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A BACKGROUND PAPER

ON

SRI LANKA'S HEALTH SECTOR

PREPARED BY:

LOUISE B. WISE

DIVISION OF PROGRAM ANALYSIS
OFFICE OF INTERNATIONAL HEALTH
U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

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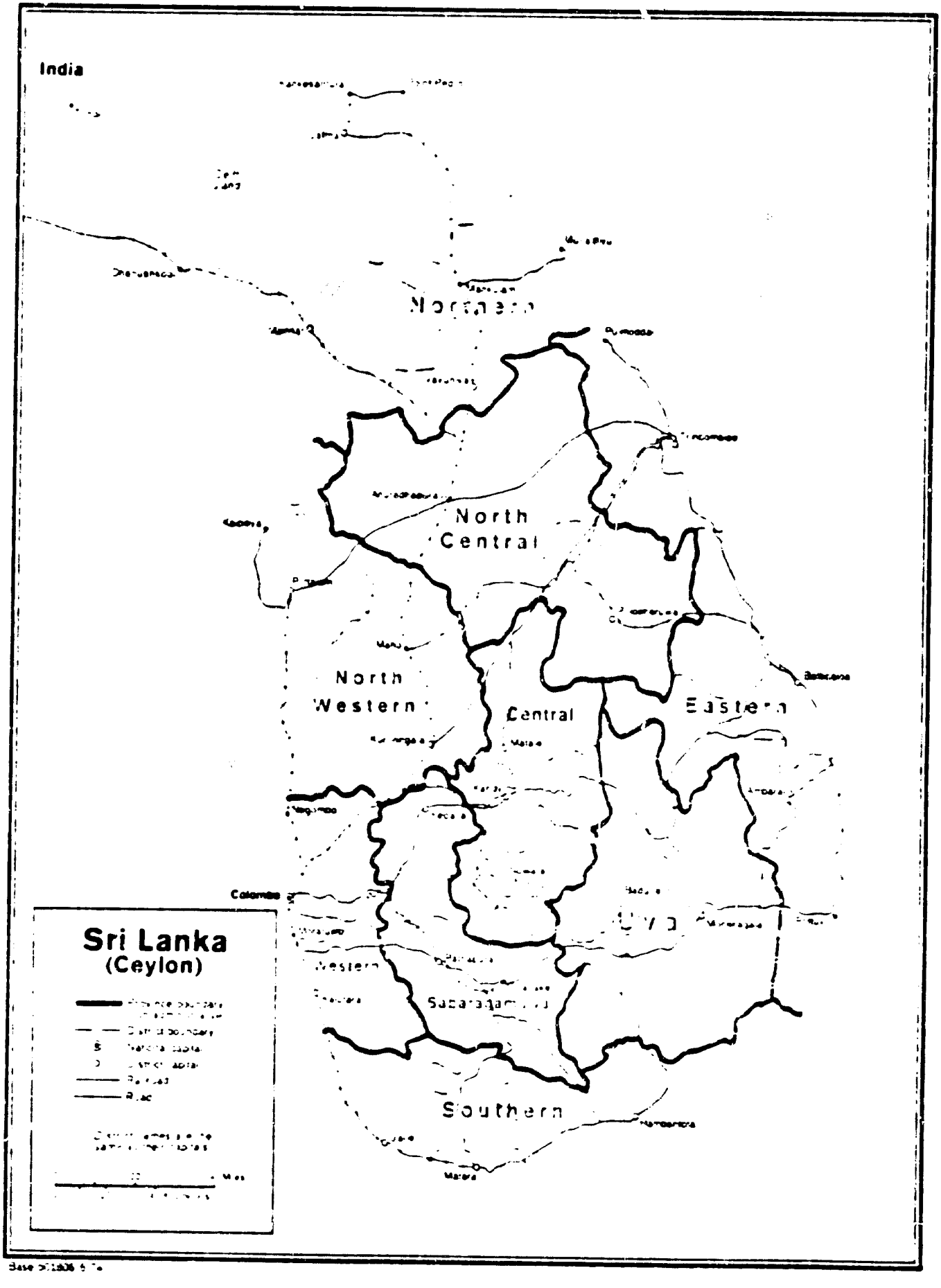
India
Northern
North Central
North Western
Central
Eastern
Colombo
Sri Lanka
(Ceylon)
Southern

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FOREWORD

This background paper on Sri Lanka's[1] health sector was requested by the Population, Health and Nutrition Division, Office of Technical Resources, Bureau for Asia, U.S. Agency for International Development (AID). It was developed at the Office of International Health (OIH), U.S. Department of Health, Education, and Welfare, under an interagency agreement funded by the Office of Health of AID's Development Support Bureau. It was drafted as a "shelf study," using sources available in the Washington, D.C. area and expanded upon after a short trip to the field to gather additional information. The presentations in the paper all are based on published materials and personal briefings. No data were generated specifically for this document

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[1] In order to avoid confusion while reading this document, one must note that prior to 1972 the Republic of Sri Lanka was known as Ceylon. On May 22, 1972, the Ceylonese adopted a new Constitution which declared Ceylon to be the Republic of Sri Lanka. Hence, the Government of Sri Lanka is referred to as such consistently throughout the body of this paper, with the terms Sri Lankan or Ceylonese being used interchangeably to describe the population. However, when citing Government documents, and/or programs designated with titles prior to 1972, the name "Ceylon" is kept, e.g., in referring to the Government of Ceylon, Five Year Plan for 1972-76, or an action of the Ceylon Medical Association of 1971.

nor was there extensive analysis performed on existing data. Both of these activities were outside of the scope of the project.

The paper attempts to describe the major problem areas in, and infrastructure of, Sri Lanka's health sector, the efforts of the Sri Lankan Government to deal with them, and the related assistance activities of international agencies. The paper does not contain a general introduction to Sri Lanka -- there are many books which do this -- nor does it contain specific programmatic recommendations for AID projects. Its purpose rather is to provide background information which will facilitate the project development process. Its value lies in its: summarizing in one document information that otherwise only can be obtained by consulting a great many sources; highlighting areas of intervention in the health system of the country which will contribute to socio-economic development; and, providing a standardized resource for the study of comparative health systems.

Statistical Profile of Sri Lanka (1978)

Population in millions (1978 estimate)	14.2
Population Distribution	
Rural	78%
(millions)	(11.1)
Urban	22%
(millions)	(3.1)
Density per Square Mile (persons)	529
Population under 15 years	39%
Population over 65 years	4%
Crude Birth Rate (per 1,000 population)	28
Crude Death Rate (per 1,000 population)	8
Infant Mortality Rate (per 1,000 live births)	44
Maternal Mortality Rate (per 1,000 live births)(1974)	1.0
Net Migration (1976)	-3.7
Annual Rate of Natural Increase	2%
Life Expectancy at Birth (years)	68
Population Projection to year 2000 (millions)	20.4
Number of Years to Double Population at current population growth rate	34.5
Per Capita GNP (US Dollars)	200
National Literacy Rate	78.5%
Rural	76.2%
Urban	86.2%
Number of Doctors (1977)	4,427[a]
Population per Doctor (1977)	3,156
Doctors per 10,000 Population (1977)	3.17

Statistical Profile (Cont'd)

Number of Nurses/Midwives (1977)	
(a) Professional	6,022
(b) Auxiliary (including midwives)	3,482
Population per Nurse/Midwife (1977)	
(a) Professional	2,320
(b) Auxiliary	4,012
Nurses/Midwives per 10,000 Population (1977)	
(a) Professional	4.31
(b) Auxiliary	2.49
Number of Hospital Beds (1976)	41,051
Population per Hospital Bed (1976)	334
Hospital Beds per 10,000 Population (1976)	29.90
Number of Health Centers (1971)	1,369
Health Expenditure as Percent of Total Expenditure (1975)	4.6
Per Capita Health Expenditure in Rupees	
(a) Government (1976)	29.79
(b) Private (1973)	14.64
Nutrition	
Per Capita Calorie Intake (% of daily requirement of 2,200 calories per day)	
Rural	89%
Estate[b]	77%
Urban (low income)	77%
Per Capita Protein Supply or Intake/Consumption (% of daily requirement of 48 grams per day)	
Rural	77%
Estate	77%
Urban	77%
Labor Force Engaged in Agriculture	
Traditional Agriculture	29%
Public Estate Plantations	20%
Unemployment Distribution	
Rural (as percentage of total unemployed)	77%
Estate	6%
Urban	17%

Statistical Profile (Cont'd)

Average Age at Marriage (1971)	
Male	28.0
Female	23.5
Access to Piped Water	
Rural	4.8%
Estate	24.8%
Urban	45.3%
Homes Connected to Electricity	
Rural	2.8%
Estate	4.1%
Urban	34.5%

---

[a] This figure includes approximately 1200 doctors in the private sector and 1059 Registered Medical Practitioners (RMPs).

[b] Estate - The estate population consists of those persons who live and work on the tea and rubber plantations in Sri Lanka.

Source: Population Reference Bureau, Inc., 1978 World Population Data Sheet, Washington, D.C., 1978; USAID, Annual Budget Submission, 1978, Sri Lanka, Washington, D.C., Department of State, May 1978, Annexes B and C; Health Statistics Division, Ministry of Health, Government of Sri Lanka; Basic Information Relating to Health, Regional Office for South-East Asia, World Health Organization, SEA/VHS/162. Rev. 2, July 1978.

I. POPULATION PROFILE

A. Introduction

Sri Lanka, an island 18 miles southeast of the Indian subcontinent, has an area of 25,332 square miles and an estimated population of 14.2 million (mid-1978).[1] Comparable in size to the State of West Virginia, Sri Lanka has a population density of 529 persons per square mile. Map 2 shows the geographical density of the population as of 1971. As can be seen from the map, the distribution of people over the island is not uniform -- during the last five to six centuries it has been weighted toward the southwest quarter where, historically, agricultural conditions have been most favorable with the use of traditional technology. Colombo, the capital city, is located in this heavily populated region. It has about 900,000 inhabitants.[2]

Sri Lanka has a predominantly agricultural economy. Seventy-eight percent, or approximately 11 million people live in

