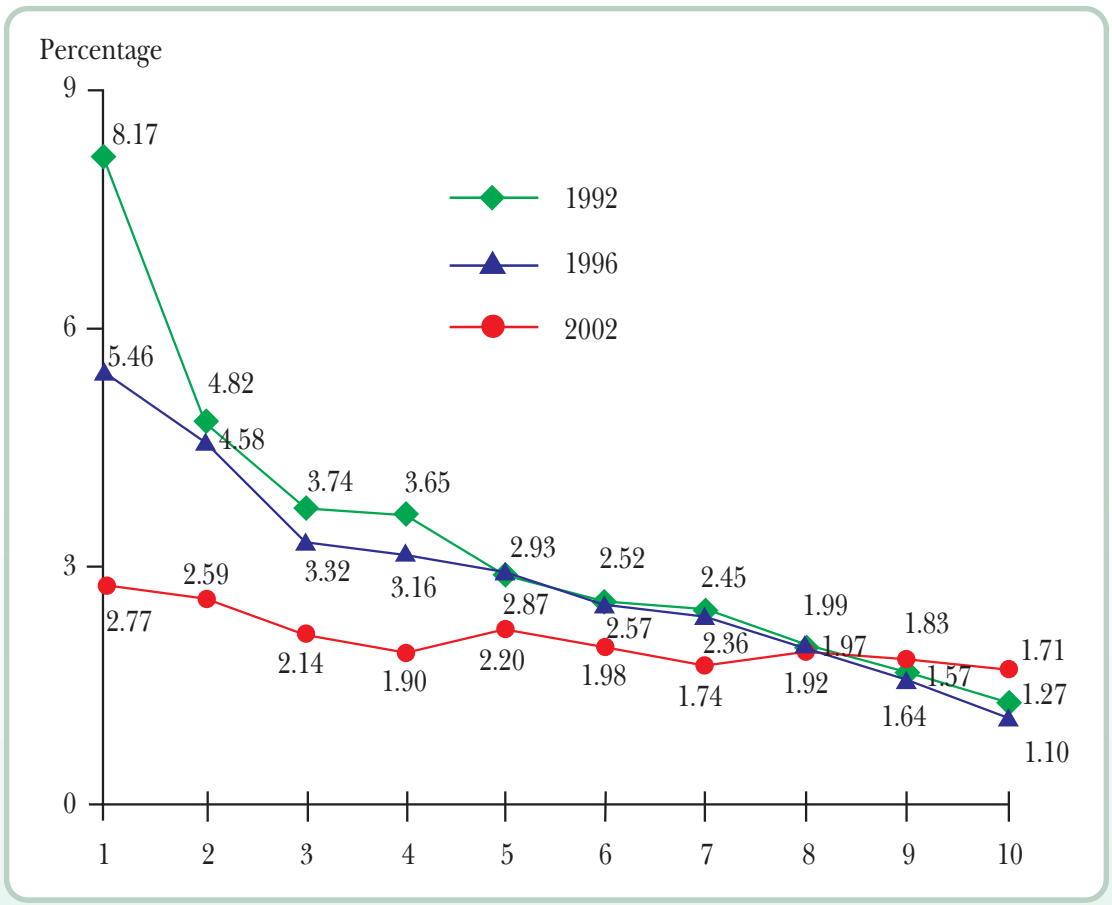
The spending on drugs has been found to increase very rapidly; much more than that for overall health care (Table 4.4 and Figure 4.11).

**Figure 4.9** Expenditures on Drugs and Health in Relation to GDP, 1980-2002




**Source:** Table 6.50 in Chapter 6.

**Figure 4.10** Percentage of Households' Health Expenditures, Compared to Income in 1992-2002




| Year | Income deciles | | | | | | | | | | Discrepancy between group 1 and group 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
| 1992 | 8.17 | 4.82 | 3.74 | 3.65 | 2.87 | 2.57 | 2.45 | 1.99 | 1.64 | 1.27 | 6.4 |
| 1994 | 7.56 | 4.75 | 4.49 | 3.60 | 3.26 | 3.03 | 2.53 | 2.32 | 2.03 | 1.26 | 6.0 |
| 1996 | 5.46 | 4.58 | 3.32 | 3.16 | 2.93 | 2.52 | 2.36 | 1.97 | 1.57 | 1.10 | 5.0 |
| 1998 | 4.22 | 3.07 | 2.95 | 2.90 | 2.59 | 2.43 | 1.94 | 2.00 | 1.57 | 1.23 | 3.4 |
| 2000 | 4.58 | 3.67 | 3.29 | 2.78 | 2.38 | 2.22 | 2.06 | 1.68 | 1.55 | 1.27 | 3.6 |
| 2002 | 2.77 | 2.59 | 2.14 | 1.90 | 2.20 | 1.98 | 1.74 | 1.92 | 1.83 | 1.71 | 1.6 |

**Source:** Chitpranee Vasavid. Analysis of data from the Household Socio-Economic Survey, 2002. National Statistical Office.

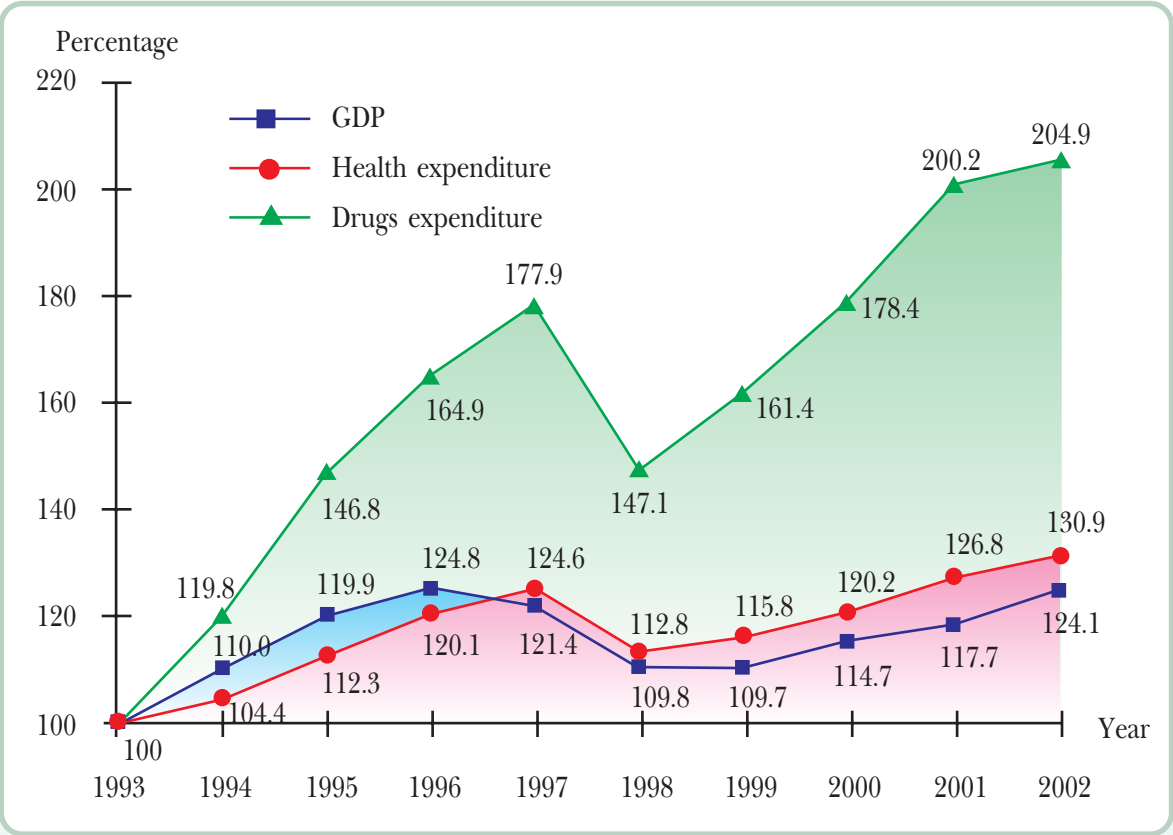
**Table 4.4** Growth of Real-Term Expenditures on Drugs and Health and GDP, 1993-2002 (1993 Price = 100)

| Year | GDP | Health expenditure | Drug expenditure |
|---|---|---|---|
| 1993 | 100.0 | 100.0 | 100.0 |
| 1994 | 110.0 | 104.4 | 119.8 |
| 1995 | 119.9 | 112.3 | 146.8 |
| 1996 | 124.8 | 120.1 | 164.9 |
| 1997 | 121.4 | 124.6 | 177.9 |
| 1998 | 109.8 | 112.8 | 147.1 |
| 1999 | 109.7 | 115.8 | 161.4 |
| 2000 | 114.7 | 120.2 | 178.4 |
| 2001 | 117.7 | 126.8 | 200.2 |
| 2002 | 124.1 | 130.9 | 204.9 |
| Average annual growth rate (10-year period) | 2.43 | 3.03 | 8.29 |

**Source:** Table 6.50 in Chapter 6.

**Note:** For comparison purpose, health expenditure for 1993 was set at 100.

**Figure 4.11** Growth of Real-Term Expenditures on Drugs and Health and GDP, 1993-2002 (1993 Price = 100)




**Source:** Table 4.4 in Chapter 4.

**Note:** For comparison purpose, health expenditure for 1993 was set at 100.

**(2) Roles of the Public and Private Sectors in Health Care Delivery.**

During the bubble economy, the demand for private sector health care rose rapidly. When considering the number of doctors, the proportion of doctors in the private sector climbed from 6.7% in 1971 to 20.5% in 1996. The rise was most rapid during the period 1992-1996, resulting in a serious public-to-private sector brain drain. In 1997, just prior to the economic crisis, 21 community hospitals had no doctors at all.

After the economic crisis, with the people's declined purchasing power, the utilization of private health facilities dropped markedly, resulting in a reduction of revenue in the private sector. The people who could not afford private health services turned to state-run health facilities and some to drugstores for self-medication. Overall, in the beginning of the economic crisis, the numbers of outpatients and inpatients at public health facilities went up, but sluggishly rose during the following period (Tables 4.5 and 4.6). Meanwhile, the number of clients at private health facilities dropped (Table 4.7), corresponding to the results of the study conducted by Weerasak Phuthasri and colleagues (2003) which showed that the numbers of outpatients and inpatients had a tendency to decrease, especially in over-50-bed private hospitals (Table 4.8). But since 2001 the government has implemented the universal health care policy, more outpatients but fewer inpatients have been attending public facilities.

**Table 4.5** Number of Outpatient Visits at Public Health Facilities, Fiscal Years 1992-2003

| Fiscal year | Regional/general hospitals | | Community hospitals | | Health centres and CHPs | | Total | |
|---|---|---|---|---|---|---|---|---|
| | No. of visits (millions) | Change (percent) | No. of visits (millions) | Change (percent) | No. of visits (millions) | Change (percent) | No. of visits (millions) | Change (percent) |
| 1992 | 11.21 | | 19.00 | | 22.26 | | 52.47 | |
| 1993 | 12.02 | + 7.2 | 21.01 | + 10.6 | 23.63 | + 6.2 | 56.66 | + 8.0 |
| 1994 | 12.61 | + 4.9 | 23.60 | + 12.3 | 27.74 | + 17.4 | 63.95 | + 12.9 |
| 1995 | 14.62 | + 15.9 | 26.18 | + 10.9 | 32.43 | + 16.9 | 73.23 | + 14.5 |
| 1996 | 15.49 | + 6.0 | 28.00 | + 7.0 | 35.39 | + 9.1 | 78.88 | + 7.7 |
| 1997 | 16.78 | + 8.3 | 29.57 | + 5.6 | 41.53 | + 17.3 | 87.88 | + 11.4 |
| 1998 | 18.15 | + 8.2 | 33.93 | + 14.7 | 44.54 | + 7.2 | 96.62 | + 9.9 |
| 1999 | 19.41 | + 6.9 | 36.71 | + 8.2 | 46.86 | + 5.2 | 102.98 | + 6.6 |
| 2000 | 20.44 | + 5.3 | 40.16 | + 9.4 | 51.80 | + 10.5 | 112.40 | + 9.1 |
| 2003 | 23.03 | + 12.7 | 43.70 | + 8.8 | 62.39 | + 20.4 | 129.12 | + 14.9 |

**Source:** Bureau of Health Service System Development, Department of Health Service Support.

**Note:** In FYs 2001-2002, due the restructuring of the MoPH, the data were inaccurate and cannot be shown.

**Table 4.6** Number of Inpatients at Public Health Facilities, Fiscal Years 1992-2003

| Fiscal year | Regional/general hospitals | | | Community hospitals | | | All types of hospitals | | |
|---|---|---|---|---|---|---|---|---|---|
| | Million cases | Change (percent) | Change in admissions (percent) | Million cases | Change (percent) | Change in admissions (percent) | Million cases | Change (percent) | Change in admissions (percent) |
| 1992 | 1.66 | | + 17.8 | 1.79 | | + 9.4 | 3.78 | +12.5 | |
| 1993 | 2.00 | + 0.5 | + 16.6 | 1.89 | + 5.6 | + 9.0 | 3.89 | +11.8 | + 2.9 |
| 1994 | 2.08 | + 4.0 | + 16.5 | 2.13 | + 12.7 | + 9.0 | 4.21 | +11.6 | + 8.2 |
| 1995 | 2.35 | +13.0 | + 16.1 | 2.24 | + 5.2 | + 8.6 | 4.59 | +11.3 | + 9.0 |
| 1996 | 2.46 | + 4.7 | + 15.9 | 2.39 | + 6.7 | + 8.5 | 4.85 | +11.2 | + 5.7 |
| 1997 | 2.56 | + 4.1 | + 15.3 | 2.44 | + 2.1 | + 8.3 | 5.00 | +10.8 | + 3.1 |
| 1998 | 2.59 | + 1.2 | + 14.3 | 2.85 | + 16.8 | + 8.4 | 5.44 | +10.4 | + 8.8 |
| 1999 | 2.62 | + 1.2 | + 13.5 | 2.82 | - 1.1 | + 7.7 | 5.44 | + 9.7 | 0.0 |
| 2000 | 2.56 | - 2.3 | + 12.5 | 2.92 | + 3.5 | + 7.3 | 5.48 | + 9.0 | + 0.7 |
| 2001 | 2.74 | + 7.0 | + 12.1 | 3.17 | + 8.6 | + 7.1 | 5.91 | + 8.8 | + 7.8 |
| 2002 | 2.41 | -12.0 | + 8.7 | 2.76 | - 12.9 | + 4.1 | 5.17 | + 5.5 | -12.5 |
| 2003 | 2.50 | + 3.7 | + 10.9 | 2.89 | + 4.7 | + 6.6 | 5.39 | + 8.1 | + 4.3 |

**Source:** Bureau of Health Service System Development, Department of Health Service Support.

**Table 4.7** Numbers of Outpatient Visits and Inpatients at Private Health Facilities, Fiscal Years 1991-2002

| Fiscal year | No. of private health facilities surveyed | Outpatient visits | | Inpatients | | Change (percent) |
|---|---|---|---|---|---|---|
| | | Number (millions) | Average visits/hospital/yr | Number (millions) | Average cases/hospital/yr | |
| 1991 | 257 | 2.24 | 8,716 | 0.50 | 1,946 | +22.3 |
| 1992 | 268 | 2.52 | 9,403 | 0.64 | 2,388 | +25.4 |
| 1993 | 263 | 2.82 | 10,722 | 0.67 | 2,548 | +23.7 |
| 1994 | 322 | 3.79 | 11,770 | 0.85 | 2,640 | +22.4 |
| 1995 | 357 | 4.29 | 12,017 | 0.97 | 2,717 | +22.6 |
| 1996 | 358 | 4.95 | 13,827 | 1.63 | 4,553 | +32.9 |
| 1997 | 358 | 4.45 | 12,430 | 1.58 | 4,413 | +35.5 |
| 1998 | 373 | 5.17 | 13,860 | 1.62 | 4,343 | +31.3 |
| 1999 | 374 | 4.58 | 12,246 | 1.47 | 3,930 | +32.1 |
| 2000 | 331 | 4.14 | 12,507 | 1.48 | 4,471 | +35.7 |
| 2001 | 323 | 4.97 | 15,387 | 1.71 | 5,294 | +34.4 |
| 2002 | 320 | 4.03 | 12,594 | 1.54 | 4,812 | +38.2 |

**Source:** Report on Health Resources, Bureau of Policy and Strategy, MoPH.

**Notes:** 1. Private health facilities include private hospitals and polyclinics.

2. The reported numbers are approximately 5 times lower than those revealed in the NSO survey.

**Table 4.8** Average Numbers of Outpatient Visits and Inpatients in Private Hospitals, 1996-2000

| Type of patients | Total | Size of hospitals | | | | Change between 1997 and 2000 | | |
|---|---|---|---|---|---|---|---|---|
| | | < 50 beds | 51 - 100 beds | 101 - 200 beds | >200 beds | Size of hospital | Outpatient Percent | Inpatient Percent |
| • 1996 | | | | | | | | |
| - Outpatients (visits) | 70,953 | 23,454 | 66,880 | 137,866 | 276,785 | < 50 beds | - 9.1 | - 32.8 |
| - Inpatients (cases) | 6,305 | 2,018 | 5,857 | 12,251 | 26,238 | | | |
| • 1997 | | | | | | | | |
| - Outpatients (visits) | 70,024 | 22,086 | 65,750 | 141,308 | 283,699 | 51-100 beds | + 8.3 | - 16.9 |
| - Inpatients (cases) | 6,250 | 2,015 | 6,828 | 11,685 | 23,037 | | | |
| • 1998 | | | | | | | | |
| - Outpatients (visits) | 65,096 | 20,605 | 67,897 | 131,958 | 256,849 | 101-200 beds | + 3.2 | - 24.0 |
| - Inpatients (cases) | 5,017 | 1,605 | 5,643 | 9,990 | 18,678 | | | |
| • 1999 | | | | | | | | |
| - Outpatients (visits) | 67,409 | 19,838 | 73,608 | 140,495 | 267,076 | > 200 beds | - 10.6 | - 25.7 |
| - Inpatients (cases) | 4,564 | 1,330 | 5,397 | 9,050 | 17,272 | | | |
| • 2000 | | | | | | | | |
| - Outpatients (visits) | 66,407 | 20,070 | 71,184 | 145,799 | 253,485 | All sizes | - 5.2 | - 26.9 |
| - Inpatients (cases) | 4,569 | 1,353 | 5,671 | 8,875 | 17,121 | | | |

**Source:** Weerasak Phuthasri et al. Report on a Study of the Role and Adjustments of Hospitals in Thailand Before and During the Economic Crisis (1996-2001), 2003.

**Note:** The analysis of private hospitals' conditions is based on the database of the Survey on Private Hospitals of the National Statistical Office.

**(3) Mental Health Problems are on the Rise.**

Intensive competition during the bubble economic period resulted in a rising prevalence of mental disorders. Moreover, the economic crisis also resulted in a higher unemployment rate, leading to an increasing trend of suicidal ideation. Eleven surveys on people's mental health conditions during the economic crisis, conducted from September 1997 to September 2000, revealed that the prevalence of those with stress and suicidal ideation among the unemployed was higher than that among the employed and general public (Department of Mental Health, MoPH). And even though the crisis has been over, mental health problems remain more prevalent, particularly psychosis, rising from 440.1 per 100,000 population in 1997 to 519.6 per 100,000 population in 2001 (see the section on mental health indicators in Chapter 5).

**(4) Government Budget for Health.** During the period of economic boom, the Ministry of Public Health's budget increased to 7.7% of the national budget. Most of the budget was previously expended on investments. But during the economic crisis, the government budget for health had a declining trend, especially for investments. Since 2001 the government has implemented the universal health care policy and the government health budget, particularly the operating budget, has risen steadily. As a result, the proportion of overall MoPH budget has risen to 7.6% in 2004 (see details in Chapter 7).

**(5) Investments in Health Technology.** The great expansion in health technology investments has slowed down since the 1997 economic crisis (see additional details in section 1.3.2 Medical and Health Technology in Chapter 6). During the economic boom, plenty of medical technologies were imported with duty exemptions, particularly medical equipment according to the investment promotion policy. This led to competition in purchasing high-cost medical equipment, resulting in the clustering and utilizing of medical technology not in alignment with the national economic development. In 1988, for instance, in Bangkok Metropolis there were 10 CT scanners per one million population, a proportion greater than that in the United Kingdom which had only 6.3 machines per one million population. The proportion (machines per one million population) rose rapidly to 15.7 in 1994 and further increased slightly to 15.9 in 1999 for Bangkok. For the entire country, the proportion was only 4.5 in 1999 (Table 4.9). The investment on high-cost medical devices slowed down after the economic crisis occurred.

**Table 4.9** Number of CT Scanners in Developed Countries Compared to Those for Thailand and Bangkok, 2003

| Country | No. of CT scanners (per million population) |
|---|---|
| Japan (1996) | 69.7 |
| U.S.A. (1990) | 26.9 |
| Italy (1997) | 14.6 |
| France (1997) | 9.7 |
| United Kingdom (1990) | 6.3 |
| Thailand (1995) | 2.0 |
| Thailand (1998)* | 3.9 |
| Thailand (1999) | 4.5 |
| Thailand (2003)* | 4.2 |
| Bangkok Metropolis (1988) | 10.0 |
| Bangkok Metropolis (1994) | 15.7 |
| Bangkok Metropolis (1998) | 14.8 |
| Bangkok Metropolis (1999) | 15.9 |
| Bangkok Metropolis (2003)* | 13.3 |
| Provinces (1999) | 3.3 |
| Provinces (2003)* | 3.1 |

**Sources:** Wongduern Jindawatthana et al. Expensive Medical Devices in Thailand: Distribution and Access, 2000.
* Data from the Radiation and Medical Devices Division, Department of Medical Sciences.

**(6) Industrial Sector's Expansion. The expansion in this sector at a rate higher than that in the agriculture sector has resulted in the following situations:**

**(6.1)** Greater migration of labour force from the agricultural sector to the industrial sector in urban areas has resulted in the problems of family institution deterioration, stress, crime, traffic congestions, drug abuse and environmental health. In particular, slums and solid wastes are becoming serious problems in large cities nationwide. The number of urban slums has risen from 1,587 in 1994 to 1,802 in 1997 and to 2,265 in 2000, or by 13.5%, and 25.7%, respectively, mostly in Bangkok and vicinity. A survey on demographic and social characteristics of slums in 17 provinces including those around Bangkok and others with a large number of slums in various regions in 1998 revealed that more than 50% of such slums had a drug abuse problem, mostly related to "ya ba" or methamphetamines and volatile solvents (Report on the Survey of Demographic and Social Characteristics of Slums in the Provinces around Bangkok and Other Regions, 1998, National Statistical Office). This is only one of the problems that reflects the people's health status and quality of life.

**(6.2) Health problems associated with working conditions and occupational health.** In 2003, the working-age population was 34.7 million, 54.1% of the total population: 15.6 million in the agricultural sector, 15.8 million in the industrial and service sectors, 2.6 million in the public sector, and 0.7 million in other sectors, generally in both formal and informal systems.

**(6.2.1) Labour force in the formal sector.**[1] In 2003, there were 9.8 million workers in the formal sector (or 28.4% of total workforce), including civil servants, state enterprise employees, and employees of business workplaces with 10 or more workers. Most of the workers completed only primary education, thereby not being able to protect or take care of themselves from occupational problems. The rate of employees with occupational injuries had a tendency to rise, i.e. from 2% in 1976 to 4.7% in 1993, then began to stabilize and decline to 3.0% in 2003. But the rate of work-related fatalities has been declining from 44.9 per 100,000 workers in 1979 to 11.19 per 100,000 workers in 2003 (Table 4.10 and Figure 4.12). However, the rate is considered to be relatively high, compared with those in developed countries. For instance, the work-related fatality rate per 100,000 workers is only 1.3 in the U.K. and only 4 in Finland (Choochai Supawongse. Environmental Situation and Its Impact on Health in Thailand, 1996).

[1] Labour in the formal sector means the labour market that has a clear organizational or structural system of employment, recruitment, contracting or definite employment contract period, and welfare and social security with a specified line of command and responsibilities for each type of labour.

**Table 4.10** Numbers and Rates of Occupational Deaths and Injuries in Workers, 1974-2003

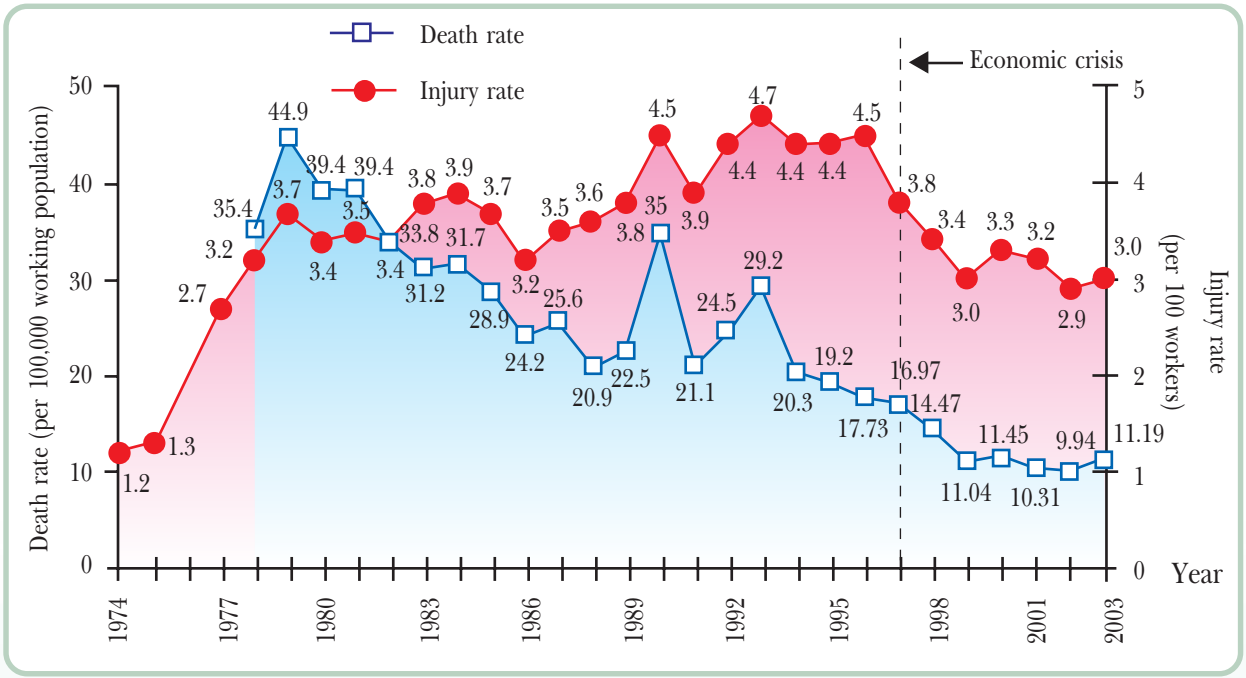
| Year | No. of workers covered | No. of workers injured | Rate of injuries (percent) | Death | | Disability | | Loss of some organs | | Temporary absenteeism | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | No. | Rate | No. | Rate | No. | Rate | No. | Rate |
| 1974 | 272,848 | 3,200 | 1.2 | 95 | 34.8 | - | - | 401 | 146.9 | 2,704 | 991.0 |
| 1975 | 349,814 | 4,605 | 1.3 | ← | | n.a. | | → | | | |
| 1976 | 496,700 | 10,136 | 2.0 | ← | | n.a. | | → | | | |
| 1977 | 570,000 | 15,335 | 2.7 | ← | | n.a. | | → | | | |
| 1978 | 590,640 | 19,134 | 3.2 | 209 | 35.4 | 9 | 1.5 | 1,119 | 18.9 | 17,797 | 3,013.2 |
| 1979 | 659,041 | 24,370 | 3.7 | 296 | 44.9 | 8 | 1.2 | 1,104 | 16.8 | 22,962 | 3,484.1 |
| 1980 | 745,513 | 25,334 | 3.4 | 294 | 39.4 | 13 | 1.7 | 1,191 | 16.0 | 23,836 | 3,197.3 |
| 1981 | 797,270 | 27,723 | 3.5 | 314 | 39.4 | 10 | 1.3 | 1,275 | 16.0 | 26,124 | 3,276.7 |
| 1982 | 824,565 | 28,323 | 3.4 | 279 | 33.8 | 14 | 1.7 | 1,085 | 131.2 | 26,945 | 3,267.8 |
| 1983 | 873,059 | 33,213 | 3.8 | 272 | 31.2 | 5 | 0.6 | 514 | 62.3 | 32,422 | 3,713.6 |
| 1984 | 994,190 | 39,182 | 3.9 | 315 | 31.7 | 20 | 2.0 | 1,305 | 131.3 | 37,542 | 3,776.1 |
| 1985 | 1,091,318 | 39,119 | 3.7 | 315 | 28.9 | 18 | 1.7 | 1,159 | 106.2 | 37,627 | 3,447.8 |
| 1986 | 1,179,812 | 37,445 | 3.2 | 285 | 24.2 | 10 | 0.8 | 978 | 82.9 | 36,172 | 3,065.9 |
| 1987 | 1,232,555 | 42,811 | 3.5 | 315 | 25.6 | 10 | 0.8 | 1,158 | 93.9 | 41,328 | 3,353.0 |
| 1988 | 1,346,203 | 48,912 | 3.6 | 282 | 20.9 | 7 | 0.5 | 1,179 | 87.6 | 47,444 | 3,524.3 |
| 1989 | 1,661,651 | 62,766 | 3.8 | 373 | 22.5 | 15 | 0.9 | 1,582 | 95.2 | 60,796 | 3,658.8 |
| 1990 | 1,826,995 | 80,065 | 4.5 | 640 | 35.0 | 30 | 1.6 | 1,509 | 82.6 | 77,886 | 4,263.1 |
| 1991 | 2,751,868 | 102,273 | 3.9 | 581 | 21.1 | 9 | 0.3 | 2,141 | 77.8 | 99,542 | 3,617.3 |
| 1992 | 3,020,415 | 131,800 | 4.4 | 740 | 24.5 | 15 | 0.5 | 2,010 | 66.5 | 129,035 | 4,272.1 |
| 1993 | 3,355,805 | 156,543 | 4.7 | 980 | 29.2 | 10 | 0.3 | 5,436 | 161.9 | 150,122 | 4,473.5 |
| 1994 | 4,248,414 | 186,394 | 4.4 | 863 | 20.3 | 23 | 0.5 | 4,548 | 107.0 | 180,960 | 4,259.5 |
| 1995 | 4,903,736 | 216,525 | 4.4 | 940 | 19.2 | 17 | 0.4 | 5,469 | 111.5 | 209,909 | 4,280.6 |
| 1996 | 5,425,422 | 245,616 | 4.5 | 962 | 17.73 | 18 | 0.3 | 5,042 | 92.93 | 239,574 | 4,416.1 |
| 1997 | 6,084,822 | 230,376 | 3.8 | 1,033 | 16.97 | 29 | 0.4 | 5,272 | 86.64 | 224,042 | 3,681.9 |
| 1998 | 5,418,182 | 186,445 | 3.4 | 784 | 14.47 | 19 | 0.3 | 3,692 | 68.14 | 181,956 | 3,358.1 |
| 1999 | 5,679,567 | 172,087 | 3.0 | 627 | 11.04 | 14 | 0.2 | 3,437 | 60.51 | 168,009 | 2,958.1 |
| 2000 | 5,417,041 | 179,566 | 3.3 | 620 | 11.45 | 16 | 0.3 | 3,516 | 64.91 | 175,414 | 3,238.2 |
| 2001 | 5,884,652 | 189,621 | 3.2 | 607 | 10.31 | 20 | 0.3 | 3,510 | 59.65 | 185,484 | 3,152.0 |
| 2002 | 6,541,105 | 190,979 | 2.9 | 650 | 9.94 | 14 | 0.2 | 3,424 | 52.54 | 186,891 | 2,857.2 |
| 2003 | 7,033,907 | 210,673 | 3.0 | 787 | 11.19 | 17 | 0.2 | 3,821 | 54.32 | 206,048 | 2,929.35 |

**Source:** Ministry of Labour.

**Notes:** (1) n.a. = Data not available.

(2) Except for the rate of injuries, other rates are per 100,000 workers.

**Figure 4.12** Rates of Deaths and Injuries Due to Occupational Hazard Exposure, 1974-2003




**Source:** Ministry of Labour.

**(6.2.2) Labour force in the informal sector.**[2] In 2003, there were 24.8 million workers in the informal employment system (71.6% of total labour force), including those in the agricultural sector, the self-employed, home-based workers, etc. A survey on workers who do the work at home as hired by a certain business revealed that such workers had problems related to occupational safety; the rate rising from 2.8% in 1999 to 33.2% in 2002. Most of such problems were related to eye-sight, working position and dust (Reports on the Surveys of Home-based Work, 1999 and 2002. National Statistical Office).

**(7) Trade liberalization and international economic cooperation have led to increased trade competition and protection partially affecting health products and services industries (see Chapter 10).**

## 2. Educational Situations and Trends

### 2.1 Educational System

According to the National Education Act, B.E. 2542 (1999), proclaimed on 20 August 1999, the education reform has been implemented to expeditiously provide 12-year basic education, covering 6-year primary education, 3-year lower secondary education and 3-year upper secondary education. The compulsory education is extended from 6 years to 9 years, together with tuition fee exemption for years 10-12. Also, the Act provides an opportunity for educational institutions to be able to offer and manage any pattern of education based on their own needs, i.e. formal and non-formal education, or even free-style education.

Nonetheless, Thailand's school enrollment rates of school-age population in primary and secondary education are still lower than those in some other Asian countries and in all European and American countries (Table 4.11).

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[2] Labour force in the informal sector means the labour market that lacks systems for employment, welfare, and protection under the social security law.

**Table 4.11** Enrollment Rates of School-Age Population in Basic Educational System in Various Countries, 2001/2002

| Primary education enrollment | | Secondary education enrollment | |
|---|---|---|---|
| **Country** | **Rate (percent)** | **Country** | **Rate (percent)** |
| **WHO/SEAR** | | **WHO/SEAR** | |
| Sri Lanka | 105.0 | Sri Lanka | 82.0[1] |
| Maldives | 96.0 | India | 59.7[1] |
| Indonesia | 92.0 | Thailand | 55.0[1] |
| Bangladesh | 87.0 | Nepal | 54.6[1] |
| Thailand | 86.0 | Indonesia | 47.0 |
| India | 83.0 | Bangladesh | 44.0 |
| Myanmar | 82.0 | Myanmar | 35.0 |
| Nepal | 70.0 | Maldives | 31.0 |
| Bhutan | 16.0[1] | Bhutan | 5.0[1] |
| North Korea | n.a. | North Korea | n.a. |
| **ASEAN** | | **ASEAN** | |
| Malaysia | 95.0 | Brunei | 81.9[1] |
| Vietnam | 94.0 | Singapore | 75.6[1] |
| Philippines | 93.0 | Malaysia | 69.0 |
| Indonesia | 92.0 | Vietnam | 65.0 |
| Singapore | 91.4[1] | Philippines | 56.0 |
| Brunei | 87.9[1] | Thailand | 55.0[1] |
| Thailand | 86.0 | Indonesia | 47.0 |
| Cambodia | 86.0 | Myanmar | 35.0 |
| Laos | 83.0 | Laos | 31.0 |
| Myanmar | 82.0 | Cambodia | 21.0 |
| **World (top ten)** | | **World (top ten)** | |
| Sweden | 102.0 | Japan | 101.0 |
| Norway | 101.0 | Sweden | 99.0 |
| Belgium | 101.0 | Canada | 98.0 |
| Iceland | 101.0 | Norway | 95.0 |
| United States | 101.0 | United Kingdom | 95.0 |
| United Kingdom | 101.0 | Finland | 95.0 |
| Finland | 100.0 | France | 92.0 |
| Canada | 100.0 | Netherlands | 90.0 |
| Netherlands | 100.0 | Switzerland | 88.0 |
| France | 100.0 | Austria | 88.0 |

**Sources:** Human Development Reports, 2002-2004.

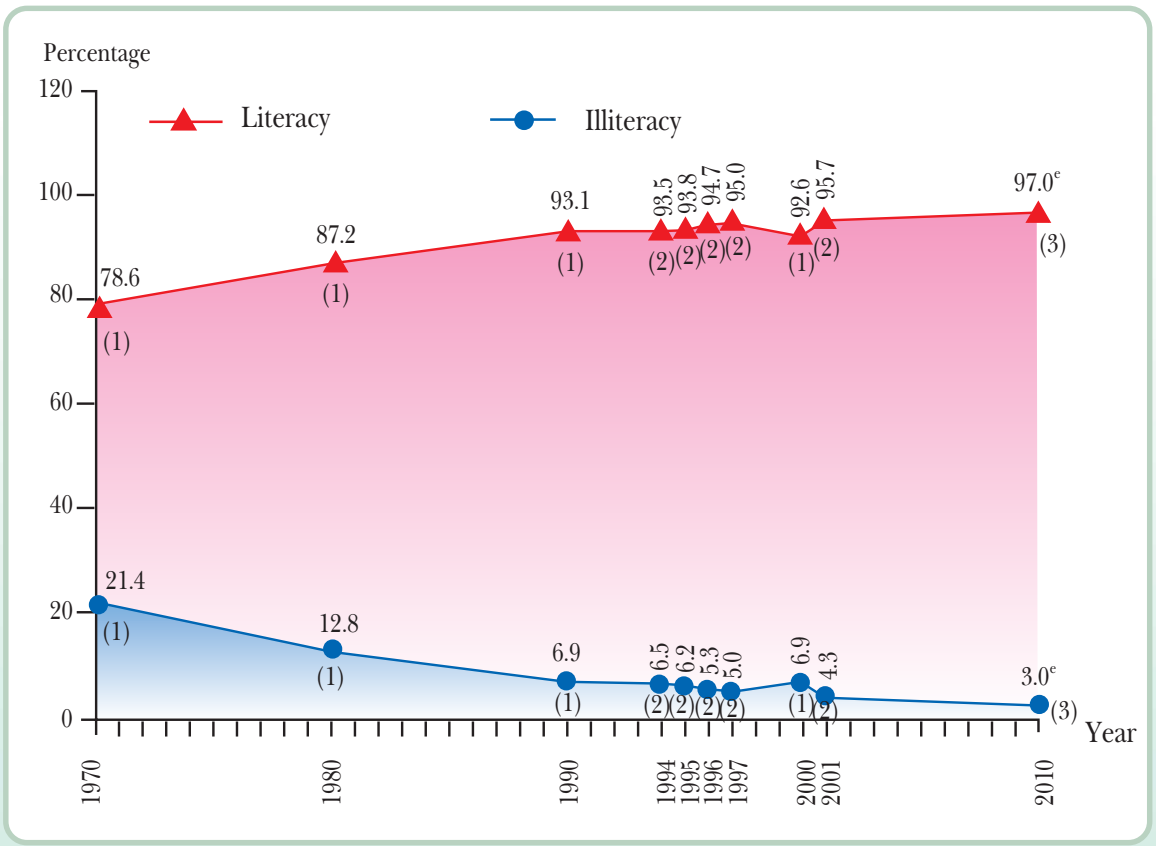
**Note:** [1] Data for 1998. The listing of countries is done in order of their enrollment rates.

## 2.2 Knowledge, Capability and Skills of Thai People

### 2.2.1 Literacy Rate

The literacy rate among Thai population aged 15 and over rose from 78.6% in 1970 to 95% in 1997. The trend, however, reversed after the economic crisis (Figure 4.13), but slightly rose to 95.7% in 2001. Yet, the rate remains much higher than the average for other developing countries (74.5%). Although Thailand's literacy rate ranks first among the 10 ASEAN member countries,[3] its illiteracy rate was recorded at 4.3% in 2001. It is estimated that the literacy rate will be as high as 97% in 2010.

**Figure 4.13** Literacy and Illiteracy Rates of Thai Population Aged 15 and over, 1970-2010




**Sources:** (1) Data for 1970, 1980, 1990 and 2000 were derived from the Population and Housing Censuses. National Statistical Office.

(2) Data for 1994-1997 and 2001 were derived from UNDP, Human Development Reports, 1997-2003.

(3) UNESCO, Principal Regional Office for Asia and Pacific. Literacy in Asia and the Pacific.

[3] UNDP, Human Development Report, 2003.

Nevertheless, when considering the reading rate among the Thai people, it was found that only 35.4 million people (61.2%) read regularly, and on average for 2.99 minutes per day (Table 4.12).

**Table 4.12** Percentage of Thai Population Aged 6 Years and Over Who Read Regularly, by Reading Period, Region of Residence, Sex and Age Group, 2003

| Administrative region, sex and age group | Percentage of reading population[1] | Time spent on reading[2] (minutes/day) | |
|---|---|---|---|
| | | Per person (entire population) | Per reading person |
| **Reading** | 61.2 | 2.99 | 67.49 |
| **Non-reading** | 38.8 | - | - |
| **Administrative region** | | | |
| Urban | 74.4 | 5.94 | 69.28 |
| Rural | 54.7 | 1.67 | 64.79 |
| **Sex** | | | |
| Female | 57.7 | 2.18 | 65.10 |
| Male | 64.8 | 3.83 | 68.97 |
| **Age group** | | | |
| 6 - 9 | 77.4 | n.a. | n.a. |
| 10 - 14 | 90.0 | 1.28 | 68.99 |
| 15 - 24 | 80.4 | 3.47 | 79.67 |
| 25 - 59 | 54.3 | 2.84 | 59.28 |
| 60 and over | 24.4 | 4.43 | 84.72 |

**Sources:** [1] Report on the Reading of Population Survey, 2003. National Statistical Office.
[2] Report on the Reading Time of Population Survey, 2001. National Statistical Office.

**Notes:** [1] Population aged 6 years and over.
[2] Population aged 10 years and over.

### 2.2.2 Learning Rate

The learning rate of Thai people is still rather low at only 58.7% (2003) and there are wide disparities between those for the regions and between urban and rural residents (Table 4.13). Besides, a survey on children and youths revealed that, in 2002, such people had the capacity and skills in foreign languages and computer use of less than 50% (Table 4.14).

**Table 4.13** Learning Rate of Thai People, 1992-2003

Unit: Percent

| Region and area | 1992 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|---|---|---|---|---|
| Urban | 57.1 | 60.0 | 61.7 | 65.2 | 65.4 | 66.4 | 67.5 | 68.6 | 70.0 |
| Rural | 36.5 | 41.0 | 42.2 | 45.3 | 46.9 | 48.1 | 49.4 | 50.8 | 52.9 |
| Region | | | | | | | | | |
| - Central | 41.0 | 48.2 | 49.4 | 50.9 | 52.1 | 54.1 | 52.4 | 53.2 | 58.6 |
| - North | 36.2 | 38.6 | 40.7 | 43.3 | 43.5 | 45.0 | 46.6 | 48.2 | 49.9 |
| - Northeast | 39.6 | 44.1 | 45.0 | 48.6 | 51.0 | 51.7 | 54.8 | 55.7 | 56.5 |
| - South | 43.6 | 47.5 | 48.5 | 52.6 | 53.8 | 54.3 | 56.3 | 58.7 | 58.7 |
| - Bangkok | 61.6 | 64.8 | 66.8 | 72.5 | 72.1 | 72.6 | 73.1 | 73.7 | 75.7 |
| Whole country | 42.3 | 47.1 | 48.5 | 51.8 | 53.0 | 54.1 | 55.3 | 56.6 | 58.7 |

**Source:** Data from the Workforce Survey (3rd Round) of the National Statistical Office, analyzed by the Bureau of Development Evaluation and Dissemination, NESDB.

**Note:** Learning rate is the level of literacy and basic computation required for daily livelihood; to attain such a level, a person should have had 5-6 years of formal schooling or equivalent.

**Table 4.14** Percentage of Children and Youths Aged 11-24 Years With Computer and Language Capability by Area, Region, 2002

Unit: Percent

| Capability | Whole country | Area | | Region | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Urban | Rural | Bangkok | Central | North | Northeast | South |
| - Computer use | 41.3 (6.4 million) | 42.7 | 33.7 | 38.5 | 45.5 | 48.0 | 30.3 | 37.4 |
| - Language for communication purposes | 29.2 (4 million) | 34.1 | 27.0 | 31.4 | 29.6 | 34.3 | 18.0 | 49.4 |
| - English | 82.4 | 89.9 | 78.2 | 94.3 | 95.3 | 92.1 | 75.0 | 64.0 |
| - Chinese | 1.5 | 2.1 | 1.1 | 2.9 | 1.3 | 0.9 | 2.3 | 0.5 |
| - Other | 16.1 | 8.0 | 20.7 | 2.8 | 3.4 | 7.0 | 22.7 | 35.5 |

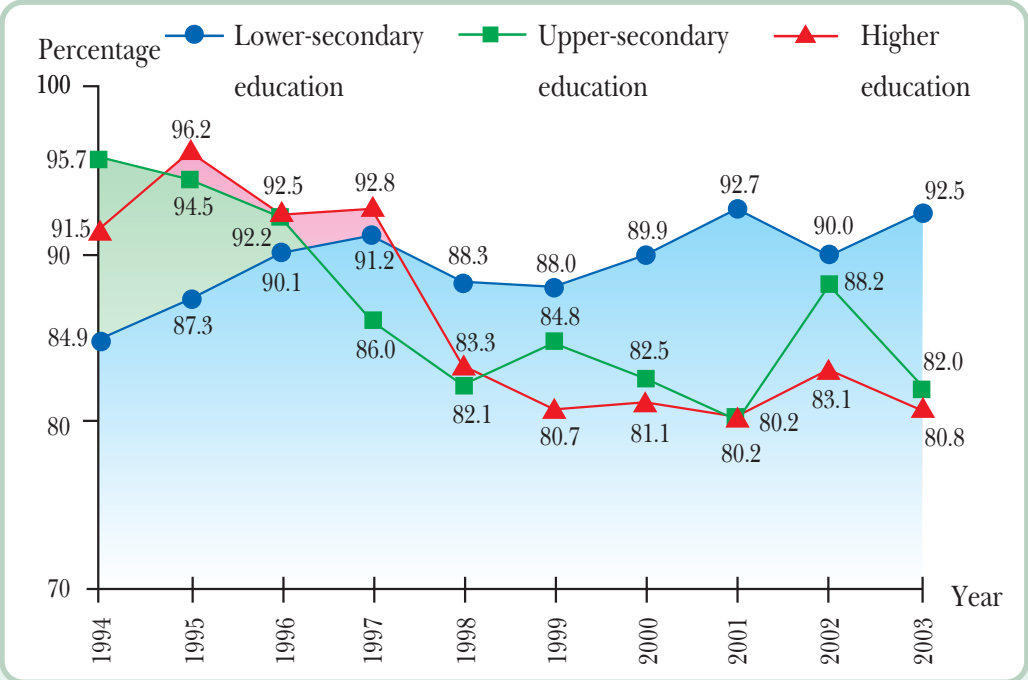
**Source:** Report on the Survey of Children and Youths, 2002. National Statistical Office.

## 2.3 Education Opportunities

### 2.3.1 Educational Continuation

The rates of students continuing their education from primary to lower-secondary, from lower to upper-secondary, and from upper-secondary to higher education tended to be rising during the pre-economic crisis period. But the rates dropped during the crisis and rose again after the crisis was over (Figure 4.14).

**Figure 4.14** Rates of Educational Continuation by Educational Level, Academic Years 1994-2003




**Source:** Office of the Education Council, Ministry of Education.

With the higher rate of educational continuation, coupled with an increase in the average duration of education among Thai population aged 15 and over from 6.6 years in 1996 to 7.8 years in 2003 (Table 4.15), the proportion of labour force (2003) with primary schooling has dropped to 63.8%. It has been projected that the proportion of workers with primary education will drop further to only 39.9% in 2020, while those with higher education will rise from 11.9% in 2003 to 22.5% in 2020 (Table 4.16).