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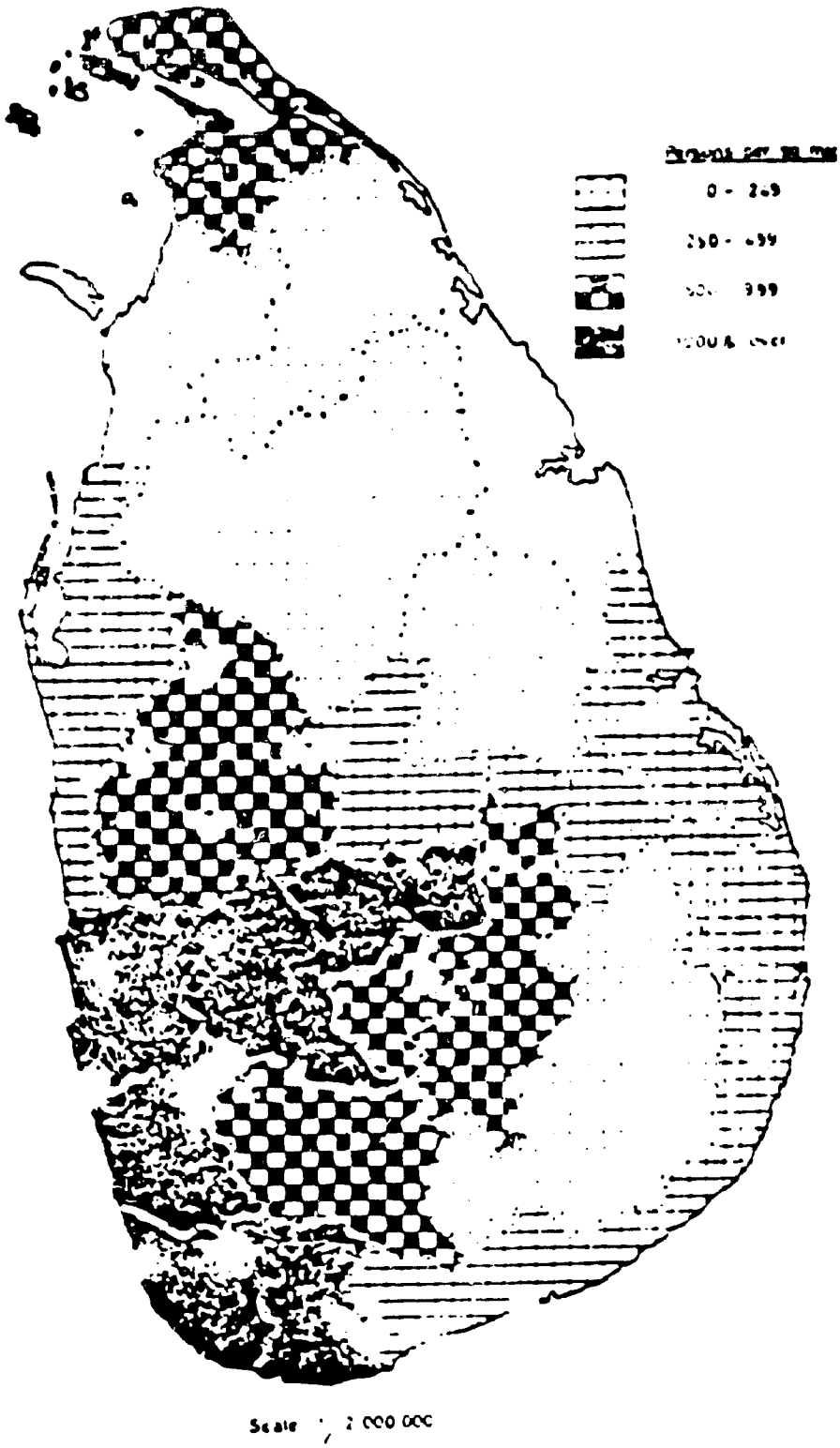
[1] Population Reference Bureau, 1978 World Population Data Sheet, Washington, D.C.: Population Reference Bureau, March 1978.

[2] Department of State, Background Notes, Sri Lanka, Washington, D.C.: U.S. Government Printing Office, December 1976, p. 3.

Map 2

Density of Population in Sri Lanka, 1971



Source: Eugene J. Gerberg and Henry Wilcox. Environmental Assessment of Malaria Control Project - Sri Lanka. Baltimore, Md.: Insect Control and Research, Inc., August 197[illegible], p. 18.

rural areas throughout the island, producing the major exports of tea, rubber and coconuts.[3] Table I-1 shows the population distribution in urban and rural areas of Sri Lanka in 1946 and 1971. There has been an increase in the overall rural population since the 1940's probably due to the influx of immigrant estate laborers.[4]

B. Population Dynamics

Health indicators such as crude death rates, infant mortality rates, and life expectancy, show Sri Lanka to be fairly developed in its health sector relative both to its own *per capita* income and to the rest of the developing world. With a *per capita* gross national product of $200, an infant mortality rate of 44 per 1000 live births, a crude death rate of eight per 1000 population and a life expectancy at birth of 68 years,[5] a recent World Bank Report stated, "Sri Lanka has about one and one-half times the life expectancy, one quarter the infant mortality and half the birth rate that would be expected at its *per capita* income level."[6]

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[3] *1978 World Population Data Sheet.*

[4] Richard F. Nyrop, *Area Handbook for Ceylon,* Washington, D.C.: American University, 1971, p. 67.

[5] See Statistical Profile of Sri Lanka (1978), enclosed.

[6] USAID, *Annual Budget Submission, FY 1980, Sri Lanka and Annexes A & C*, Washington, D.C.: Department of State, May 1978, p. 1.

Table I-1

The Shares of Urban and Rural Population By District (Percent)

District	1946		1971	
	Urban	Rural	Urban	Rural
Colombo	50.5	49.5	54.4	45.6
Kalutara	20.0	80.0	22.1	77.9
Kandy	11.0	89.0	12.3	87.7
Matale	11.4	88.6	11.9	88.1
Nuwara Eliya	5.0	95.0	4.8	95.2
Galle	19.7	80.3	21.4	78.6
Matara	12.0	88.0	11.5	87.5
Hambantota	10.8	89.2	9.8	90.2
Jaffna	29.5	70.5	32.9	67.1
Mannar	15.4	84.6	14.4	85.6
Vavuniya	31.5	68.5	21.6	78.4
Batticaloa	29.5	70.5	27.0	73.0
Amparai	11.5	88.5	11.6	88.4
Trincomalee	64.5	35.5	39.7	60.3
Kurunegala	4.4	95.6	4.2	95.8
Puttalam	12.5	87.5	13.6	86.4
Anuradhapura	14.4	85.6	10.3	89.7
Polonnaruwa	11.2	88.8	10.8	89.2
Badulla	6.0	94.0	8.3	91.7
Moneragala	1.5	98.5	2.2	97.8
Ratnapura	5.3	94.7	7.2	92.8
Kegalle	4.6	95.4	7.0	93.0
Sri Lanka	21.3	78.7	22.3	77.7

Source: Marga Journal, Vol. 2. No. 1, 1973. "The Rural-Urban Balance and Development: The Experience in Sri Lanka" in: Participatory Development and Dependence, The Case of Sri Lanka, Colombo: The Marga Institute, Oct. 77, Table 2-6.

1. Births

The island's population has grown at a very rapid rate, almost quadrupling since the turn of the century. The first island-wide census was taken in 1871; registrations of births and deaths had begun in 1867. The population, as of the first census, was listed as 2.8 million. It is generally felt that the figures for births and deaths in the early censuses were under-numerations, particularly the listings of female births. This was attributed to low status of women and statistical error associated with low literacy levels. Beginning in 1893 penalties were imposed on people failing to report births and deaths. This increased the reliability of the statistics.[7]

The current annual rate of natural increase is two percent. At such a rate of growth it is expected that the population of Sri Lanka will double in less than 35 years, with a projection for the year 2000 of 20.4 million people.[8]

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[7] Richard F. Nyrop, p. 66.

[8] 1978 World Population Data Sheet.

Although over the past few decades the steep drop in mortality rates (effected largely by malaria eradication efforts in the mid-1940s[9]) has resulted in rapid population growth, the crude birth rate has been consistently declining, and Sri Lanka has now reached the critical point of demographic transition. The crude birth rate has fallen from 39.8 per thousand in 1951 to 28 per thousand in 1978. It is anticipated that the rates of natural increase will begin to decline in the long term, in both urban and rural areas of Sri Lanka.[10]

There are several possible explanations for the declining birth rates and consequent drop in the rate of natural increase in Sri Lanka. One of the classical arguments cited to effect lowering of birth rates is the reduction in infant mortality. The fact that fewer babies are dying may affect family size, but the more likely reasons for a drop in birth rates in Sri Lanka are rampant unemployment, a rising age at marriage, and a drop in

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[9] Richard Nyrop, p. 65.

[10] Marga Institute, Participatory Development and Dependence, The Case of Sri Lanka, Colombo: The Marga Institute, Oct, 1977, p. 5.

marital fertility.

The economic situation in Sri Lanka is very serious, complicated by the existence of a surfeit of university-educated young adults who cannot find appropriate jobs and refuse to accept menial work. The unemployment rate among young people with university educations is thought to be more than 50 percent. Overall, approximately 20 percent of the population is unemployed. The dim prospect of getting jobs and being able to support a family interferes with plans for marriage and raising children. A young woman will seldom marry until her fiance secures a job, hence she may spend most of her twenties "biding her time" before she can marry and bear children.[11]

Nearly everyone in the country marries eventually but the average age at marriage has risen since the turn of the century. In 1901 the average age at which women married was 19.4 years. In contrast, in 1970 the average age at marriage for women was 23, that for men 28 years of age.[12] While part of the reason for this may be poverty and unemployment, another factor in the rising age at marriage

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[11] Extracted from conversation with Dr. Hiranthi Wijemanne, UNICEF, Colombo.

[12] Richard F. Nyrop, pp. 70-71.

is that the young people increasingly seek a university education and attend post-graduate programs and, thus, choose to postpone marriage and children until they have finished. Postponement of marriage to a later age, for a variety of reasons, has tended to depress the birth rate in Sri Lanka.

There is also concrete evidence of a decline in marital fertility in Sri Lanka. The total fertility rate for all age groups fell from 5.04 in 1963 to 4.22 in 1971. This indicates a 16.3 percent change over this time period.[13]

2. Deaths

The life expectancy and mortality rates in Sri Lanka may be compared favorably with other countries as seen in Table I-2. Life expectancy has risen from an approximate 42 years in 1946 to 68 years in 1978. It has remained relatively constant during the 1970's.[14] With the exception of Singapore, Sri Lanka's indicators reveal a higher health status than any other developing Asian country despite the fact that some of the other countries enjoy per capita

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[13] Participatory Development and Dependence, The Case of Sri Lanka, pp. 5-6.

[14] See Statistical Profile of Sri Lanka (1978, enclosed).

TABLE I-2

DEATH RATES AND LIFE EXPECTANCY OF SOME ASIAN COUNTRIES

COUNTRY	Deaths per 1000 Population, 1972	Life Expectancy at Birth, 1972 (Years)
Bangladesh	18	53
India	15	51
Nepal	22	43
Pakistan	16	54
Sri Lanka	8	65
Indonesia	18	48
Republic of Korea	9	64
Malaysia	10	60
Philippines	11	59
Singapore	5	70
Thailand	11	62

Source: "In Search of Population Policy. Views from the Developing World," National Academy of Sciences, in Participatory Development and Dependence, The Case of Sri Lanka, Colombo: The Marga Institute, October 1977, Table 2-15.

incomes that are twice to three times that of Sri Lanka. India and Pakistan, with comparable per capita incomes, have a life expectancy which is one-fifth to one-fourth lower than that of Sri Lanka.[15]

An interesting comparison can be drawn between Sri Lanka and Washington, D.C. Despite similar life expectancy at birth, in Washington the infant mortality rate of 25 is slightly over half that of Sri Lanka's 44 per 1000 live births and directly related to widely varying living standards.[16]

After rapid improvement over time, the death rates in Sri Lanka are beginning to level off. In 1945 Sri Lanka had a death rate of 21.5 per 1000 and an infant mortality rate of 140 per 1000. Though current figures are one-half to one-third what they were 30 years ago, they have changed little over the last 10 years.[17]

Sri Lanka is unusual in that the health profile depicted at the national level is by and large free from wide regional variations. Table I-3 lists crude birth and

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[15] Participatory Development and Dependence, The Case of Sri Lanka, pp. 3-4.

[16] Davidson, Gwatkin, Unpublished article.