**Table 4.15** Average Years of Schooling for Thai People, 1996-2003

| Age group | Years of schooling | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
| 15-21 years | 8.8 | 9.0 | 9.3 | 9.4 | 9.5 | 9.6 | 9.7 | 9.8 |
| 15-59 years | 7.2 | 7.4 | 7.6 | 7.7 | 7.8 | 7.7 | 7.8 | 7.9 |
| 60 years and over | 3.2 | 3.3 | 3.4 | 3.5 | 3.6 | 3.7 | 3.8 | 3.9 |
| Average (15 years+) | 6.6 | 6.8 | 7.0 | 7.1 | 7.2 | 7.4 | 7.6 | 7.8 |

**Source:** Reports on Thai People's Educational Attainment, 2000 and 2003. Office of the Education Council, Ministry of Education.

**Note:** An estimate for 2003.

**Table 4.16** Structure (Percentage) of Labour Force by Educational Level, 1995-2020

| Educational level | 1995[(1)] | 1997[(1)] | 1999[(1)] | 2001[(1)] | 2002[(1)] | 2003[(1)] | 2010[(2)] | 2020[(2)] |
|---|---|---|---|---|---|---|---|---|
| Primary and lower | 78.0 | 75.2 | 69.8 | 66.3 | 65.6 | 63.8 | 55.9 | 39.9 |
| Lower-secondary | 8.9 | 10.1 | 12.0 | 12.7 | 13.0 | 13.7 | 14.7 | 14.6 |
| Upper-secondary | 3.3 | 3.6 | 5.0 | 6.2 | 6.8 | 7.2 | 8.7 | 14.3 |
| Vocational | 4.7* | 4.8* | 5.0* | 3.4* | 3.3* | 3.3* | 6.6 | 8.7 |
| Higher | 5.1 | 6.2 | 8.2 | 11.3 | 11.3 | 11.9 | 14.1 | 22.5 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Sources:** [(1)] Data for 1995-2003 were derived from the Reports of the Workforce Surveys 3rd Round, 1995-2003. National Statistical Office.

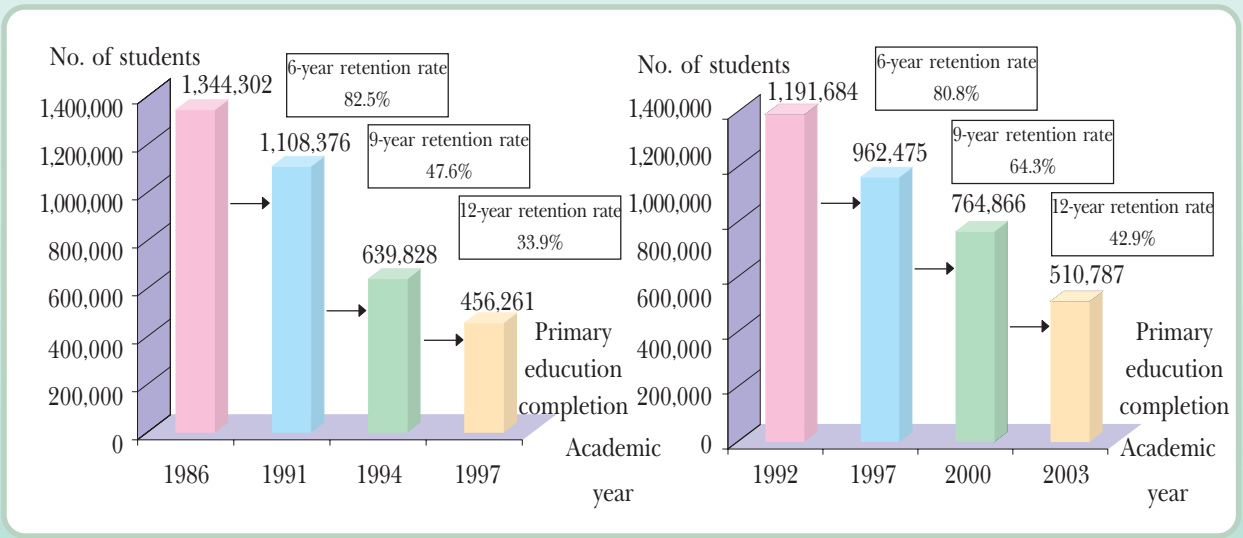
[(2)] Data for 2010-2020 were derived from the Report on Thailand's Social and Economic Trends. Thailand Development Research Institute

**Note:** * Including graduates from vocational and teacher-training colleges for 1995-2000

### 2.3.2 Education Retention Rate

The students retention rates have been improving, essentially for the primary educational level, but the rises for those at the lower-secondary and upper-secondary educational levels are rather slow. The 12-year retention through upper-secondary education is only 42.9% (Figure 4.15).

**Figure 4.15** Comparison of Student Retention Rates, Academic Years 1986-1997 and 1992-2003




**Source:** Office of the Education Council, Ministry of Education.

## 2.4 Quality of Education

The Thai educational system tends to focus on memorization rather than strengthening of analytical skills for problem solving and self-study, resulting in low educational achievements below 50% for both primary and secondary levels. Thai children's capability is weaker in terms of rational and systematic analysis and synthesis (Table 4.17). Besides, the Thai educational system cannot compete with those in other countries as evidenced in the results of the academic Olympics contest. In the contest, Thai students' mathematics and science capabilities were lowest among the five Asian countries participating in the event, except for 2002-2004 when Thailand was ranked fourth, better than Singapore and Vietnam (Figure 4.16). Most Thai students have a problem with answering a question that requires the application of knowledge for further analysis and problem solving, and the measuring of process skills. As a result, a lot of Thai people lack the skills for analysis which is a basis for creating life-skills, leading to failure or inability to resolve a problem or situation related to health risks.

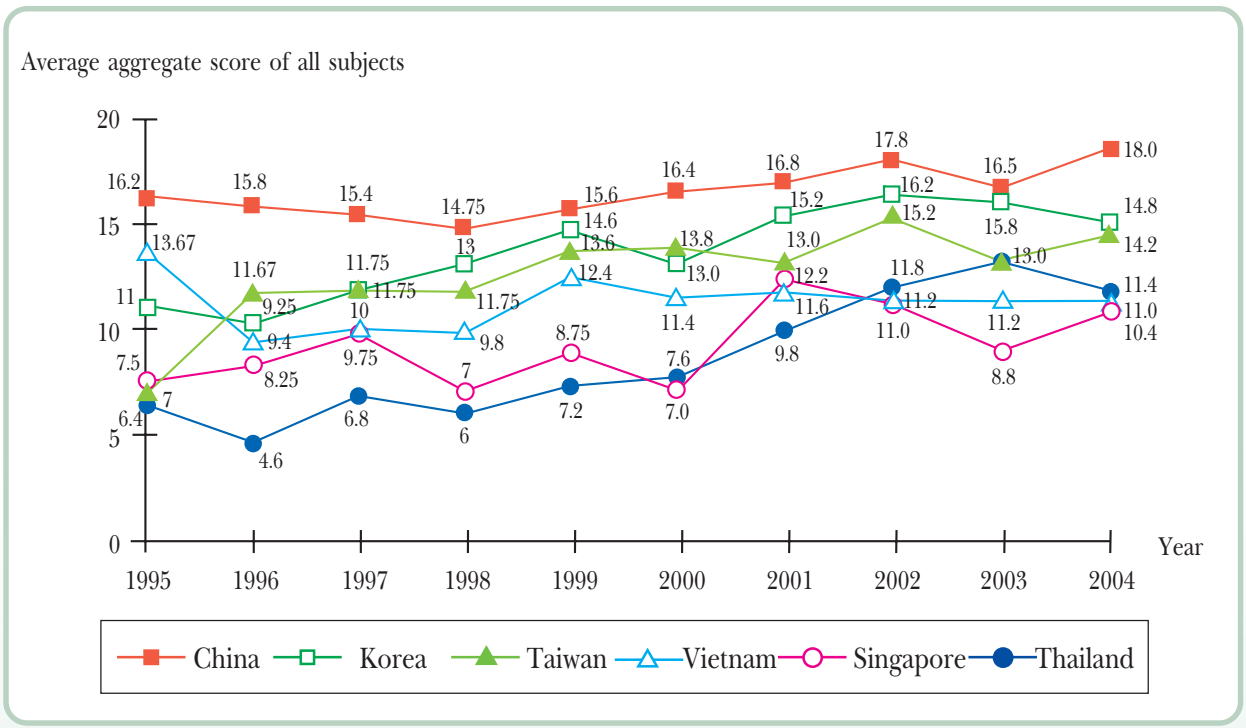
**Table 4.17** Learning Achievements and Attitudes of Primary and Secondary School Students, 2000-2003

| Learning achievement / Educational level | | Average score (percent) | | | |
|---|---|---|---|---|---|
| | | Mathematics | Science | Thai language | English |
| 1. Primary | 2001 | 46.9 | n.a. | 54.3 | 49.6 |
| | 2002 | 49.9 | n.a. | 50.6 | 47.4 |
| | 2003 | 41.7 | 42.4 | 45.2 | 41.1 |
| 2. Lower-secondary | 2000 | 31.2 | 40.4 | 53.0 | 38.9 |
| | 2001 | 32.4 | n.a. | 46.3 | 38.9 |
| | 2002 | 39.1 | n.a. | 46.7 | 45.3 |
| | 2003 | 35.0 | 38.1 | 54.0 | 37.9 |
| 3. Upper-secondary | 2003 | 34.0 | 48.8* | 44.5 | 39.1 |
| **Learning attitude / Educational level** | | **Computational** | **Analytical** | **Language capability** | |
| - Upper-secondary | 2000 | 38.3 | 43.1 | 37.2 | |
| | 2001 | 41.7 | 39.6 | 38.7 | |
| | 2002 | 38.0 | 42.9 | 39.2 | |
| | 2003 | 38.9 | 38.3 | 40.7 | |

**Source:** Office of the Basic Education Commission, Ministry of Education.

**Notes:**
1. Assessments of students' learning achievements for primary and lower-secondary levels, 2001-2002, in three subjects: Thai language, English and mathematics.
2. For 2000-2003, the assessments of upper-secondary school students' learning attitudes were undertaken in three aspects: computational, analytical and language capabilities.
3. For 2003, there was also an assessment of learning achievements for upper-secondary school students.
4. * For physical/biological sciences.

**Figure 4.16** Results of Olympic Scientific Knowledge Contest of Students from Thailand and Other Asian Countries, 1995-2004




**Source:** Office of the Education Council, Ministry of Education.

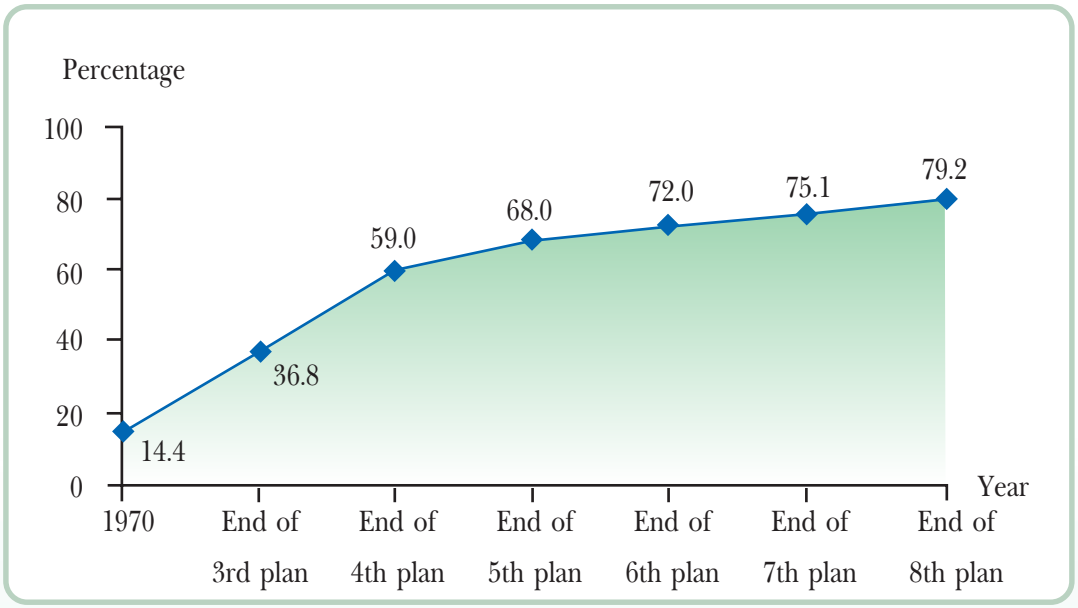
**Note:** Average aggregate score of all subjects means an average score of 5 subjects (mathematics, chemistry, physics, biology and computer science) for each year.

## 3. Situations and Trends of Population, Family and Migration

### 3.1 Population Structure

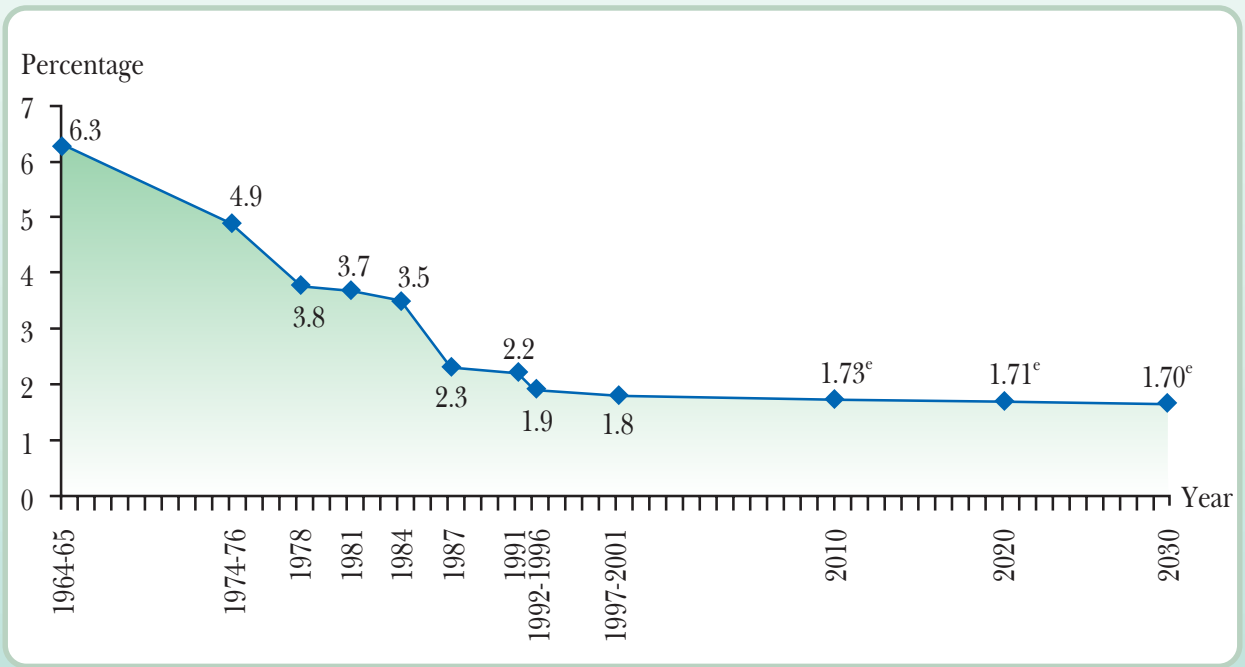
The success in Thailand's family planning campaigns has led to an increase in the contraceptive prevalence rate from 14.4% in 1970 to 79.2% in 2001 (Figure 4.17), resulting in a drastic reduction in the total fertility rate (Figure 4.18). And as a result, the population growth has continuously dropped from 3.2% prior to 1970 to 0.8% in 2001. It has been projected to keep on declining to 0.53% in 2020 (Figure 4.19). The decrease in population growth rate has affected the quantity and age structure of the population. Thailand will have a population of 72.3 million in 2025 (Figure 4.20), while the proportion of children aged 0-14 tends to drop whereas the working-age and elderly proportions are likely to escalate (Figure 4.21). This describes the phenomenon of declining dependency ratio for children but rising for the elderly. Though the overall dependency ratio keeps falling until 2010, it will rise again due to a greater proportion of the elderly (Figure 4.22). This will result in a change in Thailand's Population Pyramid from wide-base to narrow-base, similar to those in developed countries (Figure 4.23).

**Figure 4.17** Contraceptive Prevalence Rate for Thailand Since the Beginning of the Family Planing Programme Until 2001



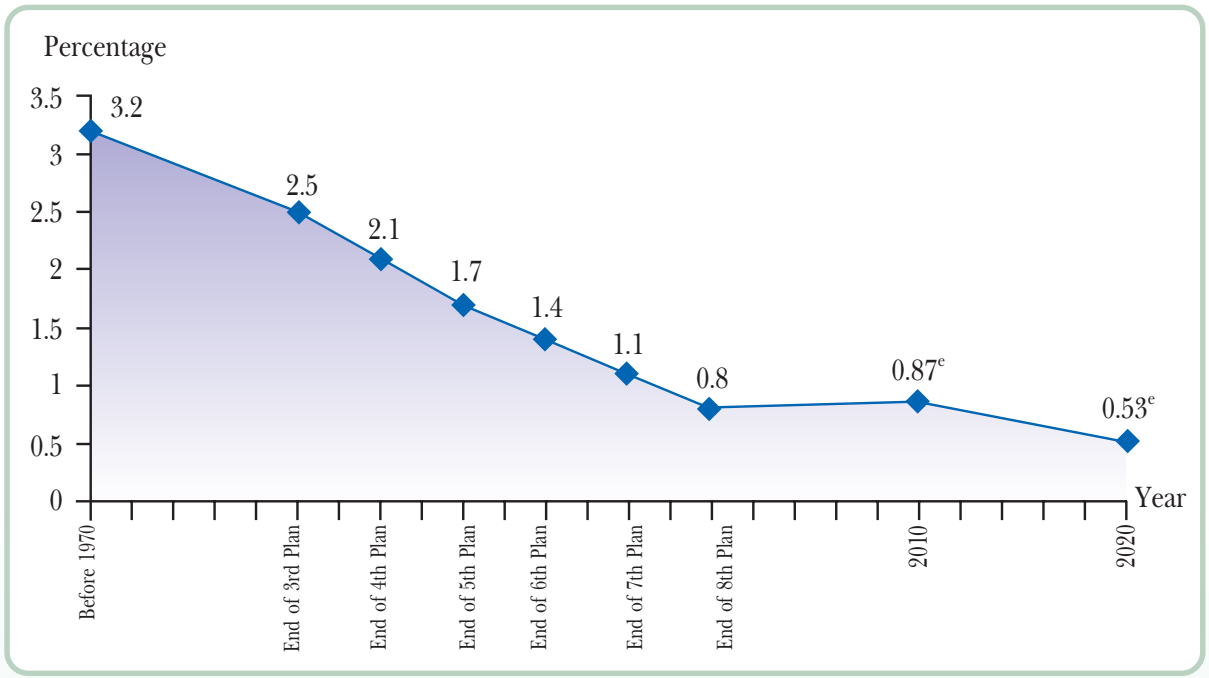

**Source:** Bureau of Health Promotion, Department of Health.

**Figure 4.18** Total Fertility Rate for Thailand and Projections, 1964-2030



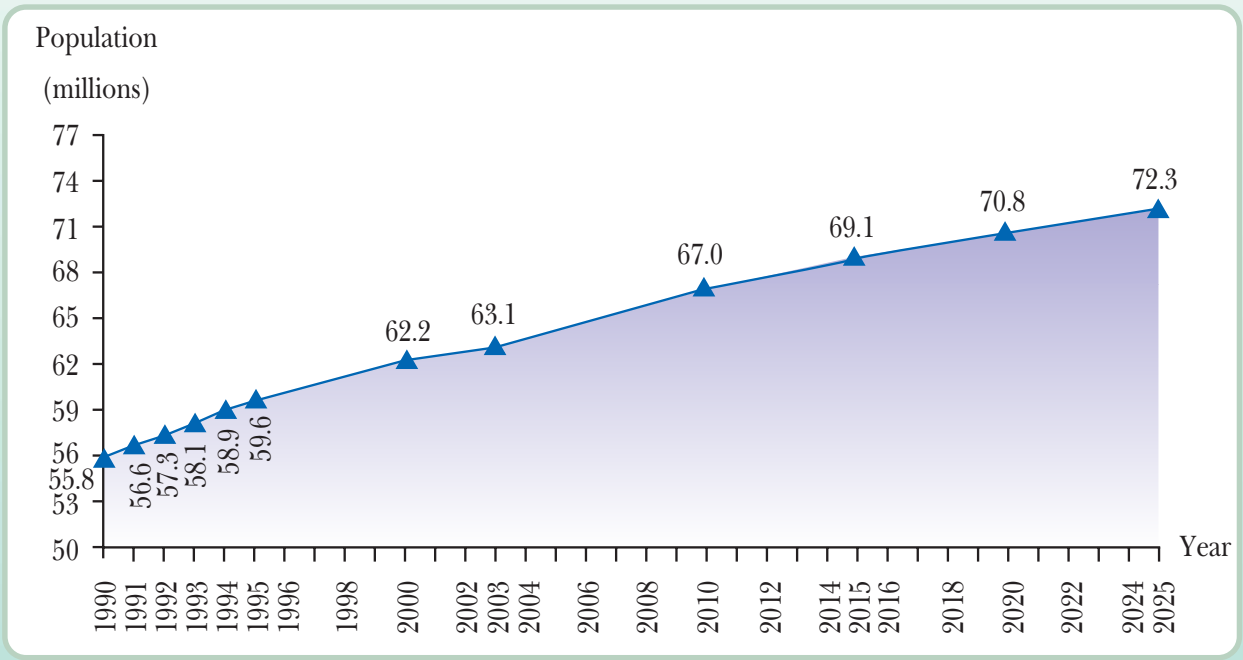

**Source:** Institute of Population and Social Research, Mahidol University.

**Figure 4.19** Population Growth Rate and Projection, Thailand, 1970-2020




**Sources:** (1) Data before 1970 were derived from Niphon Debavalya, Before Getting the 1970 Population Policy.
(2) Data for end of the 3rd-8th Plans were derived from the Department of Health, MoPH.
(3) Data for 2010-2020 were derived from Population Projections, Thailand, 1990-2020, NESDB.

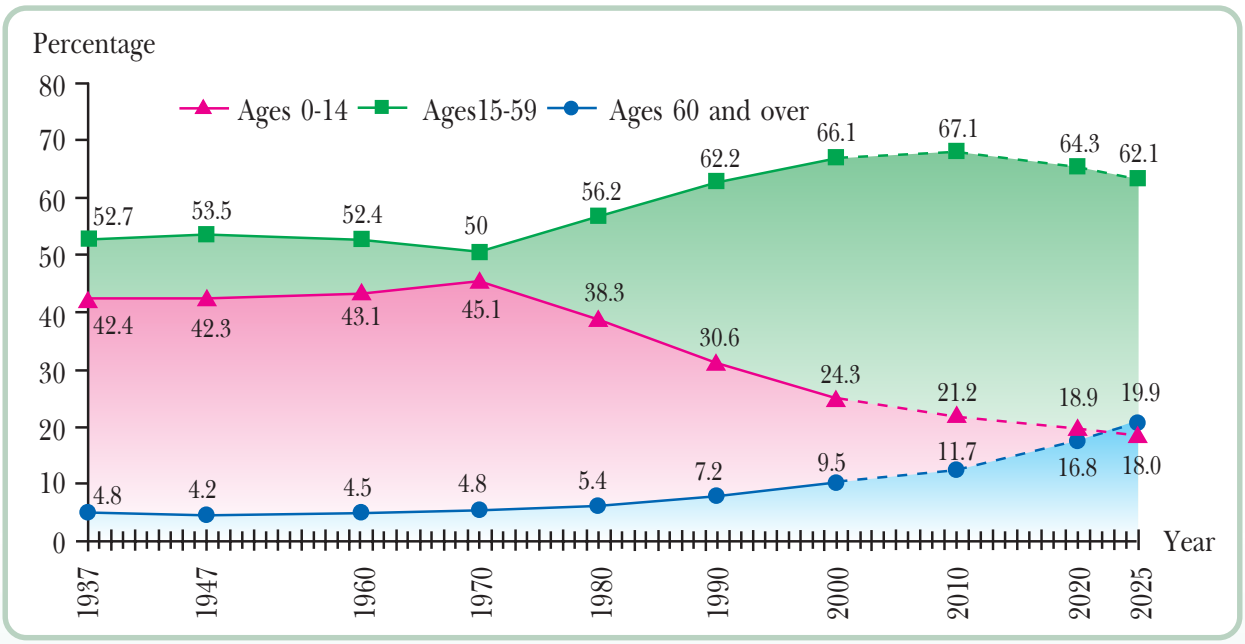
**Figure 4.20** Projection of Population Thailand, 1990-2025




**Source:** Population Projections, Thailand, 2000-2025, NESDB.

**Note:** For 2003, data were derived from the Bureau of Registration Administration, Ministry of Interior.

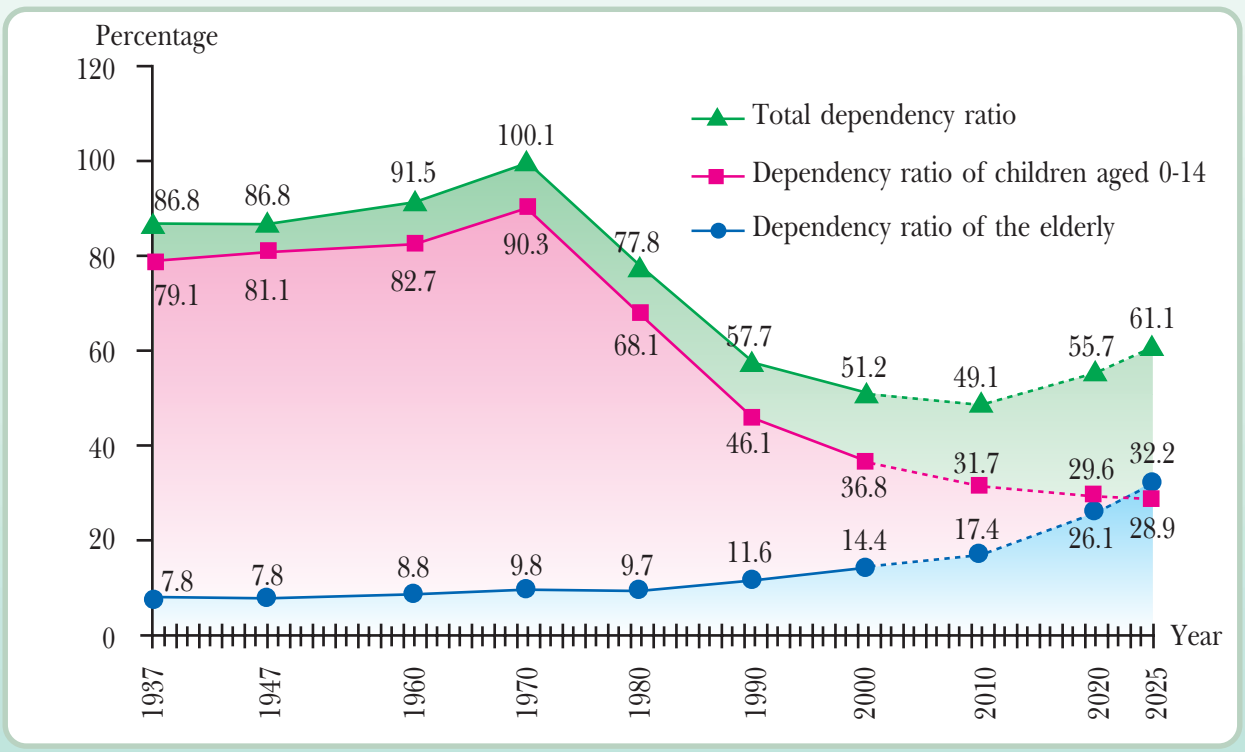
**Figure 4.21** Proportion of Population by Major Age Group, 1937-2025




**Sources:** (1) Data for 1937, 1947, 1960, 1970, 1980, 1990 and 2000 were derived from the Population and Housing Censuses. National Statistical Office.

(2) Data for 2010, 2020 and 2025 were derived from Population Projections, Thailand, 2000-2025. NESDB.

**Figure 4.22** Population Dependency Ratio, 1937-2025




**Sources:** (1) Data for 1937, 1947, 1960, 1970, 1980 and 1990 were derived from the Population and Housing Censuses. National Statistical Office.

(2) Data for 2010-2025 were derived from Population Projections, Thailand, 2000-2025. NESDB.

**Figure 4.23** Population Pyramids of Thailand in 1960, 1990, 2000, 2010, 2020, and 2025 Compared to Those in 1999 for Sweden, Denmark and Japan

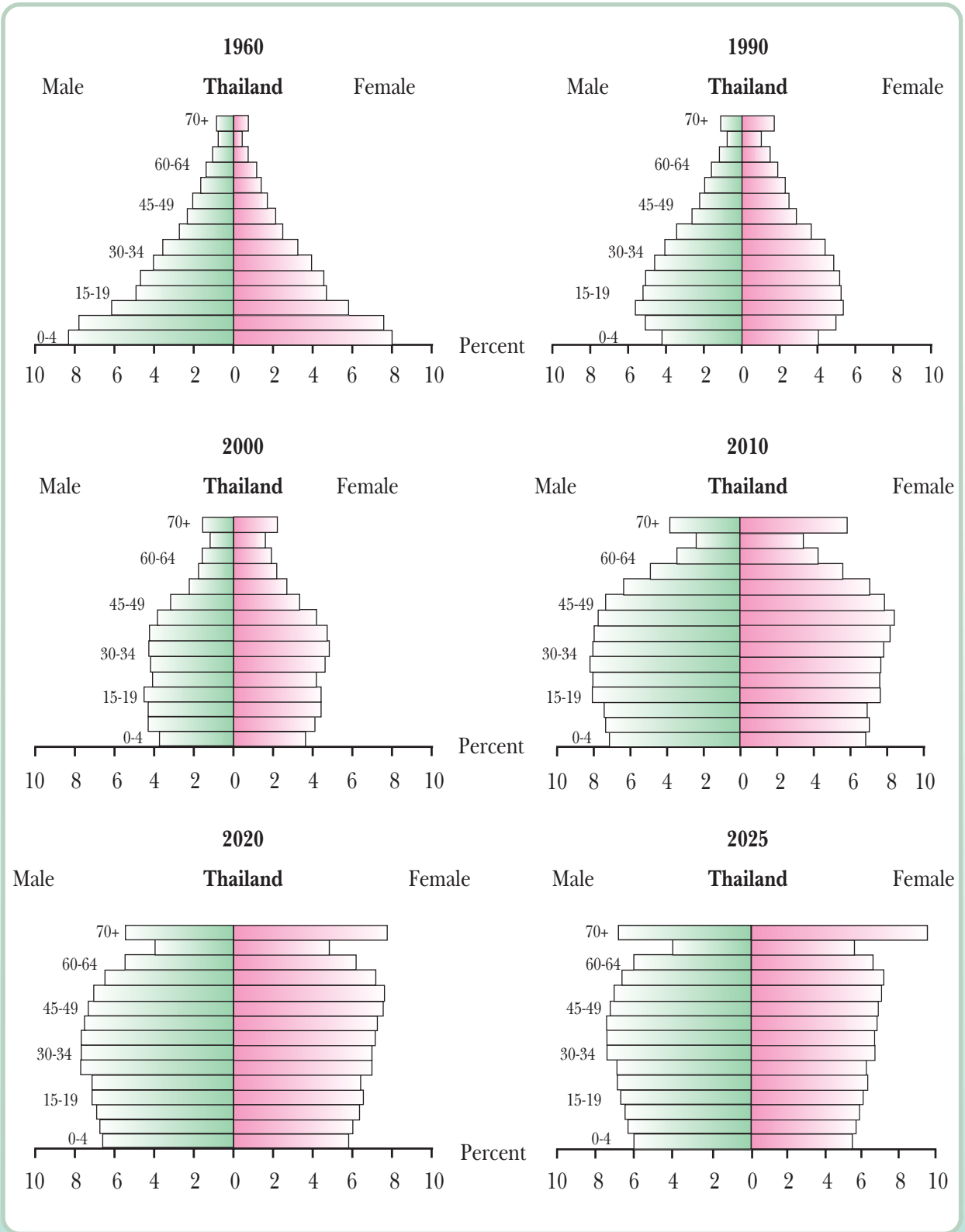
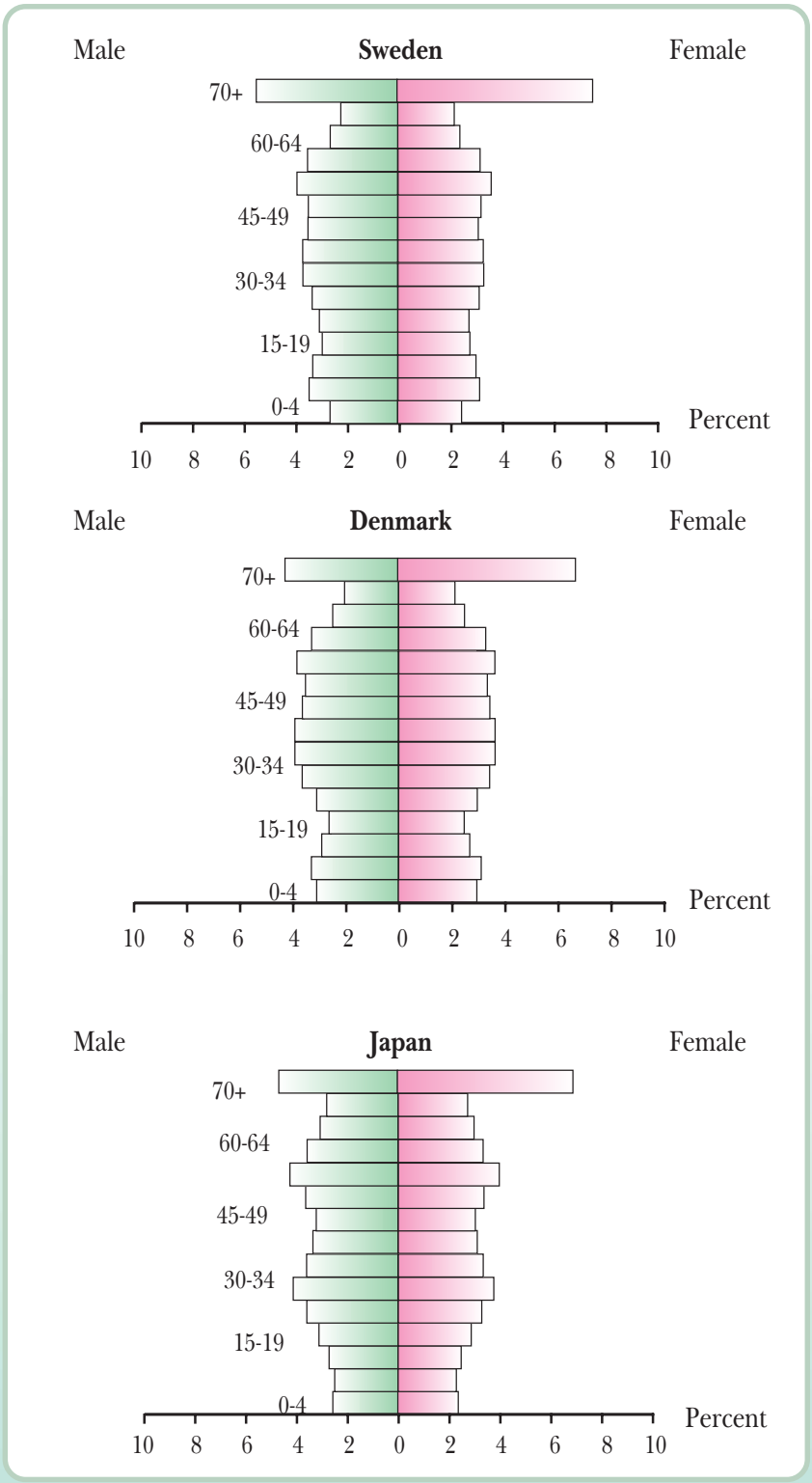


**Figure 4.23** Population Pyramids of Thailand in 1960, 1990, 2000, 2010, 2020, and 2025 Compared to Those in 1999 for Sweden, Denmark and Japan (Cont'd)




**Sources:** (1) Data for 1960, 1990 and 2000 were derived from the Population and Housing Censuses. National Statistical Office.

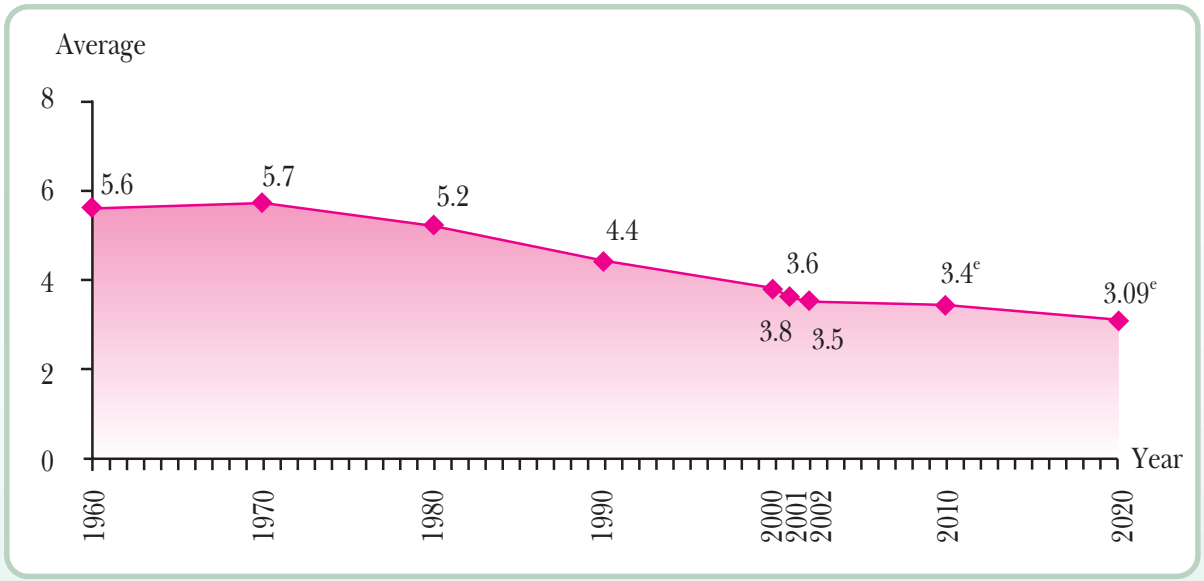
(2) Data for 2010, 2020 and 2025 were derived from the Projection of Thai Population, 2000-2025, NESDB.

(3) United Nations (1999). World Population Prospects: 1998 Revision, Volume II: Sex and Age.

## 3.2 Family Structure and Relationship

The family structure has become complex in various forms with a tendency to change from an extended family to a nucleus family. The average family size has dropped to 3.5 persons in 2002 and is expected to drop further to 3.09 persons in 2020 (Figure 4.24). Beginning to appear are one-person households and those with one household head living with a single offspring; the proportion rising from 16.1% in 1996 to 26.1% in 2002 (Household Socio-Economic Survey. National Statistical Office).

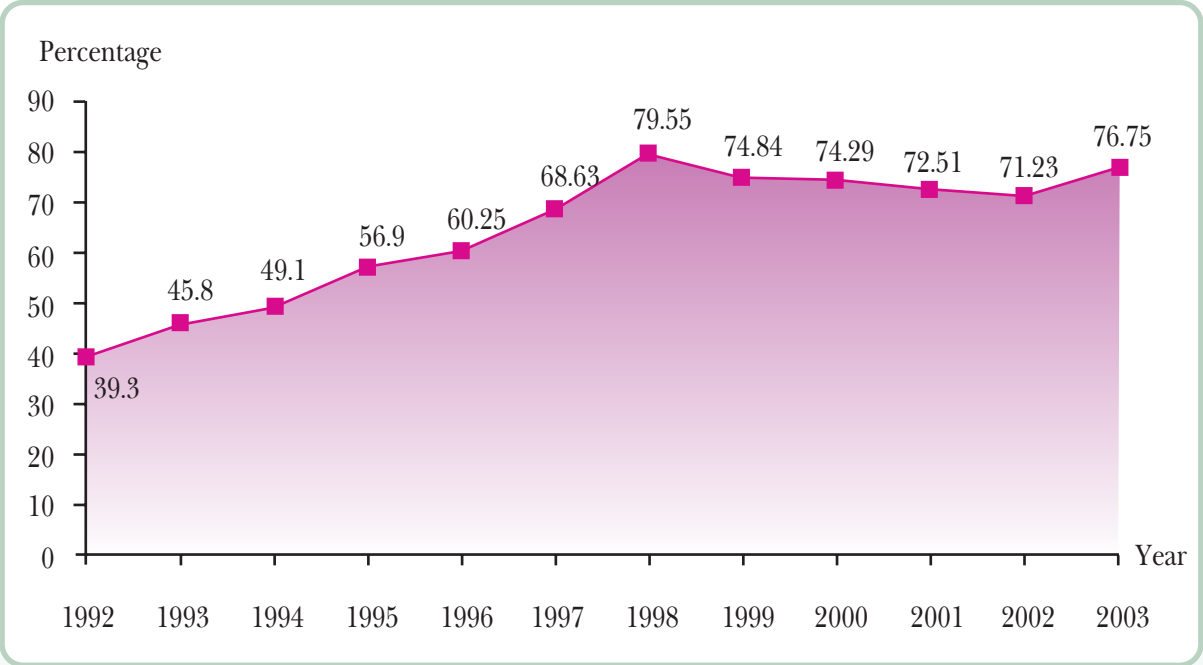
**Figure 4.24** Average Family Size and Projections, Thailand, 1960-2020




**Sources:** (1) For 1960-2000, Population and Housing Censuses. National Statistical Office.
(2) For 2001-2002, Household Socio-Economic Surveys. National Statistical Office.
(3) For 2010-2020, Reports on Trends in Thailand's Economic and Social Status. Thailand Development Research Institute.

The national development under the capitalist economy focussing on industrial development as well as materialistic development and competition has changed the Thai family livelihood. More and more women have to work outside the home to financially support the family, resulting in family members having less time for talking and helping each other. Thus, the family relationship has become weakened as evidenced by the higher rate of divorces, in relation to new marriages, rising from 10.5% in 1994 to 24.6% in 2003. It is noteworthy that even though the population is growing, the number of marriages each year has fallen to 328,356 couples in 2003 (Bureau of Registration Administration, Ministry of Interior). This is due to rising numbers of delayed marriages and cohabitation without wedding registration. Besides, child-rearing patterns have also changed; more pre-school-age children are raised outside the family. A study conducted by NSO in 2002 revealed that as high as 53.3% of children aged 3-5 years were looked after at nurseries, day-care centres, or schools and only 28.6% of them were raised by their own parents. This is consistent with the rising rate of 3-5-year-olds attending pre-elementary school from 39.3% in 1992 to 76.75% in 2003 (Figure 4.25).

**Figure 4.25** Rate of Children Aged 3-5 Years Attending Pre-elementary School, 1992-2003




**Source:** Education Statistics in the Schooling System. Ministry of Education.

Such a change in the family structure and relationship has an impact on the Thai health system as follows:

**3.2.1 More family violence deteriorating women and children's physical and mental health status.** As a lot of people cohabiting without any marriage registration or traditional wedding, they are not prepared to live a marriage life, lacking family-life and problem-solving skills. Whenever a problem arises, more people tend to end up with physical or mental assaults and sexual abuse. A survey on 2,408 women and children in Bangkok and its vicinity and in another 14 provinces across the country conducted by the Rajabhat Institute at Suan Dusit in 2002 revealed that among the women and children who were assaulted, 62.8% were inflicted by their own family members. Among women, 47.9% were sexually abused and 23.0% were mentally oppressed. For children, 36.1% were physically assaulted, 32.7% were sexually abused and 27.3% were forced to do hard work. Another study, conducted by the Institute of Population and Social Research of Mahidol University in 2000, on 2,816 women aged 15-49 years in Bangkok and a province (province B) in the upper part of the nation's central region, revealed that 23% and 34% of women in Bangkok and province B, respectively, had ever been assaulted by their spouses. This has resulted in a poor physical and mental health condition and a high rate of women taking analgesics (Table 4.18).

**Table 4.18** Percentage of Women with Health Problems When Assaulted, 2000

| Health problem | Assaults, Bangkok | | Assaults, Province B | |
|---|---|---|---|---|
| | Sexual or physical (percent) | Sexual and physical (percent) | Sexual or physical (percent) | Sexual and physical (percent) |
| **1. Health problems during the past four weeks** | | | | |
| - Problem of walking | 20 | 25 | 16 | 14 |
| - Problem with daily routines | 17 | 25 | 21 | 25 |
| - Illness or uneasiness | 25 | 29 | 27 | 31 |
| - Problem with memory and concentration | 32 | 35 | 30 | 36 |
| **2. Use of medication during the past four weeks** | | | | |
| - Sleeping pills | 6 | 7 | 11 | 15 |
| - Analgesics | 35 | 49 | 52 | 63 |
| **3. Hospital care during the past year** | | | | |
| - Hospitalization | 12 | 15 | 10 | 10 |

**Source:** Kritaya Archavanitkul et al. Report on Violence in Marriage Life and Women's Health. Institute of Population and Social Research, Mahidol University, 2003.

**3.2.2 Lack of appropriate child-rearing practices leading to a rather low level of development and intelligence and health problems.** This is because most parents have no time to closely look after their children; and they have to take children to the educational system with teachers taking care of them while parents are at work. Some have to leave their children at a child-care centre, which might be substandard; and some child caregivers have no spiritual linkages with the children, having an adverse effect on the level of development and intelligence of Thai children and youths. A cross-sectional study on 9,488 children aged 1-18 years in 2001, using a development screening test and an intelligence quotient test by age group, revealed that for children under 6 only 63% had normal and faster-than-normal development levels and most of children aged 6-18 had a rather low IQ (Table 4.19). This is why there are a lot of health problems such as homosexuality, HIV/AIDS, drug abuse in adolescents, and mental health. The 2002 report of the Department of Mental Health on mental health services for children aged 0-15 years revealed that 25,871 children/adolescents had mental health and psychiatric problems; among them, as high as 36.8% (9,523 cases) had a behavioural abnormality of mental development.

**Table 4.19** Levels of Development and Intelligence of Thai Children and Youths, 2001

| Development level | | Intelligence quotient | | |
|---|---|---|---|---|
| **Level** | **Children aged 1-<6 yrs. (percent)** | **Level** | **Children aged 6-<13 yrs. (percent)** | **Children aged 13-18 yrs. (percent)** |
| - Slower than normal | 7.1 | - Lower than normal | 4.6 | 7.5 |
| - Rather slow | 29.9 | - Rather low | 62.9 | 58.7 |
| - Normal | 43.1 | - Normal | 28.3 | 27.2 |
| - Rather fast | 15.1 | - Rather high | 3.7 | 6.1 |
| - Faster than normal | 4.8 | - Higher than normal | 0.5 | 0.5 |

**Source:** Chanpen Choprapawon. Prospective Cohort Study in Thai Children Project. A document distributed in the 10th Anniversary Exhibition of the Thai Research Fund, 2003

**Note:** Figures were estimated using the weighting technique based on the population of each region.

### 3.2.3 More children and elders are abandoned.

Due to a lack of family warmth and a rising rate of divorces as well as an economic hardship, more children and elderly people are abandoned, particularly during the 1998-1999 economic crisis and even during the post-crisis period, there has been no declining trend (Table 4.20). In actuality, there have been more and period, there has been more children and elders abandoned as evidenced by the rising numbers of street children and orphans.