[17] See Statistical Profile of Sri Lanka (1978) enclosed.

Table I-3

Crude Birth and Death Rates, by Districts, 1971

District	Crude Birth Rate (per 1,000 population)	Crude Death Rate (per 1,000 population)
Group A:		
Colombo	28.2	8.2
Kalutara	25.8	6.9
Galle	25.0	7.0
Matara	31.5	7.1
Group B:		
Kandy	31.0	9.2
Nuwara Eliya	32.2	11.6
Kegalle	23.1	6.6
Group C:		
Matale	31.0	7.9
Kurunegala	29.8	6.1
Ratnapura	30.6	8.0
Puttalam/Chilaw	33.8	7.1
Badulla	34.8	8.0
Group D:		
Jaffna	29.5	8.0
Group E:		
Hambantota	31.1	6.1
Mannar	34.7	7.6
Vavuniya	37.9	5.8
Batticaloa/Amparai	38.3	8.3
Trincomalee	36.2	5.9
Anuradhapura/Polonnaruwa	33.5	5.5
Total:	30.1	7.7

Source: Asian Population Studies No. 23, page 27, in: Participatory Development and Dependence, The Case of Sri Lanka, Colombo: The Marga Institute, Oct. 77, Tables 2-3a, 2-3b.

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seven percent population growth rate, attributable to immigration rather than any real growth in the rate of natural increase.[19] By the 1940's immigration and emigration had almost equalized; there was even a net flow of migration outward. By this time there were approximately one million Indian Tamils living on estates in Sri Lanka. The plantations could not provide work for all of the young people entering the labor force and it was impossible for them to secure outside employment.

Stemming from concern over their burgeoning numbers, in 1948 nine-tenths of the Indian Tamil immigrants were disenfranchised through legislation passed by the Government of Sri Lanka. As India refused to recognize the Tamils as her citizens, they were left stateless. Finally an agreement was concluded on October 30, 1964 providing Indian citizenship for 525,000 of the Indian Tamils and their offspring, over a period of 15 years, and Sri Lankan citizenship to another 300,000 during the same period. The fate of a remaining 150,000 was left undecided. In April of 1973 both countries agreed to increase repatriation by 10 percent each year. In February 1974 the remaining 150,000

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[19] Richard F. Nyrop, p. 67.

persons, whose status had never been determined in 1964, were divided equally between the two countries.[20]

Currently, the net flow of migration in Sri Lanka is -3.7 per 1000 persons. In other words, almost four out of every 1000 people are leaving the country (above those that are immigrating).[21] A large segment of this figure is accounted for by the repatriation of Indian Tamils; the remainder is thought to consist of professionals, like doctors, lawyers and other university-educated Sri Lankans, and, in the last two to three years, significant numbers of skilled workers, e.g., carpenters, bricklayers, bus drivers, and electricians, who are leaving their country due to rampant unemployment and the absence of suitable positions for them.

Internal migration is also a factor of consideration in the population dynamics of Sri Lanka. The greatest in-country migration occurs to the districts of Colombo, Anuradhapura, Monaragala, Polonnararuwa, Trincomalee, Vavuniya, Puttalam, Batticaloa and Mannar, in descending order. This shows a tendency of movement of persons from

---

20 Department of State, Background Notes, Sri Lanka, p. 3.

21 Statistical Profile of Sri Lanka, 1978, enclosed.

the densely populated wet zone to comparatively sparsely populated dry zone districts -- a trend which, no doubt, is encouraged by the resettlement areas being provided as part of the Mahaweli Development Scheme. The exception to this pattern of migration from wet zone areas to dry zone areas is seen in the significant in-migration to Colombo district.[22] The flow of people into Colombo is understandable given that it is the capital of the country.

C. Population Characteristics

1. Ethnic Composition

The current population of Sri Lanka is comprised largely of Sinhalese and the balance of Tamils, of Indian and Sri Lankan origin.[23] Table I-4 shows the composition of the population of Sri Lanka by ethnic group. The population is distributed over the island quasi-regionally according to ethnicity. The Sinhalese are divided into the "lowland Sinhalese," who occupy the southwestern coastal segment of the country, and the "upland" or "Kandyan" Sinhalese who are

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[22] Selected International Organzational Sources.

[23] Richard F. Nyrop, p. 66.

Table I-4

Population Composition of Sri Lanka by Ethnic Group, 1971

Ethnic Group	Percentage of Population
Sinhalese	72.0
Sri Lanka Tamils	11.2
Indian Tamils	9.3
Sri Lanka Moors	6.5
Indian Moors	0.2
Burghers and Eurasians	0.4
Malays	0.3
Others	0.1
TOTAL	100.00

Source: Unpublished materials from the Ministry of Health, Government of Sri Lanka.

found in the hilly interior. The more northern regions of the island, typically less populated, have undergone development for tea and rubber estates during the last 80 years and are populated by immigrant and semi-immigrant laborers, the majority of whom are Indian Tamils. The Sri Lanka Tamils (whose ancestors have lived in Sri Lanka for many years and who have full voting rights) live predominantly in the northern and eastern provinces.[24]

2. Religion

Buddhism, in the Theravada form, is the most widely professed religion in Sri Lanka. The majority of Buddhists are Sinhalese, and, in 1971, constituted 67.3 percent of the population. The Tamils are believers in Hinduism. Hindus comprised 17.6 percent of the population as of 1977. Islam is the religion of the Moors and Malays. They make up 7.1 percent of the total population. Christianity cuts across ethnic lines and claims some 900,000 followers, most of whom are Roman Catholic.[25] There is a strong link between ethnicity and religion in Sri Lanka. The Sinhalese are

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[24] Background Notes, Sri Lanka, p.3.

[25] Compilation of various international organizational sources.

predominantly Buddhist, the Tamils largely Hindu and the Moors exclusively Muslims. The balance between the two main ethnic/religious groups, the Sinhalese/Buddhists and the Tamils/Hindus, has to be conscientiously maintained to ensure internal harmony.

3. Age-Sex Distribution

Sri Lanka, like many developing countries, is composed of a relatively young population. Table I-5 gives 1974 mid-year estimates of the population by age and sex. There are fewer reported females in Sri Lanka, but the population pyramid is approximately symmetrical for the two sexes. There are, however, a disproportionate amount of infants and children in Sri Lanka relative to the numbers of adults; hence the population distribution by age is clearly triangular. Thirty-nine percent of the people of Sri Lanka are under the age of 15. The corresponding percentage in the developed countries is much lower, ranging from 22-30 percent. Persons of working age, 15 to 64 years, constitute only 57 percent of the total population; thus, the dependency ratio (that of children and dependent adults to economically active adults) is relatively high.[26]

[26] Ministry of Planning and Employment, The Five Year Plan, 1972-76, Colombo: Government of Ceylon, November 1971, p. 121.

Table I-5

Population by Age and Sex 1974 Mid-Year Estimates
(thousands)

Age Group	Male	Female	Total
All ages	6,876	6,567	13,393
0-4	936	908	1,845
5-9	889	862	1,752
10-14	843	807	1,650
15-19	743	723	1,466
20-24	628	626	1,254
25-29	501	502	1,003
30-34	411	340	855
35-39	369	349	718
40-44	335	304	639
45-49	298	260	558
50-54	246	214	460
55-59	202	169	731
60-64	164	133	296
65-69	130	104	234
70-74	94	74	168
75+	86	82	168

Source: Statistical Pocket Book of the Republic of Sri Lanka (Ceylon), Dept. of Census and Statistics, Colombo, Sri Lanka, 1975. p. 11.

The Government of Sri Lanka has devoted much attention to the problem of population growth. In the 1972-76 Five Year Plan, the Government of Sri Lanka emphasized the grave implications of unchecked population growth and called for renewed emphasis on family planning coverage. The Government of Sri Lanka recognizes that a large number of children dependent on the working population is a distinct disadvantage to their economic development efforts and has accepted considerable United Nations (U.N.) assistance and bilateral aid from Sweden to increase family planning service availability.[27]

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[27] Ibid.

II. HEALTH STATUS

A. Morbidity and Mortality

Evaluation of changes in health status over time indicate a reduction in the incidence of fatal and non-fatal but disabling diseases since World War II as a result of preventive and curative medical services and programs sponsored by the Government of Sri Lanka.[1] The overall mortality rate is eight per 1,000 population and the principal causes of death and illness are: cardiovascular diseases, respiratory diseases, accidents and injuries, perinatal morbidity, gastro-intestinal diseases, nutritional diseases and neoplasms.[2] The major epidemic diseases have declined within the recent past, and compared with other countries of similar income level, Sri Lanka's mortality pattern is much closer to that of developed countries with high income levels and aging populations. Charts II-1 and II-2 show the changes in mortality and morbidity rates from leading causes of death over the last 25 years.

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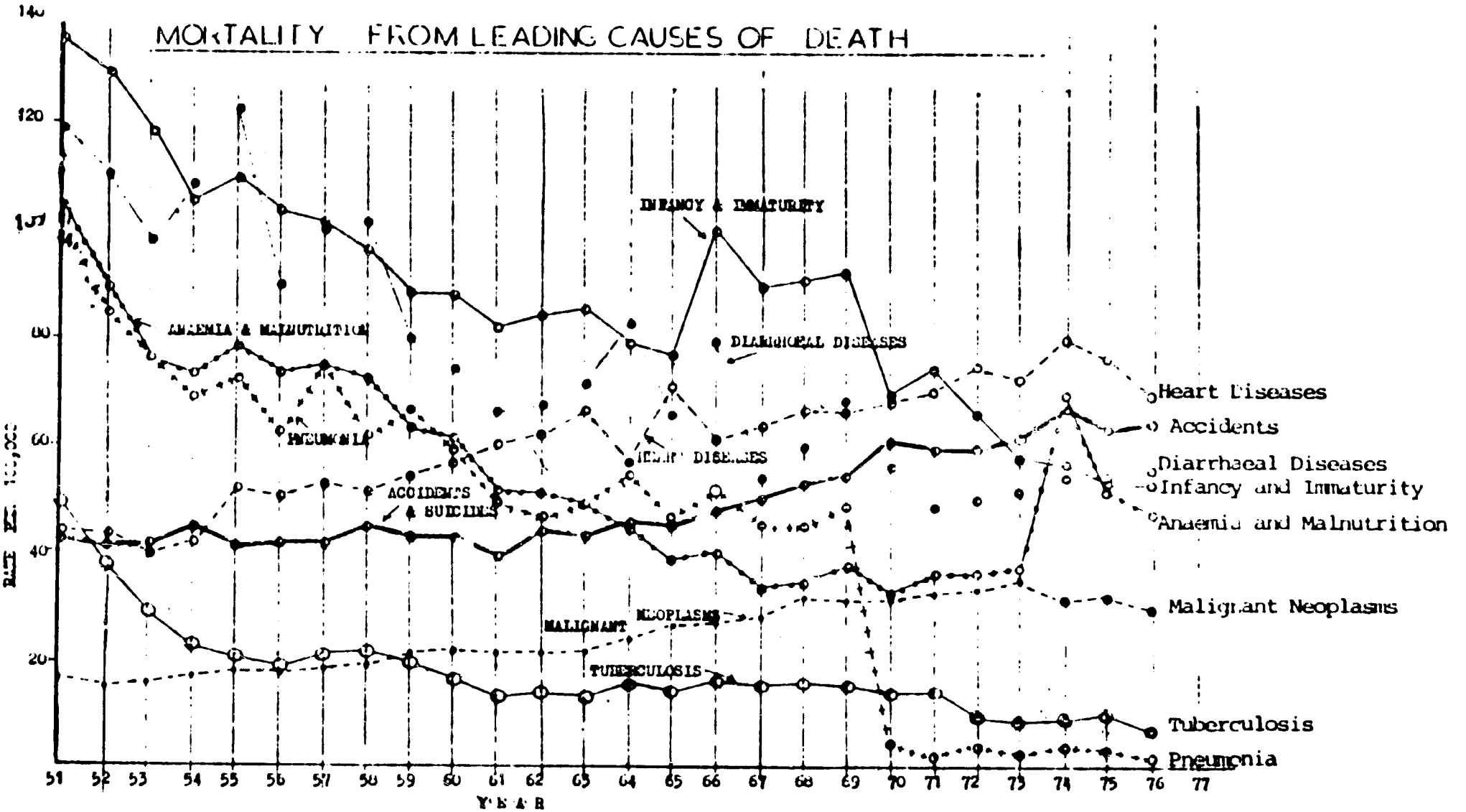
[1] Gunnar Myrdal, Asian Drama, Vol. III, New York: Pantheon, 1968, p. 1614.

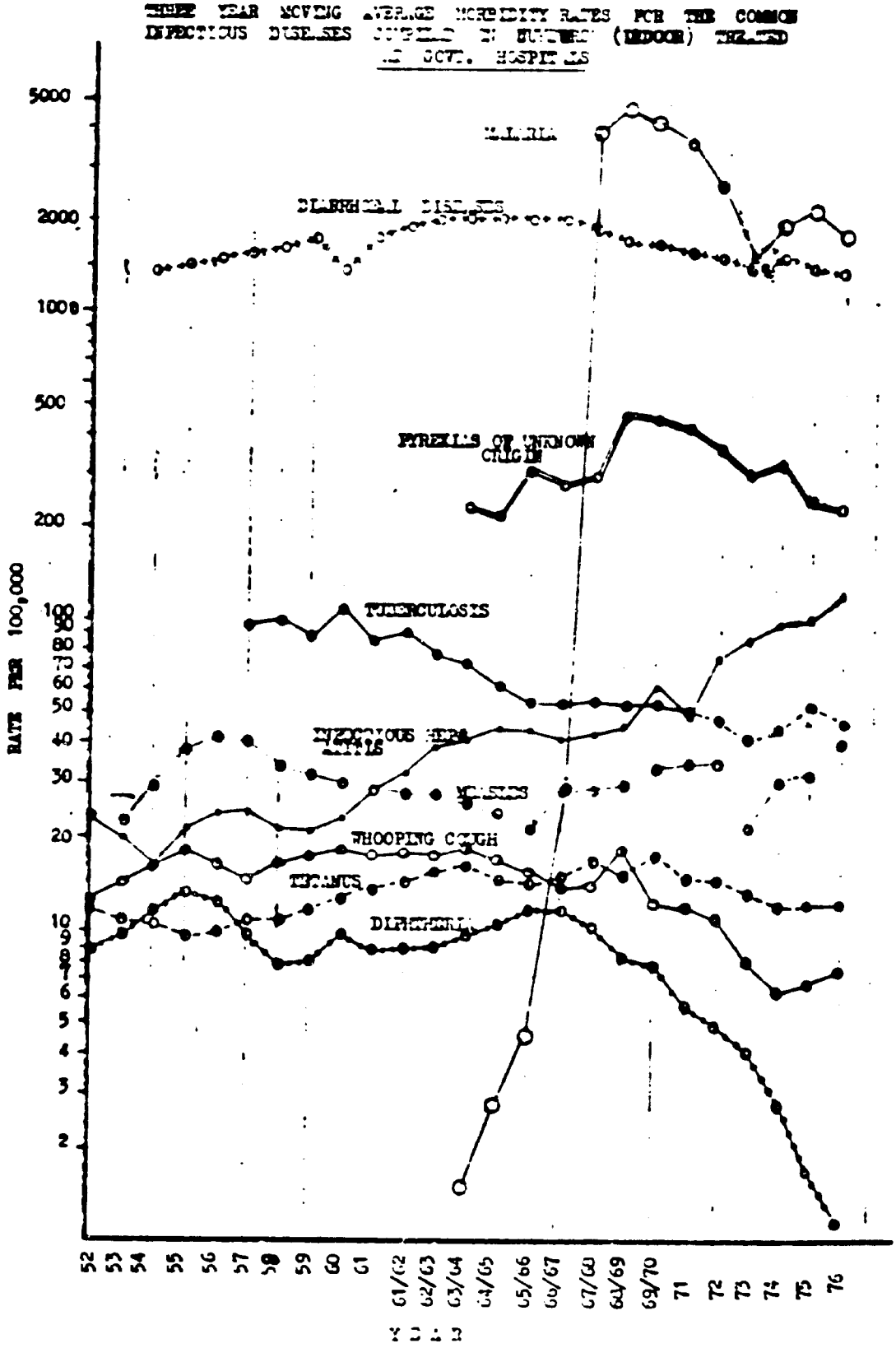
[2] Compilation of various international organizational sources.

Chart II-1



Source: Selected international organizational sources.

Chart II-2



Source: Selected international organizational sources.

As with the rest of the developing world, tabulations of disease-specific morbidity and mortality rates can only hope to give an idea of trends rather than accurate counts of incidence and prevalence. Mortality data are gathered from several sources -- the annual tabulations of the Registrar-General's department and the figures on hospital deaths. These data are subject to a number of limitations. Much of the crude data must be adjusted to take into account the fact that for about 25 percent of deaths no specific cause is reported. In addition, the reported cause of deaths may be inaccurate, particularly when one is trying to reconcile the categories used in Ayurvedic medicine with the Western International Classification of Diseases (I.C.D.). A good example of underreporting and misclassification occurs with regard to deaths caused from accidents and injuries. Accidents and injuries account for 13 percent of overall mortality, but only five to seven percent of hospital deaths, hence one must combine several sources of data to arrive at an accurate rate.[3] Morbidity data, similarly, are based on Registrar-General's figures, hospital in-patient records, outpatient treatments and visits to special clinics and private doctors.

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[3] Selected international organizational sources.

The total number of episodes of sickness from all types of diseases can be tentatively estimated at four per person per year or some 56 million. Of this, one-half resulted in absenteeism from work. Roughly three-quarters required a visit to a medical practitioner or institution, with three percent of cases as an inpatient in a government hospital. Of all episodes requiring a visit to a health institution, about 0.25 percent ended in death, with 1.3 percent of inpatient episodes resulting in death.[4]

B. Disease Eradication Campaigns

Though conventional health indicators highlight the positive health status of Sri Lankans vis-a-vis neighboring countries at a similar level of development, infectious and parasitic diseases are all deeply rooted in the environment. A climatic predisposition for tropical diseases enhanced by substandard sanitation would result in disease being the norm in Sri Lanka were it not for the impressive national disease eradication and health education programs that act as buffers to the disease process.

1. Malaria

Currently, malaria is endemic in approximately 3/5 of Sri Lanka and affects 70 percent of the population. Though

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[4] Ibid.

mortality from malaria is low, morbidity associated with it is of epidemic proportions. In 1978 there were approximately 60,000 diagnosed cases of malaria.[5]

Malaria has always been prevalent in Sri Lanka. There have been periodic epidemics at 3-5 year intervals recorded since the turn of the century. The established vector for Sri Lanka is Anopheles culicifacies. There are two types of malaria that occur in Sri Lanka. One is known as "river malaria" in that it is prevalent along the areas surrounding the major rivers and their tributaries. Another is "drought malaria," for the epidemics occur when there is little rainfall and the volume of water is so reduced that the rivers are broken up into a series of pools. The failure of monsoons thus, directly affects the incidence of malaria in various regions of Sri Lanka.[6]

The most devastating effects of the disease are in the hyper-endemic rural areas of the dry zone of Sri Lanka. Map 3 depicts the climatic zones of Sri Lanka and Map 4 shows the geographical intensity of malaria incidence. The areas

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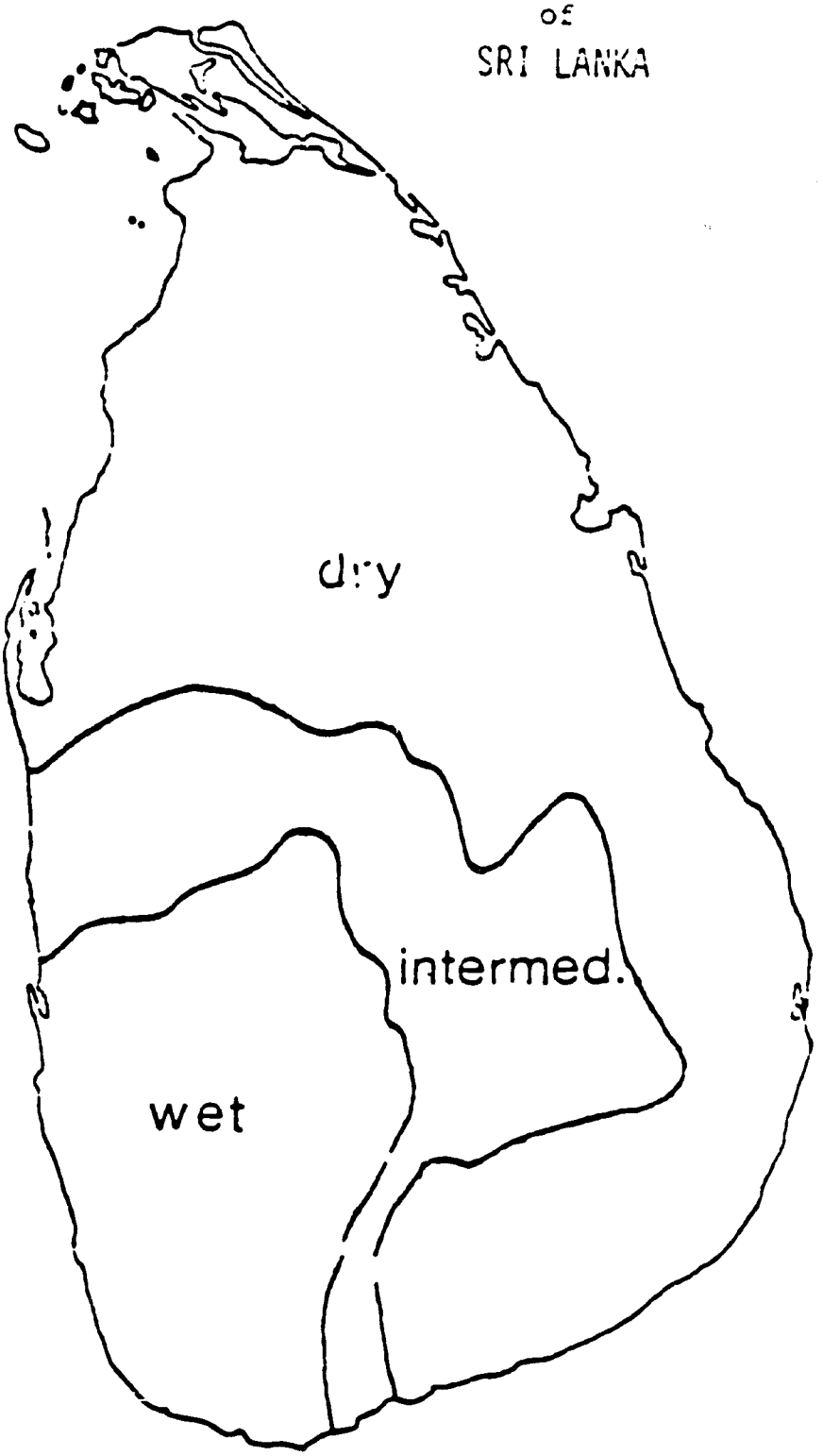
[5] Ibid.