**Table 4.20** Numbers and Proportions of Abandoned Children and Elders, 1993-2003

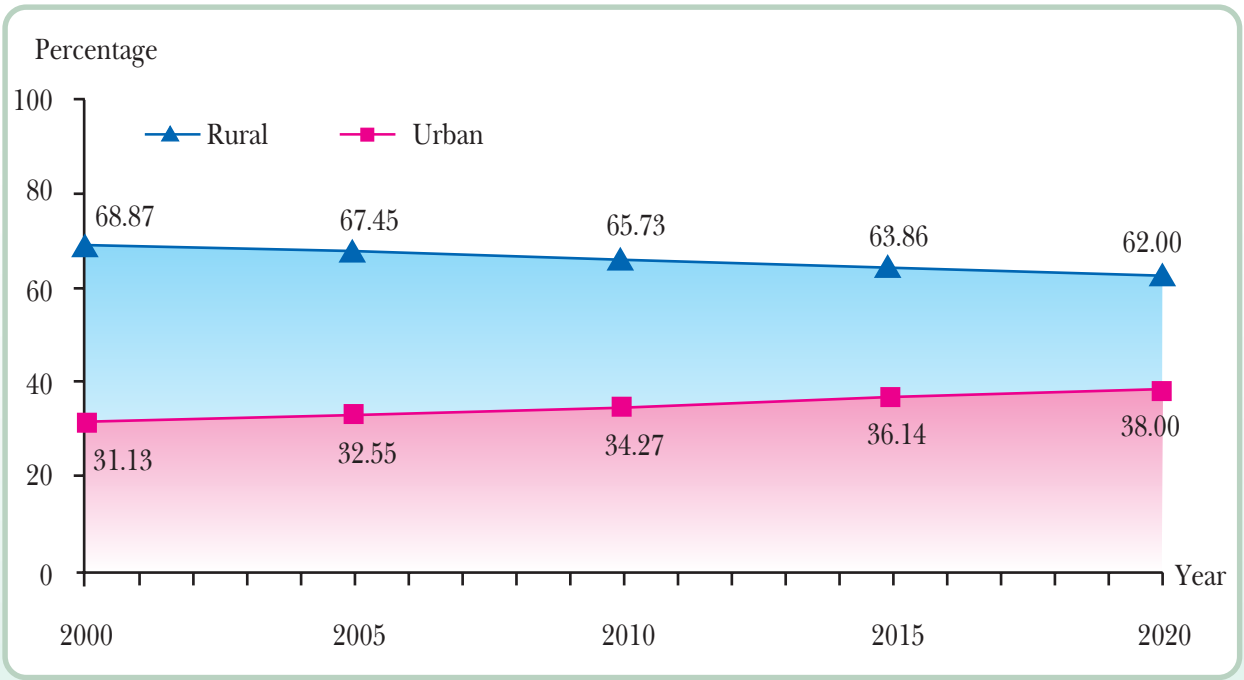
| Year | Children abandoned | | Elders abandoned | |
|---|---|---|---|---|
| | **Number** | **Proportion per 100,000 children** | **Number** | **Proportion per 100,000 elders** |
| 1993 | 5,605 | 30.33 | 2,141 | 51.30 |
| 1994 | 5,748 | 31.19 | 2,200 | 49.11 |
| 1995 | 5,736 | 31.22 | 2,311 | 51.60 |
| 1996 | 5,896 | 32.25 | 2,504 | 53.50 |
| 1997 | 6,049 | 33.38 | 2,624 | 53.83 |
| 1998 | 6,341 | 35.15 | 2,619 | 51.47 |
| 1999 | 6,262 | 35.00 | 2,652 | 50.33 |
| 2000 | 6,096 | 34.42 | 2,896 | 53.41 |
| 2001 | 6,151 | 35.11 | 2,804 | 49.94 |
| 2002 | 6,110 | 35.24 | 2,884 | 49.33 |
| 2003 | 6,192 | 35.71 | 2,991 | 51.16 |

**Source:** Central Affairs Division, Department of Social Development and Welfare.

## 3.3 Rural-to-Urban Migration

The national development with industrialization emphasis plays a major role in causing rural people to migrate to cities to seek jobs in the industrial and service sectors. The proportion of rural-to-urban migrants was 31.13% of all migrants in 2000; and it has been forecast that, in 2020, 38% of the total population will reside in urban areas (Figure 4.26). Most of the migrants will move to Bangkok, followed by to Bangkok's vicinity, as well as to the eastern seaboard area.

**Figure 4.26** Projection of Urban and Rural Populations, Thailand, 2000-2020




**Source:** Population Projections, Thailand, 2000-2025, NESDB.

The 1997 economic crisis resulted in the shutdown or downsizing of a lot of business operations. This led to a reverse of labour force mobilization from urban to rural domiciles, particularly to the Northeast and the North. In 1997, the migration of Thai population from urban to rural areas was as high as 37.2% of all migrants, while only 13.4% migrated from rural to urban areas. After the economic expansion in 2002, the proportion of urban-to-rural migration dropped to only 33.0% but the rural-to-urban migration rose to 19.2%, particularly from the Central Plains, the North and the Northeast (Table 4.21).

**Table 4.21** Percentage of Migrants by Type of Migration and Current Residential Region, 1992-2002

| Type of migration | Total | Current residential region | | | | |
|---|---|---|---|---|---|---|
| | | Bangkok | Central | North | Northeast | South |
| All migrants | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Urban → urban | 16.6 | 30.3 | 23.1 | 13.2 | 10.9 | 14.7 |
| Rural → urban | | | | | | |
| 1992 | 15.5 | n.a. | n.a. | n.a. | n.a. | n.a. |
| 1994 | 15.0 | 78.4 | 9.8 | 10.0 | 6.9 | 14.4 |
| 1997 | 13.4 | 74.1 | 10.5 | 8.8 | 5.9 | 15.9 |
| 2002 | 19.2 | 67.0 | 21.1 | 14.1 | 9.6 | 18.6 |
| Unknown[1] → urban | 0.7 | 2.7 | 0.5 | 0.9 | 0.3 | 0.6 |
| Rural → rural | 28.4 | - | 29.8 | 31.4 | 28.2 | 40.5 |
| Urban → rural | | | | | | |
| 1992 | 32.2 | n.a. | n.a. | n.a. | n.a. | n.a. |
| 1994 | 33.4 | - | 28.2 | 38.1 | 47.0 | 20.9 |
| 1997 | 37.2 | - | 32.0 | 39.6 | 55.5 | 20.3 |
| 2002 | 33.0 | - | 24.9 | 38.0 | 47.2 | 24.3 |
| Unknown[1] → rural | 2.1 | - | 0.6 | 2.4 | 3.8 | 1.4 |

**Sources:** Data for 1992, 1994, 1997 and 2002 were derived from the Reports on Surveys of Population Migration, 1992, 1994, 1997 and 2002. National Statistical Office.

**Note:** [1] Including immigrants from foreign countries

Due to more rural-to-urban migration, the migrants have to change their rural lifestyles and adopt urban lifestyles. This has led to health problems in some workers who cannot properly adjust themselves to the changing conditions; such problems are mental disorders, peptic ulcer, hypertension, and certain diseases or conditions commonly found in urban slums, i.e., child malnutrition, diarrhoea and tuberculosis. In addition, most of the migrant workers working in factories are more likely to be exposed to occupational diseases related to industrial chemicals, such as cancer and chemical poisoning. A number of them have to live in an unhygienic environment and some of those who are involved in commercial sex are at increased risk of contracting and spreading HIV/AIDS.

The increasing rural-to-urban migration has created problems of mega-cities requiring a suitable urban development planning approach; health services have to be provided to cover all target groups of population.

## 3.4 Transnational Labour Migration

Recently, there has been more transnational labour migration. More Thai workers tend to seek jobs overseas; the number of workers ring from 61,056 in 1990 to 202,296 in 1995, but dropping to only 147,769 after the economic crisis in 2003 (Bureau of Overseas Workers Administration, Department of Employment; the number would be much greater if illegal workers were taken into account). At present, they are more likely to go to work in Taiwan, Singapore, Malaysia, and the Middle East. Nevertheless, a lot of foreign workers have migrated to work in Thailand, both legally and illegally, especially low-wage labourers from neighbouring countries such as Myanmar, Laos, China and Cambodia. Since 2003, the government has allowed the registration of alien workers. As of 31 July 2004, there were 1,269,074 registered workers: 905,881 (71.4%) from Myanmar; 181,614 (14.3%) from Laos; and 181,579 (14.3%) from Cambodia. The provinces with the highest numbers of workers from Myanmar are Bangkok, Tak, Samut Sakhon, Chiang Mai, and Ranong, each having 55,000 to 127,000 workers (Department of Employment).

As Thailand has had more and more alien workers, particularly along the borders, several infectious diseases are widespread such as malaria, diarrhoea, HIV/AIDS, poliomyelitis, and anthrax. Certain diseases that Thailand could once be able to control have re-emerged, such as filariasis; it was reported that 3% of Myanmar workers along the border were carriers of such a disease.

## 4. Quality of Life of Thai People

The United Nation Development Programme (UNDP) has developed a Human Development Index (HDI), a quality of life measurement, based on social factors (education, life expectancy at birth and economic factors - GDP per capita). In 1990, the quality of life of Thai people stood at the "moderate" level, ranking 74th (HDI = 0.715) among 173 countries worldwide, and fourth among ASEAN member states after Singapore, Brunei and Malaysia. In 1995, the HDI ranking of Thailand rapidly jumped from 74th in 1990 to 59th among 174 nations, and stayed at the "high" level, ranking third (HDI = 0.838) among ASEAN nations, after Singapore and Brunei (Table 4.22). The major factor attributable to the higher ranking is its high level of economic growth.

After the economic crisis, the quality of life of Thai people worsened between 1998 and 2002; Thailand's HDI dropped from "high" to "moderate" level (HDI = 0.745-0.768) and the ranking fell from 59th to 66th-76th among 174 countries and fourth among ten ASEAN member states, after Singapore, Brunei and Malaysia (Table 4.22).

**Table 4.22** Human Development Indexes for Thailand and Some Other Countries, 1990-2002

| Group and country | 1990 Actual rank | 1990 In-group rank | 1990 HDI value | Group and country | 1995 Actual rank | 1995 In-group rank | 1995 HDI value | Group and country | 1998 Actual rank | 1998 In-group rank | 1998 HDI value | Group and country | 1999 Actual rank | 1999 In-group rank | 1999 HDI value | Group and country | 2000 Actual rank | 2000 In-group rank | 2000 HDI value | Group and country | 2001 Actual rank | 2001 In-group rank | 2001 HDI value | Group and country | 2002 Actual rank | 2002 In-group rank | 2002 HDI value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WHO/SEAR** | | | | **WHO/SEAR** | | | | **WHO/SEAR** | | | | **WHO/SEAR** | | | | **WHO/SEAR** | | | | **WHO/SEAR** | | | | **WHO/SEAR** | | | |
| Thailand | 74 | 1 | 0.715 | Thailand | 59 | 1 | 0.838 | Thailand | 76 | 1 | 0.745 | Thailand | 66 | 1 | 0.757 | Thailand | 70 | 1 | 0.762 | Thailand | 74 | 1 | 0.768 | Thailand | 76 | 1 | 0.768 |
| Sri Lanka | 86 | 2 | 0.663 | Sri Lanka | 90 | 2 | 0.716 | Sri Lanka | 84 | 2 | 0.733 | Sri Lanka | 81 | 3 | 0.735 | Sri Lanka | 89 | 3 | 0.941 | Sri Lanka | 99 | 3 | 0.730 | Sri Lanka | 96 | 3 | 0.740 |
| Maldives | 112 | 4 | 0.497 | Maldives | 95 | 3 | 0.683 | Maldives | 89 | 3 | 0.725 | Maldives | 77 | 2 | 0.739 | Maldives | 84 | 2 | 0.743 | Maldives | 86 | 2 | 0.751 | Maldives | 84 | 2 | 0.752 |
| Indonesia | 108 | 3 | 0.515 | Indonesia | 96 | 4 | 0.679 | Indonesia | 109 | 4 | 0.670 | Indonesia | 102 | 4 | 0.677 | Indonesia | 110 | 4 | 0.684 | Indonesia | 112 | 4 | 0.682 | Indonesia | 111 | 4 | 0.692 |
| Myanmar | 123 | 5 | 0.390 | Myanmar | 131 | 5 | 0.481 | Myanmar | 125 | 5 | 0.585 | Myanmar | 118 | 6 | 0.551 | Myanmar | 127 | 6 | 0.552 | Myanmar | 131 | 6 | 0.549 | Myanmar | 132 | 6 | 0.551 |
| India | 134 | 6 | 0.309 | India | 139 | 6 | 0.451 | India | 128 | 6 | 0.563 | India | 115 | 5 | 0.571 | India | 124 | 5 | 0.577 | India | 127 | 5 | 0.590 | India | 127 | 5 | 0.595 |
| Bhutan | 159 | 9 | 0.150 | Bhutan | 155 | 9 | 0.347 | Bhutan | 142 | 7 | 0.483 | Bhutan | 130 | 8 | 0.471 | Bhutan | 140 | 7 | 0.494 | Bhutan | 136 | 7 | 0.511 | Bhutan | 134 | 7 | 0.536 |
| Nepal | 152 | 8 | 0.170 | Nepal | 152 | 8 | 0.351 | Nepal | 144 | 8 | 0.474 | Nepal | 129 | 7 | 0.48 | Nepal | 142 | 8 | 0.490 | Nepal | 143 | 9 | 0.499 | Nepal | 140 | 9 | 0.504 |
| Bangladesh | 147 | 7 | 0.189 | Bangladesh | 147 | 7 | 0.371 | Bangladesh | 146 | 9 | 0.461 | Bangladesh | 132 | 9 | 0.47 | Bangladesh | 145 | 9 | 0.478 | Bangladesh | 139 | 8 | 0.502 | Bangladesh | 138 | 8 | 0.509 |
| DPR Korea | - | - | - | DPR Korea | - | - | - | DPR Korea | - | - | - | DPR Korea | - | - | - | DPR Korea | - | - | - | DPR Korea | - | - | - | DPR Korea | - | - | - |
| **ASEAN** | | | | **ASEAN** | | | | **ASEAN** | | | | **ASEAN** | | | | **ASEAN** | | | | **ASEAN** | | | | **ASEAN** | | | |
| Singapore | 43 | 1 | 0.849 | Singapore | 28 | 1 | 0.896 | Singapore | 24 | 1 | 0.881 | Singapore | 26 | 1 | 0.876 | Singapore | 25 | 1 | 0.885 | Singapore | 28 | 1 | 0.884 | Singapore | 25 | 1 | 0.902 |
| Brunei | 44 | 2 | 0.847 | Brunei | 35 | 2 | 0.880 | Brunei | 32 | 2 | 0.848 | Brunei | 32 | 2 | 0.857 | Brunei | 32 | 2 | 0.856 | Brunei | 31 | 2 | 0.872 | Brunei | 33 | 2 | 0.867 |
| Malaysia | 57 | 3 | 0.790 | Malaysia | 60 | 4 | 0.834 | Malaysia | 61 | 3 | 0.772 | Malaysia | 56 | 3 | 0.774 | Malaysia | 59 | 3 | 0.782 | Malaysia | 58 | 3 | 0.790 | Malaysia | 59 | 3 | 0.793 |
| Thailand | 74 | 4 | 0.715 | Thailand | 59 | 3 | 0.838 | Thailand | 76 | 4 | 0.745 | Thailand | 66 | 4 | 0.757 | Thailand | 70 | 4 | 0.762 | Thailand | 74 | 4 | 0.768 | Thailand | 76 | 4 | 0.768 |
| Philippines | 92 | 5 | 0.603 | Philippines | 98 | 6 | 0.677 | Philippines | 77 | 5 | 0.744 | Philippines | 70 | 5 | 0.749 | Philippines | 77 | 5 | 0.754 | Philippines | 85 | 5 | 0.751 | Philippines | 83 | 5 | 0.753 |
| Vietnam | 115 | 7 | 0.472 | Vietnam | 122 | 7 | 0.560 | Vietnam | 108 | 6 | 0.671 | Vietnam | 101 | 6 | 0.682 | Vietnam | 109 | 6 | 0.688 | Vietnam | 109 | 6 | 0.688 | Vietnam | 112 | 7 | 0.691 |
| Indonesia | 108 | 6 | 0.515 | Indonesia | 96 | 5 | 0.679 | Indonesia | 109 | 7 | 0.670 | Indonesia | 102 | 7 | 0.677 | Indonesia | 110 | 7 | 0.684 | Indonesia | 112 | 7 | 0.682 | Indonesia | 111 | 6 | 0.692 |
| Myanmar | 123 | 8 | 0.390 | Myanmar | 131 | 8 | 0.481 | Myanmar | 125 | 8 | 0.585 | Myanmar | 118 | 8 | 0.551 | Myanmar | 127 | 8 | 0.552 | Myanmar | 131 | 9 | 0.549 | Myanmar | 132 | 9 | 0.551 |
| Cambodia | 148 | 10 | 0.186 | Cambodia | 140 | 10 | 0.422 | Cambodia | 136 | 9 | 0.512 | Cambodia | 121 | 9 | 0.541 | Cambodia | 130 | 9 | 0.543 | Cambodia | 130 | 8 | 0.556 | Cambodia | 130 | 8 | 0.568 |
| Laos | 141 | 9 | 0.246 | Laos | 136 | 9 | 0.465 | Laos | 140 | 10 | 0.484 | Laos | 131 | 10 | 0.476 | Laos | 143 | 10 | 0.485 | Laos | 135 | 10 | 0.525 | Laos | 135 | 10 | 0.534 |
| **World (top ten)** | | | | **World (top ten)** | | | | **World (top ten)** | | | | **World (top ten)** | | | | **World (top ten)** | | | | **World (top ten)** | | | | **World (top ten)** | | | |
| Japan | 1 | 1 | 0.983 | Canada | 1 | 1 | 0.960 | Canada | 1 | 1 | 0.935 | Norway | 1 | 1 | 0.939 | Norway | 1 | 1 | 0.942 | Norway | 1 | 1 | 0.944 | Norway | 1 | 1 | 0.956 |
| Canada | 2 | 2 | 0.982 | France | 2 | 2 | 0.946 | Norway | 2 | 2 | 0.934 | Australia | 2 | 2 | 0.936 | Sweden | 2 | 2 | 0.941 | Iceland | 2 | 2 | 0.942 | Sweden | 2 | 2 | 0.946 |
| Norway | 3 | 3 | 0.979 | Norway | 3 | 3 | 0.943 | U.S.A. | 3 | 3 | 0.929 | Canada | 3 | 3 | 0.936 | Canada | 3 | 3 | 0.940 | Sweden | 3 | 3 | 0.941 | Australia | 3 | 3 | 0.946 |
| Switzerland | 4 | 4 | 0.978 | U.S.A. | 4 | 4 | 0.943 | Australia | 4 | 4 | 0.929 | Sweden | 4 | 4 | 0.936 | Belgium | 4 | 4 | 0.939 | Australia | 4 | 4 | 0.939 | Canada | 4 | 4 | 0.943 |
| Sweden | 5 | 5 | 0.977 | Iceland | 5 | 5 | 0.942 | Iceland | 5 | 5 | 0.927 | Belgium | 5 | 5 | 0.935 | Australia | 5 | 5 | 0.939 | Netherlands | 5 | 5 | 0.938 | Netherlands | 5 | 5 | 0.942 |
| U.S.A. | 6 | 6 | 0.976 | Finland | 6 | 6 | 0.942 | Sweden | 6 | 6 | 0.926 | U.S.A. | 6 | 6 | 0.934 | U.S.A. | 6 | 6 | 0.939 | Belgium | 6 | 6 | 0.937 | Belgium | 6 | 6 | 0.942 |
| Australia | 7 | 7 | 0.972 | Netherlands | 7 | 7 | 0.941 | Belgium | 7 | 7 | 0.925 | Iceland | 7 | 7 | 0.932 | Iceland | 7 | 7 | 0.936 | U.S.A. | 7 | 7 | 0.937 | Iceland | 7 | 7 | 0.941 |
| France | 8 | 8 | 0.971 | Japan | 8 | 8 | 0.940 | Netherlands | 8 | 8 | 0.925 | Netherlands | 8 | 8 | 0.931 | Netherlands | 8 | 8 | 0.935 | Canada | 8 | 8 | 0.937 | U.S.A. | 8 | 8 | 0.939 |
| Netherlands | 9 | 9 | 0.970 | New Zealand | 9 | 9 | 0.939 | Japan | 9 | 9 | 0.924 | Japan | 9 | 9 | 0.928 | Japan | 9 | 9 | 0.933 | Japan | 9 | 9 | 0.932 | Japan | 9 | 9 | 0.938 |
| U.K. | 10 | 10 | 0.964 | Sweden | 10 | 10 | 0.936 | U.K. | 10 | 10 | 0.918 | Finland | 10 | 10 | 0.925 | Finland | 10 | 10 | 0.930 | Switzerland | 10 | 10 | 0.932 | Ireland | 10 | 10 | 0.936 |

**Sources**: Human Development Report, 1993-2004.

Since 1994, UNDP has additionally developed a "Human Poverty Index" (HPI) to reflect **the national performance of developing countries in improving their population's quality of life,** based on the percentage of population dying before the age of 40, the percentage of illiterate adults, and the percentage of people deprived of health care. In 1995, Thailand's HPI was 11.9, ranking second among Asian developing countries (Table 4.23).

During the economic crisis, the HPI of Thailand rose to 18.7 due to an increase in the number of poor people; but after the crisis was over, the Thai HPI improves, dropping to 13.1 in 2002 (Table 4.23).

**Table 4.23** Human Poverty Indexes for Thailand and Some Other Countries, 1995-2002

| Group/ Country | 1995 | | | Group/ Country | 1997 | | | Group/ Country | 1999 | | | Group/ Country | 2002 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HDI rank | Group rank | HDI value | | HDI rank | Group rank | HDI value | | HDI rank | Group rank | HDI value | | HDI rank | Group rank | HDI value |
| **WHO/SEAR** | | | | **WHO/SEAR** | | | | **WHO/SEAR** | | | | **WHO/SEAR** | | | |
| Thailand | 59 | 1 | 11.9 | Thailand | 29 | 1 | 18.7 | Thailand | 21 | 1 | 14 | Thailand | 22 | 2 | 13.1 |
| Indonesia | 96 | 2 | 20.2 | Indonesia | 46 | 4 | 27.7 | Indonesia | 38 | 4 | 21.3 | Indonesia | 35 | 3 | 17.8 |
| India | 139 | 5 | 35.9 | India | 59 | 6 | 35.9 | India | 55 | 6 | 34.3 | India | 48 | 6 | 31.4 |
| DPR Korea | - | - | - | DPR Korea | - | - | - | DPR Korea | - | - | - | DPR Korea | - | - | - |
| Sri Lanka | 90 | 3 | 20.6 | Sri Lanka | 33 | 2 | 20.4 | Sri Lanka | 31 | 3 | 18 | Sri Lanka | 36 | 4 | 18.2 |
| Maldives | - | - | - | Maldives | 43 | 3 | 25.4 | Maldives | 25 | 2 | 15.8 | Maldives | 17 | 1 | 11.4 |
| Myanmar | 131 | 4 | 27.5 | Myanmar | 55 | 5 | 32.3 | Myanmar | 43 | 5 | 28 | Myanmar | 45 | 5 | 25.4 |
| Bhutan | 155 | 6 | 44.9 | Bhutan | 70 | 7 | 41.8 | Bhutan | - | - | - | Bhutan | - | - | - |
| Nepal | - | - | - | Nepal | 85 | 9 | 51.9 | Nepal | 77 | 8 | 44.2 | Nepal | 69 | 7 | 41.2 |
| Bungladesh | - | - | - | Bungladesh | 73 | 8 | 44.4 | Bungladesh | 73 | 7 | 43.3 | Bungladesh | 72 | 8 | 42.2 |
| **ASEAN** | | | | **ASEAN** | | | | **ASEAN** | | | | **ASEAN** | | | |
| Singapore | 28 | 1 | 6.5 | Singapore | - | - | - | Singapore | - | - | - | Singapore | 6 | 1 | 6.3 |
| Malaysia | - | - | - | Malaysia | 18 | 1 | 14.2 | Malaysia | 13 | 1 | 10.9 | Malaysia | - | - | - |
| Thailand | 59 | 2 | 11.9 | Thailand | 29 | 3 | 18.7 | Thailand | 21 | 2 | 14.0 | Thailand | 22 | 2 | 13.1 |
| Philippines | 98 | 3 | 17.7 | Philippines | 20 | 2 | 16.3 | Philippines | 23 | 3 | 14.7 | Philippines | 28 | 3 | 15.0 |
| Indonesia | 96 | 4 | 20.2 | Indonesia | 46 | 4 | 27.7 | Indonesia | 38 | 4 | 21.3 | Indonesia | 35 | 4 | 17.8 |
| Brunei | - | - | - | Brunei | - | - | - | Brunei | - | - | - | Brunei | - | - | - |
| Vietnam | 122 | 5 | 26.1 | Vietnam | 51 | 5 | 28.7 | Vietnam | 45 | 6 | 29.1 | Vietnam | 41 | 5 | 20.0 |
| Myanmar | 131 | 6 | 27.5 | Myanmar | 55 | 6 | 32.3 | Myanmar | 43 | 5 | 28 | Myanmar | 45 | 6 | 25.4 |
| Cambodia | 140 | 8 | 39.9 | Cambodia | - | - | - | Cambodia | 78 | 8 | 45 | Cambodia | 74 | 8 | 42.6 |
| Laos | 136 | 7 | 39.4 | Laos | 66 | 7 | 38.9 | Laos | 66 | 7 | 39.9 | Laos | 66 | 7 | 40.3 |

**Sources:** Human Development Reports, 1998-2004.

**Note:** For 1995, HDI was used instead as HPI was not used for ranking purposes for that year.

Since 2002, UNDP has used the Human Achievement Index (HAI) to measure the extent to which Thailand has been able to develop human resources at the regional and provincial levels. The measurement is based on eight dimensions: health, education, employment, income, residence and the environment, family life and community, transport and communications, and participation. As the HAI covers several dimensions, it can better reflect the development level than the HDI. For 2003, it was found that Thailand's HAI was at the middle level (0.6163); the highest level being noted for the central region and Bangkok's neighbouring provinces, whereas the HAI for the Northeast and North was lowest. However, by province the HAI for Phuket was highest (Table 4.24).

**Table 4.24** Human Achievement Indexes by Region and for Top Five Provinces, 2003

| HAI by region | | | HAI by province | | |
|---|---|---|---|---|---|
| **Region** | **HAI rank** | **HAI value** | **Province** | **HAI rank** | **HAI value** |
| Whole Kingdom | | 0.6163 | Phuket | 1 | 0.7175 |
| Bangkok | 1 | 0.6731 | Nonthaburi | 2 | 0.7060 |
| Five provinces around Bangkok | 2 | 0.6627 | Chon Buri | 3 | 0.7006 |
| East | 3 | 0.6429 | Nakhon | 4 | 0.6804 |
| Central | 4 | 0.6352 | Pathom | | |
| West | 5 | 0.6259 | Songkhla | 5 | 0.6788 |
| South | 6 | 0.6178 | | | |
| North | 7 | 0.5868 | | | |
| Northeast | 8 | 0.5379 | | | |

**Source:** Human Achievement Report, Thailand, 2003. UNDP.

## 5. Values, Beliefs and Culture

### 5.1 Consumption and Lifestyle Values

The 2003 ABAC Poll survey on spending of students/teenagers in Bangkok revealed that 43.7% of them liked to buy brand-name goods and 33.5% of them based their selection criteria on product's model and "high taste". This has resulted in Thai people's overspending and consuming unnecessary items, some of which might be hazardous to health such as tobacco, alcohol and narcotics.

The media tends to play a role in shaping Thai people's lifestyle and leisure-time spending, particularly television and the Internet, while radio seems to be less significant in this regard (Table 4.25).

**Table 4.25** Leisure-Time Spending of Thai People by Administrative Region, 2001

| Time spending category | Time spent by each person, hours/day | | |
|---|---|---|---|
| | Municipal areas | Non-municipal areas | Whole country |
| - Watching TV or VDO tapes | 3.2 | 2.7 | 2.9 |
| - Searching info from the Internet | 2.0 | 1.7 | 1.9 |
| - Going to sports, movies, music events | 1.7 | 1.8 | 1.8 |
| - Socializing | 1.8 | 1.7 | 1.7 |
| - Doing hobbies | 1.6 | 1.5 | 1.6 |
| - Playing games | 1.7 | 1.5 | 1.6 |
| - Playing sports | 1.5 | 1.5 | 1.5 |
| - Listening to music/radio | 1.5 | 1.4 | 1.4 |

**Source:** Report on Survey of Leisure-Time Spending among People Aged 10 Years and Over. National Statistical Office.

## 5.2 Beliefs and Culture

A survey on the participation of 2,177 Thai Buddhists aged 15-20 years in 14 representative provinces nationwide in religious activities, conducted by the Rajabhat Institute at Suan Dusit in 2003, revealed that 39.4% of them went to a Buddhist monastery once or twice a year; 76.2% never prayed prior to sleeping at night. Besides, a lot of them lacked morality and tended to compete with, or took advantage of, each other or were more likely to become individualistic in trying to seek more political and financial powers. And unfortunately, the Thai culture relating to solicitude and respect for seniority tends to be diminishing to the level that a plan on conserving Thai culture has to be developed.

# 6. Political and Administrative Situations and Trends

## 6.1 Political System

Thailand has changed its political system from the absolute to constitutional monarchy since 1932. Since then, 16 constitutions have been enacted while the latest one is the Constitution of the Kingdom of Thailand, B.E. 2540 (1997), promulgated on 11 October 1997; and it is regarded as **the first constitution of people.** Over a period of over 70 years, there have been 11 coups d'etat as well as nine rebellions, including 53 cabinets, both democratically elected and appointed. Although the Thai political system has been struggling, four highlighted waves of changes and problems are yet of notice.

**6.1.1 The Thai political system has been more democratic than in the past,** but its instability is rather high as coalition governments often have cabinet reshuffles, resulting in frequent conflicts among coalition parties.

The last general election held in January 2001 might be regarded as the new dimension that almost half the members of the House of Representatives (members of parliament, MPs) were elected from a single large party, leading to only three parties forming the coalition government, which is thus quite

stable. With the development of democratic processes, political powers have shifted from certain groups of military officers and civil servants to businessmen/politicians. It is expected that in the future there would be only one large political party running the administrative branch of the country.

**6.1.2 Thai political parties have never had a stable structure and true representation of the people**. Therefore, they are under the influence of major capitalists and are dominated by political businessmen who are major financiers sponsoring political candidates in running campaigns in general elections.

**6.1.3 The Thai political system encounters a number of behavioural hassles,** such as vote buying, power abuse for self-interests, corruption and lack of political ethics. A study conducted by Professor Pasuk Phongpaichit and colleagues revealed that the votes from 30.6% of households were bought during the 1996 parliamentary general election. On average, each household was paid 678 baht for vote buying, totalling 3,066 million baht for the entire country. However, this amount might be considerably lower than actuality as other studies have estimated that vote buying involves as many as 70% of the constituencies in general elections.[4] Besides, in the present political system, there is less involvement of the general public in determining the future national direction, coupled with a lack of inspection system for politicians and civil servants. This brings to inefficiency in decision-making for resolving national problems, and the national development level is not as high as expected.

**6.1.4 The society and people are much stronger and more interested in politics,** in particular among middle-income urban citizens. Plenty of opinions towards political issues have been publicly expressed through various media. In terms of public participation in casting their votes in the MP and senatorial elections, the number of people voting or turnout rate is quite high, especially in the latest general election under the new Constitution (Table 4.26).

**Table 4.26** Public Participation Through Casting Votes in the 15th-20th General Elections for MPs and Senators

| Votes | Numbers of voters and turnout rates in general elections of MPs | | | | | | |
|---|---|---|---|---|---|---|---|
| | 15th (24 Jul 1988) | 16th (22 Mar 1992) | 17th (13 Sep 1992) | 18th (2 Jul 1995) | 19th (17 May 1996) | 20th (6 Jan 2001) | 1st Senatorial election (4 Mar 2000) |
| No. of eligible voters | 26,658,638 | 32,436,283 | 31,860,156 | 37,817,983 | 38,564,593 | 44,519,222 | 42,567,111 |
| No. of actual voters | 16,944,931 | 19,216,466 | 19,622,332 | 23,462,746 | 24,070,750 | 29,904,940 | 30,684,040 |
| Turnout rate | 63.6 | 59.2 | 61.6 | 62.0 | 62.4 | 67.2 | 72.1 |

**Source:** Department of Provincial Administration, Ministry of Interior.

The aforementioned problems and changes have led to **the political reform movement,** particularly the promulgation of the new constitution, which is regarded as the "political reform" constitution. This is a significant political structure transformation that provides more opportunities for people to participate in

[4] Pasuk Phongpaichit et al. Corruption in the Public Sector: Opinions and Experiences of Households, 1999.

politics. Significant examples include establishing a political party, applying for party membership, inspecting a political party, providing suffrage for those who are outside the constituency or aboard, and so forth. The election system has been changed from having up to three MPs in one constituency to only "one MP in one constituency". Also, these include the election of MPs on a party-list basis, a newly adopted system for electing candidates for political positions. For example, an MP candidate must have had a bachelor's degree or higher, an inspection mechanism for the state-power exercise by requiring asset and liability declaration, which inspects candidates' actual assets (once unusually gained assets are found, such assets will be vested in the state), and a change in power for controlling and organizing elections at all levels. The duty for inspecting political parties has been transferred from the Ministry of Interior to an autonomous agency, the Election Commission. The Office of the Election Commission was established to support its operations. As a result, **the future politics will be more democratic, with greater participation of various population groups not only MPs in the parliament. The system for inspecting politicians by society has been strengthened, resulting in a more transparent system, more results-based performance and more qualified candidates entering the political arena.**

## 6.2 Public Administration System

The problems in the public administration system can be summarized as follows:

**6.2.1 Rules and laws being unconducive to development.** The state administrative system has plenty of rules and regulations full of numerous steps. The system focuses on strict compliance with rules rather than **goal achievement.** Some old laws have the provisions that are inconsistent with current situations, lacking flexibility and unresponsive to the needs of people and society.

**6.2.2 Over-departmentalization.** The civil service system has the procedures that are hard to follow, leading to delays in operations. The system is too departmentalized with several agencies, under different political parties, responsible for one programme. This leads to inflexibility and inefficiency in seeking innovative knowledge for problem solutions and interventions in response to socioeconomic changes, such as problems of environmental and occupational health, hospital administration and road traffic accidents.

**6.2.3 Problems of transparency and corruption.** As health services are primarily provided by the public sector, which is hard to inspect, resulting in corruption and wastage. Most civil servants have low salaries with a lot of debts, and thus they tend to adopt malpractice that leads to illegally taking kickbacks, which is a problem of transparency and corruption in the civil service system. The inspection system through the State Audit Office and the National Counter Corruption Commission are not strong enough to cope with such problems. A survey conducted during 1998-2003 by the Transparency International (the coalition against corruption) revealed that Thailand's transparency level was rather low. However, its corruption perceptions index has slightly improved, rising from 3.0 in 1998 to 3.3 in 2003, ranking 70th among 133 countries surveyed. Such a ranking was lower than several other ASEAN countries (Table 4.27). A survey of households regarding corruption in the public sector in 1999 revealed that 10% of households nationwide had been asked for bribes by civil servants. The average bribe given was 970 baht per household per year, the amount being highest for financial and property-related transactions. The amount of bribe involving public service agencies was lower; state-run hospitals in Bangkok were reported to take the highest amount in this group of agencies (Table 4.28).

**Table 4.27** Corruption Perceptions Indexes in Various Countries, 1998-2003

| Group and country | 1998 | | | Group and country | 1999 | | | Group and country | 2000 | | | Group and country | 2001 | | | Group and country | 2002 | | | Group and country | 2003 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Actual rank | In-group rank | CPI value | | Actual rank | In-group rank | CPI value | | Actual rank | In-group rank | CPI value | | Actual rank | In-group rank | CPI value | | Actual rank | In-group rank | CPI value | | Actual rank | In-group rank | CPI value |
| **ASEAN** | | | | **ASEAN** | | | | **ASEAN** | | | | **ASEAN** | | | | **ASEAN** | | | | **ASEAN** | | | |
| Singapore | 7 | 1 | 9.1 | Singapore | 7 | 1 | 9.1 | Singapore | 6 | 1 | 9.1 | Singapore | 4 | 1 | 9.2 | Singapore | 5 | 1 | 9.3 | Singapore | 5 | 1 | 9.4 |
| Malaysia | 29 | 2 | 5.3 | Malaysia | 32 | 2 | 5.1 | Malaysia | 36 | 2 | 4.8 | Malaysia | 36 | 2 | 5 | Malaysia | 33 | 2 | 4.9 | Malaysia | 37 | 2 | 5.2 |
| Thailand | 61 | 4 | 3.0 | Thailand | 68 | 4 | 3.2 | Thailand | 60 | 3 | 3.2 | Thailand | 61 | 3 | 3.2 | Thailand | 64 | 3 | 3.2 | Thailand | 70 | 3 | 3.3 |
| Philippines | 55 | 3 | 3.3 | Philippines | 54 | 3 | 3.6 | Philippines | 69 | 4 | 2.8 | Philippines | 65 | 4 | 2.9 | Philippines | 77 | 4 | 2.6 | Philippines | 92 | 4 | 2.5 |
| Indonesia | 80 | 6 | 2.0 | Indonesia | 96 | 6 | 1.7 | Indonesia | 85 | 6 | 1.7 | Indonesia | 88 | 6 | 1.9 | Indonesia | 96 | 6 | 1.9 | Indonesia | 122 | 6 | 1.9 |
| Brunei | - | - | - | Brunei | - | - | - | Brunei | - | - | - | Brunei | - | - | - | Brunei | - | - | - | Brunei | - | - | - |
| Vietnam | 74 | 5 | 2.5 | Vietnam | 75 | 5 | 2.6 | Vietnam | 76 | 5 | 2.5 | Vietnam | 75 | 5 | 2.6 | Vietnam | 85 | 5 | 2.4 | Vietnam | 100 | 5 | 2.4 |
| Myanmar | - | - | - | Myanmar | - | - | - | Myanmar | - | - | - | Myanmar | - | - | - | Myanmar | - | - | - | Myanmar | 129 | 7 | 1.6 |
| Cambodia | - | - | - | Cambodia | - | - | - | Cambodia | - | - | - | Cambodia | - | - | - | Cambodia | - | - | - | Cambodia | - | - | - |
| Laos | - | - | - | Laos | - | - | - | Laos | - | - | - | Laos | - | - | - | Laos | - | - | - | Laos | - | - | - |
| **World (top ten)** | | | | **World (top ten)** | | | | **World (top ten)** | | | | **World (top ten)** | | | | **World (top ten)** | | | | **World (top ten)** | | | |
| Denmark | 1 | 1 | 10.0 | Denmark | 1 | 1 | 10.0 | Finland | 1 | 1 | 10.0 | Finland | 1 | 1 | 9.9 | Finland | 1 | 1 | 9.7 | Finland | 1 | 1 | 9.7 |
| Finland | 2 | 2 | 9.6 | Finland | 2 | 2 | 9.8 | Denmark | 2 | 2 | 9.8 | Denmark | 2 | 2 | 9.5 | Denmark | 2 | 2 | 9.5 | Iceland | 2 | 2 | 9.6 |
| Sweden | 3 | 3 | 9.5 | New Zealand | 3 | 3 | 9.4 | New Zealand | 3 | 3 | 9.4 | New Zealand | 3 | 3 | 9.4 | New Zealand | 2 | 2 | 9.5 | Denmark | 3 | 3 | 9.5 |
| New Zealand | 4 | 4 | 9.4 | Sweden | 3 | 3 | 9.4 | Sweden | 3 | 3 | 9.4 | Iceland | 4 | 4 | 9.2 | Iceland | 4 | 4 | 9.4 | New Zealand | 3 | 3 | 9.5 |
| Iceland | 5 | 5 | 9.3 | Canada | 5 | 5 | 9.2 | Canada | 5 | 5 | 9.2 | Singapore | 4 | 4 | 9.2 | Singapore | 5 | 5 | 9.3 | Singapore | 5 | 5 | 9.4 |
| Canada | 6 | 6 | 9.2 | Iceland | 5 | 5 | 9.2 | Iceland | 6 | 6 | 9.1 | Sweden | 6 | 6 | 9.0 | Sweden | 5 | 5 | 9.3 | Sweden | 6 | 6 | 9.3 |
| Singapore | 7 | 7 | 9.1 | Singapore | 7 | 7 | 9.1 | Norway | 6 | 6 | 9.1 | Canada | 7 | 7 | 8.9 | Canada | 7 | 7 | 9.0 | Netherlands | 7 | 7 | 8.9 |
| Netherlands | 8 | 8 | 9.0 | Netherlands | 8 | 8 | 9.0 | Singapore | 6 | 6 | 9.1 | Netherlands | 8 | 8 | 8.8 | Luxembourg | 7 | 7 | 9.0 | Australia | 8 | 8 | 8.8 |
| Norway | 9 | 9 | 9.0 | Norway | 9 | 9 | 8.9 | Netherlands | 9 | 9 | 8.9 | Luxembourg | 9 | 9 | 8.7 | Netherlands | 7 | 7 | 9.0 | Norway | 8 | 8 | 8.8 |
| Switzerland | 10 | 10 | 8.9 | Switzerland | 9 | 10 | 8.9 | United Kingdom | 10 | 10 | 8.7 | Norway | 10 | 10 | 8.6 | United Kingdom | 10 | 10 | 8.7 | Switzerland | 8 | 8 | 8.8 |

**Sources**: Transparency International and Dr. Johann Graf Lambsdarff Gottingen University, Germany, 1998-2003

**Notes**:
1. Corruption Perceptions Index gathered from perspectives of businessmen, risk analysis and general public; score ranges 1-10: "0" means high perceptions of corruption and "10" means "rarity of corruption".
2. Report on Corruption Perceptions Index Survey conducted to assess each country's performance; at least three survey reports were used.

**Table 4.28** Average Amount of Bribe Paid by Each Household to Certain Public Agencies, 1999

| Type of agency | Average bribe, baht | | | |
|---|---|---|---|---|
| | Whole country | Bangkok | Provincial-municipal areas | Rural areas |
| - Police | 9,588 | 2,688 | 7,921 | 13,414 |
| - Customs | 8,428 | 13,025 | 3,059 | 201 |
| - Revenue | 6,287 | 11,403 | 4,939 | 753 |
| - Land | 3,179 | 1,489 | 7,056 | 1,430 |
| - Public schools | 1,394 | 1,293 | 2,943 | 295 |
| - Waterworks | 880 | 859 | 1,000 | - |
| - Public hospitals | 786 | 2,478 | 124 | 634 |
| - Electricity | 721 | 300 | 664 | 767 |
| - Passport | 647 | 300 | 500 | 800 |
| - District offices | 639 | 173 | 2,225 | 517 |
| - Driving licensing and vehicle registration | 586 | 851 | 784 | 447 |
| - Solid waste collection | 295 | 255 | 378 | - |
| - Public telephone | 288 | - | 423 | - |
| - Postal service | 66 | - | 66 | - |
| - Irrigation | 45 | - | - | 45 |

**Source:** Pasuk Phongpaichit. Corruption in the Public Sector: Opinions and Experiences of Households, 1999.

**6.2.4 Lack of operating efficiency in public agencies is an obstacle to the growth and development in the business sector.** Low efficiency in the public sector results in a higher production cost in the private sector. A study conducted by Saowanee Thairungroj and colleagues revealed that business operators had to spend a lot of time when contacting public agencies. On average they spent 14% of their time for the whole year, small-size businesses spending more than medium- and large-scale businesses.[5] For this reason, they had to pay bribes to state officials to expedite the transactions, resulting in a higher cost in business operations. Another study of the International Institute for Management Development (IMD) in 2003 revealed a rather satisfactory performance level of the Thai civil service system, but lower than that for Malaysia (Table 4.29).

Regarding the quality and efficiency of public services, most people stated that such services were at a high level (average score of 4 out of 7); agencies with low scores being customs offices, police stations, land offices and public hospitals (Figure 4.27).

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[5] Saowanee Thairungroj et al. The Business Environment and Attitudes of Business Operators towards Public Sector Services. Faculty of Economics, University of the Thai Chamber of Commerce, 1999.

**Table 4.29** Efficiency of the Civil Service System and Business Sector Development in Certain Countries, 2003

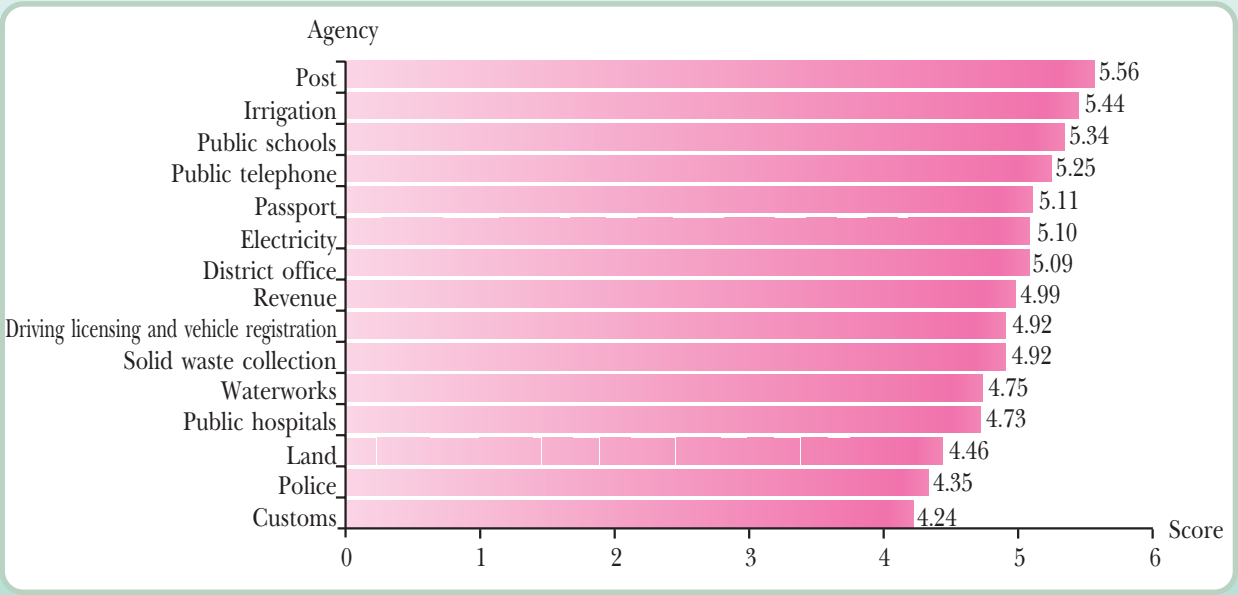
| Group/country | Rank | Score |
|---|---|---|
| 1. Countries with a population of more than 20 million | | |
| - Malaysia | 1 | 5.22 |
| - Australia | 2 | 4.87 |
| - U.S.A. | 3 | 4.33 |
| - Thailand | 4 | 4.16 |
| - Japan | 15 | 2.80 |
| - France | 16 | 2.76 |
| - Germany | 23 | 1.96 |
| 2. Countries with a population of less than 20 million | | |
| - Iceland | 1 | 6.97 |
| - Finland | 2 | 6.89 |
| - Singapore | 3 | 6.43 |
| - Hong Kong | 4 | 5.91 |
| - Greece | 28 | 1.60 |
| - Bavaria | 29 | 1.46 |

**Source:** IMD. The World Competitiveness Yearbook, 2003.

**Notes:** 1. In the IMD Report 2003, a new data collection method was used for two groups of countries: one for countries with a population of more than 20 million and the other for those with a population of less than 20 million; no cross-group comparisons can be made.

2. For the first group, 30 countries were ranked.
3. For the second group, 29 countries were ranked.
4. Full score is 10.