[6] Eugene J. Gerberg and Henry Wilcox, III, Environmental Assessment of Malaria Control Project - Sri Lanka, Baltimore, Md.: Insect Control and Research, Inc., August 1977, p. 1.

Map 3

CLIMATIC ZONES
of
SRI LANKA



Source: Eugene J. Gerberg and Henry Wilcox. Environmental Assessment of Malaria Control Project - Sri Lanka. Baltimore, Md.: Insect Control and Research, Inc., August 1977. p. 7.

Map 4

Source: Anti-Malaria Campaign, Ministry of Health, Government of Sri Lanka.

where malaria is endemic in Sri Lanka constitute an important food-producing sector of the country where agricultural developments in the production of rice are being interrupted and/or curtailed. The impact of malaria is being felt not only on the health of the populace but in the economic and agricultural development sectors as well.[7]

Historically, Sri Lanka was one of the first of the developing countries to undertake massive campaigns against such diseases as malaria and tuberculosis. Immediately after World War II, the Government launched an intensive malaria eradication program consisting of island-wide spraying with dichloro-diphenyl-ethane (DDT). This led to a reduction in the malaria-related annual morbidity rate from 44,300 per 100,000 in the 1937 to 1945 period to five per 100,000 in 1960.[8] Table II-1 shows the progress made by the malaria eradication campaign from the 1936-46 period when deaths due to malaria accounted for 5.8 percent of all recorded deaths in Sri Lanka, to 1960 when there were no deaths attributed to malaria.[9]

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[7] Annual Budget Submission, FY 1980, Sri Lanka, p. 1.

[8] Richard F. Nyrop, Area Handbook for Ceylon, Washington: American University, 1971, p. 132-133.

[9] Gunnar Myrdal, Asian Drama, New York: Pantheon, 1968, Vol. II, p. 1569.

Table II- 1

Reported Cases and Deaths due to Malaria per 100,000 Population for Selected Years

Year	Morbidity	Mortality
1937-45 (average)	44,300	112.8
1946	41,200	187.3
1947	19,600	66.1
1949	9,900	32.8
1951	5,800	20.6
1953	1,300	9.1
1955	220	3.1
1957	380	1.9
1960	5	--

Source: Gunnar Myrdal, Asian Drama, Vol. III, New York: Pantheon, 1968, p. 1569.

A slight increase in the morbidity rate in 1957 occurred from an interruption in DDT spraying. Temporary abandonment of spraying, linked to the fear that mosquitoes would develop a resistance to the pesticide, resulted in a resurgence of malaria. In November of 1958 a five-year intensive campaign was launched to completely eradicate the disease.[10] For the following years the Government continued heavy emphasis on the malaria program. They received technical assistance from the World Health Organization (WHO) and grant funding from the U.S. and other donor nations.

By 1963 the Government of Sri Lanka felt that malaria had been eradicated and cut budget allocations for the control program. For the next six years morbidity rates climbed steadily from 17 positive cases reported in 1963 to 440,644 in 1968. The resurgence of malaria can be attributed to a breakdown in the surveillance mechanism due to reduced Government support for its operation rather than to DDT ineffectiveness given its limited use at that time.

By 1968 malaria had returned as a major health problem in Sri Lanka. Widespread DDT spraying operations, mass drug

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[10] Ibid., p. 1570.

administration, and radical treatment campaigns were launched. These succeeded, once again temporarily, in reducing malaria-related morbidity. But the upsurge of case rates since 1972 reveals the limited success of this attack phase. The dramatic setback was due to several factors: the resistance of the vector, Anopheles culicifacies, to DDT; population shifts, motivated by opportunities for increased food production, to new highly endemic malarious areas; and a prolonged drought from 1972 to 1974 which caused the drying up and pooling of rivers, creating areas highly conducive to mosquito propagation. Especially alarming during this period was the appearance of P. falciparum, a strain of malaria that can cause cerebral damage, particularly in children and non-immune populations. A three-fold increase occurred in the total number of cases of malaria from 1972 to 1975 and an eighteen-fold increase occurred in the number of P. falciparum cases.

The total number of recorded malaria cases in 1977 was 262,460, with 10,431 cases of the P. falciparum strain.[11] This figure very likely only represents 40 to 50 percent of the actual number of cases. In terms of sex distribution of

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[11] Selected international organizational sources.

the disease, males predominate, with 65 percent of the reported cases in 1977. Only nine percent of the cases belong to the age group 0-5 -- this represents a reduction from the 12.6 percent of cases from the 0-5 group in 1976. Despite the large morbidity rate for malaria in Sri Lanka, the mortality rate in 1977 was only 0.1 per million.[12]

The Government has declared malaria control a high priority. It is stressing preventive rather than clinical approaches to combating malaria. Spraying with malathion, an insecticide with no vector resistance as yet, began in 1975 along with massive surveillance programs with the Ministry of Health and foreign technical assistance.[13] Map 5 details the spray coverage with malathion as of 1978. The five year Anti-Malaria Campaign strives to reduce the incidence of malaria in Sri Lanka to one case per 1,000 population per year.[14] The cost of the project for fiscal years 1977-81 is estimated to be approximately Rs 652,922,000, Rs. 414,500,000 of which is to come in the form of foreign assistance. It is hoped that the campaign will

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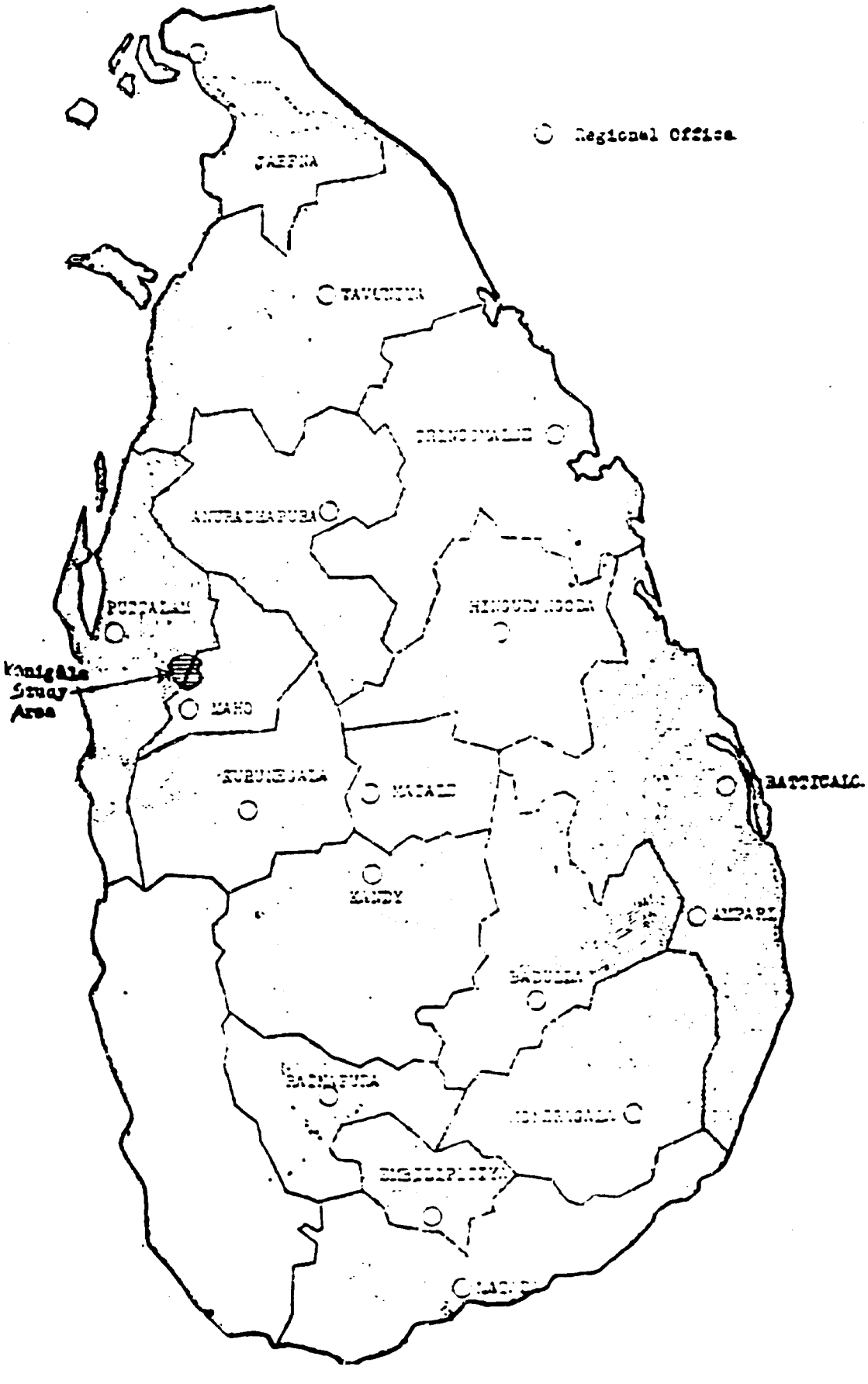
[12] Ibid.

[13] Ibid., p. 1.

[14] Ibid., Annex C, p. 355.

Map 5

SPRAY COVERAGE (MALATHION) - 1978.



Source: Anti-Malaria Campaign, Ministry of Health, Government of Sri Lanka.

prevent 28.9 million malaria cases by its completion in 1981 and save the Sri Lankan economy US $40 million.[15]

2. Tuberculosis

In 1947 the Government began one of the first anti-tuberculosis campaigns in South Asia. It was successful in reducing the death rate from all forms of tuberculosis and in preventing new cases through mass vaccination programs. In the five year period from 1950-1955, the tubercuclosis death rate fell from 53.3 per 100,000 to 21.8 per 100,000. By 1963 it had fallen to 12 per 100,000.[16] In 1976 the rate of incidence for tuberculosis was 49.7 per 100,000 population, with tuberculosis of the respiratory system being the dominant form. There has been a three percent reduction rate per year in the incidence of tuberculosis in Sri Lanka and testing and vaccination are still underway in an effort to keep the rates low. The major issues affecting the control program are: case detection through sputum examination is not being routinely performed in outpatient departments and clinics; X-ray machines are frequently out

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15 Frontlines, USAID publication, June 1979.

16 Ibid., p. 133.

of order; and there is inadequate coverage of newborns with BCG. Ministry of Health officials are addressing these obstacles to the program in assessing current needs and future plans.[17]

3. Filariasis

The National Anti-filariasis Campaign came into existence in October 1917. It concentrated its efforts on investigation and control of filariasis in the endemic belt of southwestern Sri Lanka, excluding the capital city of Colombo. Over time, Colombo developed as a reservoir of infection for the spread of filariasis so that a control program aimed at Colombo was launched in 1978 with financial and technical assistance from UNDP/WHO.[18] Microfilaria rates have been coming down gradually however, in 1977 in all of Sri Lanka there were still 2,995 reported cases of microfilaria and 1,315 cases with clinical manifestations.[19] Transmission has not been completely interrupted and obstacles to the control efforts involve difficulties in:

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[17] Selected international organizations sources.