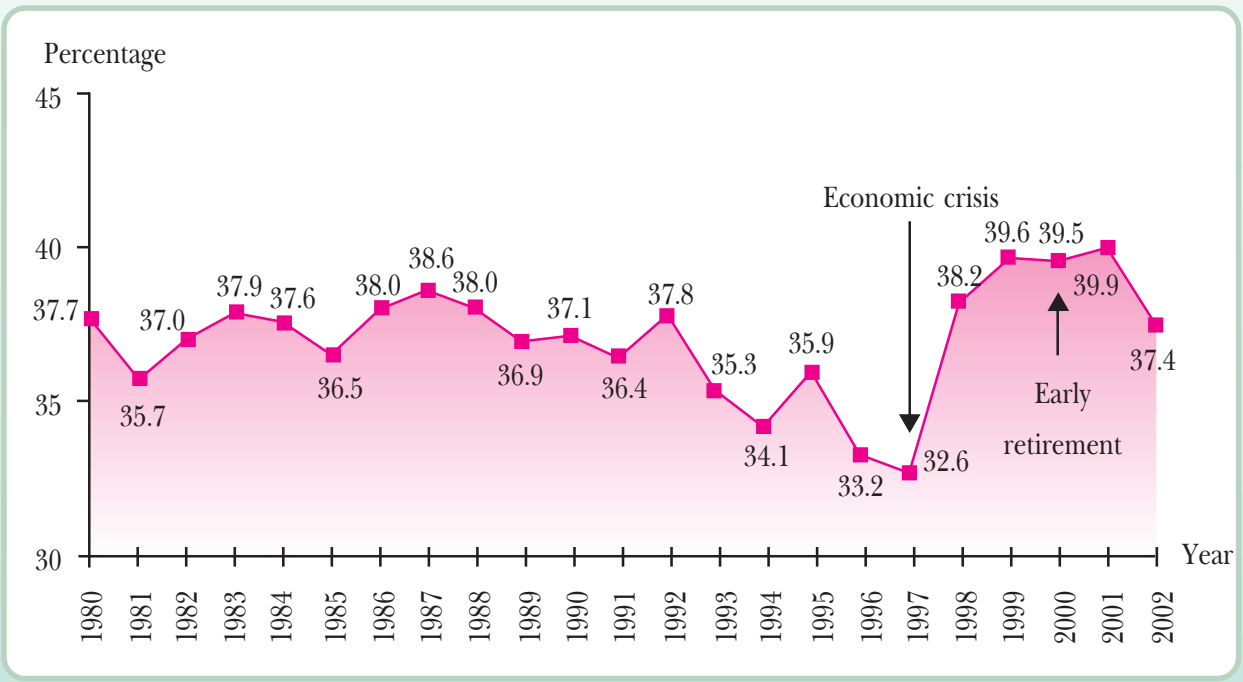
**Figure 4.27** Quality of Services Provided by Public Sector Agencies, 1999




**Source:** Pasuk Phongpaichit. Corruption in the Public Sector: Opinions and Experiences of Households, 1999.

**6.2.5 Problems of organizational structure.** The public sector is large with numerous agencies; new agencies are established while similar old agencies are not abolished or downsized, resulting in overstaffing and a high personnel cost, which was as high as 37.7% of the national budget in 1980 and 37.4% in 2002 (Figure 4.28). This has resulted in the public sector being unable to offer suitable remuneration for its personnel. The salaries of civil servants are rather low; there is a big difference in starting salaries of civil servants compared with those in the private sector. For those with higher educational background, the difference is bigger and tends to become much bigger (Table 4.30). When considering the differences in remuneration at various levels in the private and public sectors, the remuneration in the public sector is on average 2.66 times lower than that in the private sector, the difference being 1-2 times for low-ranking personnel and being up to 4.39 times higher for high-ranking C-11 officials. For 2002, the private-public sector remuneration was 1-2 times different as non-salary remuneration was not included (Figure 4.29). Besides, Araya Preechameta (1994) estimated that for an individual, beginning from graduation with a bachelor's degree working as a civil servant until retirement at age 60, in comparison with another individual working in the private sector, based on the same spending pattern and the current civil servants salary scale, at current prices, the savings of the private sector employee would be 28 times higher than those of the civil servant.

**Figure 4.28** Proportion of Personnel Cost in the Public Sector in Relation to the National Budget, 1980-2002




**Source:** Office of the Civil Service Commission. Data for 1980-2002 were obtained from the Comptroller-General's Department, Ministry of Finance.

**Note:** For 2002, the personnel cost did not include salaries for those in independent public agencies established in accordance with the constitution.

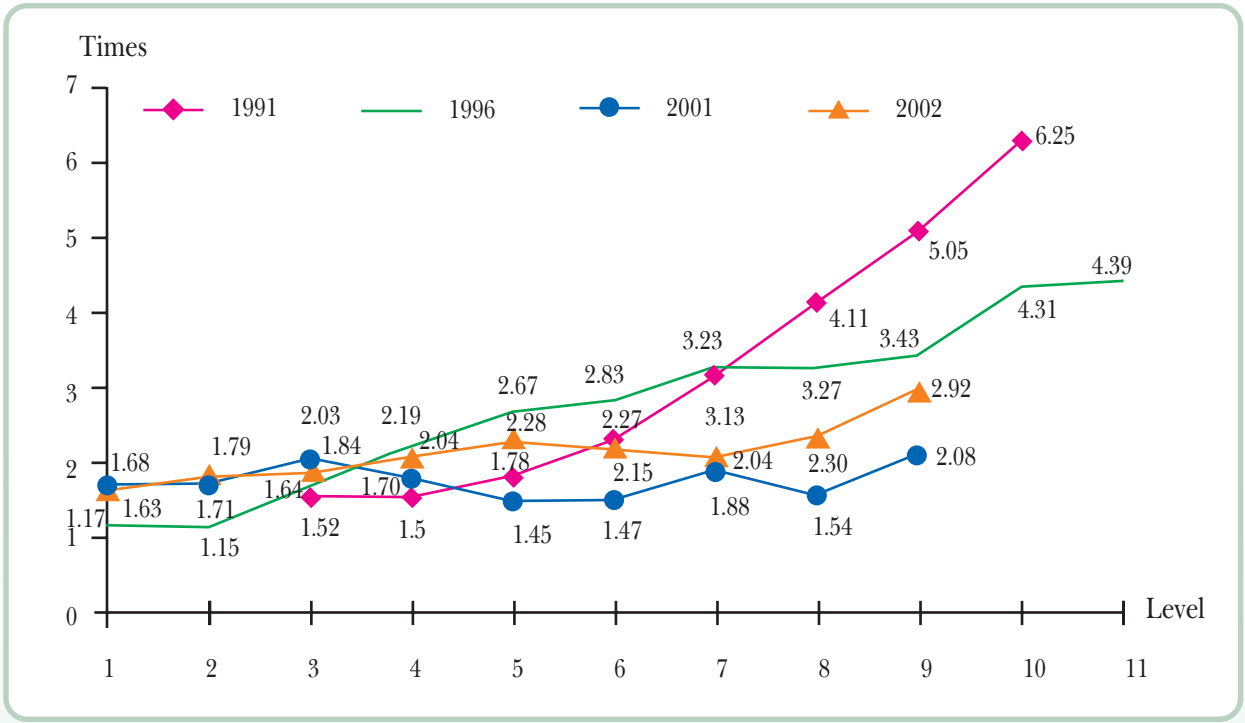
**Table 4.30** Comparison of Starting Monthly Salaries of Personnel in the Public and Private Sectors, 1995/1996, 2001, and 2002

| Educational level | 1995/96 | | | | 2001 | | | | 2002 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Private sector[a] | Public sector | Discrepancy | | Private sector[a] | Public sector | Discrepancy | | Private sector[a] | Public sector | Discrepancy | |
| | (1) baht/ month | (2) baht/ month | (1) - (2) (%) | (1)/(2) (times) | (1) baht/ month | (2) baht/ month | (1) - (2) (%) | (1)/(2) (times) | (1) baht/ month | (2) baht/ month | (1)-(2) (%) | (1)/(2) (times) |
| *1.Vocational* | | | | | | | | | | | | |
| 1.1 Accounting | 5,395 | 4,700 | 14.79 | 1.15 | 6,034 | 4,700 | 28.38 | 1.28 | 5,635 | 4,700 | 19.89 | 1.2 |
| 1.2 Mechanics/Electrics | 5,637 | 4,700 | 19.94 | 1.20 | 6,222 | 4,700 | 32.38 | 1.32 | 5,996 | 4,700 | 27.57 | 1.27 |
| **Average** | **5,516** | **4,700** | **17.36** | **1.17** | **6,128** | **4,700** | **30.38** | **1.30** | **5,815** | **4,700** | **23.72** | **1.24** |
| *2.Higher vocational* | | | | | | | | | | | | |
| 2.1 Accounting | 6,402 | 5,740 | 11.53 | 1.12 | 7,055 | 5,740 | 22.90 | 1.23 | 6,794 | 5,740 | 18.36 | 1.18 |
| 2.2 Mechanics/Electrics | 6,650 | 5,740 | 15.85 | 1.16 | 7,483 | 5,740 | 30.37 | 1.30 | 7,049 | 5,740 | 22.80 | 1.23 |
| 2.3 Computer science | 6,666 | 5,740 | 16.13 | 1.16 | 7,230 | 5,740 | 25.96 | 1.26 | 7,039 | 5,740 | 22.63 | 1.23 |
| **Average** | **6,573** | **5,740** | **14.51** | **1.15** | **7,256** | **5,740** | **26.41** | **1.26** | **6,961** | **5,740** | **21.27** | **1.21** |
| *3.Bachelor's degree* | | | | | | | | | | | | |
| 3.1 Engineering | 13,446 | 6,360 | 111.42 | 2.11 | 14,111 | 6,360 | 121.87 | 2.22 | 13,639 | 6,360 | 114.45 | 2.14 |
| 3.2 Computer science | 11,029 | 6,360 | 73.41 | 1.73 | 11,962 | 6,360 | 88.08 | 1.88 | 11,763 | 6,360 | 84.95 | 1.85 |
| 3.3 Sciences | 10,752 | 6,360 | 69.06 | 1.69 | 12,191 | 6,360 | 91.68 | 1.92 | - | - | - | - |
| 3.4 Architecture | 10,130 | 6,360 | 59.28 | 1.59 | 10,300 | 7,040 | 46.31 | 1.46 | - | - | - | - |
| 3.5 Commerce and accounting | 9,956 | 6,360 | 56.54 | 1.57 | 10,468 | 6,360 | 64.59 | 1.64 | 9,994 | 6,360 | 57.14 | 1.57 |
| 3.6 Pharmacy | 9,588 | 6,360 | 50.75 | 1.51 | 11,169 | 7,040 | 58.65 | 1.59 | - | - | - | - |
| 3.7 Marketing | 9,501 | 6,360 | 49.39 | 1.49 | 10,116 | 6,360 | 59.06 | 1.59 | 9,569 | 6,360 | 50.46 | 1.50 |
| 3.8 Sociology | 9,073 | 6,360 | 42.66 | 1.43 | 9,369 | 6,360 | 47.31 | 1.47 | 8,958 | 6,360 | 40.85 | 1.41 |
| **Average** | **10,434** | **6,360** | **64.06** | **1.64** | **11,211** | **6,530** | **71.68** | **1.72** | **10,785** | **6,360** | **69.57** | **1.70** |
| ***4.Master's degree*** | ***15,830*** | ***7,780*** | ***103.47*** | ***2.03*** | ***17,678*** | ***7,780*** | ***127.22*** | ***2.27*** | ***15,826*** | ***7,780*** | ***103.42*** | ***2.03*** |

**Source:** Data for 1995/96 were derived from the Study on the Public Sector Remuneration and Adjustments to Match Private Sector Scales. Thailand Development Research Institute, December 1996.
Data for 2001 and 2002 were derived from the Office of the Civil Service Commission, using average salaries for private sector personnel.

**Note:** [a] For graduates from educational institutions within Thailand.

**Figure 4.29** Discrepancy of Remunerations in the Private and Public Sectors, 1991, 1996, 2001 and 2002




**Sources:**
- Comparison of Remunerations in the Public and Private Sectors in 1991. Office of the Civil Service Commission.
- Study of the Public Sector Remunerations and the Adjustments to Equal Those in the Private Sector. Thailand Development Research Institute, December 1996.
- Bureau of Position Classification and Remuneration System Development, Office of the Civil Service Commission.

**Notes:** Data for 1991 were derived by estimating workload values of different positions for comparing the remunerations in the public and private sectors.

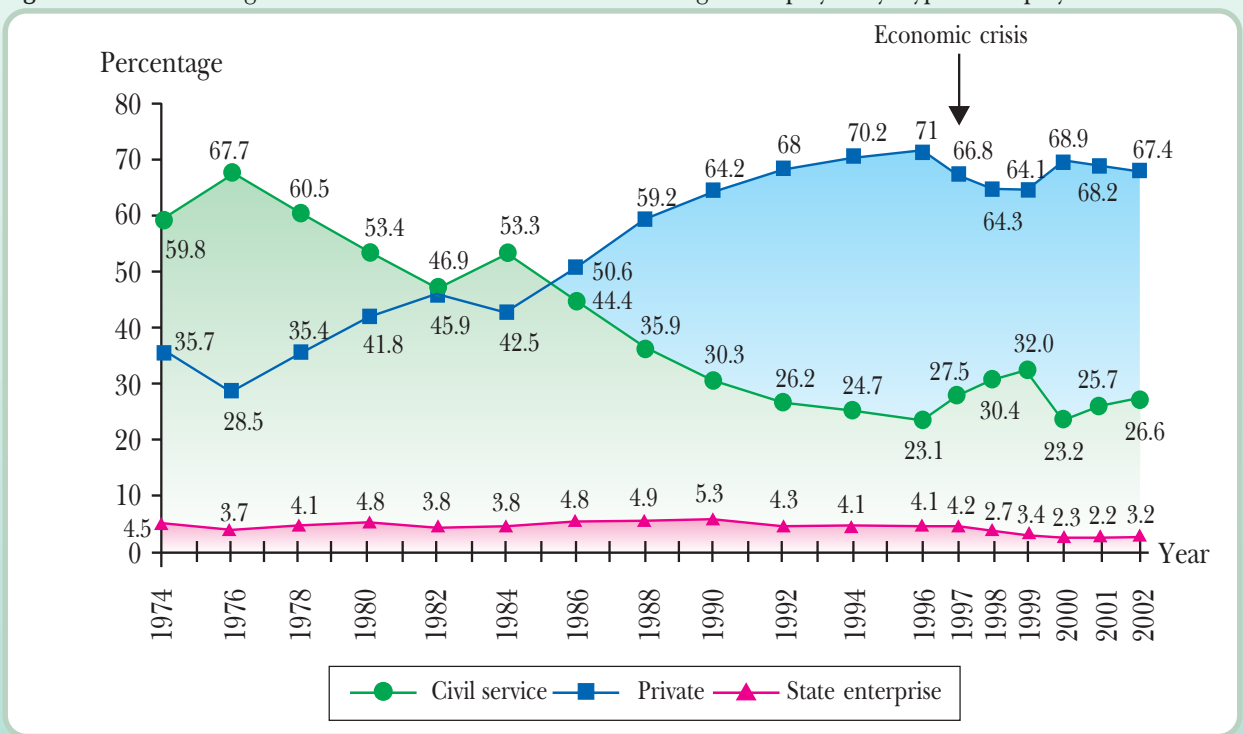
Data for 1996 were derived from the Study on the Comparison of the "Average Salaries" in the Public Sector and the Remunerations in the Private Sector.

Data for 2001 and 2002, public sector salaries were derived from mid-points in the salary scale plus position allowances, whereas those in the private sector were derived from average salaries excluding non-salary remuneration; thus, the discrepancies were lower than those for 1991 and 1996.

### 6.2.6 Problems of personnel administration system and civil servant quality.

As the public sector has no systematic mechanisms of performance evaluation coupled with its low remuneration rates, the motivation for employment in this sector has steadily declined. As a result, the public sector has lost a large number high-quality officials to the private sector, i.e. "no inward brain drain" (capable individuals not seeking employment in the public sector) and "outward brain drain" among the officials who have realized a great discrepancy between the compensations in the public and private sectors. Before to the economic crisis, newly recruited civil servants who had passed the examination organized by the Office of the Civil Service Commission had a grade point average between 2.00 and 2.99; university students were uncertain about career in the civil service system, and only 29.4% of them wanted to become civil servants (A Study on Desires for Employment in the Civil Service System of Students. Office of the Civil Service Commission, 1991); the reasons being low salaries and poor welfare system, repetitive tasks, cronyism and corruption. And in 1996, according to a study conducted by the Ministry of University Affairs, only 23.1% of newly graduated bachelor's degree holders who were employed had a job as civil servants, whereas such a proportion was as high as 59.8% in 1974 (Figure 4.30). After the economic crisis in 1999, the students' desires for public sector employment rose to 58.7% (Report on Attitudes of Students Towards Employment in the Civil Service System. Office of the Civil Service Commission, 1999). Besides, a survey on 1,596 unemployed bachelor's degree holders in Bangkok and vicinity, conducted in 2001 by Suan Dusit Rajabhat Institute, revealed that 71.5% of respondents wished to work in the public sector, the remaining 28.5% wanted to work in the private sector. This trend corresponded with the rise to the 32% employment of bachelor's degree holders in the civil service system in 1999 due to better job security, compared with that in the private sector. It is noteworthy that, in 2000, the new employment rate in the civil service system dropped to 23.2% and rose slightly to 26.6% in 2002 (Figure 4.30).

**Figure 4.30** Percentage of New Graduates with a Bachelor's Degree Employed by Type of Employment, 1974-2002




**Source:** Report on Employment of Newly Graduated Bachelor's Degree Holders. Bureau of Higher Education Policy and Planning, Office of the Higher Education Commission.

6.2.7 The process of planning, decision-making, manpower development, and budgeting appears **centralized** and with a top-down perspective in conceptualizing problems leading to the lack of flexibility, efficiency, clear understanding and responsiveness to the needs of each locality.

6.2.8 The public sector system encounters political domination and interference from the business-oriented political system.

To resolve the aforementioned problems and the economic crisis as well as to comply with IMF requirements on government expenditure reduction and revenue generation, a movement for **"public sector reform"** arose to drive for greater efficiency within five years of the public sector administrative system, i.e. roles, missions and public sector management, performance-based budgeting system, personnel management system, and changes in laws, culture and values of civil servants. According to the Public Organizations Act of B.E. 2542 (1999), published in the Government Gazette on 24 February 1999, several public organizations have been established with a more flexible system to undertake certain activities that should not be carried out by a regular government agency; rather, they should be accomplished in a more efficient manner by an autonomous agency. The public sector workforce, for example, has to be reduced by at least 20% in the 8th Plan and at least another 20% in the 9th Plan. Government agencies are required to abolish at least 80% of vacancies resulting from retirement; and an early retirement system was introduced in 2000-2003 with 57,544 retirees out of the target of 90,000. These measures have resulted in a slow-down in the increase in public sector workforce by 102,677 positions and in personnel budget by 19,742 million baht. As a result of the change in the public sector management system, the Thai public sector system will become smaller in the future and will play a role only in activities that should belong to the public sector; and some government agencies will be transformed into public organizations such as state-run universities and some government hospitals that are ready to do so.

Concurrently, more investigation systems have been established for examining the public service system such as information disclosure according to the Official Information Act of B.E. 2540 (1997) that offers greater opportunities for the public to share ideas in the implementation of important issues with a huge impact on the people, such as public hearings on the issue of establishment of a coal-fired power plant in Prachuap Khiri Khan Province. However, the civic mechanism is still weak resulting in its inability to efficiently scrutinize the operations of various institutions as only 20% of communities are strong enough to carry out such functions.[6]

## 6.3 Decentralization

The promulgation of the Thai Constitution of B.E. 2540 (1997) and the economic crisis are the prime factors driving for devolution. This leads to the reform of laws and local administration organizations such as the Transformation of Sanitary District into Municipality Act of B.E. 2542 (1999) that has upgraded 980 sanitary districts to Tambon (subdistrict) municipalities and the Decentralization Act of B.E. 2542 (1999), an organic law under which the government is required to decentralize basic services functions to local administration organizations within four years. Besides, regarding the allocation of tax revenue, endowment and other revenues to local administration organizations, the law requires that not less than 20% of the national budget be allocated by the year 2001 and not less than 35% by 2006. At present only 23.5% of the national budget has been allocated to local authorities (FY 2005), resulting in such agencies not taking responsibility for certain local functions according to people's needs as expected.

[6] Office of the National and Economic and Social Development Board. Sustainable Development in the Thai Context, 2003.

Regarding the devolution of health services, the Ministry of Public Health has advocated a devolutionary framework by establishing an Area Health Board (AHB) comprising representatives from all categories of local administration organizations (Tambon administration organizations, municipalities, and provincial administration organizations), central/provincial government agencies and local leaders. Each AHB will function as a health service purchaser for the people or probably as an owner of public health facilities. This effort urges the Ministry of Public Health to prepare for locality's capacity strengthening so as to provide services with quality, efficiency and equity within 5-10 years.

However, in actuality the decentralization of power and budget to local authorities has been rather minimal as the central government still holds a large proportion of the national budget. This is evidenced in a study conducted by IMF in 2001 which revealed that the proportion of revenue and expenditure to GDP of local authorities (3%) was much lower than that of the central government (15-19%; Table 4.31). And the revenue actually collected by local authorities was only 12-20% while the central government could collect as much as 50% (Table 4.32).

**Table 4.31** Comparison of Revenues and Expenditures of Local Authorities and Central Government as a Percentage of GDP, 1997-2003

| | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 |
|---|---|---|---|---|---|---|
| **Local authorities** | | | | | | |
| - Revenues* | 2.0 | 2.1 | 2.1 | 2.9 | 3.2 | 3.4 |
| - Subsidies | 0.7 | 0.8 | 0.7 | 1.2 | 1.4 | 1.2 |
| - Expenditures | 2.1 | 2.2 | 1.8 | 2.8 | 2.9 | 3.3 |
| **Central government** | | | | | | |
| - Revenues | 16.2 | 15.5 | 15.5 | 15.2 | 15.9 | 16.3 |
| - Expenditures | 18.7 | 19.0 | 18.4 | 18.1 | 19.5 | 17.7 |

**Source:** Michael E. Porter and NESDB. Report on Development of Thailand's Competitiveness, 2003.

**Note:** * including subsidies.

**Table 4.32** Local Revenue Structure (percent)

| Category | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 |
|---|---|---|---|---|---|---|
| **Local revenue** | **67.9** | **61.6** | **65.4** | **58.7** | **58.0** | **64.8** |
| - Collected by local authorities | 16.9 | 17.9 | 20.0 | 12.2 | 12.3 | 11.8 |
| 1. Taxes | 9.3 | 9.6 | 10.6 | 7.6 | 7.3 | 7.6 |
| 2. Others | 7.6 | 8.4 | 9.4 | 4.6 | 4.0 | 4.2 |
| - Collected by central government | 51.0 | 43.7 | 45.3 | 46.5 | 45.7 | 53.0 |
| **Subsidies and grants** | **32.1** | **38.4** | **34.6** | **41.5** | **42.0** | **35.2** |

**Source:** Michael. E. Porter and NESDB. Report on Development of Competitiveness for Thailand, 2003.

Such political and administrative changes have had an impact on the Thai health system as follows:

**(1) Health policy formulation.** Previously health policies were formulated by civil servants who had most of the information on hand; as there had been frequent changes in the government, there was a problem of discontinuity of health policies. But at present health policies are set by the government that administers the nation, such as the 30-baht healthcare scheme.

**(2) More health personnel in important branches such as doctors, dentists and nurses resign from the public sector to work in the private sector.** The number of doctors resigning from state-run health facilities has increased from 300 annually during 1995-1997 to 500-600 in 2002-2003, partly due to a much lower remuneration in the public sector, compared to that in the private sector. A study on remunerations by type of professions in four hospitals in 1997 revealed that the remuneration was lowest in MoPH hospitals for all professions. In particular, the compensation for doctors and dentists in MoPH hospitals was 4-10 times lower than that in for-profit private hospitals (Table 4.33).

**Table 4.33** Comparison of Salaries and Compensations of Health Personnel in Public and Private Hospitals, 1997

| Type of personnel | Salaries and compensations, baht/month | | | | |
|---|---|---|---|---|---|
| | MoPH hospital | State enterprise hospital | Non-profit private hospital | For-profit private hospital | Difference between MoPH and for-profit private hospitals (times) |
| - Doctors | 8,190-27,980 | 15,090-62,080 | 100,000* | 50,000-300,000 | 6.1 - 10.7 |
| - Dentists | 8,190-19,840 | 17,990-52,990 | 80,000* | 27,000-150,000 | 3.3 - 7.6 |
| - Pharmacists | 7,040-17,083 | 7,640-49,910 | 18,000-55,000 | 18,399-31,229 | 1.8 - 2.6 |
| - Nurses | 6,360-19,680 | 7,640-21,620 | 9,000-20,000 | 14,281-27,720 | 1.4 - 2.2 |
| - Medical technologists | 5,180-19,005 | 7,640-35,960 | 5,300-25,000 | 14,281-29,381 | 1.5 - 2.8 |
| - Radiological technologists | 5,180-17,880 | 4,880-35,960 | 5,000-20,000 | 10,417-29,160 | 1.6 - 2.0 |

**Source:** Supasit Pannarunothai et al. Administrative Systems in Public and Private Hospitals: Financial and Business Management for Public Hospitals That Will Operated as an Autonomous Agency, 1999.

**Note:** * average value.

# 7. Situations and Trends of the Physical Environment

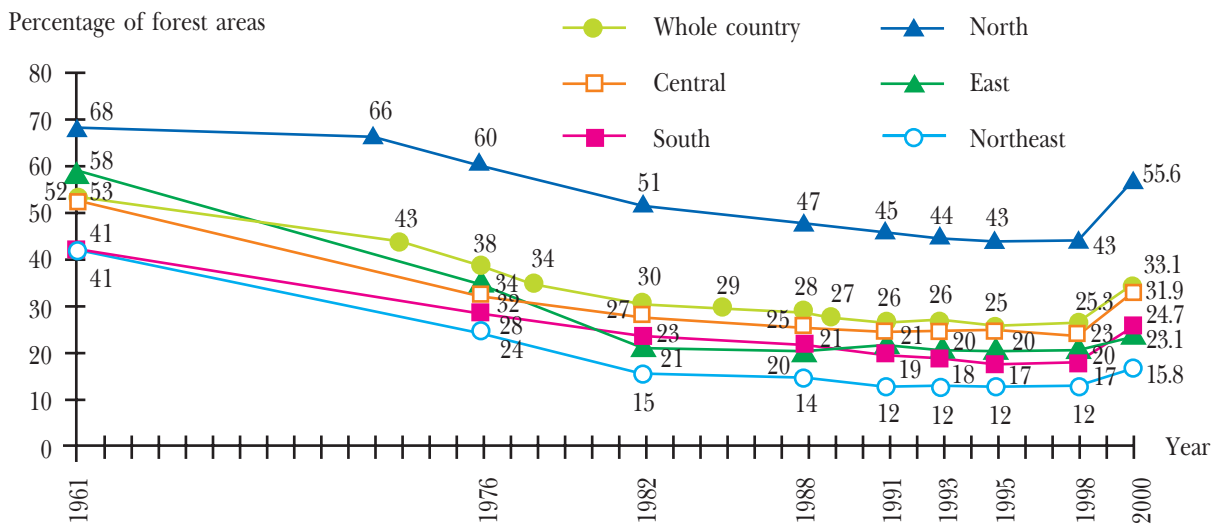
## 7.1 Natural Resources and Biodiversity

### 7.1.1 Forests and Wildlife

The previously fertile forest areas in Thailand have rapidly diminished from 171.0 million rai (1acre = 2.53 rai) in 1961, covering 53.3% of the nation's total land area, to only 81.0 million rai or 25.3% in 1998. However, in 2000 the total forest areas have increased to 107 million rai or 33.1% of the total land area (Figure 4.31); that is still lower than the 40% minimum requirement for a suitable ecological system. Major factors related to the increase in forest areas include reforestation policy, designation of more conserved forests, more reforestation efforts, such as reforestation in honour of His Majesty the King, and raised aware about forest conservation.

The number of wild animals has also declined rapidly. As many as four species of wild mammals and nine species of wild birds have become extinct; and thus another 100 species of vertebrates have been designated as endangered species.

**Figure 4.31** Proportion of Forest Areas, 1961-2000




**Source:** Royal Forest Department, Ministry of Agriculture and Cooperatives.

**Note:** In 2000, the new forest mapping system was introduced using satellite images on a scale 1:50,000 rather than 1:250,000 resulting in the limitation in making comparison with previously available information.

### 7.1.2 Land Resources and Land Use for Agriculture

Thailand's total territory covers an area of approximately 320.69 million rai (625 rai = 1 sq.km.). In 1975, 112.2 million rai of land was used for agricultural purposes and the agricultural land areas increased to 131.3 million rai in 1999 or 41.0% of entire country's territory. Most of the agricultural areas are paddy fields, field-crop plantations, orchards and other plantations. Of all cultivable land, **about 3 million rai is left unused.**

Since 1991 the area of land used for agricultural purposes has been declining; rice fields have declined from 69.2 million rai to 65.2 million rai in 2001, field-crop land down from 33.5 million rai to 28.2 million rai, and orchards/plantations rising from 20.2 million rai to 26.6 million rai, and residential areas rising from 3.5 million rai to 3.6 million rai over the same period.

### 7.1.3 Mineral Resources

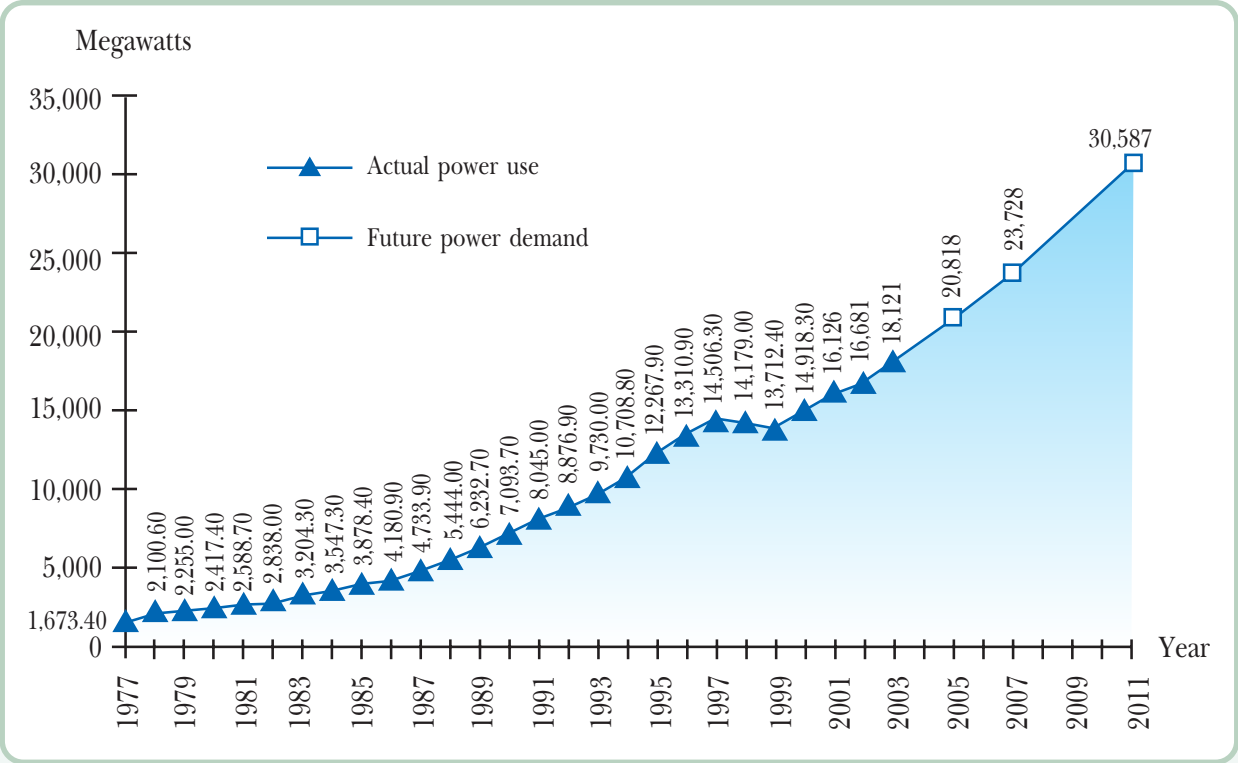
Mineral production tends to be increasing in response to the country's demand. In 2003, the top five minerals produced include lignite, limestone, gypsum, gold and basalt. However, mining concessions without proper control measures may lead to the deterioration of other natural resources and health of the people in the vicinity. Significant examples include rock mining with stone dust affecting lung functions and the discharge of lead-contaminated wastewater from Klity mines to the Klity creek in western Thailand. In 1999, according to the Department of Health's study on blood-lead level examinations and cumulative lead contamination in the environment, villagers in the Klity village had a higher blood-lead level than the general public, particularly in children aged 0-6 years. Yet, apparent symptoms of lead poisoning were not detected. The lead contamination was detected in certain stretches of Klity creek and in some aquatic animals such as prawns, crabs and fish; the contamination levels unacceptable for human consumption.

### 7.1.4 Energy Resources

Thailand's energy consumption has a rising trend and more electrical power has to be generated. In 2003, fuels for electricity generation include natural gas (78.9%), coal and lignite (17.8%), bunker oil (3.1%) and diesel (0.2%). The use of lignite and bunker oil as fuels with a high sulfur content results in air pollution with sulfur dioxide and suspended particles. Other pollutants also include those generated from fuel use in transportation and industrial operations.

During the economic crisis, in the beginning the power demand dropped by 2.2% and 3.2% in 1998 and 1999, respectively. But in 2001-2003, the demand went up by 6.7% annually and is projected to keep rising despite a lot of efforts on energy conservation (Figure 4.32). In the future, as the demand will be rising, it is necessary that other sources of energy be sought for substitution such as solar, wind and nuclear energy.

**Figure 4.32** Trends in Electrical Power Requirement, 1977-2011




**Source:** Electricity Division, Office of the National Energy Policy Commission.

### 7.1.5 Fisheries

Due to the expansion of fishery industry, inappropriate use of fishing technology and depletion and deterioration of natural water resources, species and quantities of aquatic animals have declined. In response to such changes, aquaculture expansion is needed, but inevitably affecting the environment. For example, giant tiger prawn farming along the coasts and freshwater basins results in the deterioration of mangrove forests and paddy fields, respectively.

### 7.1.6 Biodiversity

Biodiversity includes marine ecosystem, animals and plants. Thailand, formerly regarded as the land of natural resource abundance, has lavishly exploited such biological and other natural resources on account of a demand for national development, such as agricultural land expansion, urbanization and large dam construction. Without proper restrictions and management, the biodiversity has been destroyed and certain ecosystems have immensely deteriorated.

At the same time, some foreign countries try to import Thailand's natural plants/animals for research purposes and, sometimes, for property right registration. This has a great impact on Thailand's long-term benefits. Therefore, relevant laws have been enacted to get Thailand prepared prior to entering into the international biodiversity agreement; i.e. **Protection and Promotion of Thai Traditional Medicine Act of 1999, Plant Protection Act of 1999 and Community Forest bill under the legislation process.**

## 7.2 Pollution

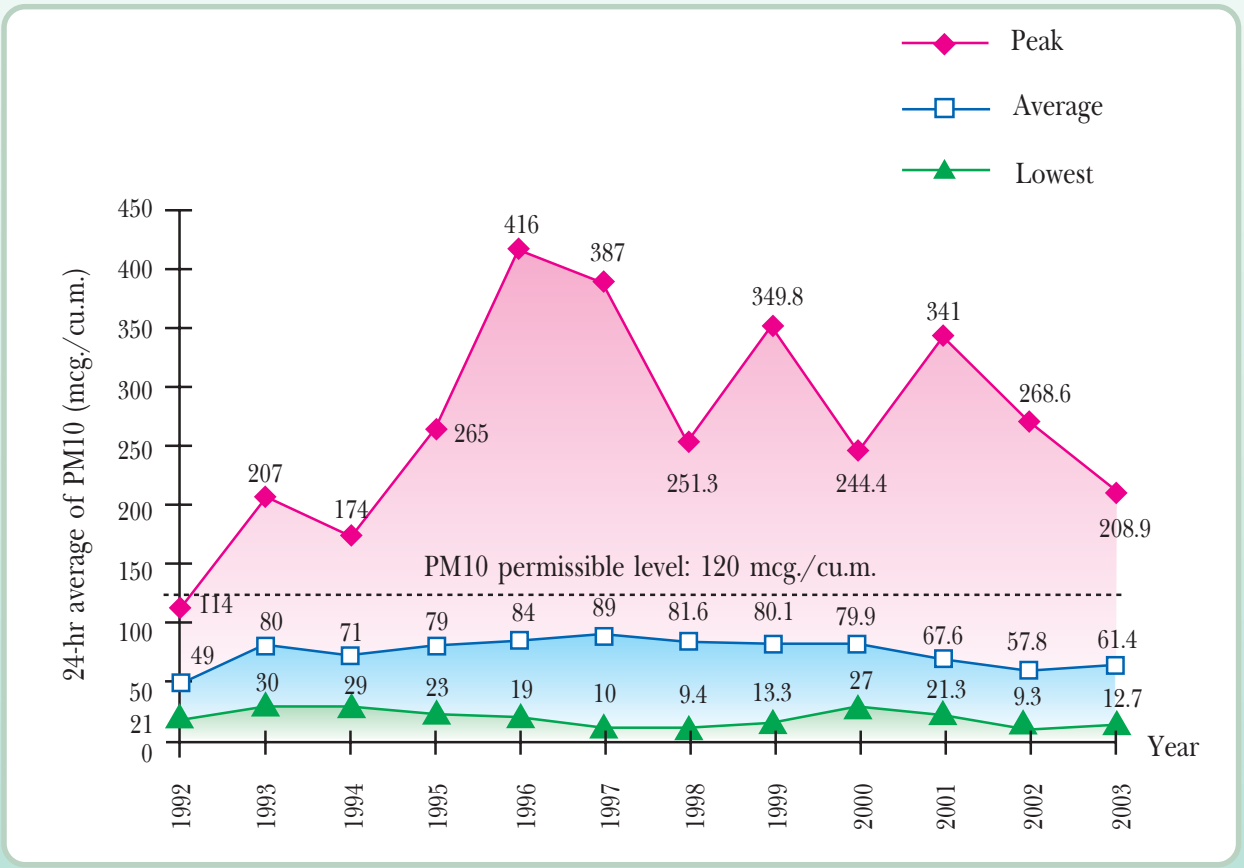
### 7.2.1 Air Pollution

#### (1) Air Quality

According to the Air Quality Monitoring programme conducted in Bangkok Metropolis and its vicinity, and in other major cities, it has been found that dust is still a major problem, and the levels of carbon monoxide and ozone are occasionally higher than the maximum permissible levels. The levels of other pollutants such as lead and sulfur dioxide are within the allowable limits.

As the major cause of air pollution problem in Bangkok, dust or suspended particulate matter is particularly dispersed every where and near the roads; the problem seems to be more serious at places near the sources of pollution, i.e. motor vehicles and construction sites. In 2003, it was found that the 24-hr total average amounts of dust particles on the roadsides in Bangkok had been declining since 1997 due to decreased industrial and construction activities resulting from the economic crisis. During 1992-2003, the 24-hr average concentrations of particulate matter of less than 10 microns (PM10) on the roadsides of Bangkok were higher than the maximum permissible level at all monitoring stations (Figure 4.33), while the levels of carbon monoxide, sulfur dioxide and lead were found to be lower than the maximum allowable levels.

**Figure 4.33** 24-hr Average Concentration of <10-micron Particulate Matter on Roadsides in Bangkok, 1992-2003




**Source:** Pollution Control Department, Ministry of Natural Resources and Environment.

In other provincial cities, the Pollution Control Department conducted the air quality measurement in 31 stations covering 15 provinces nationwide in 2003 and found that the 24-hr average peaks of PM10 detected were higher than the maximum permissible level in almost all areas (maximum permissible concentration for 24-hr average PM10 is 120 mcg./cu.m.). The highest PM10 pollution was detected at 388.5 mcg./cu.m. in Saraburi province, but the concentrations of nitrogen oxide, sulfur dioxide and carbon monoxide are still within the maximum permissible levels.

The major air pollutant in the area of Mae Moh, Lampang Province, is sulfur dioxide from lignite combustion in the electricity generation process. During 1996-1998, the number of times of the 1-hr average sulfur dioxide concentration found over the maximum permissible level declined from 51 to 16. In particular, during 1999-2003 no air samples were found to have the 1-hr average sulfur dioxide concentration over the permissible level, as the sources of pollutant had been under control. However, the PM10 pollution was still a problem, at 154.7 mcg./cu.m. in 2003.

**(2) Acid Rain**

The accumulation of sulfuric and nitric acids in the atmosphere with clouds will finally become "acid rain" which is the cause of transboundary air pollution. Thus, Thailand may be affected by acid rain from within the country and other countries, particularly industrialized countries such as Japan, Korea and China. A monitoring of acid rain as measured by the pH values of rainwater in 1996-2002 in certain provinces revealed that the rainwater in Bangkok and Kanchanaburi tended to be more acidic (Table 4.34), which has resulted in high levels of acidity in water sources and land, damaging plants, animals and human's respiratory system. The severity of the effects varies with the individual's sensitivity to sulfur dioxide; an individual with asthma will be more severely affected than normal individuals.[7]

**Table 4.34** Average pH Values in Rainwater, 1996-2002

| Study area | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|
| Bangkok | 6.4 | 5.6 | 5.2 | 5.2 | 5.0 | 5.0 | 5.1 |
| Pathum Thani | * | * | * | 4.8 | 5.3 | 5.1 | 5.33 |
| Kanchanaburi | * | 6.0 | 5.8 | 5.6 | 5.6 | 5.8 | 5.64 |
| Samut Prakan | * | * | * | * | 4.8 | * | ** |
| Chiang Mai | * | * | * | * | * | 5.7 | 5.72 |

**Source:** Pollution Control Department, Ministry of Natural Resources and Environment.

**Note:** * No measurements.

** Data incomplete.

[7] Acids in the Atmosphere: Borderless Pollution. Department of Pollution Control.

### 7.2.2 Water Pollution

At present, the quality of various waterways tends to be deteriorating, but the water is still usable for agricultural and industrial purposes, except for the lower stretches of the Chao Phraya and Tha Chin Rivers in the Central Plains, where the water is heavily polluted and the rivers can be used only for transportation purposes.

A report on water quality surveillance on 49 waterways and four stagnant water reservoirs (Kwan Phayao, Boraphet, Nong Han and Songkhla Lakes) in 1992-2003 revealed that overall the water quality is better than before; the proportion of samples with good water quality has risen from 6.25% in 1992 to 36.67% in 2002, but fallen slightly to 32.0% in 2003; the proportion of those with satisfactory quality has risen from 18.75% in 1992 to 31.0% in 2003 - the water from such sources can be used for human consumption after being properly treated and disinfected (Table 4.35).

For the Chao Phraya River, during 1992-2003, the water quality was at the good and satisfactory levels, rising from 11.68% in 1994 to 57.0% in 2003 (Table 4.35). However, the problems encountered were the higher contents of coliform and faecal coliform bacteria, high levels of pollution in terms of organic chemical substances, and low levels of dissolved oxygen.

**Table 4.35** Percentage of Water Samples with Various Water–Quality Levels from the Chao Phraya and Other Rivers, 1992-2003

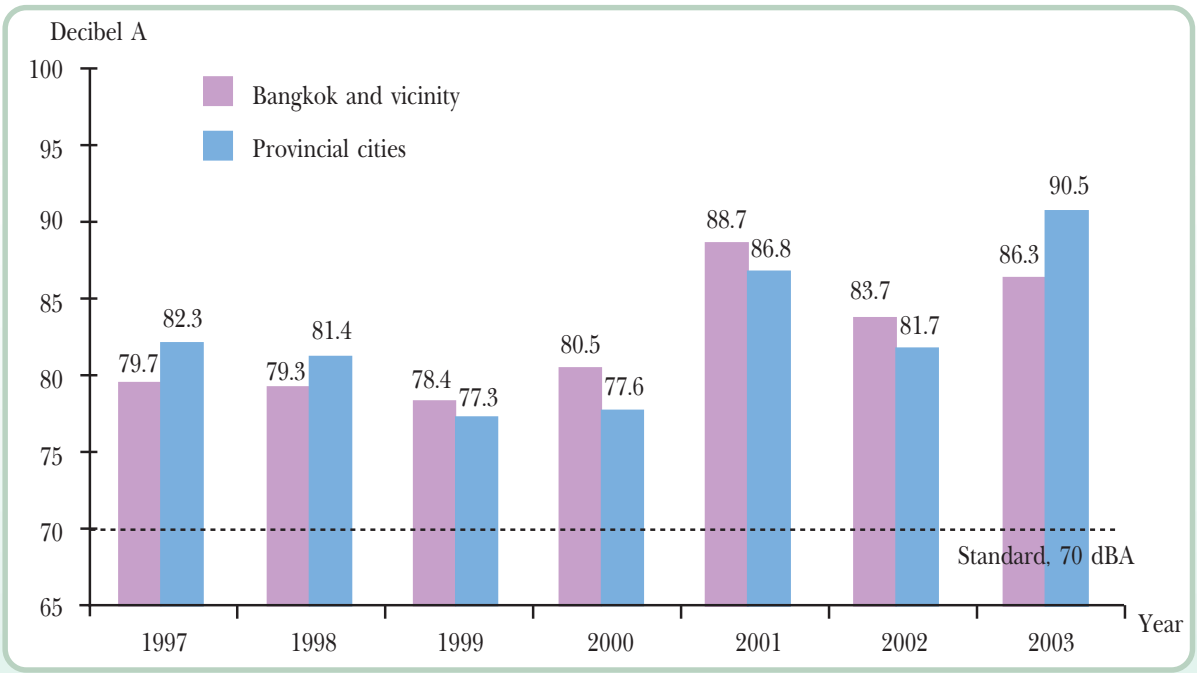
| Year | Quality of other rivers | | | | Quality of Chao Phraya River | | | |
|---|---|---|---|---|---|---|---|---|
| | Good | Satisfactory | Poor | Very poor | Good | Satisfactory | Poor | Very poor |
| 1992 | 6.25 | 18.75 | 75.00 | 0.00 | 0.00 | 5.88 | 17.65 | 76.47 |
| 1993 | 8.33 | 19.44 | 61.11 | 11.11 | 0.00 | 12.50 | 50.00 | 37.50 |
| 1994 | 4.35 | 32.61 | 60.87 | 2.17 | 3.65 | 8.03 | 33.58 | 54.74 |
| 1995 | 10.87 | 21.74 | 56.52 | 10.87 | 4.17 | 15.28 | 36.11 | 44.44 |
| 1996 | 9.43 | 30.19 | 56.60 | 3.77 | 0.00 | 15.28 | 31.94 | 52.78 |
| 1997 | 20.75 | 35.85 | 37.74 | 5.66 | 3.70 | 16.67 | 31.48 | 48.15 |
| 1998 | 30.19 | 49.06 | 15.09 | 5.66 | 19.44 | 26.39 | 27.78 | 26.39 |
| 1999 | 20.75 | 35.85 | 39.62 | 3.77 | 12.04 | 24.07 | 34.26 | 29.63 |
| 2000 | 27.78 | 38.89 | 27.78 | 5.56 | 15.63 | 31.25 | 31.25 | 21.88 |
| 2001 | 18.52 | 40.74 | 33.33 | 7.41 | 31.94 | 22.22 | 26.39 | 19.44 |
| 2002 | 36.67 | 20.00 | 40.00 | 3.33 | 8.33 | 31.94 | 27.78 | 31.94 |
| 2003 | 32.0 | 31.00 | 31.00 | 6.00 | 25.00 | 32.00 | 13.00 | 30.00 |

**Source:** Pollution Control Department, Ministry of Natural Resources and Environment.

### 7.2.3 Noise Pollution

The most serious source of noise pollution is motor vehicles, especially those on major roads in Bangkok, its vicinity and other major cities with traffic congestions. A report on noise level monitoring in 1997-2003 of the Pollution Control Department revealed that, at 32 air quality and noise monitoring stations in 15 provinces, almost all stations had 24-hr average continuous equivalent noise levels (Leq)[8] higher than the maximum permissible level (Figure 4.34).

**Figure 4.34** Noise Levels (Leq 24-hr) on Roadsides in Bangkok, Its Vicinity and Major Provincial Cities, 1997-2003




**Source:** Pollution Control Department, Ministry of Natural Resources and Environment.

### 7.2.4 Pollution from Hazardous Substances

Hazardous substances are imported mostly for industrial and agricultural applications; during 1994-2003, 60.3% and 38.5% of the substances were used for industrial and agricultural purposes, respectively; only 1.2% for household use. In 2003, 6.7 million tons of the substances were imported for industrial use and another 4.7 million tons for agricultural use (Table 4.36). Such substances could be released to the environment, causing pollution problems. A report on groundwater examinations (54 samples from three Northeastern provinces, 2001) revealed that eight samples (14.8%) were found to be contaminated with pesticides.

Besides, in 2003 there were 28 incidents of chemical disasters resulting in 35 injuries (no fatalities) and 150 million baht worth of damages.

It is noteworthy that after the 1997 economic crisis, the imports of chemical substances tended to be declining, but they were rising again soon after the crisis was over (Table 4.36).

[8] Noise level in Leq 24-hr is an average value of continuous noise or sound energy for a 24-hr period.

**Table 4.36** Amounts of Imported Chemical Substances, 1993-2003

| Chemical substance | Imported amount (tons) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
| **1. For industrial use** | **n.a.** | **4,874,115** | **5,020,611** | **5,164,181** | **4,822,042** | **4,602,197** | **5,006,919** | **6,031,927** | **5,547,467** | **6,356,872** | **6,785,320** |
| ❑ Inorganic chemicals | n.a. | 839,228 | 966,346 | 961,009 | 1,050,327 | 836,241 | 1,080,753 | 1,777,212 | 1,200,203 | 1,331,981 | 1,527,059 |
| ❑ Organic chemicals | n.a. | 2,152,448 | 2,391,862 | 2,442,034 | 2,159,141 | 2,275,283 | 2,280,271 | 2,362,797 | 2,313,657 | 2,640,466 | 2,866,077 |
| ❑ Colouring agents | 86,813 | 111,468 | 99,302 | 100,270 | 100,151 | 68,971 | 87,427 | 107,855 | 104,806 | 125,674 | 137,679 |
| ❑ Paints and vanishes | 21,265 | 47,112 | 29,628 | 29,716 | 37,624 | 21,051 | 24,866 | 32,018 | 133,258 | 37,672 | 87,632 |
| ❑ Anti-knock additives | 38,217 | 42,843 | 49,016 | 48,345 | 44,878 | 33,058 | 36,785 | 34,066 | 35,157 | 35,984 | 38,608 |
| ❑ Plastic pallets | 515,378 | 692,895 | 656,835 | 718,958 | 622,876 | 571,376 | 712,857 | 787,681 | 744,459 | 875,167 | 947,317 |
| ❑ Films, foils and plastic tapes | 45,406 | 54,564 | 58,399 | 58,755 | 64,307 | 51,666 | 91,401 | 82,987 | 80,682 | 91,422 | 104,951 |
| ❑ Other chemicals | n.a. | 933,557 | 769,223 | 805,094 | 742,738 | 744,551 | 692,559 | 847,311 | 935,245 | 1,218,506 | 1,075,997 |
| **2. For agricultural use** | **3,291,022** | **3,047,576** | **3,188,235** | **3,482,195** | **3,033,190** | **2,905,710** | **3,610,583** | **3,378,739** | **3,510,837** | **3,736,767** | **4,787,320** |
| ❑ Pesticides | 25,140 | 29,718 | 32,248 | 42,198 | 42,240 | 32,197 | 48,995 | 50,272 | 54,428 | 67,414 | 69,732 |
| ❑ Fertilizers | 3,265,882 | 3,017,858 | 3,155,987 | 3,439,997 | 2,990,950 | 2,873,513 | 3,561,588 | 3,328,467 | 3,456,409 | 3,669,353 | 4,717,588 |
| **3. For household use** | **66,873** | **90,562** | **84,515** | **81,296** | **95,225** | **68,475** | **89,595** | **116,333** | **139,078** | **132,490** | **159,910** |
| ❑ Medicines | 6,109 | 7,886 | 9,732 | 10,072 | 10,592 | 6,929 | 10,574 | 13,726 | 13,240 | 19,239 | 19,958 |
| ❑ Vitamins and hormones | 2,961 | 3,282 | 3,752 | 3,257 | 3,763 | 2,938 | 3,844 | 5,223 | 5,397 | 5,590 | 5,783 |
| ❑ Other medical and pharmaceutical products | 5,394 | 15,747 | 4,734 | 5,205 | 5,018 | 3,253 | 4,235 | 6,557 | 18,043 | 6,069 | 6,517 |
| ❑ Soap and detergents | 40,440 | 48,934 | 54,308 | 51,116 | 55,700 | 43,010 | 55,563 | 67,381 | 80,376 | 75,163 | 94,774 |
| ❑ Cosmetics | 11,969 | 14,713 | 11,989 | 11,646 | 20,152 | 12,345 | 15,379 | 23,446 | 22,022 | 26,429 | 32,878 |
| **Total imports** | **n.a.** | **8,012,253** | **8,293,361** | **8,727,672** | **7,950,457** | **7,576,382** | **8,707,097** | **9,526,999** | **9,197,382** | **10,226,129** | **11,732,550** |
| Increase from previous year (percent) | n.a. | n.a. | +3.5 | +5.2 | - 8.9 | - 4.7 | +14.9 | +9.4 | -3.4 | +11.2 | +14.8 |

**Source:** Department of International Trade Negotiations, Ministry of Commerce

**Note:** n.a. = Data not available

For 2001, the data were adjusted, according to the most recent report of the Department of International Trade Negotiations.

#### 7.2.5 Pollution from Hazardous Wastes

The amount of hazardous wastes in Thailand has increased from 0.9 million tons in 1990 to 1.8 million tons in 2003; of this amount, 1.4 million tons (77.8%) were released from the industrial sector and 0.4 million tons (22.2%) from residential communities. The amount of such industrial wastes is on the rise, whereas the capacity for hazardous waste treatment is only 16% of the total amount.

In 2002, only 0.22 million tons of hazardous waste were sent for disposal at in-country waste treatment plants and another 330 tons were sent for disposal abroad. However, large amounts of such waste were kept in the industries or illegally dumped into the environment.

## 7.3 Environmental Sanitation

#### 7.3.1 Housing Sanitation

The number of Thailand's slum communities has risen from 1,587 in 1994 to 1,802 in 1997 and 2,265 in 2000, an increase of 13.5% and 25.7%, respectively. In 2000, there were 442,525 slum households, of which 53.9% (1,220 slums) were located in Bangkok Metropolis, 20% (452 slums) in Bangkok's vicinity, and 26.1% (593 slums) in provincial areas. The number of slums in all regions of Thailand has increased significantly, particularly in Bangkok by 44.7%, except for the Northeast where the trend is declining (Housing Information Division, National Housing Authority).

Regarding rural households, according to the 2004 survey on basic minimum needs (BMN), more households have had a better environmental condition. The number of durable households has risen from 90.6% in 1993 to 97.9% in 2001, but fallen slightly to 96.6% in 2004. The number of households with a hygienic condition has risen from 69.4% in 1992 to 89.3% in 2001, and to 93.5% in 2004.

#### 7.3.2 Food and Water Supply

**(1) Food Safety**

At present, people's food consumption culture has shifted from eating home-cooked food to eating out and eating pre-cooked or semi-cooked or ready-to-eat food. Cooking food rapidly in large quantities may involve unhygienic practices and inappropriate use of ingredients or utensils, resulting in food contamination with pathogens. The 2002 study on conditions of food establishments nationwide revealed that only 27.1% (14,999 out of 55,311) of the restaurants inspected, 16.9% (2,344 out of 13,844) of fresh markets, 16.0% (3,170 out of 19,844) of school cafeterias, 55.8% (382 out of 684) of hospital cafeterias met the food safety requirements. And the 2001 analyses of 235 samples of food sold in the market, conducted by the Department of Medical Sciences, revealed that 40.4% (95 out of 235) of the ready-to-cook food samples were unhygienic due to bacterial contamination. Besides, the Department of Medical Sciences has monitored the food safety conditions of 56 large restaurants and hotels by inspecting 225 samples of food as well as swabs of utensils and hands of food handlers and found that 63.1% (142 out of 225) of the samples were unhygienic and 4.9% (11 out of 225) were contaminated with food-poisoning pathogens. This problem has resulted in the consumers being at risk of eating unhygienic and substandard food.

**(2) Water Supply Safety**

Based on the Survey of Water Supply Situations of Thai People during 1986-1995, most Thai people preferred rainwater for drinking, followed by artesian-well water and tap water. And in 2001, a similar preference was also found, i.e. urban residents preferred bottled water, rainwater and tap water in a comparable proportion, whereas rural residents preferred rainwater, artesian-well water and tap water (Table 4.37).

**Table 4.37** Percentage of Drinking Water Sources of Thai People by Residential Area, 1986-2001

| Source of drinking water* | 1986 | 1995 | | | 2000 | | | 2001 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Whole country | Urban | Rural | Total | Urban | Rural | Total | Urban | Rural | Total |
| No. of surveyed households | 3,181 | 809 | 3,260 | 4,069 | 5,291,871 | 10,645,933 | 15,937,804 | 27,183 | 143,904 | 171,087 |
| Bottled water | n.a. | 23.4 | 8.2 | 11.2 | 40.6 | 9.2 | 19.5 | 35.5 | 9.7 | 13.7 |
| Tap water | 15.8 | 27.6 | 9.4 | 13.0 | 36.4 | 16.8 | 23.2 | 26.1 | 16.1 | 17.7 |
| Rainwater | 39.2 | 42.2 | 52.2 | 50.2 | 16.1 | 51.0 | 39.6 | 27.5 | 51.3 | 47.6 |
| Artesian wells, public & private | 26.2 | 27.0 | 52.5 | 47.4 | 6.7 | 21.9 | 16.9 | 9.7 | 21.8 | 19.9 |
| Natural water sources | 19.0 | 0.9 | 2.7 | 2.3 | 0.2 | 1.1 | 0.8 | 0.2 | 0.6 | 0.5 |

**Sources:** 1. Data for 1986 and 1995 were derived from Reports on the 3rd and 4th National Nutrition Surveys. Department of Health, MoPH.
2. Data for 2000 were derived from the Population and Household Census. National Statistical Office.
3. Data for 2001 were derived from the Provincial Health Status Survey, 2001. Bureau of Policy and Strategy, MoPH.

**Note:** * More than one answer can be made.

With regard to the quality of drinking water in Thailand, the survey conducted by Department of Health, MoPH, during 1995-2003, reveals that most of tap water samples do not meet the drinking water standards, except for those of the Metropolitan Waterworks Authority, about 70% of which meet the standard. In 2001, a campaign on drinkable tap water in rural and urban areas led to improved quality of tap water, but in 2002-2003 the quality of rural tap water was worse than before. For rainwater, artesian-well water and shallow-well water, the findings show that their quality is still unacceptable. This is mainly because of contamination with bacteria and chemicals such as cadmium, iron, lead and manganese, including unacceptable physical quality, i.e. turbidity and color levels being higher than maximum allowable standards (Table 4.38).

Regarding the quality of bottled water, based on a survey conducted by the Food and Drug Administration and some Provincial Public Health Offices during 1995-2003, 71% of water samples tested met the drinking water standards; no differences in terms of contamination were found among the water with and without FDA-licence logo. It was also found that only 57% of ice cubes samples tested met the standard (Table 4.38).

**Table 4.38** Quality of Drinking Water in Thailand, 1995-2003

| Water type | 1995 | | 1996 | | 1997 | | 1998 | | 1999 | | 2000 | | 2001 | | 2002 | | 2003 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Samples tested | Samples meeting standard | Samples tested | Samples meeting standard | Samples tested | Samples meeting standard | Samples tested | Samples meeting standard | Samples tested | Samples meeting standard | Samples tested | Samples meeting standard | Samples tested | Samples meeting standard | Samples tested | Samples meeting standard | Samples tested | Samples meeting standard |
| - Tap water, MWA | 45 | 38 | 27 | NA | 75 | 56 | 118 | 81 | 81 | 70 | - | - | - | - | - | - | - | - |
| | | (84.4) | | | | (74.7) | | (68.6) | | (86.4) | | | | | | | | |
| - Tap water, PWA | 129 | 95 | 547 | 276 | 1,470 | 713 | 1,568 | 1,397 | 532 | 294 | | | | | 120 | 92 | | |
| | | (73.6) | | (50.4) | | (48.5) | | (89.1) | | (55.3) | | | | | | (76.7) | 131 | 74 |
| - Tap water, municipality | 8 | 3 | 68 | 10 | 68 | - | 51 | 18 | 161 | 89 | 900 | 442 | 570 | 504 | 203 | 171 | | (56.5) |
| waterworks | | (37.5) | | (14.7) | | | | (35.3) | | (55.3) | | (49.1) | | (88.4) | | (84.2) | | |
| - Tap water, sanitary | 43 | 22 | 327 | 90 | 496 | 232 | 370 | 164 | 51 | 18 | | | | | - | - | - | - |
| district waterworks | | (51.2) | | (27.5) | | (46.8) | | (44.3) | | (35.3) | | | | | | | | |
| - Tap water, village | 209 | 102 | 1,683 | 399 | 465 | 108 | 3,925 | 1,103 | 5,041 | 2,039 | 4,246 | 1,507 | 2,673 | 2,297 | 1,318 | 760 | 633 | 165 |
| waterworks | | (48.8) | | (23.7) | | (23.2) | | (28.1) | | (40.4) | | (35.5) | | (85.9) | | (57.7) | | (31.0) |
| - Shallow-well water, | NA | NA | 365 | 37 | 222 | 28 | 191 | 78 | 125 | 54 | 26 | 7 | - | - | - | - | - | - |
| private | | | | (10.1) | | (12.6) | | (40.8) | | (43.2) | | (26.9) | | | | | | |
| - Artesian-well water, | 65 | 27 | 438 | 377 | 355 | 15 | 258 | 62 | 277 | 112 | 280 | 102 | - | - | 174 | 50 | - | - |
| public | | (41.5) | | (86.1) | | (4.2) | | (24.0) | | (40.4) | | (36.4) | | | | (28.7) | | |
| - Rainwater | 65 | 23 | 495 | 98 | 121 | 6 | 298 | 104 | 90 | 27 | 69 | 19 | - | - | - | - | - | - |
| | | (35.4) | | (19.8) | | (5.0) | | (34.9) | | (30.0) | | (27.5) | | | | | | |
| - Bottled water | 1,462 | 968 | 407 | 286 | 3,225 | 2,837 | 4,496 | 3,167 | 3,766 | 2,329 | 1.033 | 788 | 3,551 | 2,383 | 2,996 | 2,121 | 2,743 | 1,925 |
| | | (66.2) | | (70.3) | | (88.0) | | (70.4) | | (61.8) | | (76.3) | | (67.1) | | (70.8) | | (70.2) |
| - Ice cubes | 32 | 9 | 42 | 30 | 187 | 170 | 401 | 203 | 335 | 174 | 285 | 138 | 299 | 156 | 273 | 170 | 250 | 150 |
| | | (28.1) | | (71.4) | | (90.9) | | (50.6) | | (51.9) | | (48.4) | | (52.2) | | (62.3) | | (60.0) |

**Sources:** (1) Department of Health, MoPH.

(2) Planning and Technical Administration Division, FDA, MoPH.

**Notes:** The figures in ( ) mean percent.

### 7.3.3 Solid Waste and Sewage

In 2003, there were an estimated 14.33 million tons of solid wastes nationwide, of which about 3.41 million tons (23.8%) were generated in Bangkok, 4.42 million tons (30.8%) in municipal areas, and 6.5 million tons (45.4%) in non-municipal/sanitary district areas. Between 1992 and 2003, the total amount of solid wastes increased on average by 2.4% each year, mostly in Bangkok Metropolis and municipalities nationwide. Since 2001 the increase rate in non-municipal areas is slightly higher than that in municipal areas (Table 4.39). Solid waste disposal capacity is still limited; the Bangkok Metropolitan Administration is able to collect almost all of its solid wastes, but municipalities and non-municipal areas can collect only half of their wastes. Such conditions have an impact on the quality of life of provincial residents as they are offended by the putrid smell of such wastes; and a lot of such residents have health problems.

**Table 4.39** Amount of Solid Wastes, 1992-2003

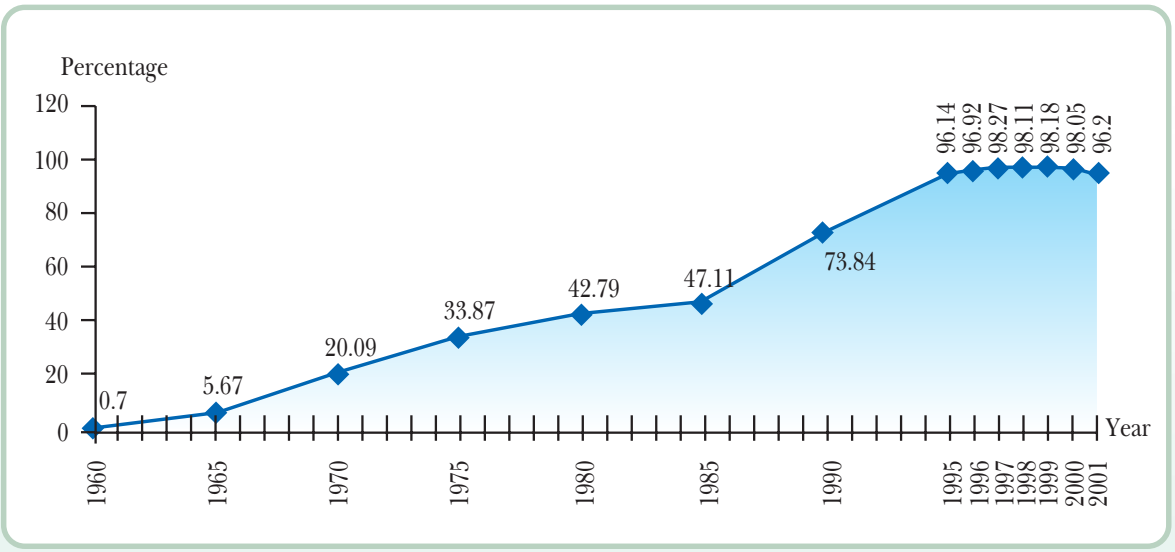
| Area / Year | Bangkok | | Municipal areas including Pattaya City | | Sanitary districts | | Outside municipal/sanitary district areas | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Amount (million tons) | Change (percent) | Amount (million tons) | Change (percent) | Amount (million tons) | Change (percent) | Amount (million tons) | Change (percent) | Amount (million tons) | Change (percent) |
| 1992 | 2.19 | - | 1.16 | - | 1.62 | - | 5.81 | - | 10.78 | - |
| 1993 | 2.57 | + 17.3 | 1.25 | + 7.7 | 1.51 | - 6.8 | 5.85 | + 0.7 | 11.18 | + 3.7 |
| 1994 | 2.56 | - 0.4 | 2.05 | + 64.0 | 1.53 | + 1.3 | 5.91 | + 1.0 | 12.05 | + 7.8 |
| 1995 | 2.63 | + 2.7 | 2.30 | + 12.2 | 1.69 | + 10.5 | 5.96 | + 0.8 | 12.58 | + 4.4 |
| 1996 | 2.95 | + 12.2 | 2.43 | + 5.6 | 1.78 | + 5.3 | 5.97 | + 0.2 | 13.13 | + 4.4 |
| 1997 | 3.26 | + 10.5 | 3.0 | + 23.4 | 1.75 | - 1.7 | 5.5 | - 7.9 | 13.51 | + 2.9 |
| 1998 | 3.10 | - 4.9 | 2.71 | - 9.7 | 1.74 | - 0.6 | 6.04 | + 9.8 | 13.59 | + 0.6 |
| 1999 | 3.28 | + 5.8 | 4.50 | + 66.0 | - | - | 6.04 | - | 13.82 | + 1.7 |
| 2000 | 3.33 | + 1.5 | 4.3 | - 4.44 | - | - | 6.3 | + 4.3 | 13.93 | + 0.8 |
| 2001 | 3.40 | + 2.1 | 4.34 | + 0.9 | - | - | 6.36 | + 1.0 | 14.10 | + 1.2 |
| 2002 | 3.51 | + 3.2 | 4.37 | + 0.7 | - | - | 6.43 | + 1.1 | 14.31 | + 1.5 |
| 2003 | 3.41 | - 2.8 | 4.42 | + 1.1 | - | - | 6.50 | + 1.1 | 14.33 | + 0.1 |

**Source** Toxic Substance and Solid Waste Management Bureau, Pollution Control Department.

**Note:** In 1999, all sanitary districts were upgraded to municipalities; since then only the figures for municipal areas appear.

Regarding human waste or night soil from urban households, problems are found to be related to its transportation and disposal. In 2000, 98.05% of rural households had sanitary latrines; the proportion dropped to 96.2% in 2001 as shown in Figure 4.35. Nationwide, 61.3% (46 provinces) of all 75 provinces had 100% of their households with sanitary latrines (Department of Health, 1999). However, a survey on latrine use of Thai people in 2001 revealed that 97.9% of them regularly used a sanitary latrine while at home; but the rate dropped to only 38.0% when they had to go out and work in plantations or paddy fields (Table 4.40).

**Figure 4.35** Percentage of Households with Sanitary Latrines, 1960-2001




**Sources:** (1) 1960-2000 from the Department of Health, MoPH.
(2) 2001 from the Provincial Health Status Survey. Bureau of Policy and Strategy, MoPH.

**Table 4.40** Latrine Use Behaviour of Thai People, 2001

| Behaviour | Sample size (N) | Number using latrine (%) | | |
|---|---|---|---|---|
| | | Regularly | Occasionally | Never |
| (1) Use sanitary latrine while at home | 14,162 | 13,845 (97.9) | 156 (1.1) | 147 (1.0) |
| (2) Use sanitary latrine while working in plantations or paddy fields | 14,055 | 5,345 (38.0) | 3,216 (22.9) | 5,489 (39.1) |

**Source:** Report on the Evaluation of the Helminthic Disease Control Programme in Thailand at the End of the 8th Plan, 2001. Department of Disease Control.

Such physical environmental changes have an impact on human health as follows:

**(1) Pollution and illnesses resulting from environmental pollution** such as allergies, respiratory diseases, cancer and chemical poisoning.

**(1.1) Air pollution with PM10 is the cause respiratory diseases including chronic bronchitis among residents in Bangkok and other major cities**. According to the 2002 environmental situation report (The World Bank, 2002), PM10 pollution is positively associated with the number of outpatients with respiratory diseases in Bangkok. This is consistent with NSO's surveys in 1991-2003 which revealed that 38-50% of patients had respiratory diseases; more patients were found in municipal areas than in non-municipal areas and the number was highest in Bangkok.

Besides, a study conducted by Pope and colleagues (2002) revealed that exposure to PM10 for a long period of time was a fatal risk for diseases of the heart and lung, especially lung cancer. An increment of every 10 mcg./cu.m. of PM10 may result in 6% and 8% increases in mortality from diseases of the heart and lung reports lung cancer, respectively.[9]

**(1.2) An extremely high healthcare expenditure due to air pollution in Bangkok.**

The World Bank (2002) estimated that healthcare spending due to PM10 exposure in six major cities in Thailand (Bangkok, Chiang Mai, Nakhon Sawan, Khon Kaen, Nakhon Ratchasima, and Songkhla) was US$643.9 million or 28,009.6 million baht as a result of 2,330 premature deaths and 9,626 cases of bronchitis. The spending was 1-1.6% of GDP for 1996-1999 or 2,000 baht per capita per year, 65% of which incurred in Bangkok alone (Table 4.41).

**Table 4.41** Estimated Impact on Health and Spending Resulting from Air Pollution with PM10 in Six Major Cities in Thailand, 2000

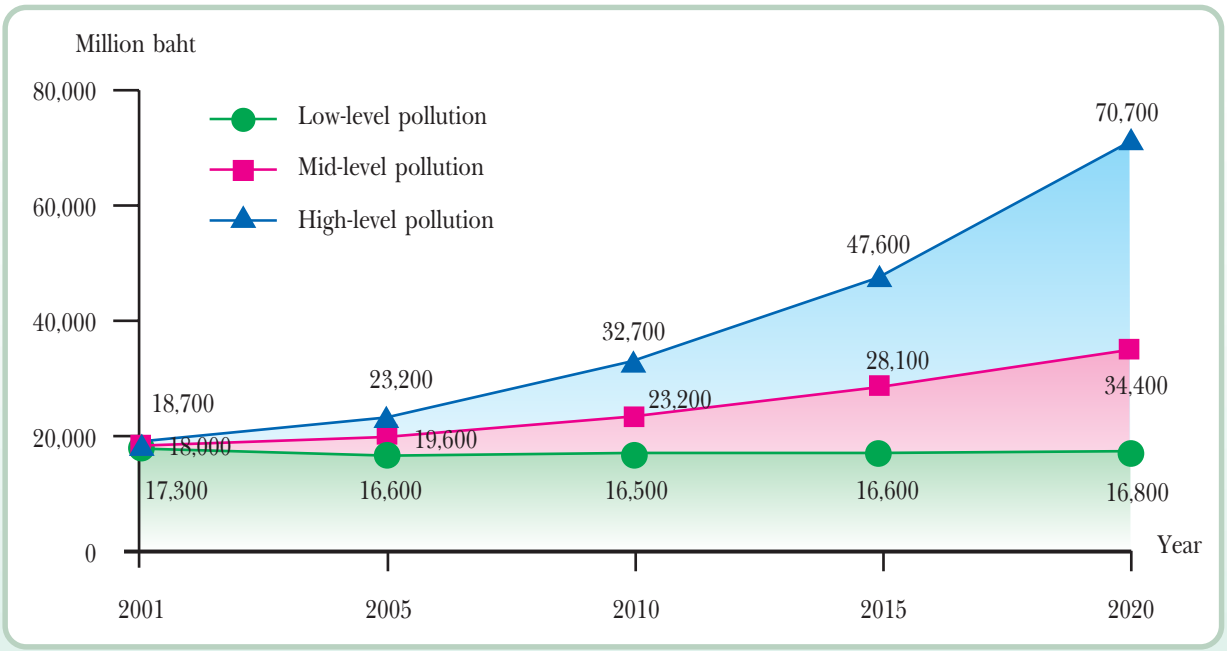
| City | PM10 (mcg./cu.m.) | Population (millions) | Death rate (percent) | Premature deaths (number) | Chronic bronchitis (cases) | Health spending | |
|---|---|---|---|---|---|---|---|
| | | | | | | US$ million | Baht million |
| Bangkok | 64 | 5.7 | 0.0065 | 1,092 | 4,550 | 424 | 18,444 |
| Chiang Mai | 57 | 1.6 | 0.00985 | 390 | 1,080 | 56.8 | 2,470.8 |
| Nakhon Sawan | 51 | 1.1 | 0.0058 | 134 | 630 | 26.1 | 1,135.35 |
| Khon Kaen | 66 | 1.8 | 0.006 | 324 | 1,476 | 59.2 | 2,575.2 |
| Nakhon Ratchasima | 51 | 2.6 | 0.0055 | 286 | 1,426 | 56.8 | 2,470.8 |
| Songkhla | 41 | 1.2 | 0.0061 | 104 | 464 | 21 | 913.5 |
| **Total** | | **14** | | **2,330** | **9,626** | **643.9** | **28,009.6** |

**Sources:** Report on Environmental Situation in Thailand, 2002. The World Bank, 2002.

[9] Pope, C. Arden, et al. (2002). "Lung Cancer Cardiopulmonary Mortality, and Long-term Exposure to Fine Particulate Air Pollution". Journal of American Medical Association, 287(9), pp. 1132-1141.

For Bangkok, in which the air pollution problem is most serious, the World Bank estimated that healthcare spending due to PM10 exposure under three scenarios (high, moderate and low levels of exposure)[10] ranged from 17,300 to 18,700 million baht and would increase to 16,800-70,700 in 2020. At the low level of pollution, the health spending would slightly drop until 2010; then it would gradually increase as the PM10 concentration would decline at a higher rate in the beginning phase, compared with the GPP growth rate. After 2010, the income expansion and life values would increase more rapidly, compared with the drop in PM10 concentration (Figure 4.36).

**Figure 4.36** Health Spending Related to PM10 Pollution in Bangkok, 2001-2020




**Source:** Report on Environmental Situation in Thailand 2002. The World Bank, 2002.

[10] Low-level pollution: GDP growth 2% per annum and GPP for Bangkok 1.5% per annum.
Moderate-level pollution: GDP growth 2% per annum and GPP for Bangkok 4.5% per annum.
High-level pollution: GDP growth 5% per annum and GPP for Bangkok 7.5% per annum.

**(1.3) Noise pollution tends to be more serious resulting in hearing impairment.** According to a study of Dr. Andrew W. Smith,[11] noise of over 80 decibels had an adverse effect on hearing; and Schultz (1978)[12] has shown that noise of over 70 decibels will badly annoy 22-95% of the people.

**(2) Increased chemical contaminations of food due to use of chemicals without scientific principles and illegal use of certain hazardous substances in the food production processes have a detrimental effect on human health.**

**(2.1) Toxic chemical residues are found at a level higher than the maximum allowable concentration in plants, vegetables, fruit and fresh food; such foods are unsafe and hazardous to consumers.** According to the routine reports of the Department of Medical Sciences (1993-2003), residues of pesticides and growth stimulant salbutamol are detected in all kinds of food such as vegetables and fruit. The contamination rate has risen from 16.2% in 1993 to 63.9% in 2002. High levels of growth-stimulant residues are also found as shown in Table 4.42. Thus, food safety campaigns have been undertaken against the use of six prohibited substances in fresh food. As a result, it has been found that all kinds of contamination tend to be declining. But high levels of pork-reddening substance and pesticides are still detected in meats and agricultural products (Table 4.43).

Besides, reports on safety surveillance of vegetables and fruit (1994-2002) reveal that 3.5-14.9% of food samples have toxic substance residues higher than the maximum permissible levels. For vegetables claimed to be pesticide-free, 9.7% of samples tested have the residues higher than the maximum allowable levels (Table 4.44). So, it is clear that the people have to consume the foods that are unsafe and hazardous to their health; if such chemicals are accumulated up to a high level, they may cause cancer.

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[11] Referred to in Thailand Health Profile 1999-2000, pp. 113-114.

[12] Referred to in Thailand Health Profile 1999-2000, pp. 113-114.

**Table 4.42** Results of Food Testing for Pesticide Residues and Growth Hormones on a Regular Basis, 1993-2003

| Chemical | 1993 | | 1994 | | 1995 | | 1996 | | 1997 | | 1998 | | 1999 | | 2000 | | 2001 | | 2002 | | 2003 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Samples tested | Samples with residue | Samples tested | Samples with residue | Samples tested | Samples with residue | Samples tested | Samples with residue | Samples tested | Samples with residue | Samples tested | Samples with residue | Samples tested | Samples with residue | Samples tested | Samples with residue | Samples tested | Samples with residue | Samples tested | Samples with residue | Samples tested | Samples with residue |
| 1. Pesticide residues in food such as vegetables, fruits, milk, salted fish and dried fish | 218 | 53 (24.3) | 201 | 95 (47.3) | 269 | 60 (22.3) | 476 | 93 (19.5) | 160 | 18 (11.2) | 218 | 86 (39.4) | 487 | 191 (39.2) | 209 | 79 (37.8) | 219 | 77 (35.2) | 334 | 146 (43.7) | 413 | 105 (25.4) |
| 2. Growth hormone "salbutamol" in pork and pig's kidneys and livers | 108 | - | 55 | - | 50 | - | 34 | 3 (8.8) | 10 | 4 (40.0) | 42 | 9 (21.4) | 59 | 13 (22.0) | 26 | 5 (19.2) | 146 | 33 (22.6) | 347 | 289 (83.3) | 2,074 | 182 (8.8) |
| Total | 326 | 53 (16.2) | 256 | 95 (37.1) | 319 | 60 (18.8) | 510 | 96 (18.8) | 170 | 22 (12.9) | 260 | 95 (36.5) | 546 | 204 (37.4) | 235 | 84 (35.7) | 365 | 110 (30.1) | 681 | 435 (63.9) | 2,487 | 287 (11.5) |

**Source:** Department of Medical Sciences, MoPH.

**Note:** Figures in ( ) are percentage.

**Table 4.43** Results of Testing for Chemical Contaminants in Food from Fresh Markets Nationwide under the Food Safety Project, 2003

| Contaminant | Before project implementation | | After project implementation (as of 31 Dec 03) | | |
|---|---|---|---|---|---|
| | Samples tested | Sample contaminated (percent) | Samples tested | Samples contaminated | Sample contaminated (percent) |
| 1. Pork-reddening agent | 2,132 | 96 | 1,111 | 115 | 10.4 |
| 2. Bleaching agent | 3,256 | 10.0 | 4,812 | 83 | 1.7 |
| 3. Fungicides | 2,099 | 7.2 | 4,315 | 206 | 4.8 |
| 4. Borax | 3,184 | 42.0 | 6,695 | 46 | 0.7 |
| 5. Formalin | 2,471 | 10.0 | 3,800 | 46 | 1.2 |
| 6. Pesticides | 2,268 | 20.3 | 8,437 | 508 | 6.0 |

**Source:** Food Safety Centre, MoPH.

**Table 4.44** Results of Safety Surveillance on Fresh Vegetables and Fruit, 1994-2002

| Type of food | Testing for | Samples tested | Test results | Testing agency | Year of testing |
|---|---|---|---|---|---|
| 1. Fresh vegetables and fruit of farmers | Pesticides | 3,115 | Residues were detected in 1,127 samples (36.2%), 190 of which (61%) exceeded maximum permissible levels | Department of Agriculture | 2002 |
| 2. Fresh vegetables and fruit from Si Mum Mueang markets | Pesticides | 1,753 | Residues of sulfate and carbamate compounds were detected in 89.1% of samples; 3.5% of which were at unsafe levels | Department of Agriculture | 2002 |
| 3. Food safety surveillance: pesticide-free vegetables | | | | | |
| - Vegetables | Pesticides | 262 | Residues were detected in 170 samples (64.8%); 39 samples (14.9%) exceeding maximum permissible levels | FDA and DMSc | 1994-2002 |
| - Pesticide-free vegetables | Pesticides | 319 | Residues were detected in 155 samples (48.6%) 31 samples (9.7%) exceeding maximum permissible levels | FDA and DMSc | 1994-2002 |

**Sources:** - Stop Using Pesticides in Agriculture for Thai Public Health. A paper presented at the National Health Assembly, 2003.

- Food Safety Surveillance Project: Pesticide-Free Vegetables. Food and Drug Administration, 2003.

**(2.2) More people are ill with chemical poisoning and have food- and water-borne diseases.** Health impacts from chemical use in both agricultural and industrial sectors are on the rise. Most of the people affected by chemical poisoning especially pesticides are farmers (see section 3.4.1 on poisoning from pesticides). In the future, it is possible that there will be more patients with accumulated chemical poisoning and illnesses or symptoms such as disorders of the neurological, immunological, and gastro-intestinal systems, and cancer.

Besides, consuming unsafe or substandard food and water may cause water- and food-borne diseases. The morbidity rate of food poisoning has risen to 204.29 per 100,000 population in 2003.

**(3) A rapid increase in urban slums has caused slum dwellers to suffer from environmental problems such as a lack of safe drinking water, affecting health.** In 1998, it was found that approximately 43 million Thai people did not have good-quality drinking water. The largest proportion of people at risk were those drinking rainwater (Chatchawal Chantaravijit. Situation of Drinking Water and Health Risk, 2000). Coupled with unhygienic behaviours, the morbidity rate per 100,000 population due to diarrhoea has risen during the part 20 years, particularly among children under 5 years, from 3,031.25 in 1984 to 7,242.3 in 2003.

**(4) More people lodge complaints about pollution affecting human health.** An analysis of complaints on pollution during 2002-2003 revealed that the number of complaints had increased from 9,168 to 11,033, most of which were related to air and noise pollution.

# 8. Situation and Trends of Infrastructure

## 8.1 Transportation

### 8.1.1 Land Transportation

In 2003, Thailand had a road network of approximately 172,504.4 km, of which 63,982.6 km was under the highway network and 108,521.8 km under the rural road network as well as a network of 1,889 km of four-lane roads leading to all major regions of the country. It is considered that the road network has covered all localities nationwide.

In Bangkok, there are expressways of 171.2 km and another 146.3 km under construction expected to be completed by 2009. One line of electric rail mass transit system has been operational and another four lines are expected to be completed by the end of 2005. This will help ease the traffic problems in Bangkok.

Besides, there is a railway system of 5,356.5 km.

### 8.1.2 Waterway Transportation

In 2003, Thailand had five principal harbours and 11 ports with an adequate potential for waterway transport of industrial products. However, some improvements in the infrastructure of the ports may be needed to cope with future economic expansion.

### 8.1.3 Air Transportation

At present Thailand has five international airports: Bangkok, Chiang Mai, Hat Yai, Phuket and Chiang Rai. The Bangkok International Airport is capable of handling 10,143 international passengers per

hour and 8,685 domestic passengers per hour during rush hours, or 36.5 million passengers per year, which is quite crowded. However, the government is building the Suvarnnabhumi Airport as a modern air transport hub in this region, expected to be open in 2005 with a capacity to handle 30 million passengers in the first year and up to 100 million passengers when the entire airport is completed. This is considered that Thailand is well-prepared in terms of air transport infrastructure.

## 8.2 Telecommunications

Thailand's telecommunications have rapidly expanded, especially during the past decade. In 2003, there were 6,305,245 fixed-line telephone numbers and 22,077,858 mobile phones nationwide; a rate of 99.05 fixed-line phones per 1,000 population and 346.8 mobile phones per 1,000 population (Table 4.45). The access to the Internet has increased from 30 persons in 1991 to 6.03 million persons in 2003, a use rate of 9.5%; the rate being twice as many for municipal residents, compared with non-municipal areas. The number of Internet users in Bangkok and the Central Plains is more than half of all users nationwide (Table 4.46). But in comparison with other countries, such as Singapore and Malaysia, Thailand's telecommunication infrastructure and Internet uses are lower (Table 4.47).

**Table 4.45** Telecommunication Infrastructure in Some Countries, 1996-2002

| Country | No. of fixed-line telephones (per 1,000 population) | | | | | No. of mobile phones (per 1,000 population) | | | | | No. of computers (per 1,000 population) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1996 | 1997 | 1998 | 1999 | 2002** | 1996 | 1997 | 1998 | 1999 | 2002 | 1996 | 1997 | 1998 | 1999 | 2002 |
| Singapore | 498.4 | 529.0 | 464.6 | 484.1 | 472 | 147.5 | 229 | 280.7 | 381.45 | 761.1 | 233 | 316 | 344 | 390.9 | 596 |
| Malaysia | 192.5 | 192.5 | 204.7 | 219.3 | 206 | 88.4 | 101.9 | 101.5 | 145.05 | 372.9 | 53 | 65 | 78 | 94.5 | 137 |
| Thailand | 78.6 | 85.5 | 82.2 | 101.9 | 99* | 27.8 | 34.5 | 39.6 | 138.6 | 346.8* | 22 | 28 | 33 | 40.4 | 43 |
| Philippines | 30.7 | 42.7 | 31.9 | 37.9 | 46 | 12.9 | 17.7 | 19.0 | 36.97 | 189.1 | 11 | 13 | 16 | 19.5 | 25 |
| Indonesia | 17.8 | 24.7 | 26.7 | 29.1 | 34 | 3.0 | 5.4 | 5.2 | 9.83 | 48.5 | 6 | 9 | 11 | 13.4 | 13 |
| Sweden | 684.1 | 685.4 | 696.4 | 694.5 | 750 | 281.8 | 358.1 | 511.5 | 590.08 | 900.3 | 286 | 353 | 444 | 510.4 | 687 |
| U.S.A. | 636.6 | 625.6 | 676.6 | 709.8 | 701 | 161.9 | 205.6 | 241.2 | 314.87 | 496.9 | 403 | 450 | 499 | 538.9 | 739 |
| Norway | 564.9 | 609.1 | 654.2 | 711.9 | 754 | 296.1 | 383.0 | 471.9 | 627.03 | 787.0 | 307 | 363 | 437 | 506.8 | 657 |

**Source:** IMD. The World Competitiveness Yearbooks, 1999 and 2003.

**Notes:** 1. * Data for 2003.

2. ** Data on fixed-line telephones per 1,000 population are data for 2001.

**Table 4.46** Internet Access by Administrative Jurisdiction and Region Thailand, 2001 and 2003

| Administrative jurisdiction and region | Internet users, 2001[1] | | Internet users, 2003[2] | | Increase |
|---|---|---|---|---|---|
| | No. | Percent | No. | Percent | (Percent) |
| **Whole Kingdom** | 3,536,001 | 100.0 | 6,031,300 | 100.0 | +70.6 |
| - Municipal areas | 2,341,433 | 66.2 | 3,807,900 | 63.1 | +62.6 |
| - Non-municipal areas | 1,194,568 | 33.8 | 2,223,400 | 36.9 | +86.1 |
| Bangkok Metropolis | 1,234,542 | 34.9 | 2,005,700 | 33.3 | +62.5 |
| Central Plains | 830,389 | 23.5 | 1,336,300 | 22.2 | +60.9 |
| North | 516,114 | 14.6 | 1,003,200 | 16.6 | +94.4 |
| Northeast | 559,193 | 15.8 | 1,070,100 | 17.7 | +91.4 |
| South | 395,763 | 11.2 | 616,000 | 10.2 | +55.6 |
| Internet use rate (%) | 5.7 | | 9.5 | | |

**Source:** Surveys on Household's Usage of Information Technology Equipment and Appliances, 2001 and 2003. National Statistical Office.

**Notes:** [1] Population aged 11 years and older.

[2] Population aged 6 years and older.

**Table 4.47** Comparison of the Internet Usage in Asia-Pacific Countries, 1998, 2000 and 2002

| Country | No. of Internet users (millions) | | | Internet use rate (percent) | | |
|---|---|---|---|---|---|---|
| | 1998 | 2000 | 2002 | 1998 | 2000 | 2002 |
| Australia | 4.0 | 8.42 | 10.63 | 22.2 | 43.9 | 54.4 |
| Singapore | 0.55 | 1.85 | 2.31 | 18.3 | 44.6 | 51.9 |
| Hong Kong | 1.1 | 3.46 | 4.35 | 18.3 | 48.7 | 59.6 |
| New Zealand | 0.55 | 1.49 | 2.06 | 15.3 | 39.0 | 52.7 |
| Taiwan | 3.0 | 6.4 | 11.6* | 14.3 | 28.8 | 51.8 |
| Japan | 14.0 | 47.08 | 56 | 10.8 | 37.2 | 44.1 |
| Korea | 2.0 | 16.4 | 25.6 | 4.6 | 34.5 | 53.8 |
| Thailand | 0.67 | 2.3 | 4.8 | 1.1 | 3.7 | 7.7 |
| Malaysia | 0.4 | 3.7 | 5.7* | 2.0 | 16.9 | 25.1 |
| Philippines | 0.2 | 2.0 | 4.5 | 0.3 | 2.4 | 7.7 |
| China | 1.5 | 22.5 | 45.8 | 0.1 | 1.7 | 3.5 |
| Indonesia | 0.1 | 1.45 | 4.4 | 0.1 | 0.6 | 1.9 |
| India | 0.4 | 5.0 | 7.0* | < 0.1 | 0.5 | 0.6 |
| Vietnam | 0.15 | 0.04 | 0.4* | < 0.1 | < 0.1 | 0.5 |

**Source:** Internet Users Worldwide, 2001

**Notes:** 1. Internet use rate $= \frac{\text{No. of Internet users}}{\text{Total population}} \times 100$

2. * Data for 2001.

Besides, Thailand has got its own Thaicom satellites, cable TV systems, and free TV systems, making the communication system more expansive. However, the access to various media is still inequitable, but the trends are getting better (Table 4.48).

**Table 4.48** Percentage of Households with Radios, TV Sets and Telephones, 1990-2002

| Area | Radios | | | | TV sets | | | | Telephones | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1990 | 1994 | 1998 | 2002 | 1990 | 1994 | 1998 | 2002 | 1990 | 1994 | 1998 | 2002 |
| Whole Kingdom | 72.6 | 70.8 | 75.5 | 68.9 | 61.3 | 80.3 | 88.7 | 91.6 | 5.8 | 10.1 | 21.9 | 29.2 |
| Bangkok and peripheral provinces | 79.4 | 80.3 | 86.6 | 80.8 | 80.7 | 83.8 | 90.4 | 92.5 | 24.5 | 33.1 | 59.2 | 59.6 |
| Municipal areas | 81.2 | 81.1 | 85.5 | 76.2 | 84.6 | 89.3 | 92.9 | 94.0 | 16.5 | 29.4 | 49.8 | 40.8 |
| Sanitary districts | 76.0 | 74.6 | 78.5 | - | 70.8 | 86.3 | 90.5 | - | 4.2 | 12.2 | 28.7 | - |
| Outside municipal and sanitary districts | 69.8 | 67.0 | 71.4 | 64.1 | 53.6 | 77.6 | 87.6 | 90.6 | 0.9 | 2.4 | 9.3 | 11.0 |

**Source:** Reports on Household Socio-Economic Surveys, 1990, 1994, 1998 and 2002. NSO.

**Note:** Since 2000, sanitary districts were upgraded to municipalities; thus, there are no data for sanitary districts.

The expansion of communication networks in Thailand is related to global development and part of the "globalization" evolution era.

In addition, advertisement business expansion through various media is annually worth tens of billions of baht. This intensive business sector has strongly affected Thai people's consumption behaviours. New sales patterns have been created, **especially direct sales,** through regular shops or outlets.

People's behaviours in accepting information have also shifted from radio to television sources. The 2003 media survey conducted by NSO revealed that there were as many as 54.7 million TV viewers (94.5%), compared with only 24.8 million radio listeners (24.8%). Urban people are more interested in information about economic, social, political and health conditions than, previously, in entertainment programmes. In particular, new programme patterns such as live phone-in and discourse programmes, resulting in the emergence of new communities using media as a means for interaction, for example, Jo So 100 community, TV game show communities, and various other radio programme communities.

## 8.3 Public Utilities

**8.3.1 Electricity.** In 2003, 98.9% (67,709 villages) of all villages across the country have a moderate or good level of electricity. Only 787 villages (1.1%) have not yet had access to the electricity system (Table 4.49).