[18] Compilation of various international organizational sources.

[19] Data from administrative reports of anti-filaria campaign, Ministry of Health, Government of Sri Lanka.

eliminating breeding places; achieving complete treatment because of absence of symptoms; supervision of night blood filming; and a shortage of funds for insecticides.[20]

4. Leprosy

There has been a steady increase in the number of cases of leprosy in Sri Lanka from 1947 onwards in spite of a special anti-leprosy campaign. The number of registered cases has doubled over the past 10 years -- from 4,586 cases in 1968 to 9,510 cases in 1977. There were 613 new cases detected in 1977, with 9.8 percent of total cases among children under age 15. Untreated leprosy crippled 30 percent of those afflicted. There is no immunization against leprosy, and the only method of control is to detect and bring at least 75 percent of cases in the community under regular treatment. The aim of the anti-leprosy campaign is to entirely eradicate leprosy, however, due to the nature of the illness, this can be realized only over a long period of time.[21]

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[20] Op. cit.

[21] Compilation of various international organizational sources.

5. Venereal Disease

Measures for the control of venereal diseases have been in operation in Sri Lanka for over 100 years. A large-scale anti-VD campaign was started with the assistance of WHO and has been continued by the Ministry of Health as the Anti-Venereal Disease Campaign. There has been a steep decline in the cases of early infectious syphilis and gonorrhea just in the past several years. In 1977 there were only 3,607 cases of infectious syphilis and 5,003 new cases of gonorrhea registered in the whole island. The rate per 100,000 population for early infectious syphilis dropped from 30 in 1976, to 24.8 in 1977. Gonorrhea, similarly, declined from 52 per 100,000 in 1976 to 34.5 in 1977. This is attributable in part to the introduction of private medical practitioners and also to advances in diagnosis, case finding, follow-up and health education programs.[22] The incidence rate of the disease is now roughly comparable to the rest of the world; though the need for long term surveillance and control services for venereal disease is clearly indicated.[23]

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[22] Compilation of selected international organizational sources.

[23] P.L.B. Jayasuriya, "The Epidemiology and Control of Venereal Diseases in Sri Lanka," Journal of Tropical Medicine and Hygiene, London: September 1974, Vol. 77, No. 9, pp. 196-199.

6. Rabies

In addition to the five Government-sponsored disease eradication programs just mentioned, there is also a joint program with WHO for rabies eradication which is worthy of note. Rabies is considered the most serious zoonotic disease in Sri Lanka, claiming some 315 human lives each year. The program for its eradication was launched in 1976. The targets of the program are the immunization of 200,000 to 250,000 dogs annually and the elimination of 100,000 strays annually, with an eradication goal set for 1983. Implementation of the rabies control program is both interesting and difficult given that Sri Lanka is predominantly a Buddhist country. Aside from the limitations posed by a shortage of vehicles to pick up strays and often a shortage of vaccines, a major constraint to the program lies in public resistance. Killing of animals, regardless of the public health hazard they may present, is something which is unacceptable to the bulk of the population. There have been several instances of people speaking out against such activities. The ultimate success of the rabies eradication program will depend on a certain amount of discretion on the part of its implementors and a great deal of educational work aimed at the public as to the

extent of the rabies problem, its risks, hazards and prevention.[24]

While the five disease eradication campaigns are targeted at the most serious communicable diseases in Sri Lanka there is certainly more to the morbidity and mortality picture than they include. There are numerous environment-related illnesses, affecting large segments of the population, chronic and degenerative diseases and mental health problems for which no control programs exist.

C. Environment-Related Diseases

Between 45 and 50 percent of the illnesses treated at government facilities are categorized as "preventable" and have their origin in poor environmental sanitation.[25] In addition to malaria, and gastroenteritis -- associated with inadequate drinking water supply and unsanitary environmental conditions, and the main cause of high infant mortality rates -- cholera, typhoid and helminthic infestations are also environment-related diseases of increasing epidemiological significance in Sri Lanka.

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[24] Extracted from an interview with the Director of the Division of Veterinary - Public Health, Ministry of Health, Government of Sri Lanka.

[25] USAID, Annual Budget Submission, Sri Lanka, FY 1980, Annex C, Washington, D.C.: Department of State, May 1978, p. 358.

Cholera morbidity and mortality rates can be taken as fairly reliable indices in assessing general health and environmental conditions in different areas of the country. Map 6 shows the geographical distribution of cholera in Sri Lanka in 1974. From the map, together with Table II-2 which shows the number of cases and deaths from cholera in 1973-76, it can be seen that Colombo, the capital city, has been and continues to be a focus of high incidence of cholera. In addition to Colombo, Anuradhapura (including Trincomalee), Vavuniya, Jaffna, Badulla and Puttalam can be identified as critical with regard to unsafe and inadequate drinking water and sanitation.[26]

In spite of serious under-reporting,[27] typhoid, viral hepatitis and bacillary dysentery statistics can also be used to underscore the seriousness of the environmental health situation in Sri Lanka. Table II-3 shows the critical areas for these infectious diseases associated with water and sanitation to be: Colombo, Kandy, Anuradhapura (including Trincomalee), Jaffna, Ratnapura and Badulla.[28]

Helminthic infestation is another reflective indicator of

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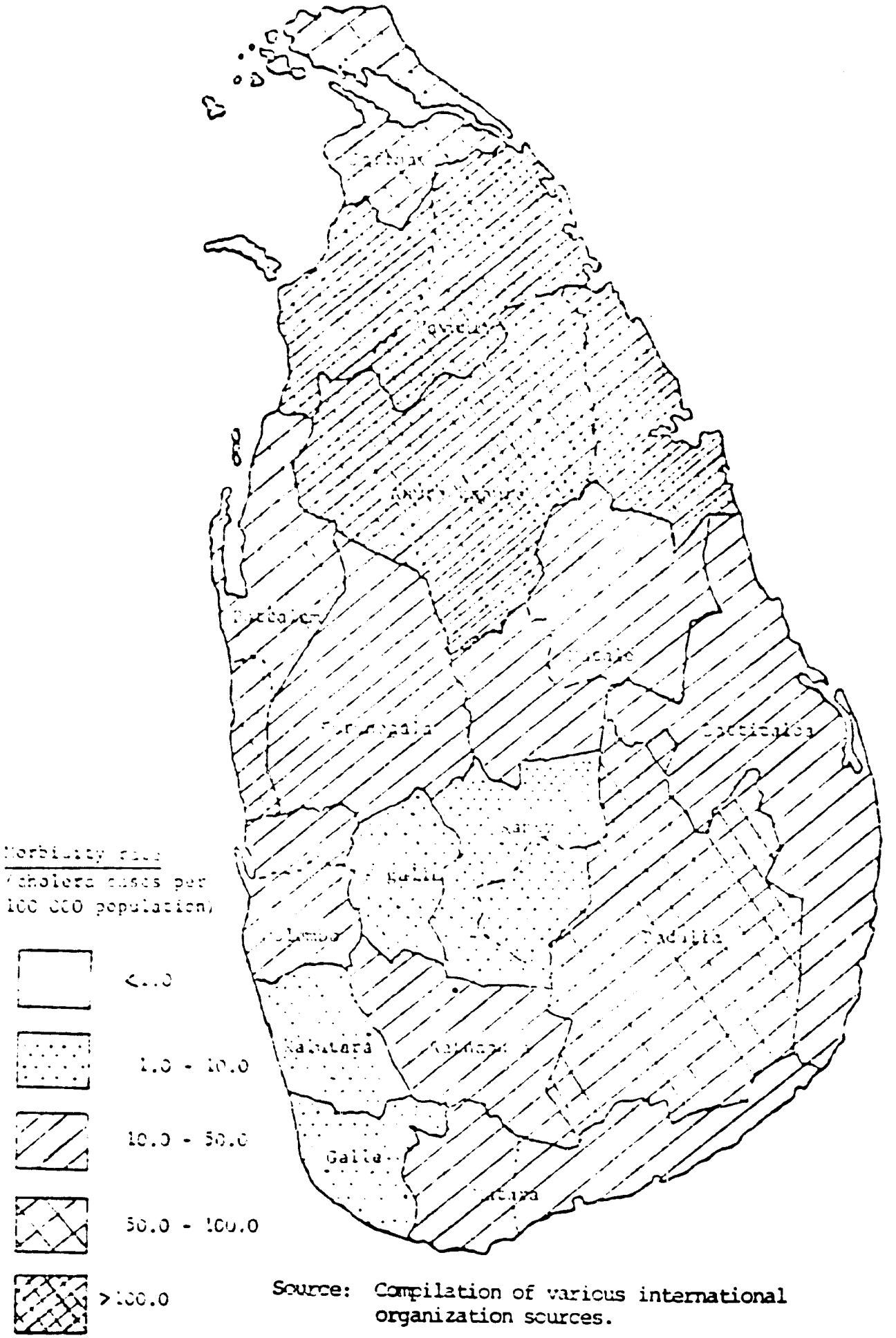
[26] Compilation of various international organizational sources.

[27] For typhoid it is estimated to be as much as 50 percent.

[28] Ibid.

Map 6

DISTRIBUTION OF CHOLERA IN 1974



Source: Compilation of various international organization sources.

Table II-2

BRIEF OF CASES AND DEATHS FROM CHOLERA IN 1973 - 1976

No.	Health divisions	1973			1974			1975			1976		
		c	r	d	c	r	d	c	r	d	c	r	d
1.	Anuradhapura (incl. Trincomalee)	-	-	-	855	132.1	57	157	24.4	N.A.	3	0.4	-
2.	Badulla (incl. Monaragala)	-	-	-	494	56.0	41	32	3.5	N.A.	34	3.8	4
3.	Batticaloa (incl. Amparai)	-	-	-	210	36.3	14	220	36.9	N.A.	-	-	-
4.	Colombo (incl. Municipality)	13	0.5	1	736	25.9	37	253	8.7	N.A.	603	20.3	5
5.	Galle	-	-	-	12	1.6	-	15	1.9	N.A.	4	0.5	-
6.	Jaffna	172	23.9	9	671	91.0	25	415	55.7	N.A.	52	6.8	-
7.	Kalutara	-	-	-	46	6.0	7	30	3.8	N.A.	10	1.3	5
8.	Kandy (incl. Nuwara-Eliya)	1	0.1	1	101	5.9	12	13	0.7	N.A	-	-	-
9.	Kegalle	-	-	-	34	5.3	1	3	0.4	N.A.	-	-	
10.	Kurunegala	-	-	-	132	12.1	18	44	3.9	N.A.	1	0.1	-
11.	Matale (incl. Polonnaruwa)	-	-	-	205	38.9	22	12	2.2	N.A.	1	0.2	-
12.	Matara (incl. Hambantota)	1	0.1	1	301	30.6	21	74	7.4	N.A.	18	1.8	2
13.	Puttalam	-	-	-	253	61.9	26	21	5.0	N.A.	-	-	-
14.	Ratnapura	-	-	-	156	22.6	14	112	15.6	N.A.	-	-	-
15.	Vavuniya (incl. Mannar)	3	1.6	1	350	183.3	38	49	25.7	N.A.	-	-	-
	Total	190	1.4	13	4550	33.7	333	1453	10.5	N.A.	726	5.1	16

Note: c - number of cases; r - morbidity rate per 100 000 population; d - number of deaths

Source: Compilation of various international organization sources.