**Table 4.49** Villages with Electricity, 1992-2003

| Year | No. of villages with available information | Villages with electricity | | | | Villages without electricity | |
|---|---|---|---|---|---|---|---|
| | | Good level[1] | | Moderate level[2] | | No. | Percent |
| | | No. | Percent | No. | Percent | | |
| 1992 | 59,354 | 54,719 | 92.2 | 2,466 | 4.2 | 2,169 | 3.6 |
| 1994 | 59,059 | 55,590 | 94.1 | 1,675 | 2.8 | 1,794 | 3.0 |
| 1996 | 60,215 | 57,523 | 95.5 | 1,198 | 2.0 | 1,494 | 2.5 |
| 1999 | 63,230 | 56,483 | 89.3 | 5,678 | 9.0 | 1,069 | 1.7 |
| 2001 | 66,193 | 60,128 | 90.8 | 4,698 | 7.1 | 1,367 | 2.1 |
| 2003 | 68,496 | 60,613 | 88.5 | 7,096 | 10.4 | 787 | 1.1 |

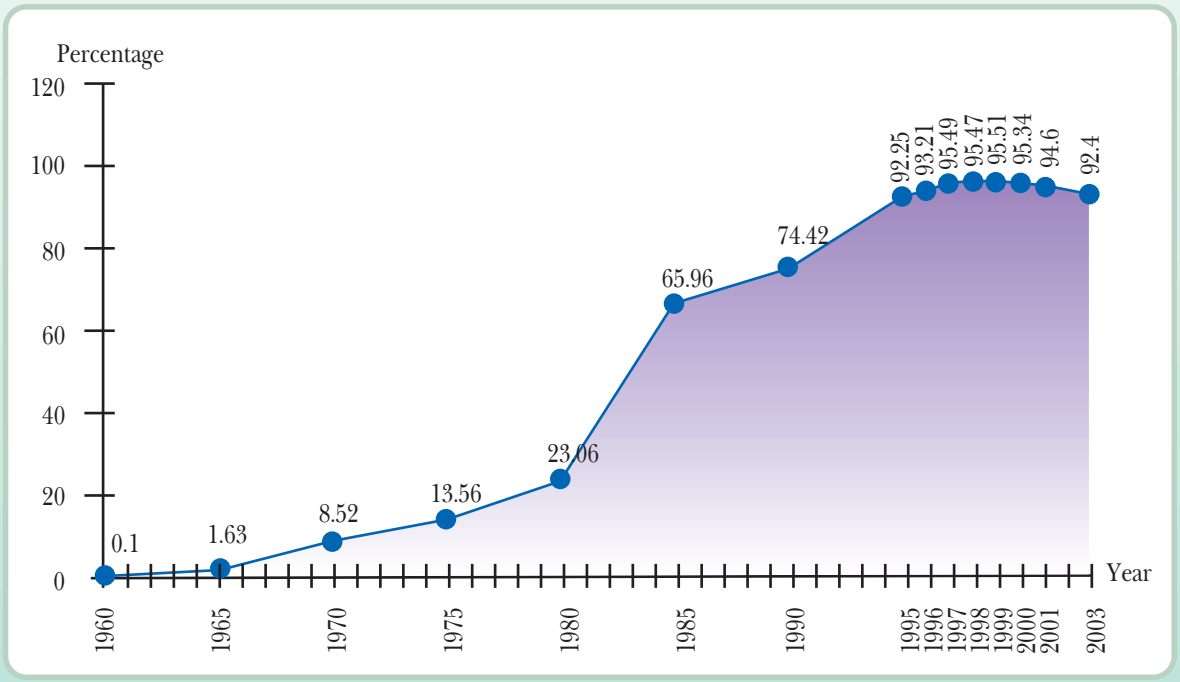
**Source:** Thai Rural Villages, 1992-2003, from Ko Cho Cho 2 Kho Database. Information Centre for Rural Development, Ministry of Interior.

**Notes:** [1] Good level: more than half of households in the village have electricity.

[2] Moderate level: less than half of households in the village have electricity.

**8.3.2 Drinking Water.** In 2003, 92.4% of households had adequate and safe drinking water (Figure 4.37) and 92.8% of them had adequate water for domestic use all year round.

**Figure 4.37** Proportion of Households with Adequate and Safe Drinking Water, 1960-2003




**Sources:** Data for 1960-2000 were derived from the Department of Health, MoPH.

Data for 2001 and 2003 were derived from Thai Rural Villages 2001 and 2003. Ko Cho Cho 2 Kho Database. Information Centre for Rural Development, Ministry of Interior.

Such changes in infrastructure have an impact on Thai people's health as follows:

**(1) More road traffic injuries.** As the road transportation system expands with more roads and vehicles - the number of motor vehicles registered has increased from 9,595,191 in 1992 to 26,378,862 in 2003 or a 2.7-fold increase, coupled with inappropriate driving behaviours – more road traffic accidents occur. The death rate from road traffic injury per 100,000 population has increased from 5.74 in 1984 to 20.97 in 2002, resulting in injuries, deaths and property losses. The Thailand Development Research Institute estimated that in 2000 the economic loss from road traffic accidents was 115,337 million baht or 2.3% of GDP (see Chapter 5, section 3.4.5 on accident-related injuries).

**(2) Disparities in access to health information.** As the Thai communication infrastructure is inferior to those in other countries, certain segments of the population may not have access to health information, particularly those living in rural areas, compared with those in urban areas.

## 9. Situations and Trends of Technology Development

For health science advancements, new technologies have been freely deployed as follows:

9.1 Biotechnology has advanced rapidly, for example, in the areas of recombinant DNA, polymerase chain reaction (PCR) and genomics for developing new vaccines, drugs and diagnostic and curative procedures for hard-to-cure diseases, such as cancer and HIV/AIDS. Besides, DNA testing has been applied in the justice system, while its utilization relevant to controlling the hazards from genetically modified food will be problematic.

9.2 Electronics and computer technologies, including digital imaging, multimedia computer, telemedicine, Wide Area Network, and Advanced Expert System, have resulted in wider educational opportunities and innovations, including public health education, exchanges of medical and health information, health counselling and new approaches to diagnostic and therapeutic procedures.

Such technological changes have an impact on the Thai health system as follows:

**(1) New technologies are costly and have to be patented; and their use is complex, requiring protection from unknown hazards and resulting in high costs of health care.** If such technologies are inappropriately used, a wastage will occur. Besides, an investment in personnel development is required; and danger from their use will have to be prevented.

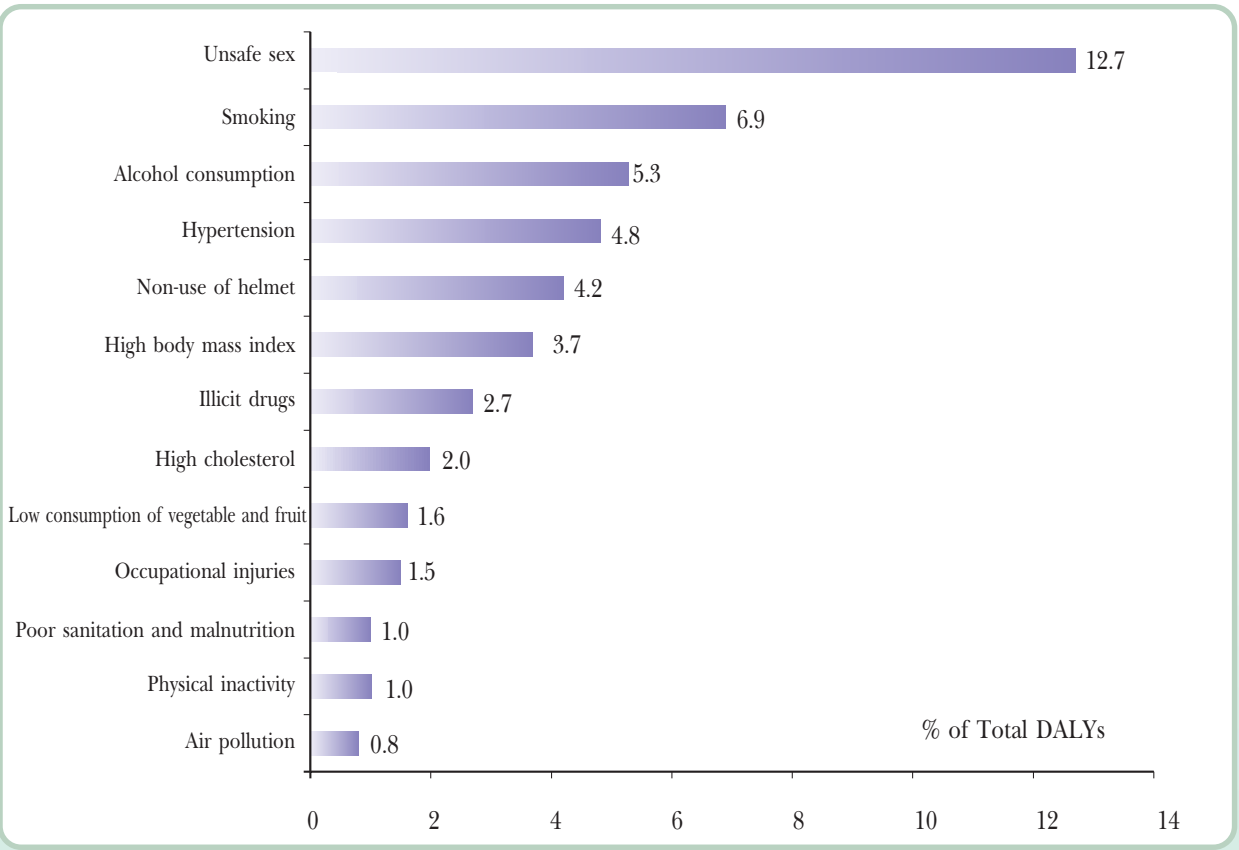
In the future, more genetically modified organisms (GMOs) or foods will be produced such as soybeans, corn, and tomatoes. Studies on such technology is still underway regarding it safety for human consumption and the environment. Therefore, the government should urgently carry out studies on the impact of production and consumption of genetically modified foods; then set up policies and measures for consumer protection purposes.

**(2) The poor in urban and rural areas do not have access to health services that deploy new, high-cost technologies.** For example, the poor with final stage chronic kidney failure cannot receive kidney dialysis under the universal healthcare coverage scheme, while the insured under the social security system and the medical benefit scheme for civil servants or state enterprise employees are entitled to receiving such service.

## 10. Health Behaviours

Risk factors of Thai people have an impact on their lives and are a national level problem affecting the country's economic and social security. In 1999, the MoPH's Bureau of Policy and Strategy conducted a study on burden of disease based on Thai people's 13 common risk factors of several diseases.[13] It was found that major risk factors are unsafe sex, smoking, alcohol consumption, hypertension, non-use of helmet among motorcyclists, overweight/obesity, malnutrition, elevated blood cholesterol, minimal consumption of vegetables and fruit, and physical inactivity (Figure 4.38).

**Figure 4.38** Percentage of Burden of Disease* from Risk Factors of Thai People, 1999




* As a percentage of overall burden of disease for 1999 (9.5 million DALYs).

An analysis of burden of disease by sex revealed that unsafe sex is the risk with the highest burden of disease (in terms of "disability-adjusted life years" or DALYs) in both males and females, followed by smoking, alcohol use, helmet non-use among motorcyclists, and high blood pressure in males. Among females, the high risks are high body mass index (overweight and obesity), high blood pressure, smoking and high blood cholesterol (Table 4.50).

[13] The study used the attributable burden determination method for each factor according to WHO guidelines.

**Table 4.50** DALYs from Risk Factors Among Thai People, 1999

| Order | Males | | | Order | Females | | |
|---|---|---|---|---|---|---|---|
| | Risk | DALYs | | | Risk | DALYs | |
| | | ($X10^5$) | Percent | | | ($X10^5$) | Percent |
| 1 | Unsafe sex | 8.8 | 16% | 1 | Unsafe sex | 3.2 | 8% |
| 2 | Smoking | 4.8 | 9% | 2 | High body mass index | 2.3 | 6% |
| 3 | Alcohol consumption | 4.6 | 8% | 3 | Hypertension | 2.1 | 5% |
| 4 | Non-use of helmet | 3.3 | 6% | 4 | Smoking | 1.8 | 5% |
| 5 | High body mass index | 2.5 | 4% | 5 | High cholesterol | 0.9 | 2% |
| 6 | Illicit drugs | 2.4 | 4% | 6 | Occupational injuries | 0.8 | 2% |
| 7 | Hypertension | 1.2 | 2% | 7 | Non-use of helmet | 0.7 | 2% |
| 8 | Low consumption of vegetables | 1.1 | 2% | 8 | Physical inactivity | 0.6 | 2% |
| | and fruit | | | 9 | Poor sanitation and malnutrition | 0.5 | 1% |
| 9 | High cholesterol | 1.1 | 2% | 10 | Low consumption of vegetables | 0.5 | 1% |
| 10 | Occupational injuries | 0.7 | 1% | | and fruit | | |
| 11 | Poor sanitation and malnutrition | 0.5 | 1% | 11 | Alcohol consumption | 0.4 | 1% |
| 12 | Air pollution | 0.5 | 1% | 12 | Illicit drugs | 0.3 | 1% |
| 13 | Physical inactivity | 0.4 | 1% | 13 | Air pollution | 0.3 | 1% |

* Male total DALYs = 5.6 million; female total DALYs = 3.9 million.

It is noteworthy that most of the risks for disease burden are health behaviors which are further elaborated as follows:

## 10.1 Food Consumption

The food consumption behaviors of Thai people have changed according to changing lifestyles and are different between urban and rural residents. Urban residents tend to take more meat and fat, while taking less vegetables and fruit. Teenagers prefer western foods to local or Thai food. More rushing lifestyles have pushed them to take ready-to-cook or semi-cooked food. The trend is rising in both urban and rural areas. Regarding food expenditures, Bangkok residents spend 50% of their food spending on ready-to-eat food, while rural residents spend only 20% for such food.[14]

The 2001 survey conducted by the National Statistical Office revealed that, when selecting food, 60% of the people think of its cleanliness and deliciousness, while only 20% think of its nutritious value. Males tend to pay more attention to its deliciousness than do females (Table 4.51).

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[14] Patthanee Vinijjakul and Wongsawat Kosalwat. Food and Nutrition in Review and Revision of Strategic Plan for Health Research in Thailand, 2003.

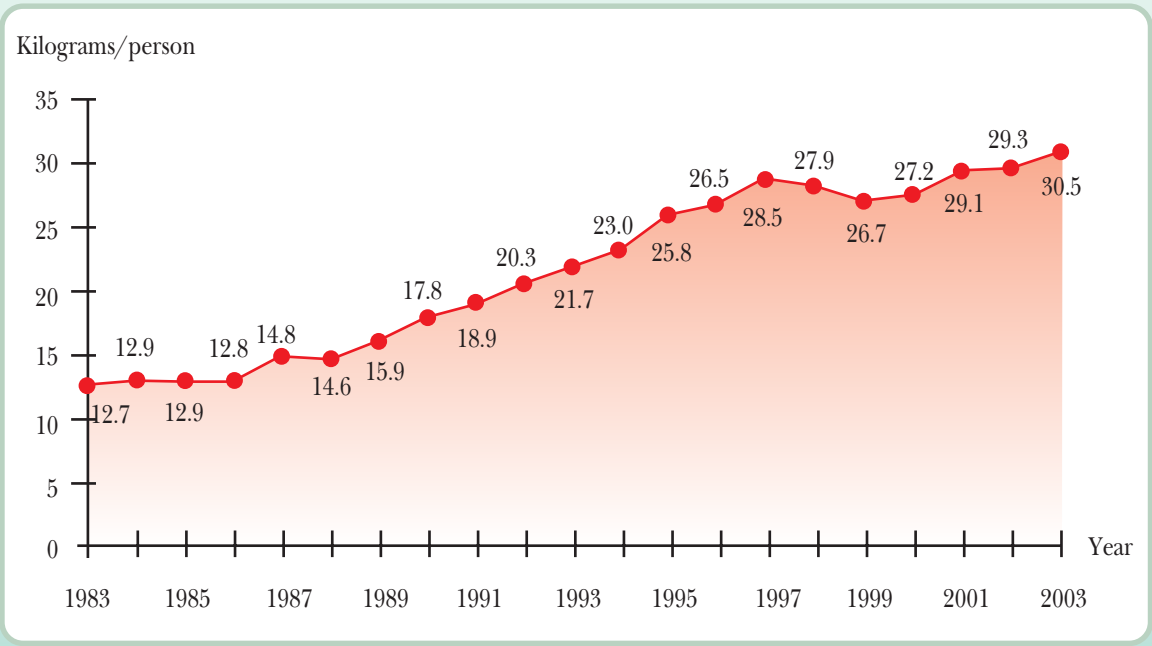
**Table 4.51** Considerations in Food Selection among People Aged 15 Years and Older, 2001

| Consideration | Percent | | |
|---|---|---|---|
| | Total | Males | Females |
| Cleanliness | 40.3 | 38.6 | 41.9 |
| Deliciousness | 24.8 | 27.3 | 22.2 |
| Nutritional values | 19.9 | 18.7 | 21.0 |
| Prices | 9.3 | 9.2 | 9.3 |
| Edibility | 4.6 | 4.8 | 4.4 |
| Modernity | 0.2 | 0.2 | 0.2 |
| Others | 0.7 | 0.8 | 0.7 |
| Unknown | 0.3 | 0.3 | 0.3 |

**Source:** Report on Health and Welfare Survey, 2001. National Statistical Office.

Besides, it was found that Thai people tended to consume more sugar and food prepared from flour and sugar. The sugar consumption rate during the past two decades has risen two-to four-fold, from 12.7 kg/person/yr in 1983 to 30.5 kg/person/yr in 2003 (Figure 4.39).

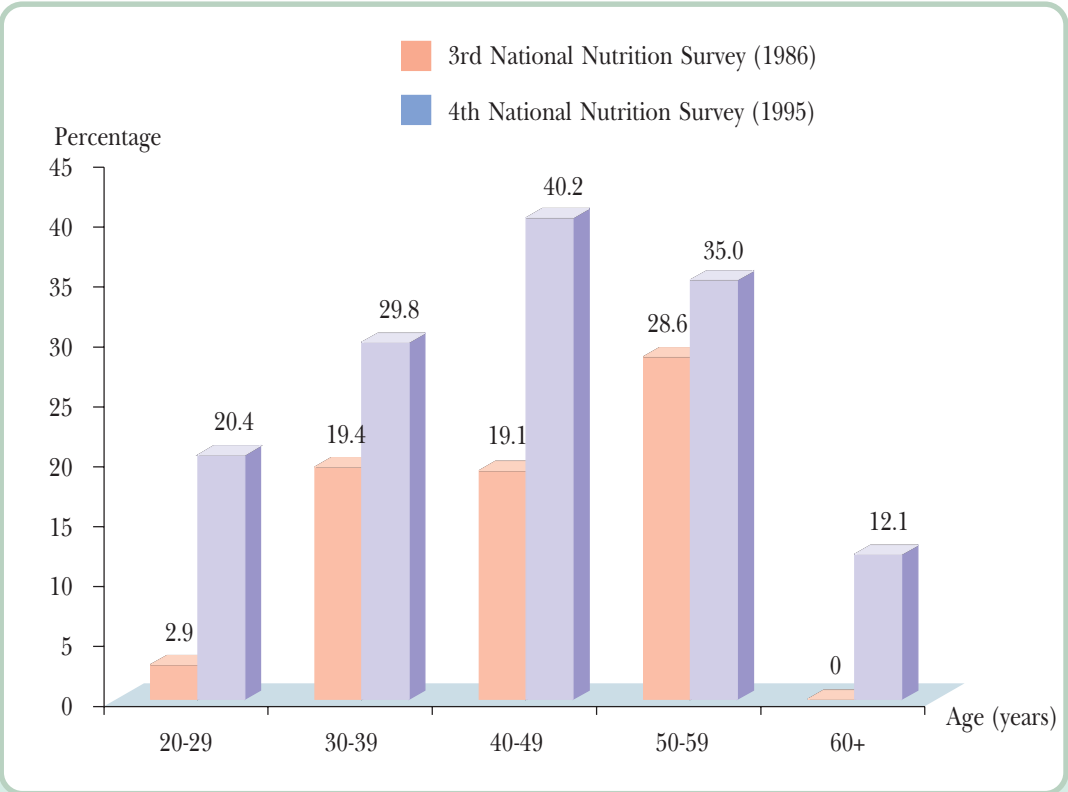
**Figure 4.39** Quantity of Sugar Intake in Thailand, 1983-2003




**Source:** Production Management Centre. Office of the Sugar Cane and Sugar Commission.

Consuming food rich in fat and calorie is a risk factor of cardiovascular diseases. According to the third and fourth national nutrition surveys (1986 and 1995, respectively) in Thailand, the prevalence of obesity has risen in all age groups; the highest increase was noted in the age group 40-49 years from 19.1% to 40.2%, followed by the age group 20-29 from 2.9% to 20.4% (Figure 4.40). And an analysis of risk factors for cardiovascular diseases among Thai people aged 35-59 revealed a rising prevalence of people with high blood cholesterol, high blood sugar, overweight and obesity (Table 4.52). Bangkok residents, both males and females, had a highest prevalence of overweight and obesity, while the northern people had the lowest. The residents in municipal areas had a higher overweight/obesity prevalence, compared with rural residents.[15]

**Figure 4.40** Prevalence Rate of Obesity in Thailand by Age Group, 1986 and 1995




**Source:** Department of Health, MoPH.

**Note:** Obesity in population aged >20 years and BMI ≥25 kilograms/square meter.

[15] Piyamit Srithara et al. Cardiovascular Research Group in Review and Revision of Strategic Plan for Health Research in Thailand, 2003.

**Table 4.52** Changes and Prevalence of Cardiovascular Disease Risk Factors in Thai People Aged 35-59 Years

| Risk factor | 1st health survey (1991-1992) | 2nd health survey (1996-1997) | Inter-Asia study (2000-2001) |
|---|---|---|---|
| Cholesterol (mg/dl) | 189 | 198 | 201 |
| Blood sugar (mg/dl) | 87 | 92 | 99 |
| Body mass index (BMI, $kg/m^2$) | 22.8 | 23.8 | 24.4 |
| Overweight (percent) | 20 | 25 | 30 |
| Obesity (percent) | 5 | 8 | 9 |

**Source:** Piyamit Srithara et al. Cardiovascular Research Group in Review and Revision of Strategic Plan for Health Research in Thailand, 2003.

**Note:** Population adjustment for 2000.

Snack consumption tends to rise with its increased convenience and variety as evidenced in a comparison of snacks for sale in retail shops and those popular among children showing a similar rising trend. Crispy snacks (Table 4.53) are generally deficient in nutritional values and the cause of dental health problems. During 2000-2001, 87.4% of 6-year-old children entering the schooling system had on average 6.0 decayed, missing and filled teeth (DMFT) per child, compared with only 71.6% with 4.9 DMFT per child in 1984 (Tables 4.54 and 4.55). And during 1995-2001, the DoH's dental health survey revealed that only 6-15% of children aged 5-6 had no tooth decay and that on average 12-year-old children had 1.6-2 DMFT per child.

Besides, it was found that over consumption of snacks had a negative economic effects. A study on primary schoolchildren[16] revealed that each child spent 13 baht per day on average on snacks and toys. Assuming that each of secondary schoolchildren spent twice that much, the total spending on snacks among Thai children and youths would amount to 142,357 million baht per year (Table 4.56), which is as much as the annual national education budget.

[16] Piyathida Prasertsom. Children, Snacks and Dental Caries. Health Promotion and Environment Health Journal, 26: 2, Apr.–June 2003.

**Table 4.53** Comparison of Snack Groups Best Selling and Most Favoured by Children, 2003

| Snack group | Best selling item | Most favoured item |
|---|---|---|
| Crispy flour | 62.2 | 31.4 |
| Candies | 7.9 | 4.2 |
| Soft bread | 7.6 | 13.9 |
| Drinks | 5.9 | 12.3 |
| Beans | 5.0 | 2.0 |
| Protein-containing | 3.4 | 2.8 |
| Jelly | 1.7 | 2.6 |
| Chocolates | 1.7 | 1.5 |
| Chewing gums | 0.5 | 0.6 |
| Fruit | - | 7.2 |
| Thai sweets | - | 16.7 |
| Others | 4.1 | 4.8 |

**Source:** Sunee Wongkongkathep et al. Snacks and Dental Caries among Thai Children, 2003.

**Table 4.54** Percentage of People with Caries by Age Group, According to National Dental Surveys, 1984, 1989, 1994 and 2000-2001

| Age group (years) | Percentage | | | |
|---|---|---|---|---|
| | 1984 | 1989 | 1994 | 2000-2001 |
| 3* | - | 66.5 | 61.7 | 65.7 |
| 6* | 71.6 | 83.1 | 85.1 | 87.4 |
| 6** | 74.4 | 82.8 | 85.3 | 87.5 |
| 6 | 30.3 | 19.2 | 11.1 | - |
| 12 | 45.8 | 49.2 | 53.9 | 57.3 |
| 18 | 63.1 | 63.3 | 63.7 | 62.1 |
| 35 - 44 | 80.2 | 76.8 | 85.7 | 85.6 |
| 60 and older | 95.2 | 93.9 | 95.0 | 95.6 |

**Sources:** Reports on the 2nd, 3rd, 4th, and 5th National Dental Health Surveys. Department of Health, MoPH.

**Notes:** * Baby or deciduous teeth.

** Mixed (permanent and baby teeth).

Other age groups - only permanent teeth.

**Table 4.55** Average DMFT Rates in Various Age Groups, According to National Dental Surveys, 1984, 1989, 1994 and 2000-2001

| Age group (years) | Average DMFT (teeth/person) | | | |
|---|---|---|---|---|
| | 1984 | 1989 | 1994 | 2000-2001 |
| 3* | - | 4.0 | 3.4 | 3.6 |
| 6* | 4.9 | 5.6 | 5.7 | 6.0 |
| 6** | 0.5 | 0.3 | 0.3 | - |
| 12 | 1.5 | 1.5 | 1.6 | 1.6 |
| 18 | 3.0 | 2.7 | 2.4 | 2.1 |
| 35 - 44 | 5.4 | 5.4 | 6.5 | 6.1 |
| 60 and over | 16.3 | 16.2 | 15.8 | 14.4 |

**Sources:** Reports on the 2nd, 3rd, 4th, and 5th National Dental Health Surveys. Department of Health, MoPH.

**Notes:** * Baby or deciduous teeth.

** Mixed (permanent and baby) teeth.

Other age groups - only permanent teeth.

**Table 4.56** Spending on Snacks of Primary Schoolchildren

| Spending group | Amount (baht/day) | Percent | Value (million baht/yr.) |
|---|---|---|---|
| 1. Snacks and toys | 13 | 44.9 | 142,357 |
| 2. Food, tuition and bus fare | 7 | 24.1 | 76,625 |
| 3. Savings | 7 | 24.1 | 76,625 |
| 4. Future spending | 2 | 6.9 | 21,943 |
| Total | 29 | 100.0 | 317,550 |

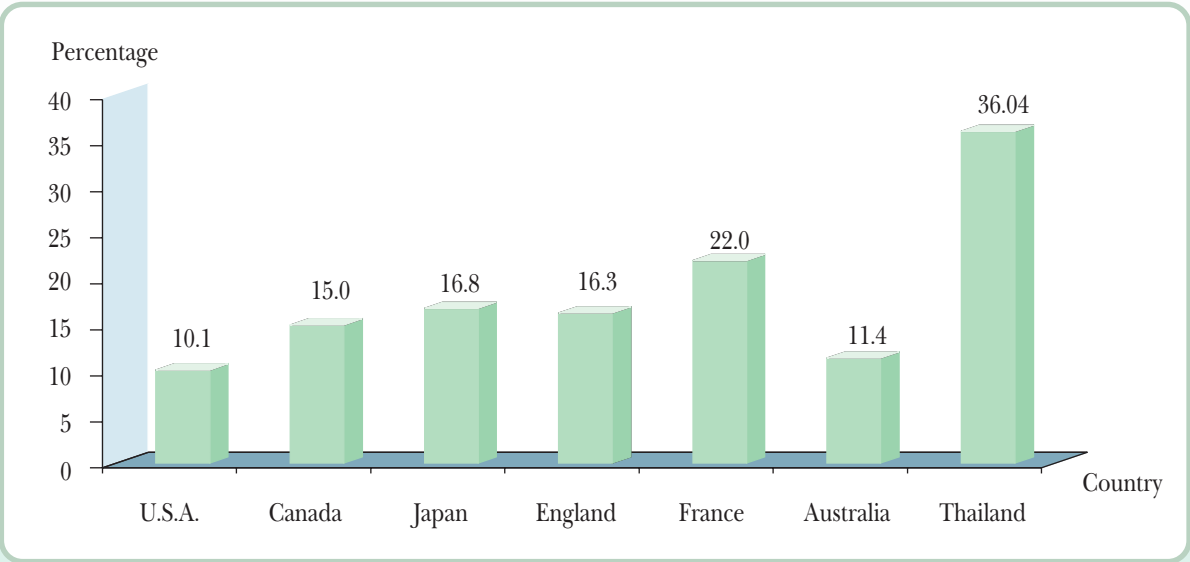
**Source:** Piyathida Prasertsom. Children, Snacks and Dental Caries, Health Promotion and Environmental Health Journal, 26: 2, Apr.-June 2003.

## 10.2 Drug Consumption

In 2002, drug consumption of Thai people accounted for approximately 66,827 million baht in wholesale prices or 120,289 million baht in retail prices, or 36.04% of the overall national health expenditure (see Chapter 6, Medical Supplies and Technology). This proportion is rather high, compared with only 10-20% in industrialized countries (Figure 4.41). During the period 1988-2002 the rising rates of drug consumption have exceeded the increasing rates of national health spending and economic growth.

In general, an analysis on drug consumption patterns of Thai people revealed that about two-thirds of the consumption was done according to the advice of professionals, such as doctors, pharmacists and other health personnel; the remainder was done as suggested by relatives, friends, or advertisements. Nevertheless, medication use according to the advice of health professionals is escalating (Table 4.57).

**Figure 4.41** Proportion of Expenditure on Drugs and Health in Thailand and Other Countries




**Source:** OECD Health Data 2001 (referenced in Drug System in Thailand, 2002).

**Table 4.57** Percentage of Drug Values Distributed Through Drug Outlets in Thailand

| Type | 1994 (percent) | 1995 (percent) | 1996 (percent) | 1997 (percent) | 1998 (percent) | 1999 (percent) | 2000 (percent) | 2001 (percent) | 2002 (percent) | 2003 (percent) |
|---|---|---|---|---|---|---|---|---|---|---|
| Drugstores | 40 | 34 | 34 | 34 | 34 | 32 | 32 | 30 | 30 | 26 |
| Public and private hospitals | 43 | 46 | 52 | 52 | 52 | 58 | 58 | 60 | 60 | 64 |
| Private clinics | 10 | 15 | 9 | 9 | 9 | } 7 | } 7 | } 8 | } 8 | } 9 |
| GPO | 2 | 2 | 2 | 2 | 2 | | | | | |
| Others | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 1 |

**Source:** IMS Company (Thailand).

The 2001 provincial health status survey revealed that nearly 20% of family members with minor illness would buy drugs for self-treatment from grocery and drug stores, about two-thirds (68%) would read the drug package labelling every time or sometime before taking the medication (Figure 4.42). Families in municipal areas would read drug labelling in a higher proportion than those outside municipalities.

No matter from whom the people get medication advice, it is evident that irrational use and over-use of drugs, particularly antibiotics, are found at all levels. A study on drug use in children with respiratory infections admitted to hospitals nationwide revealed that 38.6% of the patients had ever taken antibiotics before coming to the hospital. Other studies also indicated antibiotic use prior to visiting a doctor or health official, particularly for cases with respiratory and gastrointestinal tract diseases. Most of the cases had used drugs unnecessarily or inadequately.[17] Some inpatients with infectious diseases were given antibiotics without suitable indications (Table 4.58), partly due to advertising influence (Figure 4.43) while very little effort has been made to disseminate drug information to the public though various media including newspaper, radio, television and magazines. Although such efforts have been made more intensively, most people would get drug information from drug business operators.

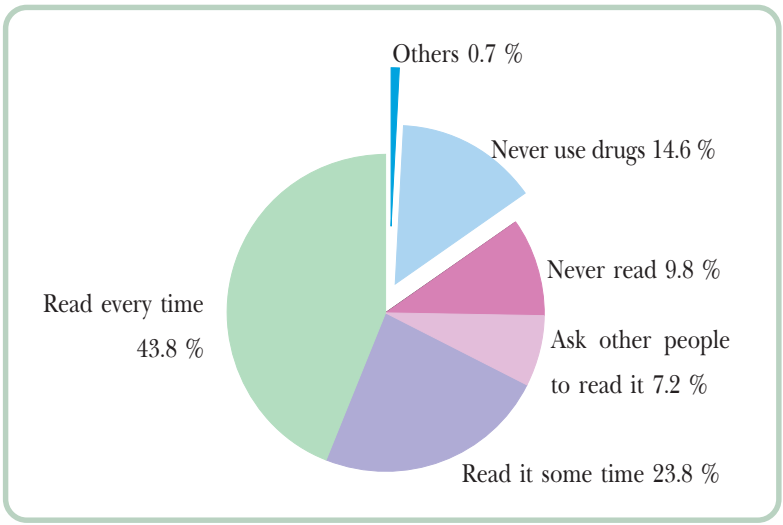
**Table 4.58** Use of Antibiotics Without Appropriate Indications, Compiled from 11 Reports

| Drug group | Study site (hospital) | Study period | No. of patients | Inappropriate use (percent) |
|---|---|---|---|---|
| Ceftriaxone | Phra Pokklao | Oct 98 - Sep 99 | 9 | 77.8 |
| Parenteral antibiotics | Ban Mi | June - Nov 97 | 203 | 39.4 |
| Ciprofloxacin | Lampang | Nov - Dec 95 | 24 | 50.0 |
| Parenteral antibiotics | Chainat | Jan - June 93 | 219 | 44.7 |
| Ceftazidime | Yasothon | July - Sep 99 | 48 | 60.4 |
| Ceftazidime | Lampang | July - Sep 96 | 49 | 40.0 |
| Cephalosporins | Taksin | Mar 91 - Feb 92 | 144 | 13.2 - 15.3 |
| Ceftazidime | Nakhon Ratchasima | May - Aug 96 | 114 | 25.0 |
| Ceftazidime | Phra Phutthachinnarat | Mar - Apr 2000 | 59 | 37.5 |
| Ceftriaxone | Lampang | Oct 94 | 17 | 41.0 |
| Cephalosporins | Uttaradit | Oct 95 - Sep 96 | 258 | 70.2 |

**Source:** Drug System in Thailand, 2002.

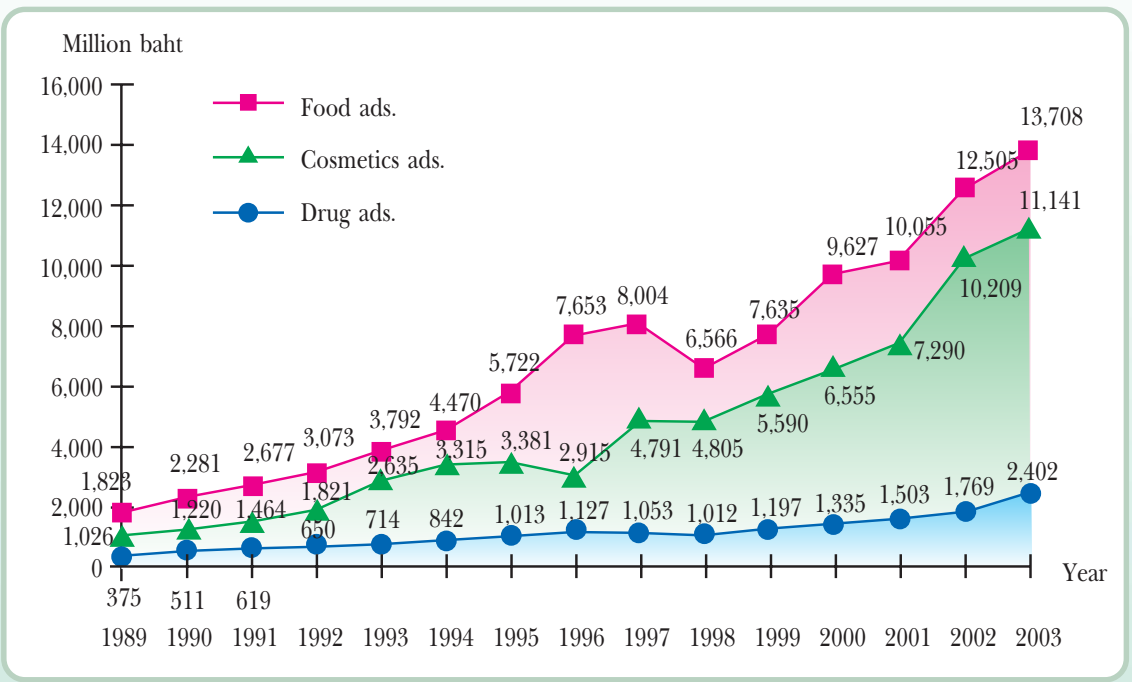
[17] Committee on Drug System Study Project in Thailand. Drug System in Thailand, 2002.

**Figure 4.42** Percentage of Household Representatives Reading Drug Lebelling before Using Drugs, 2001




**Source:** Provincial Health Status Survey, 2001.

**Figure 4.43** Billings of Drug, Food and Cosmetic Advertisements, 1989-2003




**Source:** Media Data Resources (MDR).

**Notes:** 1. Food means alcoholic beverages, milk, energy drinks, snacks, soft drinks, candies, seasonings, instant noodles, coffee, food, cooking oil, canned food, dairy products, chocolates and cigarettes, liquid foods and others.

2 Cosmetics mean shampoo, soap, general cosmetics, body powder and skin moisturizing creams.

## 10.3 Tobacco Consumption

Although Thailand has got laws related to tobacco products control, including laws on protection of health of non-smokers, the number of smokers is still high. In 2003, Thai people totally smoked 31,366 million cigarettes or an average of 75.5 packs/person/year (Table 4.59), an increase from an average of 71

packs/person/year during 2001-2002. Also, the findings are consistent with the 1999 NSO survey which showed that the proportion of cigarette smokers had increased from 20.5% in 1999 to 21.6% in 2003, the increase was noted for both males and females. It is noteworthy that although the smoking rate among youths (aged 15-24 years) is lower than those among the working-age group (aged 25-59 years) and the elderly (aged 60 and older), it was found that the smoking rate was for 2001-2003 was higher than that for 1999-2001 in both males and females. This has indicated that smoking has more widely spread among youths.

However, when considering the age of first smoking, males started smoking at a younger age then did females, but there is a tendency that males would start later while females would start earlier (Tables 4.60 and 4.61). This is consistent with the WHO forecast which indicates that the smoking rate among females in developing countries in 2025 will increase from 8% to 20%, but the rate among males will drop from 60% to 45%. A survey conducted in 1999 revealed that youths aged 15-19 years started smoking the highest (55.9%), reasoning that they wanted to try it and to follow what their peers did. This finding is different from that reported by the Kasikorn Research Centre[18] which revealed that, in 2003, the motivation for smoking among Bangkok residents were stress, alcohol use, anger, uneasiness, visiting night spots and seeing movies with smoking scene. It was found that one-third of youths aged under 13 years indicated seeing a movie with a smoking scene was the cause of their smoking desire. A regular male smoked 9.7-10.6 cigarettes per day on average; males smoking more than females (Figure 4.44). Regarding the type of cigarettes smoked the most, it was found that after the economic crisis a number of smokers shifted from using local brands to foreign brands and self-rolled cigarettes (Table 4.62). The market share of imported cigarettes has increased from 4.1% in 1997 to 14.1% in 2003; vice versa the market share of cigarettes produced by the Tobacco Monopoly of Thailand has dropped from 95.9% in 1997 to 85.9% in 2003 (Table 4.63). The smoking of self-rolled cigarette might result from people's lower income after the economic crisis; and more people turned away from factory-produced cigarettes to self-rolled ones.

Tobacco use has also had an impact on the economy. A study conducted by the Kasikorn Research Centre[18] found that, for Bangkok residents, spending on cigarettes was 15.07% of total monthly income. On average a Bangkok resident spent about 150 baht a month on cigarettes, the value of cigarette market in Bangkok was about 500 million baht for 2003. Despite intensive campaigns against smoking during the past two decades, the cigarette spending has been rising steadily. According to a world report, tobacco causes an economic loss worth 200,000 million dollars worldwide each year, which is higher than the revenue from tobacco sales; one-third of which occurred in developing countries.[19]

In Thailand, approximately 42,000 people die each year from smoking-related illnesses or 115 deaths per day (6 deaths per hour).[20] Research studies have revealed that smoking is the cause of serious illnesses; 90% of male cancer patients, 82% of larynx cancer patients, and 80% of pharynx cancer patients had ever smoked.

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[18] Kasikorn Research Centre. Smoking Behaviours of Bangkok's Residents, 2003.

[19] Prakit Vateesatogkit. What Will Occur With Tobacco in the Future. In New Generations Do Not Smoke Journal, 7: Jan-Feb 2000.

[20] Based on the estimates calculated by Prof. Dr. Prakit Vateesatogkit. Statistics on Smoking among Thai People. Action on Smoking and Health Foundation (photocopied document).

**Table 4.59** Tobacco Consumption of Thai People, 1987-2003

| Description | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total tobacco consumption (million cigarettes) | 31,309 | 34,090 | 38,718 | 38,887 | 38,825 | 40,068 | 42,245.2 | 44,849.6 | 45,755.3 | 47,235.9 | 48,336.6 | 39,057.1 | 36,166.1 | 36,469.7 | 29,502 | 29,682 | 31,366 |
| Consumption (packs/person/year) | 86.4 | 91.5 | 100.6 | 98.4 | 95.8 | 96.5 | 101.7 | 108.0 | 110.2 | 113.8 | 116.4 | 98.8 | 87.1 | 87.8 | 71.0 | 71.5 | 75.5 |
| Quantity impotred (million packs) | - | - | - | - | 12 | 51 | 60 | 71 | 71 | 77 | 99 | 172 | 261 | 239 | 261 | 262 | 293 |
| Value of imports (million baht) | - | - | - | - | - | 716.8 | 968.5 | 787.0 | 1,032.1 | 952.2 | 907.3 | 2,755.6 | 4,289.8 | 4,586.3 | 6,151.9 | 6,136 | 6,472 |
| Cigarettes domesticaly produced | | | | | | | | | | | | | | | | | |
| Million cigarettes | 31,581.01 | 32,505.41 | 37,198.47 | 38,235.21 | 39,719.55 | 39,591.40 | 41,219.63 | 44,542.460 | 43,183.83 | 47,751.79 | 47,125.75 | 34,568.73 | 32,023.63 | 31,796.45 | 29,742.35 | 29,598.67 | 31,498.95 |
| Million packs | 1,579.05 | 1,625.27 | 1,859.92 | 1,911.76 | 1,986.0 | 1,979.57 | 2,060.98 | 2,227.12 | 2,159.19 | 2,387.59 | 2,356.28 | 1,728.44 | 1,601.18 | 1,589.82 | 1,487.12 | 1,479.93 | 1,574.95 |
| Sale value (million baht) | 17,327 | 18,674 | 20,996 | 23,640 | 26,910 | 27,613 | 28,890 | 35,117 | 34,869 | 40,340 | 46,977 | 44,670 | 40,700 | 42,600 | 42,617 | 45,219 | 46,739 |
| Tobacco tax (million baht) | 10,399 | 11,467 | 12,989 | 14,785 | 17,060 | 16,991 | 17,439 | 22,375 | 22,911 | 26,134 | 28,296 | 25,816 | 23,100.6 | 23,540.2 | 23,912.2 | 25,641 | 26,349 |
| Profits sent to Ministry of Finance (million baht) | 877 | 1,069 | 2,595 | 2,064 | 2,244 | 3,202 | 2,802 | 2,954 | 3,588 | 3,445 | 3,600 | 4,657 | 5,000 | 5,310 | 5,232 | 4,958 | 5,948 |
| Excise tax (percent) | 35-56.5[1] | 35-56.5[1] | 35-56.5[1] | 35-56.5[1] | 55[2] | 55[3] | 60[3] | 60[3] | 62[3] | 68[3] | 70[3] | 70[3] | 71.5[3] | 71.5[3] | 75[3] | 75[3] | 75[3] |

**Sources:** - Thailand Tobacco Monopoly and the Excise Department, Ministry of Finance.

- Statistics on Trade and Economic Indicators of Thailand. Department of Business Economics.

**Notes:** [1] Before July 1990, three rates were applied; 35%, 48% and 56.5% of retail prices, depending on the amounts of domestic tobacco leaves.

[2] During July 1990-1991, only one single rate was applied (percentage of retail prices).

[3] During 1992-2003, a single was applied (percentage of wholesale prices).

**Table 4.60** Number and Proportion of Smokers, 1976-2003

| Year | Population (millions) | No. of smokers | | | Proportion of smokers (percent) | | |
|---|---|---|---|---|---|---|---|
| | | Total | Males | Females | Total | Males | Females |
| 1976 | 28.7[1] | 8.6 | 7.7 | 0.9 | 30.1 | 54.7 | 6.1 |
| 1981 | 35.1[1] | 9.8 | 9.0 | 0.8 | 27.8 | 51.2 | 4.4 |
| 1986 | 38.0[2] | 10.4 | 9.6 | 0.8 | 27.4 | 50.4 | 4.2 |
| 1988 | 40.5[2] | 10.1 | 9.4 | 0.7 | 25.0 | 46.7 | 3.5 |
| 1991 | 43.3[2] | 11.4 | 10.6 | 0.8 | 26.3 | 49.0 | 3.8 |
| | 38.3[3] | 11.3 | 10.5 | 0.8 | 29.7 | 55.3 | 4.3 |
| 1993 | 45.7[2] | 10.4 | 9.8 | 0.6 | 22.8 | 43.2 | 2.5 |
| | 40.7[3] | 10.4 | 9.8 | 0.6 | 25.5 | 48.5 | 2.8 |
| 1996 | 48.0[2] | 11.2 | 10.6 | 0.6 | 23.4 | 44.6 | 2.5 |
| 1999 | 49.9[2] | 10.2 | 9.6 | 0.6 | 20.5 | 38.9 | 2.4 |
| 2001 | 51.2[2] | 10.5 | 10.0 | 0.5 | 20.6 | 39.3 | 2.2 |
| 2003 | 35.8[2] | 7.7 | 7.1 | 0.6 | 21.6 | 44.1 | 2.9 |

**Sources:** 1. Health and Welfare Surveys. National Statistical Office.

2. Preliminary Results of Survey of Population's Tobacco and Liquor Consumption, 2001. National Statistical Office.

**Notes:** 1. [1] Population aged 10 and over.

[2] Population aged 11 and over.

[3] Population aged 15 and over.

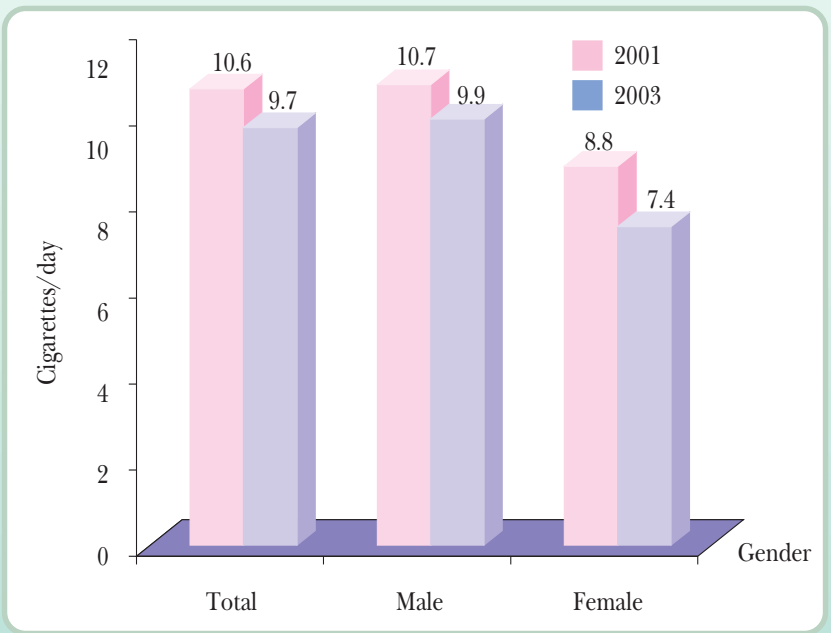
2. In the 2003 Health and Welfare Survey, the interview was undertaken only when the interviewee was present; thus, the total population surveyed was smaller than the overall population of the country.