Table II-3

DISTRIBUTION OF SOME INFECTIOUS DISEASES ASSOCIATED WITH WATER AND SANITATION (1975)
(Statistics based on hospital records)

No.	Health Divisions	Typhoid		Viral Hepatitis		Bacillary Dysentery	
		Cases	Rate*	Cases	Rate*	Cases	Rate*
1.	Anuradhapura (incl. Trincomalee)	159	23.7	341	50.7	155	23.1
2.	Badulla (incl. Monaragala)	1026	112.5	394	43.2	169	18.5
3.	Batticaloa (incl. Amparai)	279	46.7	211	35.3	44	7.4
4.	Colombo (incl. Municipality)	3978	136.8	8351	287.2	325	11.2
5.	Galle	248	31.6	324	41.3	95	12.1
6.	Jaffna	431	57.5	235	31.3	165	22.0
7.	Kalutara	273	34.9	810	103.6	168	21.5
8.	Kandy (incl. Nuwara-Eliya)	1715	98.6	631	36.3	425	24.4
9.	Kegalle	337	49.1	540	78.7	130	19.0
10.	Kurunegala	267	23.9	1517	135.6	54	3.1
11.	Matale (incl. Polonnaruwa)	265	48.5	224	41.0	169	31.0
12.	Matara (incl. Hambantota)	233	23.2	284	28.3	158	15.7
13.	Puttalam	93	22.1	540	128.3	26	6.2
14.	Ratnapura	1191	165.2	354	49.2	46	6.4
15.	Vavuniya (incl. Mannar)	161	81.3	60	3.0	6	3.0

*rate - cases per 100 000 population

Source: Compilation of various international organization sources.

the status of water supply and excreta disposal systems. In addition to filariasis, infestations with hook worms and whip worms are also common.[29]

Although Government health policy stresses preventive services in theory, in practice activities under the budgetary provision of "General Preventive Services and Environmental Sanitation," receive only three percent of the total health budget. In light of the overcrowding of hospitals, shortage of doctors and dire economic straits that characterize Sri Lanka today, there is growing public and professional feeling that a higher priority must be placed on the improvement of sanitation, the provision of unpolluted drinking water and the promotion of health education if for no other reason than to reduce the number of patients suffering from environment-related diseases.[30]

D. Chronic and Degenerative Disease

As the incidence of the major epidemic diseases in Sri Lanka has decreased, chronic disease incidence has risen. Cancer, heart disease, drug abuse, mental health and suicide are causes of morbidity and mortality that are typical of developed

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[29] Environmental Assessment of Sri Lanka, (draft), supported by the Library of Congress, Section 1.

[30] Op. cit.

countries and just beginning to be an important part of the Sri Lankan health profile. A recent study of the incidence and distribution of cancer in Sri Lanka revealed a steady increase in the incidence from 2 145 new patients registered in 1964 to 4,219 in 1973. Currently cancer deaths account for four percent of deaths due to all causes, with a mortality rate of 32 per 100,000 population and a disease-specific morbidity rate of 102.3 per 100,000 as of 1974.[31]

The commonest form, as seen in Table II-4, is that of the buccal cavity -- which accounts for 30-40 percent of all cancers. The next most common site is the buccal mucosa. There appears to be a relationship between the habit of betal chewing and buccal cancer.[32] Unlike the U.S., there is little incidence of bronchial cancer in Sri Lanka. This is attributed to low tobacco consumption (a random survey in 1971 showed that 48.2 percent of males smoke, averaging seven cigarettes per day, and only 1.6 percent of females smoke) and insignificant atmospheric pollution.[33]

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[31] Compilation of various international organizational sources.

[32] S. Nissanga, "Incidence and Pattern of Cancer in Sri Lanka," Cancer in Asia, GANN Monograph on Cancer Research #18, 1976, pp. 259-264.

[33] S.J. Stephen, "An Evaluation of Factors Relevant to the Diagnosis of Bronchial Carcinoma in Sri Lanka," Journal of

Table II-4

Anatomical Distribution of New Cases of Cancer Registered in 1972

	Anatomical distribution	New patients registered for 1972
1.	Buccal cavity and oropharynx	1,285
2.	Paranasal sinuses and nose	98
3.	Nasopharynx	62
4.	Hypopharynx	188
5.	Larynx	84
6.	Esophagus	257
7.	Stomach	79
8.	Bronchus and lung	48
9.	Rectum	26
10.	Bone	124
11.	Other connective tissues	92
12.	Skin	60
13.	Breast	363
14.	Cervix uteri	465
15.	Body of uterus	46
16.	Ovary	81
17.	External female genitalia	26
18.	Prostate	3
19.	Testes	18
20.	Penis	22
21.	Thyroid	126
22.	Hodgkin's and malignant lymphomas	92
23.	Leukemia	86
24.	Unspecified and doubtful diagnosis	307
	Total	4,069

Source : S. Nissanga, "Incidence and Pattern of Cancer in Sri Lanka," Cancer in Asia, GANN monograph on Career Research #18, 1976.

There is a wide disparity of cancer incidence between various health divisions, with Colombo having the highest rates and Vavuniya, the lowest. Further study is indicated, but current explanations for these variations are that they may be due to differences in medical facilities, preference for indigenous remedies, and inadequacies in recording new cases.[34]

E. Drug Abuse and Alcoholism

Drug abuse and alcoholism, public health problems often linked to modernization or development, are are on the increase in Sri Lanka. A recent survey found that 20 percent of the students questioned admitted to the use of drugs. Opium and ganja (cannabis) are the major narcotics in use in Sri Lanka. An estimated five tons of opium are smuggled into the country each year. The use of opium is largely confined to the urban areas with addicts mostly of the lower socio-economic class.[35] Extensive reported use of marijuana on the island poses not only a potential health hazard but also implicitly, has raised Government concern over the economic consequences of using land

Tropical Medicine and Hygiene, Vol. 79, No. 3, March 1976, pp. 46-8.

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[34] Op. cit.

[35] "Sri Lanka: Drugs and the Law," ICAA News, Vol. V, No. 4, Lausanne, Dec. 1977, p. 15.

to grow cannabis that could be put to better use for commercial cultivation.[36]

F. Mental Health

Mental health, as such, is difficult to assess in Sri Lanka partly because of its lack of recognition as a separate and unique aspect of the total public health question. A recent study conducted by the Ministry of Education has indicated that of the four million children of school age, an estimated 120,000 or three percent are mentally handicapped.

Suicide has also risen sharply over the last two decades though the incidence is still relatively low. The high rate of suicide among youths can be linked to anxiety, alcoholism and unemployment which have resulted from rapid socio-economic and cultural changes affecting this age group. With the post-war rise in population, the high degree of education of most youths, and the widespread unemployment, there are many unmet expectations and a breakdown of traditional norms and values. Of note is the increase in the use of poisons such as insecticides and agrochemicals over more traditional forms of suicide.[37]

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[36] Ibid.

[37] S.A.W. Dissanayake, "Suicide and Attempted Suicide in Sri Lanka," Ceylon Journal of Medical Sciences, Vol 23, No. 1-2, 1974, pp. 10-27.

G. Other

The numbers of maladjusted and epileptic children are not known, as these handicaps have not been considered to pose a serious problem. There are 77,000, or two percent of school-age children, who are physically handicapped. Of these, approximately 4,000, or 0.1 percent, are visually handicapped. A third of the visually handicapped are defined legally blind, win malnutrition implicated as the main underlying cause. Within this physically handicapped group, there are 20,000 children with hearing handicaps who represent 0.5 percent of the total children in the country. The Ministries of Social Services and Education are beginning to address the problems of special education for these children, while epidemiologists explore possible causal factors for these illnesses in the environment.[38]

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[38] Walter Matthews, "Special Education in Sri Lanka," Special Education Forward Trends, Vol. 4, Dec. 1977, pp. 22-24.

III. NUTRITION

A. Nutrition Status

Despite widespread controversy over the nature and magnitude of malnutrition in Sri Lanka, most recent studies do agree that it is a public health problem of considerable and growing importance. In general, there are three groups who suffer most from nutritional deficiencies. Infants, pre-school and primary school children, and pregnant and lactating mothers are those within the household who, across all sectors, are most vulnerable nutritionally.[1] Nutritional problems appear to be most acute in urban areas, where the population has to buy the bulk of its food, among the landless rural dwellers; and, increasingly, in the estate population since the nationalization of the plantations. Table III-1 shows that nutritional status varies with economic classes. Of equal importance, however, are differences in food distribution both within and between families -- variables which are very difficult to measure with aggregated data.

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[1] Compilation of various international organizational sources.

Percentage Distribution of Four Nutritional Status Categories of Households
According to Income Groups for Sri Lanka By Sectors (1969 - 70 Socio-Economic Survey)

Nutritional Status Categories	Household Income Groups: Total-- All classes		Rs.0-99		Rs.100-149		Rs.150-199		Rs.200-399		Rs.400-599		Rs.600-799		Rs.800-999		Rs.1,000&over	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
TOTAL	*2094815	100.0	169574	100.0	350589	[illegible]	379327	100.0	789702	100.0	241022	100.0	86913	100.0	33883	100.0	42804	100.0
A	1182702	58.5	62560	36.9	178924	[illegible]	199513	53.9	457196	57.9	164927	65.7	81541	70.8	25405	79.0	32636	76.2
B	262508	12.5	24179	14.3	43105	12.3	49651	13.4	108637	13.7	26261	10.5	6361	7.3	2826	8.3	2988	4.9
C	38613	1.8	2137	1.3	5802	1.7	5595	1.5	14485	1.8	6125	2.4	1335	1.5	860	2.5	2274	5.3
D	610992	29.2	80698	47.6	122758	35.0	115568	31.2	209984	26.6	53709	21.4	17676	20.3	4792	14.1	5807	13.6
URBAN	* 343666	100.0	9853	100.0	23496	100.0	39487	100.0	136132	100.0	61570	100.0	28860	100.0	17495	100.0	27778	100.0
A	177924	51.8	2562	26.0	7953	35.4	17682	11.8	84216	47.2	34705	56.4	18006	62.4	12620	72.1	20118	72.4
B	40960	11.9	1281	13.0	2906	12.9	5663	14.4	17949	13.2	7886	12.8	2395	8.3	1150	6.6	1725	6.2
C	9147	2.7	552	5.6	380	1.7	439	1.1	2313	1.7	2195	3.6	860	3.0	880	4.9	1548	5.6
D	115635	33.6	5458	55.4	11257	50.0	15693	39.2	51592	37.9	16784	27.3	7599	26.3	3865	16.4	4384	15.8
RURAL	*1504370	100.0	138042	100.0	261789	100.0	267310	100.0	570789	100.0	179795	100.0	56088	100.0	16061	100.0	14497	100.0
A	815033	54.2	44495	32.2	119023	45.5	133404	49.9	329484	57.7	122398	68.1	41788	74.5	12458	17.6	11983	82.7
B	213060	14.2	21676	15.7	38181	14.6	41757	15.6	87175	15.3	18266	18.2	3966	7.1	1676	10.4	363	2.5
C	20529	1.4	368	0.3	3939	1.5	2765	1.6	8658	1.5	3603	3.0	475	0.8	--	--	726	5.0
D	455748	30.3	71568	51.8	100645	38.4	89384	33.4	143472	25.5	35528	19.8	9859	17.6	1927	12.0	1425	9.8
ESTATE	* 246779	100.0	21679	100.0	66385	100.0	63530	100.0	82781	100.0	9657	100.0	1965	100.0	327	100.0	535	100.0
A	189745	76.9	15503	71.5	51948	78.3	48427	76.2	63414	76.6	7824	81.0	1747	88.9	327	100.0	535	100.0
B	8483	3.4	1222	5.6	2818	3.6	2226	3.5	2918	3.5	109	1.1	--	--	--	--	--	--
C	8937	3.6	1222	5.6	1483	2.2	2391	3.8	3514	4.2	327	3.4	--	--	--	--	--	--
D	39609	16.1	3732	17.2	16856	16.4	10486	16.5	12920	15.6	1397	14.5	218	11.4	--	--	--	--

A -- Energy and Protein adequate
B -- Energy adequate and Protein inadequate
C - Energy inadequate and Protein adequate
D - Energy and Protein inadequate
* - Estimated number of Households

Source: Compilation of various international organizational sources.