**Table 4.61** Proportion of Regular Smokers in Population Aged 11 Years and Over by Age Group and Gender, 1999, 2001 and 2003

| Age group (years) | Proportion of smokers (percent) | | | | | | | | | Change in regular smoking rates | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1999 | | | 2001 | | | 2003 | | | 1999 - 2001 | | | 2001 - 2003 | | |
| | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| 11-14 | 0.2 | 0.5 | - | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | -0.1 | -0.3 | +0.1 | +0.1 | 0.0 | 0.0 |
| 15-24 | 12.3 | 24.0 | 0.3 | 13.5 | 26.0 | 0.6 | 15.2 | 32.1 | 0.9 | +1.2 | +2.0 | +0.3 | +1.7 | +6.1 | +0.3 |
| 25-59 | 26.3 | 49.8 | 3.0 | 26.2 | 49.9 | 2.6 | 25.3 | 51.8 | 3.4 | -0.1 | +0.1 | -0.4 | -0.9 | +1.9 | +0.8 |
| 60 and over | 23.3 | 45.1 | 4.8 | 21.1 | 40.9 | 4.3 | 21.5 | 43.3 | 4.6 | -2.2 | -4.2 | -0.5 | +0.4 | +2.4 | +0.3 |
| Total | 20.5 | 38.9 | 2.4 | 20.6 | 39.3 | 2.2 | 21.6 | 44.1 | 2.9 | +0.1 | +0.4 | -0.2 | +1.0 | +4.8 | +0.7 |
| Age at first smoking | 18.2 | 17.9 | 22.2 | 18.5 | 18.3 | 21.9 | 18.4 | 18.2 | 21.5 | | | | | | |

**Sources:** 1. Report on Survey of Population's Tobacco Use Behaviours, 1999. National Statistical Office.
2. Report on Survey of Population's Tobacco and Liquor Consumption, 2001. National Statistical Office.
3. Report on Health and Welfare Survey, 2003. National Statistical Office.

**Figure 4.44** Average Number of Cigarettes Smoked per Day by A Regular Smoker Aged 11 Years and Over by Gender, 2001 and 2003




**Source:** 1. Preliminary Results of Population's Smoking and Drinking Behaviours Survey, 2001. National Statistical Office.
2. Health and Welfare Survey, 2003. National Statistical Office.

**Table 4.62** Percentage of Population Aged 11 and Over, Using Tobacco Products Regularly by Product Category, Before and After the Economic Crisis

| Product category (most frequently used) | Before the crisis | | After the crisis | |
|---|---|---|---|---|
| | 1993 | 1996 | 1999 | 2001 |
| Local cigarettes | 44.9 | 55.6 | 44.3 | 46.0 |
| Imported cigarettes | 0.9 | 1.1 | 1.3 | 1.2 |
| Self-rolled cigarettes | 54.0 | 42.5 | 54.1 | 52.7 |
| Cigars | < 0.1 | 0.2 | 0.1 | 0.1 |
| Pipe | 0.1 | 0.2 | 0.2 | |
| Unknown | 0.1 | 0.4 | - | |

**Sources:** 1. Report on Health and Welfare Survey. National Statistical Office.
2. Report on Survey of Population's Tobacco Use Behaviours, 1999. National Statistical Office.
3. Summary Results of Population's Tobacco and Liquor Consumption Survey, 2001. National Statistical Office.

**Table 4.63** Market Share of Domestic and Imported Cigarettes, 1991-2003

| Fiscal year | Market share (percent) | |
|---|---|---|
| | Local cigarettes | Imported cigarettes |
| 1991 | 99.4 | 0.6 |
| 1992 | 97.4 | 2.5 |
| 1993 | 97.2 | 2.8 |
| 1994 | 97.0 | 3.0 |
| 1995 | 96.7 | 3.2 |
| 1996 | 96.8 | 3.1 |
| 1997 | 95.9 | 4.1 |
| 1998 | 91.5 | 8.4 |
| 1999 | 86.4 | 13.5 |
| 2000 | 86.7 | 13.3 |
| 2001 | 85.0 | 15.0 |
| 2002 | 84.7 | 15.3 |
| 2003 | 85.9 | 14.1 |

**Source:** Thailand Tobacco Monopoly, Ministry of Finance.

## 10.4 Alcoholic Beverage Consumption

Thai people tend to consume more alcoholic beverages. In the past decade, alcohol use rose from 721.8 million litres in 1988 to 1,604.3 million litres in 1997, a two-fold increase. After the economic crisis, alcohol consumption had a declining trend from 1,689.8 million litres in 1998 to 1,340.9 million litres in 1999. However, after the economic recovery in 2003, alcohol use appears to rise to 3,783.7 million litres. The Food and Agriculture Organization estimated that the amount of alcohol consumed per capita per day of Thai people in 2000 was highest, compared with those in France, the U.S.A., Japan and the Philippines[21] (Figure 4.45).

By type of alcoholic beverages, the rate of liquor consumption seemed to be stable while those for beer and wine were rising (Table 4.64 and Figure 4.46) as a result of the government's free trade policy beginning in 1992. After that many beer brewery and winery plants have been operational (Figure 4.47); coupled with lower prices, the sales volumes and amounts of beer consumed were higher than those for liquor.

The health examination survey (1996-1997) revealed a similar result, i.e. one-third of working-age population drink alcohol. By sex, males are four times more likely to drink than females. It is noteworthy that during the eight-year period (1996-2003), the proportion of female drinkers has been rising in all age groups, particularly those aged 15-19 years, an almost six-fold increase from 1.0% to 5.6% (Table 4.66). Another survey conducted by the Institute of Population and Social Research of Mahidol University revealed that about one-third (30.7%) of Thai youths (aged 15-24 years) drink alcohol [22] and a survey on drug abuse among schoolchildren revealed a rising proportion of students drinking alcohol (Table 4.76).

Regarding drinking frequency among drinkers, it was found that about half of them drank occasionally, but the proportion of regular drinkers was rising from 8.6% in 1996 to 9.4% in 2003 (Table 4.67). An analysis and forecast, based on NSO data, conducted by Dr. Virasakdi Chongsuvivatwong of the Faculty of Medicine, Prince of Songkla University, revealed that alcohol use has been rising in both sexes and all age groups, females having a chance to drink more alcohol, more than 3-4 times per week. The reasons are to socialize, to follow friends' behaviour and to try (Table 4.68), and the influence of advertisements. The values or billings of alcohol advertisements have been rising, particularly during 1999-2002, to more than 2,000 million baht each year (Table 4.69). Thus, the government set a measure in 2003 banning alcohol advertisements during 05:00-22:00 hrs, effective 1 October 2003.

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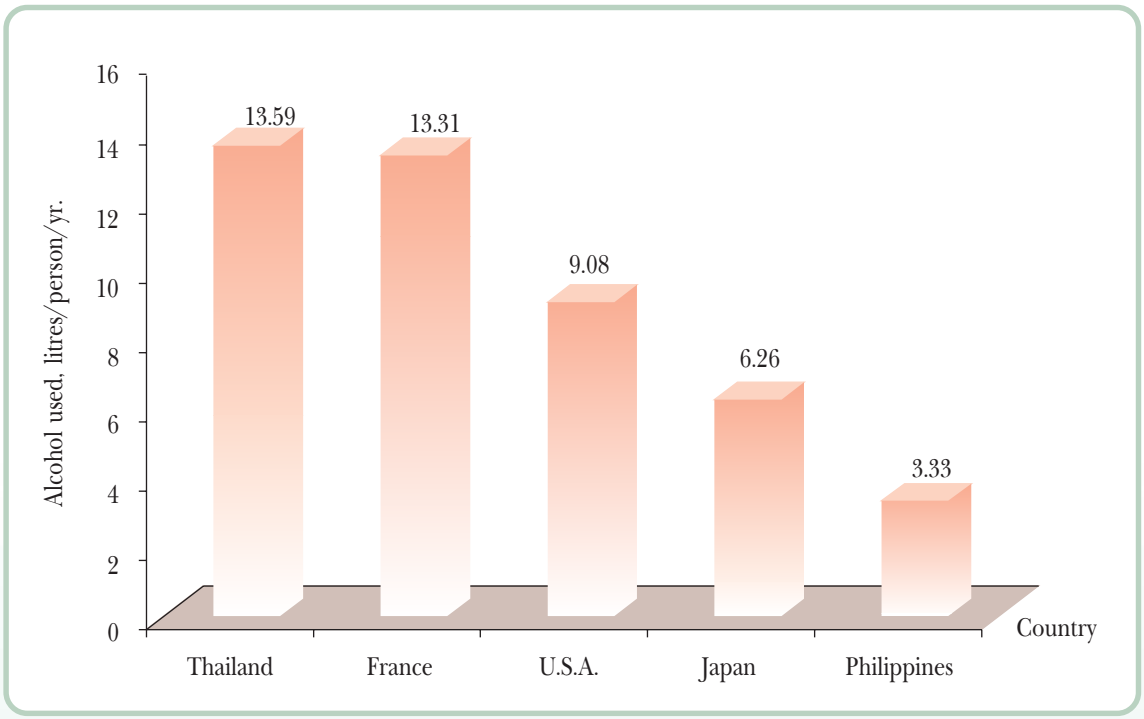
[21] Yonyout Kachondham. Advertisements of Alcoholic Drinks and Losses. Thai Health Promotion Foundation, 2004.

[22] Population and Social Research Institute, Mahidol University. Survey of Situation of Thai Youths, 1998.

**Figure 4.45** Comparison of Alcohol Consumption per Person, 2000




**Source:** WHO Alcohol Consumption Database, referred to in Yongyout Kachondham. "Advertisements and Consumption of Alcohol and Losses." Thai Health Promotion Foundation, 2003.

**Table 4.64** Alcohol Consumption in Thailand, 1988-2003

| Category | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total liquor consumption (thousand litres) | 561,857.8 | 499,619.2 | 611,926.2 | 681,767.7 | 670,922.5 | 678,011.1 | 557,634.5 | 743,825.6 | 795,633.1 | 736,616.0 | 734,879.4 | 666,275.5 | 641,487.0 | 760,556.5 | 711,280 | 1,108,704.9 |
| Average liquor consumption per person (litres) | 15.7 | 13.9 | 16.3 | 17.6 | 17.0 | 16.7 | 13.8 | 17.4 | 18.4 | 16.7 | 16.5 | 14.7 | 14.0 | 16.4 | 14.7 | 23.9 |
| Total beer consumption (thousand litres) | 157,801.3 | 178,530.0 | 260,805.8 | 278,479.6 | 320,150.9 | 419,759.4 | 509,367.7 | 616,389.1 | 714,899.1 | 863,914.6 | 950,696.7 | 666,275.5 | 1,148,409.2 | 1,149,184.1 | 1,248,550 | 2,509,129.4 |
| Average beer consumption per person (litres) | 4.4 | 5.0 | 6.9 | 7.2 | 8.1 | 10.3 | 12.1 | 14.4 | 16.5 | 19.6 | 21.3 | 14.7 | 25.1 | 24.8 | 25.8 | 54.1 |
| Total wine consumption (thousand litres) | 2,148.3 | 899.7 | 835.2 | 1,490.8 | 1,523.5 | 1,516.4 | 1,396.5 | 2,390.8 | 4,404.8 | 3,854.9 | 4,300.8 | 8,396.3 | 12,915.7 | 16,345.7 | 19,200.0 | 167,957.9 |
| Average wine consumption per person (litres) | 0.06 | 0.03 | 0.02 | 0.04 | 0.04 | 0.04 | 0.03 | 0.06 | 0.10 | 0.09 | 0.10 | 0.20 | 0.30 | 0.35 | 0.40 | 3.6 |
| Total alcohol consumption (thousand litres) | 721,807.5 | 679,049.0 | 873,567.3 | 961,738.2 | 992,597.0 | 1,099,287.0 | 1,088,394.8 | 1,362,605.6 | 1,514,937.0 | 1,604,385.5 | 1,689,876.9 | 1,340,947.3 | 1,802,812.0 | 1,926,086.4 | 1,979,030 | 3,783,792.2 |
| Average alcohol consumption per person (litres) | 20.2 | 18.9 | 23.3 | 24.8 | 25.2 | 27.1 | 25.9 | 31.9 | 35.0 | 36.4 | 37.9 | 29.5 | 39.3 | 41.6 | 40.9 | 81.7 |
| Amount of imported liquor (thousand litres) | - | - | - | - | 12,783.3 | 14,801.3 | 18,165.9 | 20,700.4 | 33,334.5 | 32,749.2 | 17,467.4 | 28,728.5 | 39,728.3 | 48,921.7 | 57,154.1 | 92,446.2 |
| Taxes on imported liquor (million baht) | - | - | - | - | 1,105.5 | 1,227.2 | 1,671.1 | 1,603.3 | 2,536.6 | 2,525.0 | 1,959.9 | 2,998.5 | 3,358.3 | 5,377.7 | 6,146.1 | 7,225.4 |

**Source:** The Excise Department, Ministry of Finance.

**Note:** Average consumption per person aged 15 and over.

**Table 4.65** Number and Proportion of Alcoholic Beverage Drinkers, 1991-2003

| Year | Population (millions) | No. of drinkers (millions) | | | Proportion of drinkers (percent) | | |
|---|---|---|---|---|---|---|---|
| | | Total | Males | Females | Total | Males | Females |
| 1991 | 39.5 | 12.4 | 10.5 | 1.8 | 31.5 | 53.7 | 9.5 |
| 1996 | 43.4 | 13.7 | 11.9 | 1.7 | 31.6 | 55.4 | 8.1 |
| 2001 | 46.9 | 15.3 | 13.0 | 2.3 | 32.6 | 55.9 | 9.8 |
| 2003 | 35.8 | 12.7 | 9.8 | 2.8 | 35.5 | 60.8 | 14.5 |

**Source:** Report on Health and Welfare Surveys, 1991, 1996, 2001 and 2003. National Statistical Office.

**Note:** In the 2003 Health and Welfare Survey, the interview was undertaken only when the interviewee was present; thus, the total population surveyed was smaller than the overall population of the country.

**Table 4.66** Alcohol Drinking Rate among Population Aged 11 and Over by Age and Sex

| Age group (years) | 1991 | | 1996 | | 2001 | | 2003 | |
|---|---|---|---|---|---|---|---|---|
| | Males | Females | Males | Females | Males | Females | Males | Females |
| 11-14 | - | - | 0.2 | 0.05 | - | - | 0.5 | 0.4 |
| 15-19 | 21.7 | 2.1 | 20.8 | 1.0 | 19.9 | 1.9 | 33.5 | 5.6 |
| 20-24 | 59.5 | 5.4 | 56.0 | 5.7 | 55.8 | 7.2 | 70.4 | 11.8 |
| 25-29 | 66.7 | 9.2 | 67.6 | 6.9 | 68.1 | 10.2 | 75.7 | 16.8 |
| 30-34 | 68.6 | 11.9 | 67.7 | 9.5 | 67.0 | 12.3 | 76.5 | 20.0 |
| 35-39 | 66.2 | 15.3 | 69.0 | 12.2 | 69.2 | 14.2 | 73.3 | 19.2 |
| 40-49 | 65.1 | 15.6 | 65.8 | 12.9 | 67.5 | 14.2 | 73.0 | 21.7 |
| 50-59 | 56.1 | 14.2 | 59.9 | 10.1 | 58.7 | 11.5 | 64.5 | 14.4 |
| 60 and over | 38.0 | 8.5 | 36.8 | 6.3 | 37.0 | 5.7 | 41.9 | 8.6 |
| Total | 53.7 | 9.5 | 50.1 | 7.4 | 55.9 | 9.8 | 60.8 | 14.5 |

**Source:** A reanalysis of the Health and Welfare Survey Database. National Statistical Office.

**Table 4.67** Percentage of Drinking Population by Frequency of Drinking, 1996, 2001 and 2003

| Drinking Frequency | 1996[1] | 2001[2] | 2003[1] |
|---|---|---|---|
| Every day | 8.6 | 7.9 | 9.4 |
| Quite frequent (3-4 times/wk.) | 10.7 | 9.9 | 10.7 |
| Some day (1-2 times/wk.) | 17.4 | 17.2 | 17.7 |
| 1-2 times/month | 16.4 | 15.3 | 12.2 |
| Occasionally | 46.2 | 49.4 | 50.0 |
| Unknown | 0.6 | 0.3 | - |

**Sources:** 1. Reports on Health and Welfare Surveys, 1996 and 2003. National Statistical Office.
2. Report on Population's Smoking and Drinking Behaviours Survey, 2001. National Statistical Office.

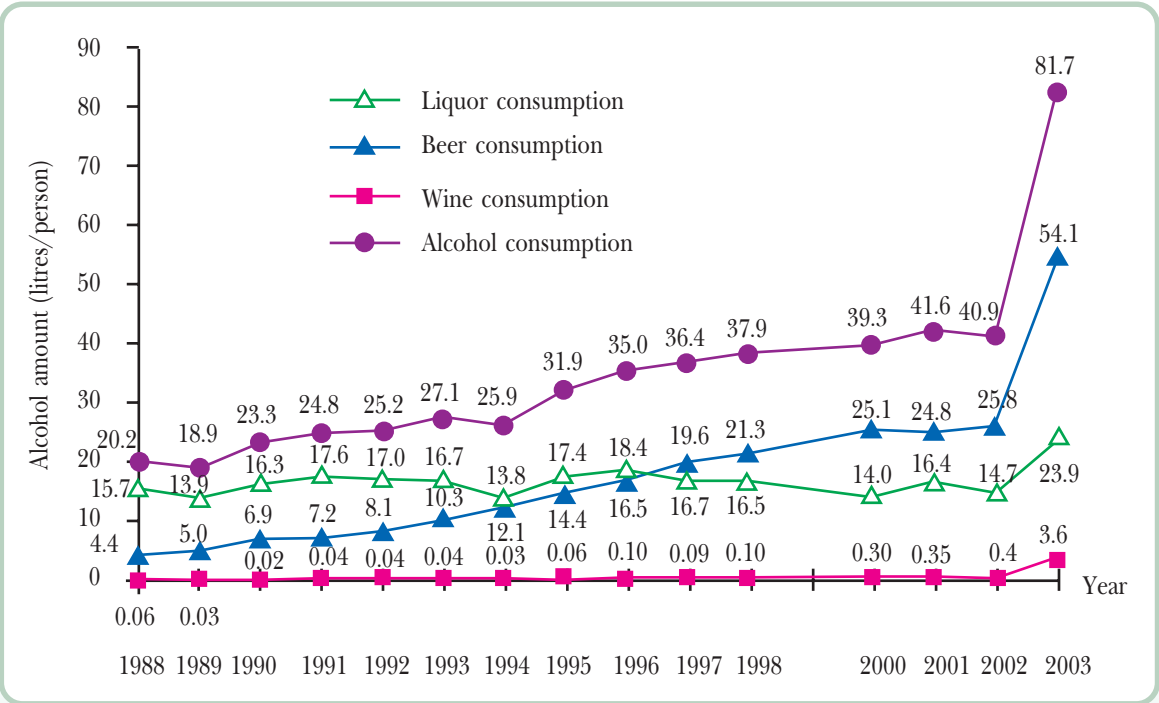
**Notes:** [1] Population aged 15 years and over.
[2] Population aged 11 years and over.

**Table 4.68** Percentage of Alcohol Drinkers by Age at First Drinking and Drinking Motive, 1991, 1996 and 2001

| Drinking motive | Males | | | | | | | | | Females | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | <20 years | | | 20 years and over | | | Total | | | <20 years | | | 20 years and over | | | Total | | |
| | 1991 | 1996 | 2001 | 1991 | 1996 | 2001 | 1991 | 1996 | 2001 | 1991 | 1996 | 2001 | 1991 | 1996 | 2001 | 1991 | 1996 | 2001 |
| Trying | 7.3 | 11.5 | 11.5 | 6.2 | 5.4 | 6.0 | 13.5 | 16.9 | 17.5 | 3.0 | 2.5 | 4.0 | 7.7 | 4.6 | 5.9 | 10.7 | 7.1 | 9.9 |
| Socializing | 12.8 | 16.4 | 18.9 | 21.1 | 21.5 | 22.7 | 33.9 | 37.9 | 41.6 | 7.8 | 8.9 | 8.9 | 31.9 | 43.5 | 45.5 | 39.7 | 52.4 | 54.4 |
| Following friends (fashion, adult looks, imitating actors, nothing to do) | 27.2 | 22.9 | 23.4 | 22.3 | 17.6 | 13.3 | 49.5 | 40.5 | 36.6 | 7.4 | 6.0 | 6.8 | 23.1 | 15.6 | 13.0 | 30.5 | 21.6 | 19.8 |
| Anxiety (drinking for relieving disappointments) | 0.4 | 1.2 | 1.8 | 0.6 | 2.1 | 2.4 | 1.0 | 3.3 | 4.1 | 0.1 | 0.8 | 1.3 | 2.2 | 16.3 | 13.6 | 2.3 | 17.1 | 14.9 |
| Others (no reason) | 0.5 | 0.5 | 0.1 | 1.4 | 0.8 | 0.1 | 1.9 | 1.3 | 0.2 | 2.8 | 0.4 | 0.6 | 14.1 | 1.4 | 0.3 | 16.9 | 1.8 | 1.0 |
| **Total** | **48.3** | **52.6** | **55.6** | **51.7** | **47.4** | **44.4** | **100.0** | **100.0** | **100.0** | **21.0** | **18.6** | **21.7** | **79.0** | **81.4** | **78.3** | **100.0** | **100.0** | **100.0** |

**Sources:** 1. Reports on Health and Welfare Surveys, 1991 and 1996. National Statistical Office.
2. Report on Survey of Population's Tobacco and Liquor Consumption Survey, 2001. National Statistical Office.

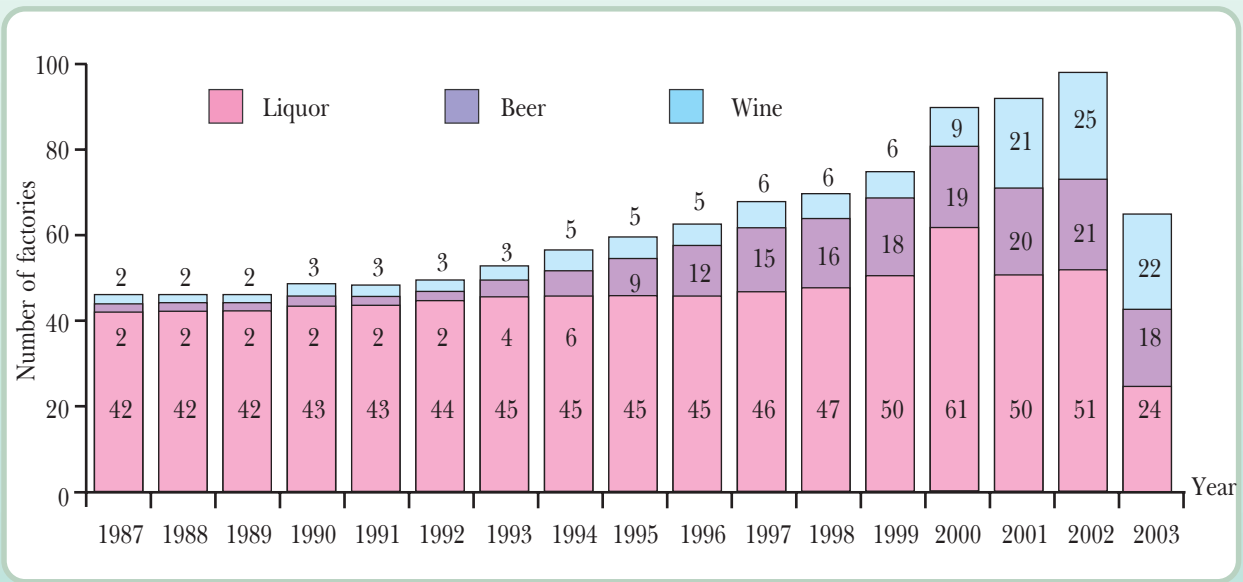
**Figure 4.46** Sales Quantities of Liquor, Beer and Wine, and Amount of Alcohol per Person Aged 15 Years and Over, 1988-2003




**Source:** The Excise Department, Ministry of Finance.

**Note:** Average consumption per person aged 15 years and over.

**Figure 4.47** Numbers of Liquor, Beer and Wine Factories, 1987-2003




**Source**: Department of Industrial Works, Ministry of Industry.

**Note**: In 2003, the number of liquor factories decreased due to factory closure and merger.

**Table 4.69** Alcohol Advertisements Billings, 1989-2003

| Year | Advertisement billings (million baht) | Increase (percent) |
|---|---|---|
| 1989 | 255 | - |
| 1990 | 347 | +36.1 |
| 1991 | 460 | +32.6 |
| 1992 | 514 | +11.7 |
| 1993 | 705 | +37.2 |
| 1994 | 772 | +9.5 |
| 1995 | 1,318 | +70.7 |
| 1996 | 2,169 | +64.6 |
| 1997 | 1,859 | -14.3 |
| 1998 | 1,264 | -32.0 |
| 1999 | 1,812 | +43.4 |
| 2000 | 2,522 | +39.2 |
| 2001 | 1,910 | -24.3 |
| 2002 | 2,180 | +14.1 |
| 2003 | 2,025 | -7.1 |

**Source:** Media Data Resources (MDR).

## 10.5 Consumption of Caffeine Drinks

As a result of all kinds of sales promotion, the volume of caffeine drinks consumed rose from 131.10 million litres in 1992 to 310.05 million litres in 1997. During the economic crisis, the consumption of such drinks dropped markedly, but after the economic recovery, the consumption rose again to 433.21 million litres in 2003 (Table 4.70).

**Table 4.70** Volumes of Caffeine Drinks (Energy Drinks) in Thailand, 1992-2003

| Year | Production volume (million litres) | Sales volume (million litres) | Per capita consumption (litres/yr.) | Change in per capita consumption (percent) |
|---|---|---|---|---|
| 1992 | 138.40 | 131.10 | 3.32 | - |
| 1993 | 173.75 | 329.26 | 8.10 | +144.0 |
| 1994 | 183.62 | 181.84 | 4.33 | -46.5 |
| 1995 | 209.31 | 217.08 | 5.08 | +17.3 |
| 1996 | 180.87 | 182.92 | 4.22 | -16.9 |
| 1997 | 308.08 | 310.05 | 7.03 | +66.6 |
| 1998 | 134.73 | 126.12 | 2.82 | -59.9 |
| 1999 | 174.59 | 155.44 | 3.42 | +21.3 |
| 2000 | 337.56 | 332.47 | 7.25 | +112.0 |
| 2001 | 364.84 | 355.14 | 7.66 | +5.6 |
| 2002 | 366.30 | 433.59 | 8.95 | +16.8 |
| 2003 | 445.47 | 433.21 | 8.90 | -0.6 |

**Source:** The Excise Department, Ministry of Finance.

**Note:** Per capita consumption among population aged 15 years and over.

In 2000, the Food and Drug Administration, the Institute of Nutrition of Mahidol University, and the Health Systems Research Institute jointly conducted a study on consumption behaviours of caffeine drinks among Thai people aged 12 years and over. The study revealed that approximately two-fifths of respondents (38.6%) drank caffeine drinks, approximately two-thirds (66.6%) drank coffee or tea, and approximately three-fourths (77.0%) drank carbonated caffeine drinks. Moreover, it was found that the prevalence of Thais drinking all three kinds of drinks was 23.7% of respondents, 36.6% for males and 11.1% for females, four times higher in males (Table 4.71); the reasons being for preventing sleepiness, refreshment and their good taste (Table 4.72).

**Table 4.71** Number and Prevalence of Caffeine Drinkers Aged 13-70 Years by Sex

| Drinking behaviour | Caffeine drinkers | | | Coffee and tea drinkers | | | Carbonated caffeine drinkers | | |
|---|---|---|---|---|---|---|---|---|---|
| | Males | Females | Total | Males | Females | Total | Males | Females | Total |
| Drinking | 1,257 | 442 | 1,699 | 1,541 | 1,592 | 3,133 | 1,656 | 1,925 | 3,581 |
| Used to drink | 266 | 192 | 458 | 202 | 209 | 411 | 175 | 200 | 375 |
| Never drink | 648 | 1,830 | 2,478 | 428 | 663 | 1,091 | 338 | 337 | 675 |
| Total | 2,171 | 2,464 | 4,635 | 2,171 | 2,464 | 4,635 | 2,169 | 2,462 | 4,631 |
| **Prevalence** | | | | | | | | | |
| Drinking | 57.9% | 17.9% | 36.7% | 71.0% | 64.6% | 67.6% | 76.3% | 78.2% | 77.3% |
| Used to drink | 12.3% | 7.8% | 9.9% | 9.3% | 8.5% | 8.9% | 8.1% | 8.1% | 8.1% |
| Never drink | 29.8% | 74.3% | 53.5% | 19.7% | 26.9% | 23.5% | 15.6% | 13.7% | 14.6% |
| **Adjusted prevalence*** | | | | | | | | | |
| Drinking | 59.8% | 17.8% | 38.6% | 70.1% | 63.1% | 66.6% | 76.3% | 77.6% | 77.0% |
| Used to drink | 10.9% | 7.5% | 9.2% | 9.1% | 8.3% | 8.7% | 7.6% | 7.7% | 7.6% |
| Never drink | 29.3% | 74.7% | 52.3% | 20.8% | 28.6% | 24.8% | 16.1% | 14.7% | 15.4% |

**Sources:** Food and Drug Administration, Institution of Nutrition of Mahidol University and Health Systems Research Institute. Report on Consumption Behaviours of Thai People Drinking Caffeine Drinks, 2000.

**Note:** * Adjusted prevalence was calculated based on the proportion of the population by sex.

**Table 4.72** Percentage of Respondents Drinking Caffeine Drinks and Reasons, 2000

| Reason for drinking (more than one choice can be specified) | Caffeine drinks (N = 1,699) | Coffee and tea (N = 3,133) | Carbonated caffeine drinks (N = 3,581) |
|---|---|---|---|
| Anti-sleepiness/refreshment | 70.8 | 64.0 | 29.0 |
| Making energetic, anti-weakness | 58.7 | 25.0 | 5.7 |
| Anti-uneasiness, addictedness | 6.7 | 10.5 | 1.8 |
| Wishing to send labels or caps for lucky draws | 3.5 | 0.8 | 0.6 |
| As tonics | 7.4 | 3.2 | 1.1 |
| Favouring the taste | 32.3 | 38.5 | 43.7 |
| Habitual drinking | 11.9 | 28.4 | 10.0 |
| Anti-thirst | 15.8 | 19.8 | 84.4 |
| Advertisement influence | 3.4 | 1.5 | 3.4 |

**Source:** Food and Drug Administration, Institution of Nutrition of Mahidol University and Health Systems Research Institute. Report on Consumption Behaviours of Thai People Drinking Caffeine Drinks, 2000.

## 10.6 Drug Dependence and Abuse

The narcotic problem is complicated in line with economic and social changes by ramifying into communities, business facilities or even educational institutions. In Thailand, despite the fact that there are numerous legal measures and continuos campaigns for drug control and suppression, the illicit drug problem situation is still prevalent. Currently, the major narcotic widely used is methamphetamine or ya ba. Although the country is encountering the economic crisis, drug smuggling does not decline, but it tends to increase. Significant examples include a rising number of methamphetamine-crime arrests, especially in northern border areas where the proportion of arrests has risen from 16.7% in 1995 to 46.5% in 2003 or up to 33 million tablets during the past ten years (Table 4.73).

**Table 4.73** Statistics of Methamphetamine Seizures, 1993-2003

| Year | Whole country (tablets) | The North | |
|---|---|---|---|
| | | Tablets | Percent |
| 1993 | 7,000,000 | 40,000 | 0.6 |
| 1994 | 4,000,000 | 600,000 | 15.0 |
| 1995 | 6,000,000 | 1,000,000 | 16.7 |
| 1996 | 9,000,000 | 3,500,000 | 38.9 |
| 1997 | 15,000,000 | 9,000,000 | 60.0 |
| 1998 | 31,770,127 | 17,689,136 | 55.7 |
| 1999 | 49,887,050 | 33,137,431 | 66.4 |
| 2000 | 83,000,000 | 34,000,000 | 41.0 |
| 2001 | 93,800,000 | 55,670,540 | 59.3 |
| 2002 | 95,900,000 | 37,810,500 | 39.4 |
| 2003 | 71,400,000 | 33,227,800 | 46.5 |

**Source:** Office of the Narcotics Control Board.

After the economic crisis, the number of new drug addicts admitted to drug dependence treatment facilities has risen from 36.1% in 1996 to 52.2% in 2002 (Table 4.74). The serious concern, during the past ten years (1992-2002), has been a remarkable increase in the number of students undergoing the drug treatment. In particular, after the economic crisis, almost 80% of the students attending the treatment centres are new cases. This indicates that each year the number of new drug addicts is soaring (Table 4.75). The rate of stimulant or methamphetamine use has escalated from 0.2% in 1985 to 1.5% in 1999 or a 7.5-fold increase (Table 4.76).

**Table 4.74** Number of Drug Addicts Registered at Drug Dependence Treatment Facilities in Thailand, 1987-2002

| Year | Total number of drug addicts | Number of readmitted addicts | New drug addicts | |
|---|---|---|---|---|
| | | | No. | Percentage of total addicts |
| 1987 | 57,874 | 42,748 | 14,895 | 25.7 |
| 1988 | 61,218 | 46,766 | 13,779 | 22.5 |
| 1989 | 60,000 | 44,048 | 13,723 | 22.9 |
| 1990 | 58,327 | 41,942 | 13,984 | 24.0 |
| 1991 | 66,465 | 46,253 | 18,398 | 27.7 |
| 1992 | 63,978 | 44,816 | 19,162 | 30.0 |
| 1993 | 82,620 | 51,053 | 29,468 | 35.7 |
| 1994 | 80,618 | 49,644 | 30,189 | 37.4 |
| 1995 | 101,145 | 61,490 | 38,565 | 38.1 |
| 1996 | 81,050 | 50,774 | 29,223 | 36.1 |
| 1997 | 62,362 | 39,075 | 21,956 | 35.2 |
| 1998 | 73,079 | 45,001 | 28,060 | 38.4 |
| 1999 | 64,232 | 37,150 | 27,082 | 42.2 |
| 2000 | 67,155 | 38,778 | 28,377 | 42.3 |
| 2001 | 72,646 | 41,265 | 31,381 | 43.2 |
| 2002 | 68,623 | 32,772 | 35,851 | 52.2 |

**Source:** Department of Medical Services, MoPH.

**Table 4.75** Number of Students Registered for Drug Dependence Treatment, 1992-2002

| Year | New cases | | Readmitted cases | | Total |
|---|---|---|---|---|---|
| | No. | Percent | No. | Percent | |
| 1992 | 1,119 | 86.8 | 170 | 13.2 | 1,289 |
| 1993 | 2,390 | 84.8 | 429 | 15.2 | 2,819 |
| 1994 | 3,091 | 79.6 | 793 | 20.4 | 3,884 |
| 1995 | 3,998 | 76.5 | 1,231 | 23.5 | 5,229 |
| 1996 | 3,147 | 73.5 | 1,137 | 26.5 | 4,284 |
| 1997 | 3,389 | 77.6 | 980 | 22.4 | 4,369 |
| 1998 | 8,109 | 88.2 | 1,084 | 11.8 | 9,193 |
| 1999 | 6,133 | 86.3 | 976 | 13.7 | 7,109 |
| 2000 | 6,862 | 90.8 | 698 | 9.2 | 7,560 |
| 2001 | 5,631 | 86.6 | 868 | 13.4 | 6,499 |
| 2002 | 5,903 | 78.1 | 1,659 | 21.9 | 7,562 |

**Sources:** For 1992-2001, Office of the Narcotics Control Board.
For 2002, Department of Medical Services, MoPH.

**Table 4.76** Percentage of Drug/Narcotic Usage among Secondary School Students, 1985-1999

| Types of drug/narcotic | 1985 (n=155,541) | 1987 (n=30,097) | 1989 (n=4,986) | 1996 (n=15,306) | 1999 (n=24,110) |
|---|---|---|---|---|---|
| Tobacco | 9.16 | 6.73 | 7.62 | 7.60 | 5.28 |
| Liquor | 9.79 | 5.96 | 7.97 | 14.00 | 13.56 |
| Marijuana | 1.05 | 0.92 | 1.78 | 1.18 | 0.80 |
| Inhalants | 0.52 | 1.78 | 2.38 | 0.85 | 0.44 |
| Stimulants/methamphetamine | 0.18 | 0.73 | 0.60 | 1.64 | 1.52 |
| Dry liquor (LSD) | 0.19 | 0.28 | 0.28 | 0.55 | 0.37 |
| Tranquilizers | 0.12 | 0.26 | 0.40 | 0.92 | 0.42 |
| Heroin | 0.74 | 0.12 | 0.46 | 0.33 | 0.19 |

**Source:** Survey of Drug Abuse among Secondary School Students. Department of General Education and Office of the Narcotics Control Board, 1999.

According to the estimates of the number of students with illicit drug use nationwide by ABAC-KSC Internet Research Institute (ABAC Poll) in 2001, about 6.2% of students had drug use behaviours (Table 4.77). Methamphetamine was the drug that they used the most (58.5%; Table 4.78).

**Table 4.77** Estimated Number of Students Using Drugs, 2001

| Behaviours of drug use | Estimated number of students | Percent |
|---|---|---|
| Using drugs (excluding liquor and tobacco) | 374,653 | 6.2 |
| Never use drugs | 5,717,819 | 93.8 |
| **Total** | **6,092,472** | **100.0** |

**Source:** Estimation of Students Using Drugs: A Case Study of Students from All Educational Institutions Nationwide. ABAC-KSC Internet Research Institute (ABAC Poll), 2001.

**Table 4.78** Estimated Number of Students Using Drugs by Drug Category, 2001

| Rank | Narcotic category | Estimated number of students | Percent |
|---|---|---|---|
| 1 | Methamphetamine | 219,284 | 58.5 |
| 2 | Marijuana | 158,065 | 42.2 |
| 3 | Tranquilizers, e.g. Domicum, Valium | 125,918 | 33.6 |
| 4 | Inhalants, rubber glue, lacquer | 62,354 | 16.6 |
| 5 | "Ecstasy" drug | 42,443 | 11.3 |
| 6 | "Love" drug | 39,349 | 10.5 |
| 7 | "K" drug (ketamine) | 32,655 | 8.7 |
| 8 | Heroin | 28,402 | 7.6 |
| 9 | Opium | 20,807 | 5.6 |
| 10 | Cocaine | 18,249 | 4.9 |
| 11 | Morphine | 18,231 | 4.9 |

**Source:** Estimation of Students Using Drugs: A Case Study of Students from All Educational Institutions Nationwide. ABAC-KSC Internet Research Institute (ABAC Poll), 2001.

**Note:** There were totally 374,653 students using drugs.

However, after the government implemented the war on drug policy in 2001, the Office of the Narcotics Control Board has estimated that the proportion of drug users has declined from 16.4% in 2001 to 6.9% in 2003, a more-than-50% decrease (Table 4.79).

**Table 4.79** Number of Drug Users Nationwide by Type of Use Duration, 2001 and 2003

| Drug | 2001 | | | 2003 | | |
|---|---|---|---|---|---|---|
| | Drug users in thousands (and percent) | | | Drug users in thousands (and percent) | | |
| | Ever used | Ever used in 1 year | Ever used in 30 days | Ever used | Ever used in 1 year | Ever used in 30 days |
| **Any kind of drug** | **7,312.2(16.4)** | **1,942.1(4.3)** | **998.7(2.2)** | **3,155.5(6.9)** | **455.5(1.0)** | **257.8(0.6)** |
| Methamphetamine | 3,491.6(7.8) | 1,092.5(2.4) | 490.3(1.1) | 1,094.0(2.4) | 83.8(0.2) | 34.1(0.1) |
| Drug E or Love | 360.1(0.8) | 46.5(0.1) | 17.7(0.0) | 119.7(0.3) | 13.3(0.0) | 7.4(0.0) |
| Ketamine | 40.7(0.1) | 7.2(0.0) | 1.2(0.0) | 23.4(0.1) | 1.0(0.0) | 0.04(0.0) |
| Cocaine | 52.8(0.1) | 4.9(0.0) | 1.1(0.0) | 29.4(0.1) | 7.4(0.0) | 1.0(0.0) |
| Marijuana | 5,425.3(12.1) | 667.2(1.5) | 210.0(0.5) | 2,019.1(4.4) | 83.4(0.2) | 18.7(0.0) |
| Kratom (khat/eave) | 2,105.8(4.7) | 643.8(1.4) | 364.2(0.8) | 1,160.0(2.6) | 344.7(0.8) | 221.6(0.5) |
| Opium | 907.0(2.0) | 38.6(0.1) | 12.3(0.0) | 323.7(0.7) | 0.6(0.0) | 0.3(0.0) |
| Heroin | 274.2(0.6) | 22.7(0.1) | 9.4(0.0) | 192.6(0.4) | 1.4(0.0) | - |
| Thinner,glue,benzene | 933.9(2.1) | 199.7(0.4) | 101.2(0.2) | 447.9(1.1) | 21.2(0.1) | 13.2(0.0) |

**Source:** Office of the Narcotics Control Board. Report on Estimation of Drug Users in Thailand, 2003.

## 10.7 Physical Activity and Relaxation

### 10.7.1 Physical Activity

The 2002 survey of **the National Statistical Office revealed that approximately 29% of Thai people regularly exercised**[23] (Table 4.80). The result is consistent with those of the 1998 survey of the Population and Social Research Institute of Mahidol University, which revealed that one-third of youths aged 15-20 years regularly exercised; the results being close to the 34.7% found by the 1998 survey of the Rajabhat Institute Suan Dusit poll.

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[23] Exercise or physical activity means any movement of the body or part of body or part of body for health promotion, entertainment, and socialization, using simple activities or simple rules, such as walking, running, rope-jumping, body-stretching, and weight-lifting (except for exercise while working or body movement in daily life).

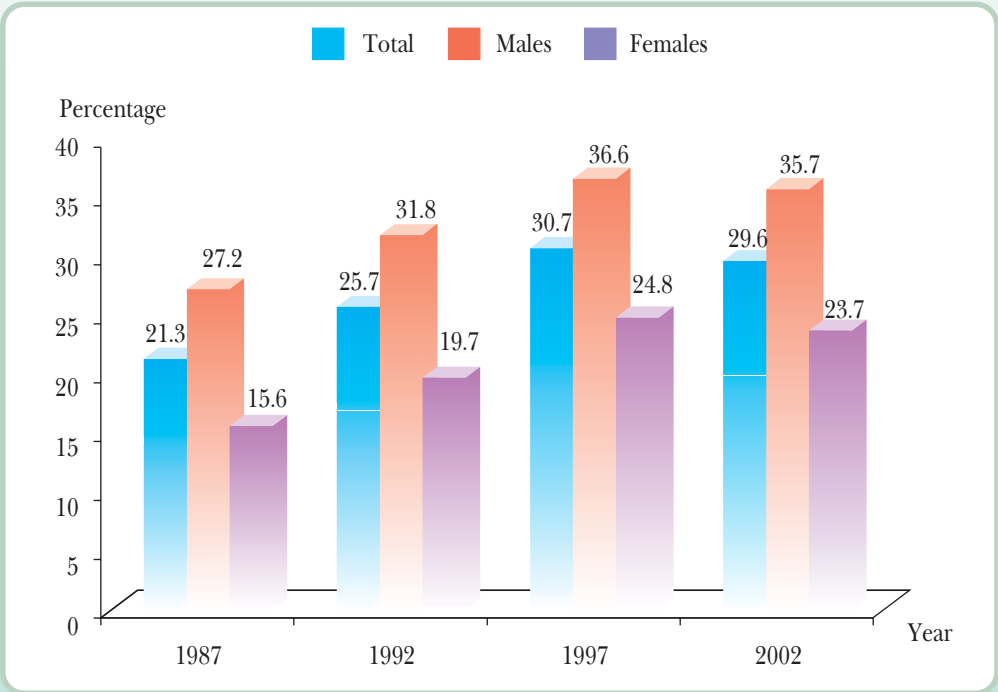
**Table 4.80** Percentage of Thai People Who Regularly Exercised, 1987-2002

| Year | People regularly exercising | |
|---|---|---|
| | Percent | Change (percent) |
| 1987 | 21.3 | - |
| 1992 | 25.7 | +20.7 |
| 1997 | 30.7 | +19.5 |
| 2002 | 29.6 | -3.6 |

**Sources:** Reports on Surveys of People Aged 6 Years and Above Playing or Watching Sports, 1987, 1992, 1997 and 2002. National Statistical Office.

However, considering the trends in regular exercising during 1987-2002, on average the number of **Thai people exercising increased** by 20% each year (Table 4.80); **particularly males are more likely to exercise than females** (Figure 4.48).

**Figure 4.48** Percentage of Thai People with Regular Physical Activity, 1987-2002




**Sources:** Reports on Surveys of People Aged 6 Years and Above Playing or Watching Sports, 1987, 1992, 1997 and 2002. National Statistical Office.

Considering the exercise behaviour based on the criteria of **physical activity for health, it was found that more than 60% of the people exercise more than three days a week and approximately 80-90% exercise for 30 minutes or longer each day** (Tables 4.81 and 4.82).

**Table 4.81** Percentage of Population Aged 6 Years and Over Exercising Each Week, 1987-2002

| Days exercised each week | 1987 | 1992 | 2002 |
|---|---|---|---|
| 1 day | 23.8 | 20.7 | 17.9 |
| 2 days | 14.6 | 16.3 | 13.9 |
| 3-4 days | 28.6 | 30.5 | 28.0 |
| 5-6 days | 14.7 | 17.8 | 25.1 |
| 7 days | 18.3 | 14.6 | 15.1 |
| **Total** | **100.0** | **100.0** | **100.0** |

**Sources:** Reports on Surveys of People Aged 6 Years and Above Playing or Watching Sports, 1987, 1992 and 2002. National Statistical Office.

**Table 4.82** Percentage of Population Aged 6 Years and Over Exercising Each Day, 1987-2002

| Time period exercised each day | 1987 | | | 1992 | | | 1997 | | | 2002 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females |
| <30 minutes | 25.8 | 21.3 | 34.9 | 21.1 | 17.7 | 26.5 | 12.0 | 10.3 | 14.7 | 4.1 | 3.0 | 5.7 |
| ≥30 minutes | 74.2 | 78.7 | 65.1 | 78.8 | 82.2 | 73.5 | 87.9 | 89.6 | 85.2 | 95.9 | 97.0 | 94.3 |
| Unspecified | - | - | - | 0.1 | 0.1 | - | 0.1 | 0.1 | 0.1 | - | - | - |
| **Total** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** |

**Sources:** Reports on Surveys of People Aged 6 Years and Above Playing or Watching Sports, 1987, 1992, 1997 and 2002. National Statistical Office.

The types of sports most favoured are soccer, volleyball, physical workouts, athletics, and jogging for health. Males mostly prefer soccer and takraw (rattan ball), while females prefer volleyball and physical workouts (Table 4.83). Where they want to play or exercise depends on the type of exercise, their own readiness and venue's convenience. It was found that **sports grounds of educational institutions** are mostly used for exercising, followed by empty grounds in a community and household grounds (Table 4.84).

**Table 4.83** Percentage of Population with Physical Activity by Sports Category, 1987-2002

| Sports category | 1987 | | | 1992 | | | 1997 | | | 2002 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females |
| Soccer | 33.9 | 50.9 | 4.4 | 28.9 | 44.6 | 3.5 | 38.1 | 61.0 | 4.7 | 39.4 | 61.7 | 6.2 |
| Volleyball | 10.4 | 2.4 | 24.4 | 12.0 | 2.6 | 27.2 | 19.2 | 6.4 | 38.0 | 12.3 | 2.4 | 27.0 |
| Athletics | 10.2 | 6.5 | 16.4 | 5.6 | 3.9 | 8.3 | 15.8 | 11.4 | 22.2 | 3.2 | 2.0 | 5.1 |
| Jogging | 7.5 | 7.1 | 8.2 | 16.0 | 13.1 | 20.6 | 9.1 | 9.2 | 8.9 | 10.0 | 8.8 | 11.9 |
| Physical workouts | 14.0 | 9.3 | 22.3 | 9.4 | 6.5 | 14.1 | 10.6 | 8.2 | 14.2 | 7.6 | 3.9 | 13.2 |
| Takraw | 9.2 | 14.3 | 0.4 | 11.7 | 18.8 | 0.4 | 15.1 | 23.9 | 2.2 | 4.6 | 7.0 | 0.9 |
| Badminton | 3.8 | 2.0 | 6.9 | 3.9 | 1.7 | 7.5 | 7.5 | 4.1 | 12.4 | 5.7 | 1.9 | 11.4 |
| Table tennis | 1.0 | 0.9 | 1.1 | 1.6 | 1.1 | 2.5 | 4.8 | 3.9 | 6.2 | 1.2 | 0.4 | 1.6 |
| Swimming | 1.6 | 1.1 | 2.4 | 2.2 | 1.5 | 3.4 | 2.1 | 1.4 | 3.2 | 1.4 | 0.8 | 2.3 |
| Basketball | 3.2 | 1.7 | 5.8 | 3.2 | 1.6 | 6.0 | 11.1 | 8.0 | 15.7 | 3.7 | 2.2 | 5.9 |
| Walking for health | 0.7 | 0.6 | 0.9 | 1.0 | 0.9 | 1.2 | 1.7 | 1.4 | 2.1 | 3.8 | 2.9 | 5.1 |
| Chairball | 1.8 | 0.5 | 4.1 | 1.2 | 0.4 | 2.5 | 1.5 | 0.5 | 2.9 | 0.7 | 0.3 | 1.3 |
| Others | 2.7 | 2.7 | 2.7 | 3.3 | 3.3 | 2.8 | 5.4 | 3.3 | 2.1 | 6.4 | 5.7 | 8.1 |
| **Total** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** |

**Sources:** Reports on Surveys of People Aged 6 Years and Above Playing or Watching Sports, 1987, 1992, 1997 and 2002. National Statistical Office.

**Table 4.84** Percentage of Population with Physical Activity by Venue of Exercise, 1997 and 2002

| Year | Total | Venue of exercise | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Sport facilities at educational institutions | Sport facilities at government agencies | Private sport facilities | Public parks | Household | Religious areas | Empty places | Others |
| 1997 | 100.0 | 68.2 | 6.9 | 1.7 | 1.7 | 7.1 | 1.7 | 12.4 | 0.3 |
| 2002 | 100.0 | 53.5 | 5.7 | 3.0 | 7.4 | 18.7 | 2.5 | 7.6 | 1.6 |

**Source:** Reports on Surveys of People Aged 6 Years and Above Playing or Watching Sports, 1997 and 2002. National Statistical Office.

Regarding the environment that facilitates the people to exercise more easily, according to a report of the Sports Authority of Thailand and the Bangkok Metropolitan Administration, the number of sports venues has been rising (Table 4.85). And a survey on exercise for health networks revealed that the number of exercise clubs nationwide has increased from 1,118 in 2001 to 35,532 in 2003. In addition, the policy on move for health campaigns implemented since 2002 has made the people more aware of the need for exercise (Table 4.86).

**Table 4.85** Sports Venues by Type, 1993-2001

| Sports venue | Year (places) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
| Health parks[1] | - | - | - | - | - | - | - | 15 | 30 |
| Multipurpose sport arenas[1] | - | - | - | - | - | - | 1,154 | 2,254 | 3,911 |
| BMA sports arenas[2] | - | - | - | - | - | 647 | 1,057 | 1,094 | 1,112 |
| Open-air sports grounds in districts and tambons[1] | 62 | 123 | 182 | 198 | 219 | 219 | 231 | 245 | 260 |

**Source:** [1] Sports Venues and Services Section, Civil Works and Engineering Division, Sports Authority of Thailand.

[2] Bureau of Social Welfare, Bangkok Metropolitan Administration.

**Table 4.86** Exercise for Health Clubs: Number and Members, 2001-2003

| Year | Number of clubs | Number of members |
|---|---|---|
| 2001 | 1,118 | 57,302 |
| 2002 | 12,974 | 172,103 |
| 2003 | 35,532 | 4,577,277 |

**Sources:** 1. Bureau of Health Promotion, Department of Health.

2. Health Education Division, Department of Health Service Support.

Exercise is an important health behaviour and very useful for human's well-being. Regular exercise helps adjust our body to the environment and increase our activeness, flexibility and strength. It also helps us to become ready to cope with adverse environmental conditions that might affect us. However, a number of people do not exercise, mostly reasoning that they have no time and are not interested in exercise (Table 4.87).

**Table 4.87** Percentage of People Not Exercising by Reason for Not Exercising, 1992-2002

| Reason | 1992 | 1997 | 2002 |
|---|---|---|---|
| Uninterested | 49.5 | 40.4 | 41.2 |
| No time | 44.5 | 51.4 | 54.1 |
| No venue | 1.0 | 0.9 | 0.8 |
| No equipment | 0.6 | 0.6 | 0.4 |
| No supporter | - | 0.2 | 0.1 |
| Others | 4.4 | 6.5 | 3.4 |
| **Total** | **100.0** | **100.0** | **100.0** |

**Sources:** Reports on Surveys of People Aged 6 Years and Above Playing or Watching Sports, 1992, 1997 and 2002. National Statistical Office.

### 10.7.2 Relaxation

A survey on health status of working-age population in 1996-1997 demonstrated that an average sleeping time period was 7.6 hours. Half the working-age population spent 7-8 hours on sleeping. It was also found that when they got older, the proportion of people sleeping for more than eight hours would decrease. But the opposite was noted in the 2001 survey conducted by the National Statistical Office: males and females aged 10 years and older on average slept for 8.7 hours, elders slept on average as long as 10.4 hours, followed by children, youths and working-age people, respectively (Tables 4.88 and 4.89).

With regard to time spending for recreation, it was found that each person spent two hours on average, males spending more time than females (Table 4.89).

**Table 4.88** Proportion of Working-age Population by Daily Sleeping Time, 1996-1997

| Age, years | Less than 6 hrs | | 6-7 hrs | | 8 hrs and over | |
|---|---|---|---|---|---|---|
| | Males | Females | Males | Females | Males | Females |
| 13-19 | 1.8 | 2.0 | 17.8 | 23.6 | 80.4 | 74.5 |
| 20-34 | 6.3 | 6.7 | 37.5 | 34.1 | 56.2 | 59.2 |
| 35-44 | 7.6 | 8.2 | 39.5 | 41.1 | 52.9 | 50.7 |
| 45-59 | 9.9 | 13.8 | 36.6 | 43.4 | 53.5 | 42.8 |

**Source:** Data reanalyzed from the database of Survey on Health Status of Working-age Population. 1996-1997. Thailand Health Research Institute and Bureau of Policy and Strategy MoPH, 1998.

**Table 4.89** Average Time Periods Spent on Sleeping and Recreation Each Day by Sex and Age, 2001

| Activity | Age-group and time spent (hours) | | | | |
|---|---|---|---|---|---|
| | 10 - 14 | 15 - 24 | 25 - 59 | 60 and older | Total |
| **Males** | | | | | |
| Sleeping | 9.2 | 8.4 | 8.4 | 10.6 | 8.7 |
| Recreation* | 2.2 | 2.4 | 2.0 | 2.4 | 2.2 |
| **Females** | | | | | |
| Sleeping | 9.2 | 8.4 | 8.40 | 10.6 | 8.7 |
| Recreation* | 1.7 | 1.6 | 1.8 | 2.4 | 1.8 |
| **Total** | | | | | |
| Sleeping | 9.3 | 8.6 | 8.5 | 10.4 | 8.8 |
| Recreation* | 2.0 | 2.1 | 1.9 | 2.4 | 2.0 |

**Source:** Report on the Time Spending of the People Survey, 2001. National Statistical Office.

**Note:** *Including social and cultural activities.

## 10.8 Driving Behaviours

### 10.8.1 Use of Safety Belt

A survey on safety-belt use among all driver categories reveals that, even through the law requires that all drivers and passengers use safety belts at all times, the safety-belt use rate has dropped from 35.8% in 1996 to only 23.5% in 2003 (Table 4.90).

### 10.8.2 Use of Safety Helmet

The rate of constant use of helmet among motorcyclists was found to be similar to that for safety belt, i.e. helmet use rate has declined from 29.0% in 1996 (the year in which the Helmet Use Royal Decree was first in effect) to only 16% in 2003 (Table 4.91).

**Table 4.90** Proportion of Drivers Aged 14 Years and Over Using Safety Belts

| Use of safety belt | 1991[1] | 1996[1] | 1997[2] | 2000[3] | 2001[1] | 2003[1] |
|---|---|---|---|---|---|---|
| Vehicles with safety belts | | | | | | |
| - Constant use | 4.3 | 35.8 | 35.7 | 25.9 | 27.1 | 23.5 |
| - Occasional use | 11.7 | 28.0 | 29.6 | 32.2 | 44.2 | 39.7 |
| - Never use | 12.6 | 6.3 | 34.7 | 13.9 | 12.1 | 32.2 |
| Vehicles without safety belts | 64.6 | 29.9 | - | - | 4.4 | 2.4 |

**Sources:** (1) Data for 1991, 1996, 2001 and 2003 were derived from Health and Welfare Surveys. National Statistical Office.

(2) Data for 1997 were derived from Prapapen Suwan et al. Study on Behaviours and Environmental Conditions for Health Promotion among Youths, Housewives and Factory Workers, 1997. Faculty of Public Health, Mahidol University.

(3) Data for 2000 were derived from the Survey of Health Behaviour of Working-age Population (15-59 years). Health Education Division, MoPH.

**Note:** Data for 2001 were derived from the survey on safety-belt use of drivers and passengers aged 15 and over in front seats.

**Table 4.91** Proportion of Motorcyclists Aged 14 Years and Over Using Safety Helmets

| Use of helmets | 1991[1] | 1996[1] | 2000[2] | 2001[1] | 2003[1] |
|---|---|---|---|---|---|
| - Constant use | 7.2 | 29.0 | 32.0 | 16.1 | 16.0 |
| - Occasional use | 21.7 | 55.4 | 44.2 | 64.3 | 49.5 |
| - Never use | 11.0 | 6.0 | 15.8 | 10.3 | 32.8 |
| - No helmet | 59.8 | 9.3 | - | 9.1 | - |

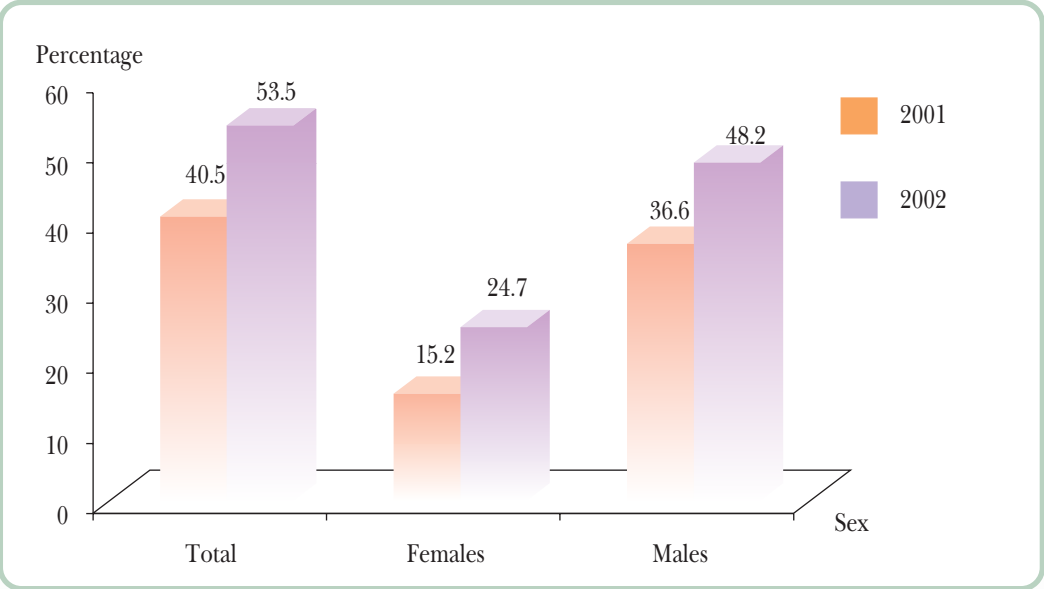
**Sources:** (1) Data for 1991, 1996, 2001 and 2003 were derived from Health and Welfare Surveys. National Statistical Office.

(2) Data for 2000 were derived from the Survey of Health Behaviours of Working-age Population (15-59 years). Health Education Division, Department of Health Service Support.

**Note:** Data for 2001 were derived from the survey on helmet use among motorcyclists and passengers aged 15 and over.

Alcohol drinking and driving is a major factor causing road traffic accidents/injuries. Even though Thailand has launched campaigns against drunk driving, having law prohibiting driving for any person with a blood alcohol concentration exceeding the specified limit, the number of drunk drivers has risen by 30%, i.e. rising from 40.5% in 2001 to 53.5% in 2003; males being twice more likely to do so than females (Figure 4.49).

**Figure 4.49** Proportion of Drunk Drivers by Sex, 2001 and 2002




**Sources:** Reports on Health and Welfare Surveys, 2001 and 2003. National Statistical Office.

## 10.9 Sexual Behaviours

Unhealthy sexual practices are a prime health determinant in spreading sexually transmitted infections (STIs), especially HIV/AIDS. Owing to intensive campaigns, people are more aware of contracting HIV when having sex with a female commercial sex worker (CSW). This brings about a higher condom use rate in CSWs from 25% in 1989 to 96.9% in 2003 (Figure 4.50). However, it has been recently discovered that people are more likely to have sex with other women who are not CSWs. In particular youths tend to have first sex at a younger age and practise unsafe sex.

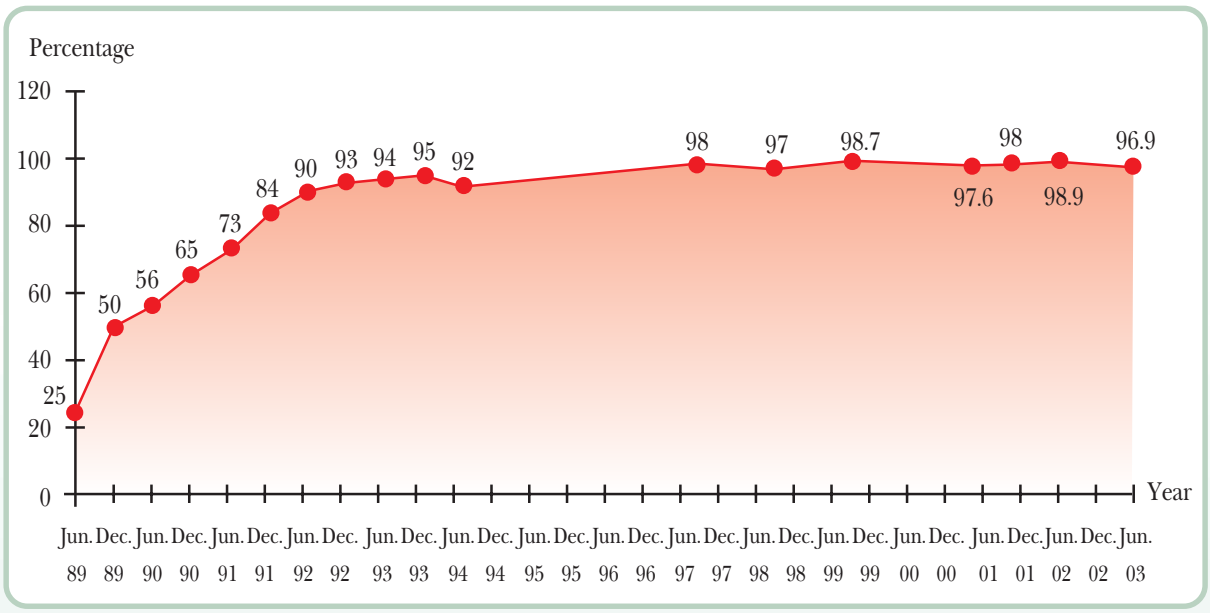
According to Thailand's surveillance of HIV/AIDS risk behaviours in the past nine years (1995-2003), the proportions of military recruits and male industrial workers having sex with CSWs and other women were **declining** except for a slightly rising rate in 2003 (Figures 4.51 and 4.52). The constant condom use rate among military recruits having with CSWs was higher than with other women they superficially know (Figures 4.53 and 4.54). Regarding female industrial workers and pregnant women attending an antenatal clinic (ANC), there was a **reduction** in sexual relations with several partners in the past four years (Figures 4.55 and 4.56). And the rate of constant condom use when having sex was increasing except for 2002 when the rate decreased markedly (Figures 4.57 and 4.56).

For youths, it was revealed that there was an elevation in sexual relations with girlfriends, lovers, close friends and males while the proportion of sexual relations with CSWs and other women was lower (Figure 4.58). They were more likely to use a condom when having sex with CSWs than with other kinds of sex partners (Figure 4.59), which is consistent with the results of Boonyong Kiewkarnka and colleagues' study (2002)[24] which revealed that high-school students (grade 11) had sex mostly with their lovers or boy/girl friends. But they did not like to use condom as they disliked it or it was unpleasurable. However, they constantly used condom when having sex with CSWs as they would be safe from STIs. Besides, a worldwide

[24] Boonyong Kiewkarnka et al. Surveillance of HIV/AIDS Risk Factors in Seven Population Groups in Bangkok, 2002. ASEAN Institute of Health Development, Mahidol University, 2002.

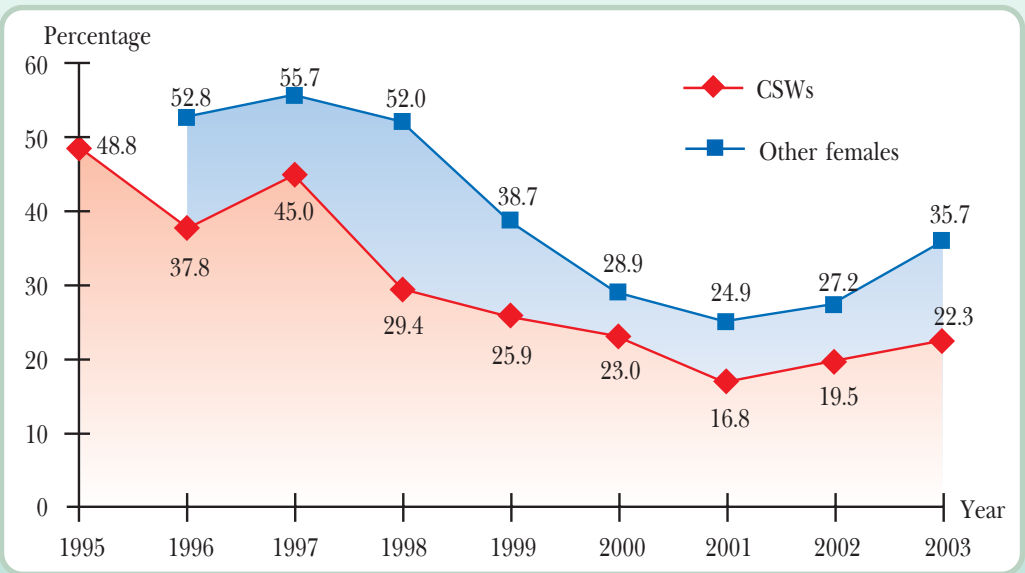
survey [25] revealed that youths had their first sex at age 16 and one youth would have on average five sex partners and totally 89 sexual encounters each year. Among Thai youths who have had sex, it was found that 12% of them never used condoms when having sex with a stranger as they did not have any condom at that time.

**Figure 4.50** Condom Use Rate among Female Commercial Sex Workers, 1989-2003




**Source:** Bureau of Epidemiology, Department of Disease Control.

**Figure 4.51** Proportion of Military Recruits' Sex Partners in the Past Year According to Survey on HIV/AIDS Risk Behaviours in Thailand, 1st-9th Rounds, 1995-2003

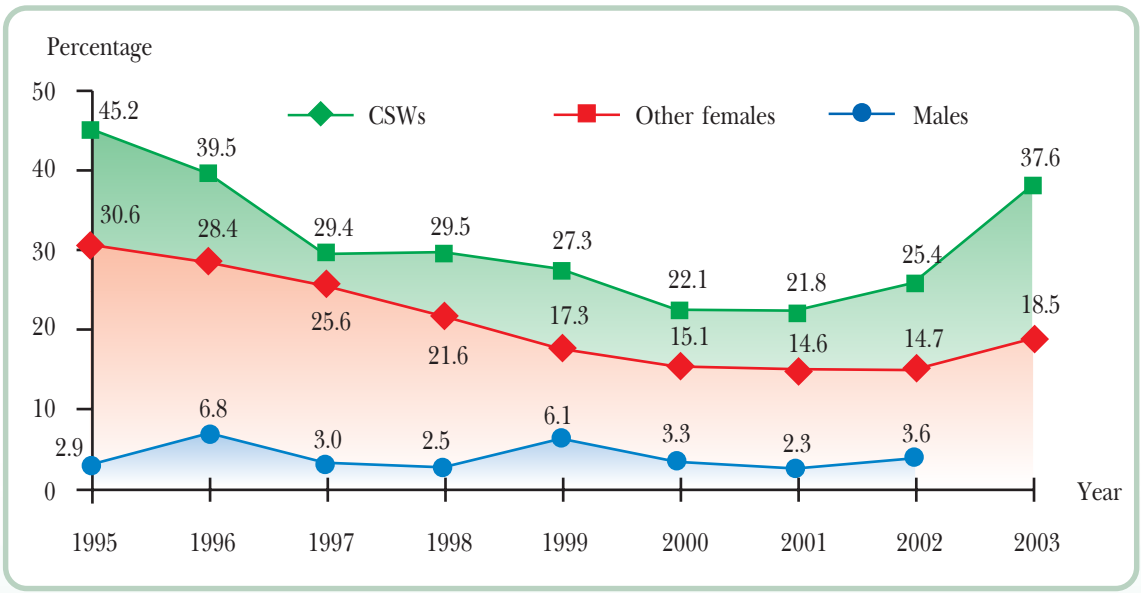



**Source:** Bureau of Epidemiology, Department of Disease Control.

**Note:** The Bureau of Epidemiology deployed the new data analysis method for the 1st-9th rounds of survey (1995-2003).

[25] Survey in 27 countries world wide by the Durex Sex Survey Program, 2002.

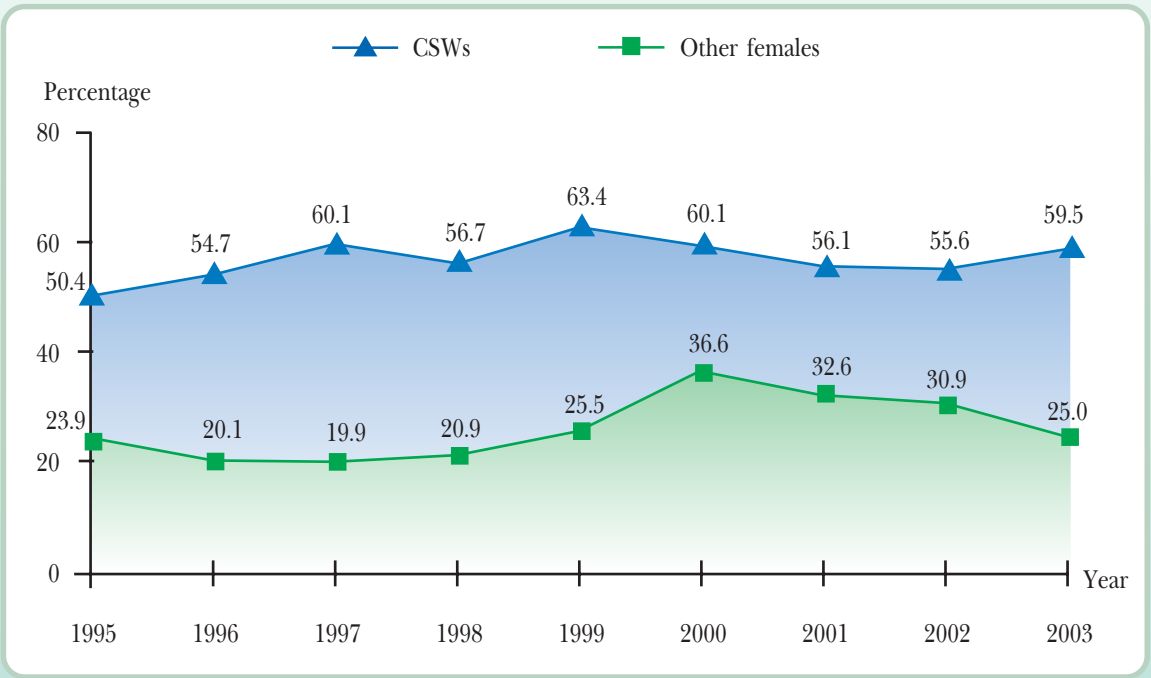
**Figure 4.52** Proportion of Male Industrial Workers' Sex Partners in the Past Year According to Survey on HIV/AIDS Risk Behaviours in Thailand, 1st-9th Rounds, 1995-2003




**Source:** Bureau of Epidemiology, Department of Disease Control.

**Note:** The Bureau of Epidemiology deployed the new data analysis method for the 1st-9th rounds of survey (1995-2003).

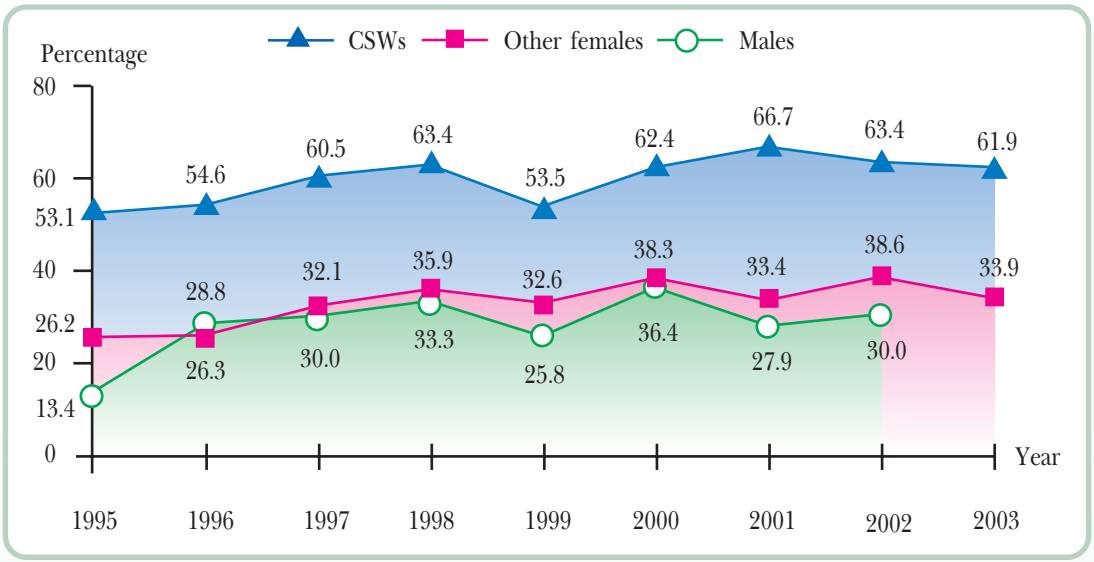
**Figure 4.53** Rate of Constant Condom Use during Sexual Encounters in the Past Year of Military Recruits According to Survey on HIV/AIDS Risk Behaviours in Thailand, 1st-9th Rounds, 1995-2003




**Source:** Bureau of Epidemiology, Department of Disease Control.

**Note:** The Bureau of Epidemiology deployed the new data analysis method for the 1st-9th rounds of survey (1995-2003).

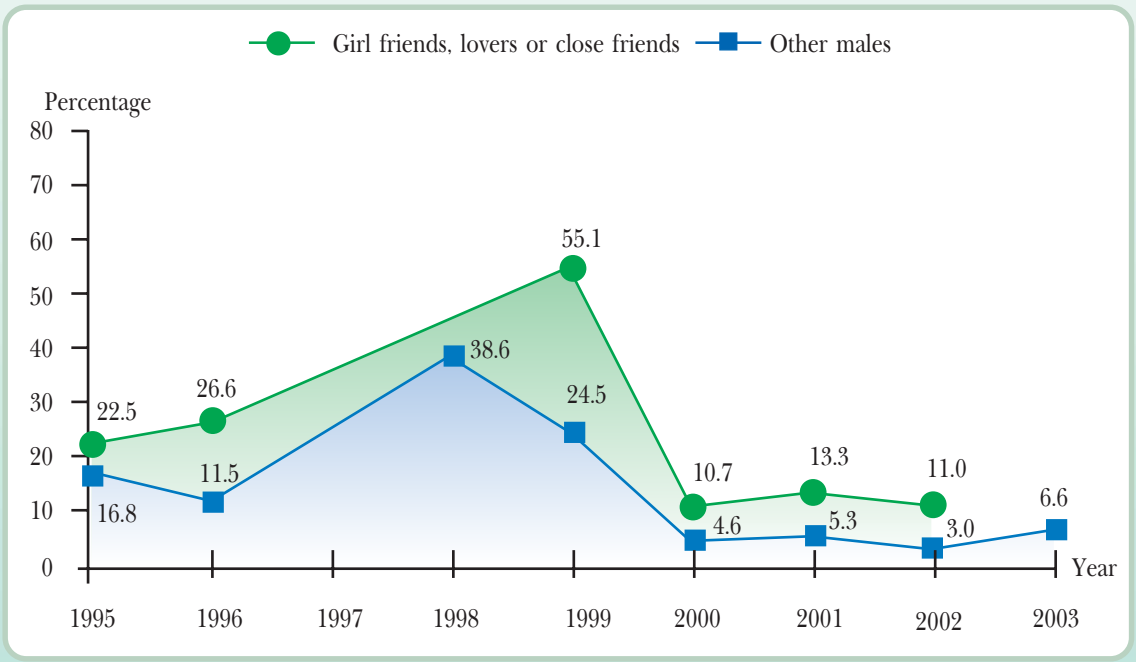
**Figure 4.54** Rate of Constant Condom Use during Sexual Encounters in the Past Year of Male Industrial Workers According to Survey on HIV/AIDS Risk Behaviours in Thailand, 1st-9th Rounds, 1995-2003




**Source:** Bureau of Epidemiology Division, Department of Disease Control.

**Note:** The Bureau of Epidemiology deployed the new data analysis method for the 1st-9th rounds of survey (1995-2003).

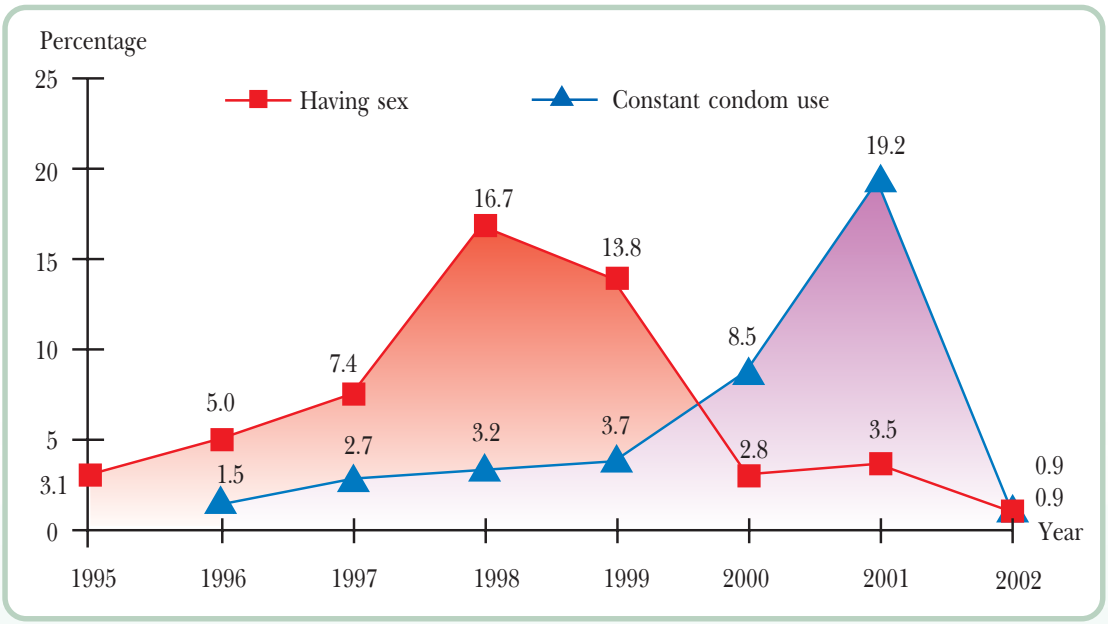
**Figure 4.55** Proportion of Female Industrial Workers Having Sexual Encounters in the Past Year According to Survey on HIV/AIDS Risk Behaviours in Thailand, 1st-9th Rounds, 1995-2003




**Source:** Bureau of Epidemiology, Department of Disease Control.

**Note:** The Bureau of Epidemiology deployed the new data analysis method for the 1st-9th rounds of survey (1995-2003).

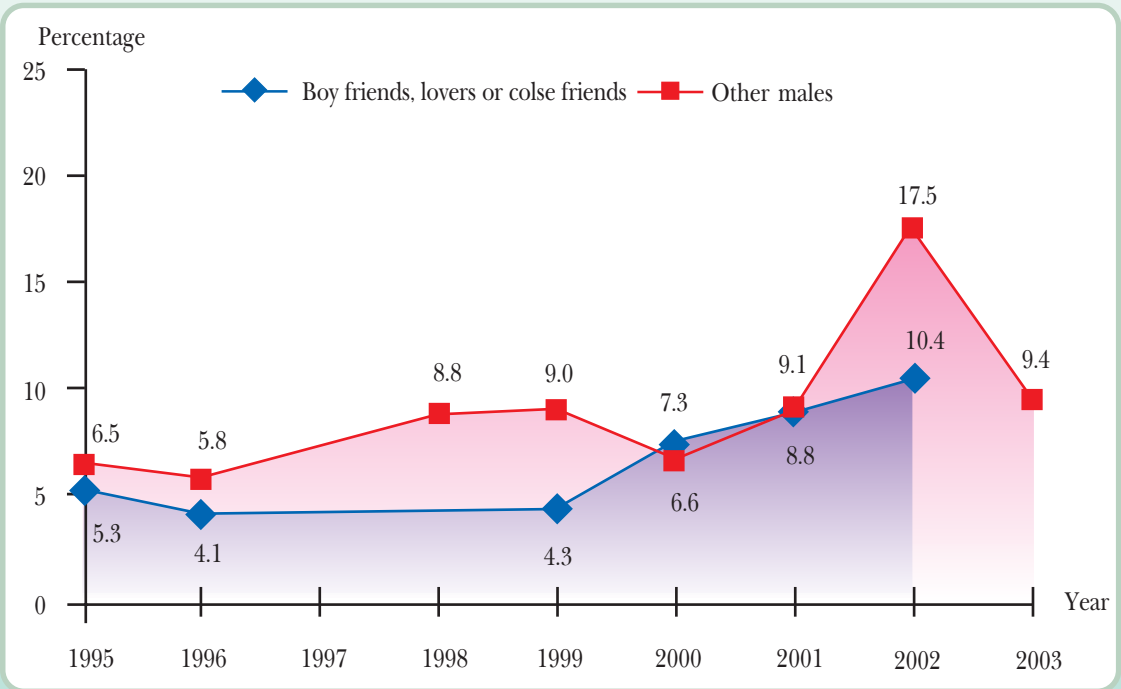
**Figure 4.56** Proportion of Pregnant Women Attending ANC Having Sex with Other Males and Constant Condom Use Rate According to Survey on HIV/AIDS Risk Behaviour in Thailand 1st-8th Rounds, 1995-2002




**Source:** Bureau of Epidemiology, Department of Disease Control.

**Note:** The Bureau of Epidemiology deployed the new data analysis method for the 1st-8th rounds of survey (1995-2002).

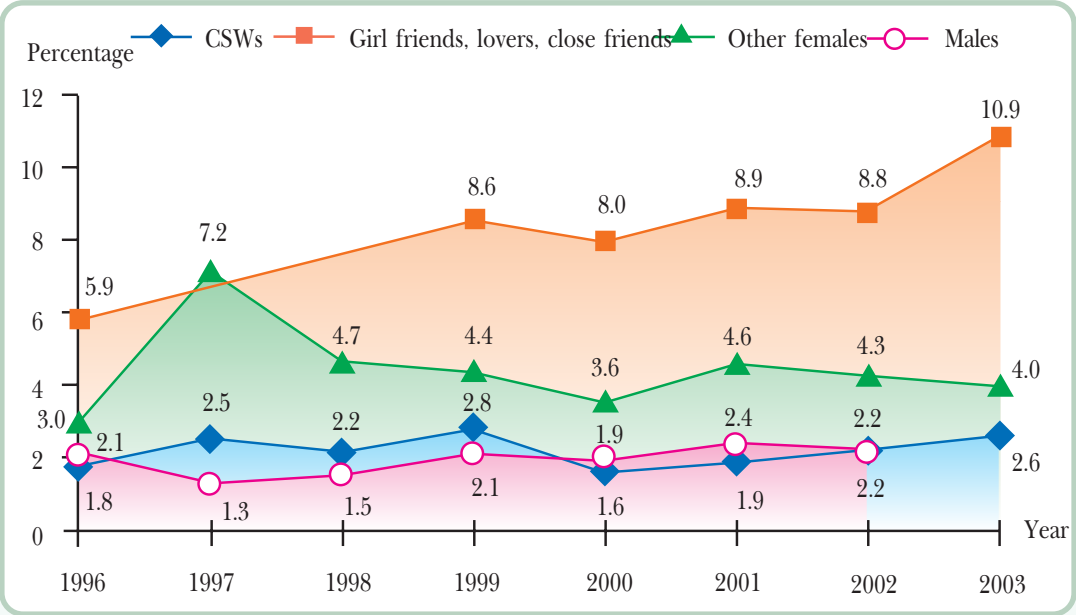
**Figure 4.57** Rate of Constant Condom Use during Sexual Encounters in the Past Year of Female Industrial Workers According to Survey HIV/AIDS Risk 1st-9th rounds, 1995-2003




**Source:** Bureau of Epidemiology, Department of Disease Control.

**Note:** The Bureau of Epidemiology deployed the new data analysis method for the 1st-9th rounds of survey (1995-2003).

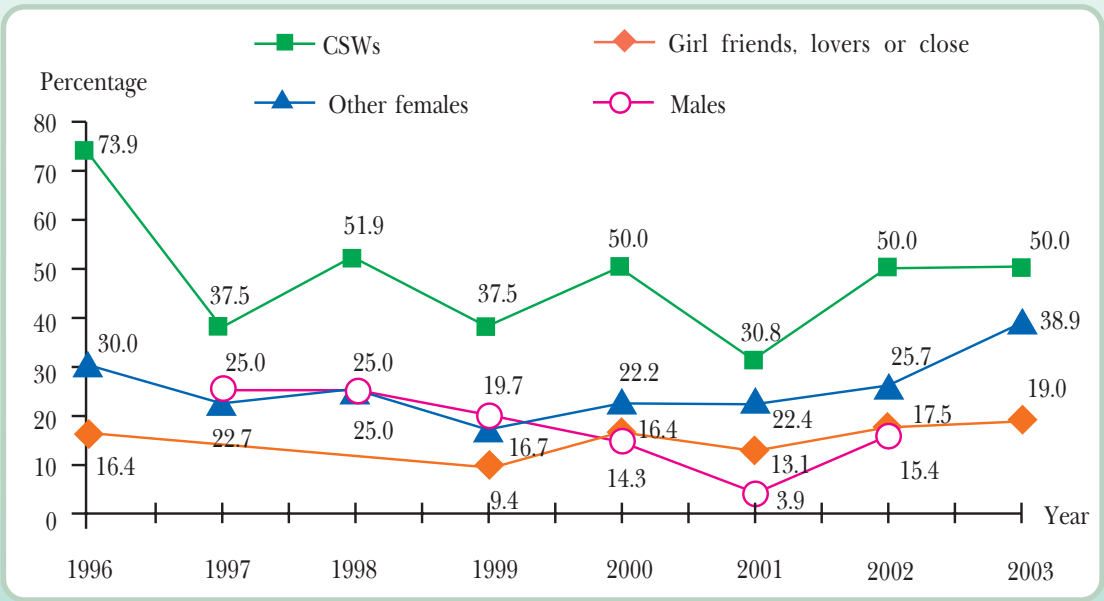
**Figure 4.58** Proportion of Male Secondary School Students (Mathayomsuksa 5 or Grade 11) Having Sex in the Past Year According to Surveys on HIV/AIDS Risk Behaviours in Thailand, 2nd-9th Rounds, 1996-2003




**Source:** Bureau of Epidemiology, Department of Disease Control.

**Note:** The Bureau of Epidemiology deployed the new data analysis method for the 2nd-9th rounds of survey (1996-2003).

**Figure 4.59** Rate of constant Condom Use during Sexual Encounters in the Past Year of Male Secondary School Students (Mathayomsuksa 5 or Grade 11) According to Surveys on HIV/AIDS Risk Behaviours in Thailand, 2nd-9th Rounds, 1996-2003




**Source:** Bureau of Epidemiology, Department of Disease Control.

**Note:** The Bureau of Epidemiology deployed the new data analysis method for the 2nd-9th rounds of survey (1996-2003).

## 10.10 Self-Health Care and Health Care Seeking Behaviours

People's health care seeking behaviours have been changing. Overall, the proportion of people seeking care at public health facilities rose from 15.5% in 1970 to 53.9% in 1996, while the rate of self-medication decreased from 51.4% in 1970 to 17.1% in 1996; and the rate of health care seeking at private clinics and hospitals slightly rose from 22.7% in 1970 to 24.2% in 1996. Nonetheless, after the economic crisis, more people have turned to buying medicine for self-care, climbing from 17.1% in 1996 to 20.9% in 2004, whereas the use of private clinics and hospitals has declined from 24.2% in 1996 to 22.7% in 2003 (Table 4.92).

**Table 4.92** Pattern of Health Care Seeking Behaviours among Thai Population (percent)

| Care or health facility attended | 1970 IPSR | 1979 IPSR | 1985 IPSR | 1991 HWS | 1996 PHS | 1996 HWS | 2001 HWS | 2003 HWS | 2004 HWS |
|---|---|---|---|---|---|---|---|---|---|
| **Both rural and urban areas** | | | | | | | | | |
| Nothing | 2.7 | 4.2 | | 15.9 | 0.5 | 6.9 | 5.4 | 5.9 | 5.3 |
| Traditional care or others | 7.7 | 6.3 | 2.4 | 5.7 | 4.2 | 2.8 | 2.5 | 2.9 | 4.4 |
| Self-medication | 51.4 | 42.3 | 28.6 | 38.3 | 17.1 | 37.9 | 24.2 | 21.5 | 20.9 |
| Health centres | 4.4 | 16.8 | 14.7 | 14.8 | 34.5 | 20.8 | 17.4 | 23.9 | 24.6 |
| Public hospitals | 11.1 | 10.0 | 32.5 | 12.9 | 19.4 | 12.9 | 34.8 | 33.1 | 30.2 |
| Private clinics/hospitals | 22.7 | 20.4 | 21.8 | 12.4 | 24.2 | 18.7 | 15.0 | 19.4 | 22.7 |
| **Rural areas** | | | | | | | | | |
| Nothing | | | | 15.6 | 0.4 | 6.7 | 5.8 | 6.0 | 5.0 |
| Traditional care or others | | | | 5.8 | 6.2 | 2.5 | 2.6 | 3.0 | 4.4 |
| Self-medication | | | | 38.6 | 11.6 | 38.4 | 22.1 | 19.9 | 18.7 |
| Health centres | | | | 17.0 | 49.6 | 24.6 | 22.3 | 29.5 | 30.8 |
| Public hospitals | | | | 12.8 | 20.0 | 13.8 | 35.2 | 34.4 | 31.0 |
| Private clinics/hospitals | | | | 10.2 | 12.3 | 14.0 | 11.4 | 15.4 | 19.5 |
| **Urban areas** | | | | | | | | | |
| Nothing | | | | 17.9 | 0.7 | 7.5 | 4.4 | 5.4 | 6.1 |
| Traditional care or others | | | | 4.7 | 1.3 | 4.3 | 2.1 | 2.6 | 4.7 |
| Self-medication | | | | 36.9 | 25.2 | 36.0 | 29.4 | 25.6 | 27.0 |
| Health centres | | | | 2.7 | 12.8 | 3.5 | 5.5 | 9.6 | 7.1 |
| Public hospitals | | | | 13.1 | 18.5 | 8.9 | 33.9 | 30.2 | 28.3 |
| Private clinics/hospitals | | | | 24.7 | 41.6 | 39.8 | 24.0 | 29.8 | 32.0 |

**Sources:** 1. IPSR: Institute for Population and Social Research, Mahidol University, 1988.
2. HWS: Health and Welfare Surveys, NSO, 1991, 1996, 2001, 2003 and 2004.
3. PHS: Provincial Health Survey, BHPP, 1996.

**Notes:** 1. Different definitions of illness in different sources.
2. More than one answers could be mentioned.

Health promotion and disease prevention services are part of the policies under the Universal Coverage of Healthcare (30-baht healthcare) Scheme. According to the 2003 survey conducted by the National Statistical Office, 5.3% of all population used health promotion services (Table 4.93).

**Table 4.93** Percentage of Population Using Health Promotion Services, 2003

| Use, non-use, and type of services | Total | Males | Females |
|---|---|---|---|
| Use of services | 5.3 | 4.0 | 6.7 |
| Non-use of services | 94.7 | 96.0 | 93.3 |
| **Type of services used** | | | |
| Immunization | 33.2 | 45.6 | 26.0 |
| Antenatal care | 7.1 | - | 11.3 |
| Family planning | 2.6 | 0.5 | 3.8 |
| Post-natal care | 3.6 | - | 5.6 |
| Health checkups | 33.5 | 32.2 | 34.3 |
| Dental care | 8.1 | 8.8 | 7.7 |
| Other services | 11.9 | 12.9 | 11.3 |

**Source:** Report on Health and Welfare Survey, 2003. National Statistical Office.

Regarding types of services, one-third of the clients came for health checkups and immunization (33.5% and 33.2%, respectively; Table 4.93). As for health facilities, one-third attended rural or urban health centres (34.2%), followed by community hospitals (28.7%), and general/regional hospitals (11.3%; Table 4.94).

**Table 4.94** Percentage of Population Using Health Promotion Services by Type of Health Facility, 2003

| Health facility | Total | Males | Females |
|---|---|---|---|
| Drugstores | 0.3 | 0.2 | 0.3 |
| Health centres | 34.2 | 36.5 | 32.9 |
| Community health centres | 1.2 | 1.0 | 1.3 |
| State-run hospitals | 47.2 | 47.5 | 47.1 |
| - Community hospitals | 28.7 | 30.2 | 27.8 |
| - General/regional hospitals | 11.3 | 10.6 | 11.8 |
| - University hospitals | 0.9 | 1.0 | 0.8 |
| - Other public hospitals | 6.3 | 5.7 | 6.7 |
| Private clinics | 9.2 | 7.4 | 10.2 |
| Private hospitals | 6.0 | 5.0 | 6.6 |
| Others | 1.9 | 2.4 | 1.6 |

**Source:** Report on Health and Welfare Survey, 2003. National Statistical Office.