According to the Socio-Economic Survey of 1969-70, as represented in Table III-1, 59 percent of the estimated 2,094,815 households in the island were adequate in both energy and protein. Thirteen percent had adequate caloric intake but inadequate protein intake, while only two percent had inadequate calories and adequate protein. An additional 29 percent showed deficiencies in both energy (as represented by calories) and protein.

Of all households in the island, 31 percent were deficient in terms of calories. Protein levels, however, were not fully met in 42 percent of the households. Protein deficiency therefore is more prevalent than calorie deficiency, and this situation exists throughout all sectors.[2] Dietary surveys over the last 30-40 years have shown that the main shortfalls in intakes occur with regard to energy (calories), proteins, iron, riboflavin, and to a degree, Vitamin A. The nutritional problems associated with these dietary deficiencies are: protein-energy malnutrition, nuritional anemia, Vitamin A deficiency and endemic goitre.

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[2] Ibid.

1. Protein-Energy Malnutrition

In 1976 a nutritional status survey was done on the preschool population of Sri Lanka using anthropometric, biochemical, and clinical measures. This study confirmed that protein-energy undernutrition in rural preschool children is a common problem. Children age 12-23 months are most seriously affected, probably because of inadequate weaning foods.[3] Chronic undernutrition resulting in stunting affected 34.7 percent of the children throughout Sri Lanka. The estate population was the worst affected with a chronic undernutrition prevalence rate of 62.4 percent.[4]

2. Nutritional Anemias

This nutritional problem is mainly due to iron deficiency and affects all age, sex and physiological groups, particularly in the lower socio-economic classes. It was found that pedal edema of nutritional origin associated with kwashiorkor is not a

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[3] Robert R. Nathan Associates, Inc., An Evaluation Report of the P.L. 480 Title II Program in Sri Lanka, Washington, D.C.: for Office of Food for Peace, USAID, May 23, 1978, pp. 18-20.

[4] Selected international organizational sources.

general problem in preschool Sri Lankans.[5] The prevalence of nutritional anemia in Sri Lanka can be summarized as follows:

	Rural	Urban Poor
Pregnant Women	52%	49%
Pre-school children	54%	49%
Adult men	40%	---

In the case of pregnant women, studies have established that iron, folate and B_{12} deficiencies contribute to the anemia problem. They are cited as being as high as 40 percent, 19 percent, and 6.9 percent respectively.[6]

3. Vitamin A Deficiency

Based on the Ministry of Health/Center for Disease Control (CDC) 1975/76 survey, Vitamin A deficiency is a problem in only two of the 16 health divisions -- Kegalle and Matara. Figures for prevalence of night blindness and Bitot's spots were 2.6 percent and 2.3 percent in the two areas. These only marginally exceed the two percent prevalence rates established by World

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[5] Op. cit., pp. 28-29.

[6] Op. cit.

Health Organization (WHO) as the criterion for recognition of Vitamin A deficiency as a public health problem. Given that Vitamin A deficiency is only a marginal problem in Sri Lanka, no widespread control measures currently are indicated.[7]

4. Endemic goiter

Endemic goiter is a problem in the southwest coastal belt and the central regions of the country which have a high rainfall. The resultant heavy leaching of the soil of its iodine content is a causative factor in endemic goiter. Since over 70 percent of the population reside in the wet zone, the percentage of those "at risk" of endemic goiter is quite high. Although the problem is extensive, the absence of severe manifestations such as cretinism, deaf-mutism and large goiters indicates that the deficiency is not a severe one.[8]

The consensus from all of the nutrition surveys is that general undernutrition as a result of chronic food deprivation is of primary importance in Sri Lanka. Recent comparative studies of international development have suggested that high per capita income is not necessarily a prerequisite to low mortality and an

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[7] Ibid.

[8] Ibid.

adequate level of health and nutrition.[9] In the case of Sri Lanka, the Government's emphasis on social welfare and concern with the provision and distribution of adequate food to its population is suggested as exerting a leading influence on mortality rate reduction. In assessing nutritional status and its impact on the health of the populace, total food availability, distribution, and consumption according to social group and type of foodstuff, must be examined.

B. Food Production/Availability

Sri Lanka has a predominantly agricultural economy, with manufacturing accounting for only 15 percent of the gross national product.[10] The traditional agricultural exports are tea, rubber and coconut. Sri Lanka has depended on these exports to finance importation of both manufactured goods and more basic needs -- about 50 percent of the food consumed on the island is imported from overseas.[11]

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[9] See Davidson Gwatkin, "Nutrition Planning and Physical Well-Being in Kerala and Sri Lanka," prepared for Interciencia/AAAS Symposium, February 1973, Washington, D.C.: Overseas Development Council, January 1978.

[10] Department of State, Background Notes, Sri Lanka, Washington, D.C.: U.S. Government Printing Office, December 1976, p. 6.

[11] Ibid.

The lack of food self-sufficiency is a weakness of the Sri Lankan economy. With the recent escalation of world commodity prices, compounded by a severe drought resulting in increased need for food imports, Sri Lanka became a Most Serious Affected (MSA) country in terms of foreign assistance. Part of Sri Lanka's development strategy involves a move from traditional plantation, export-oriented agriculture toward an emphasis on the production of food for local consumption.[12] With regard to the traditional plantations, there was extensive land reform between 1972 and 1975, with most of the estates, both foreign and locally-owned, being acquired by the State.[13] In addition to this action, the Government placed bans on certain imports in an attempt to encourage production of domestic food products. The impact of such a ban on protein availability was serious. The principal protein staples -- pulses and fish -- were banned from importation in 1972 in order to conserve foreign exchange and supposedly to stir domestic production. While there was growth in their domestic production, initial production levels were so small that they were still insufficient to meet food consumption

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[12] Davidson R. Gwatkin, "Nutrition Planning and Physical Well-Being in Kerala and Sri Lanka," Prepared for Interciencia/AAS Symposium, Feb. 1973. Washington, D.C.: Overseas Development Council, January 1978, pp. 4-5.

[13] Op. cit., p. 6.

demand.[14] Sri Lanka experienced a chronic food deficit as a consequence. The answer to this problem is a complex one. Where in the short run, the protein deficiencies pose a very grave nutritional problem, still there are some long term benefits to be seen. The importation of subsidized, and hence inexpensive, grains undermines local producer incentives. Where the initial production levels of domestic groups were small, a concerted effort needs to be taken to encourage production of indigenous crops, particularly pulses, both to meet the populations food requirements and to stablize the economy.

In addition to economic problems which affect food availability and resulting nutritional status of certain population groups, environmental sanitation impacts on maternal and child malnutrition when the lack of potable water results in diarrheal problems, dysentery and parasites. Up to two-thirds of the nutrition intake can be wasted when these diseases occur.[15] It is often difficult to determine which children under study are undernourished because of decreased food intake, and which have increased metabolic needs because of infections or parasitic infestations. While quantifying the extent of its relationship

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[14] Robert R. Nathan Associates, Inc., p. 20.

[15] Ibid., pp. 90-93.

to nutritional deficiencies is hard, environmental sanitation is still recognized as playing a key role in maternal and child nutritional needs.

Further, population growth has increased aggregate food requirements, while production has been low or declining and unable to meet demand. Overall per capita food availability in Sri Lanka is not high. The average number of daily calories available per person (including those from importation) varies from year to year between 1900 and 2200 calories. A bad monsoon, for instance, can lower food production, and hence food availability, by 25-30 percent as compared with a good year.[16] This percentage variation is quite significant. Sri Lanka's total per capita calorie availability is on a par with the rest of Asia, slightly above India and Bangladesh but below Burma, Thailand and Pakistan. With respect to protein, Sri Lanka's *per capita* protein availability is estimated at 48 grams per day. This is the lowest in Asia, where the average is 55-60 grams *per capita* per day.[17]

Examination of the overall distribution of available foods between the rural, estate, and urban populations reveals some

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[16] Davidson Gwatkin, p. 5.

[17] *Ibid.*, p. 15.

differences in caloric consumption, but not on the magnitude of differentials found elsewhere in the developing world. Based on a standard daily requirement of 2,200 calories per capita, 89 percent of the rural population achieves this minimum. Seventy-seven percent of the estate population and an equal percentage of the urban population consume at least 2,200 calories per day. Protein consumption, while insufficient, is even across these three population groups; 77 percent of the rural, urban and estate populations each consume the minimum requirement of 48 grams of protein *per capita* per day.[18]

Overall food availability is not the most clear determinant of nutrition and related morbidity and mortality levels in the Sri Lankan example. If this traditional pattern were the case, the *per capita* calorie availability, as stated, would be associated with a life expectancy of 54 years, 12 years less than the actual life expectancy.[19] Largely egalitarian food distribution and particular dietary composition are factors that act positively to offset low overall calorie availability.

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[18] Population Reference Bureau, *World Population Reference Data Sheet, 1978*, Washington, D.C.: Population Reference Bureau, 1978.

[19] *Op. cit.*, p. 16.

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NO. 62

Table III-2

FOOD BALANCE SHEET, AVERAGE 1971-1973 (AVERAGE POPULATION: 12,992,333)

('000 Metric Tons)

Commodity	Net food supply	PER CAPITA SUPPLY PER DAY* Grams	Calories	Proteins (gms)	Fats (gms)
CEREALS					
Rice	1230.92	259.56	895.48	17.65	1.30
Wheat flour	393.88	82.84	287.66	8.22	0.66
Maize	13.64	2.59	8.84	0.29	0.09
Millets	13.27	2.79	9.24	0.21	0.03
Other grains	1.21	0.25	0.84	0.02	0.01
TOTAL		348.03	1202.06	26.39	2.09
ROOTS & TUBERS					
Potatoes	20.71	4.36	4.02	0.07	-
Yams & Sweet Potatoes	47.95	10.08	9.90	0.38	0.09
Manioc	305.34	64.18	85.65	0.11	0.01
TOTAL		78.62	99.57	0.56	0.10
SUGAR					
Refined	240.63	50.74	201.95	-	-
Not refined	-	-	-	-	-
TOTAL		50.74	201.95	-	-
PULSES					
Green grams	1.98	0.59	2.07	0.15	0.01
Other pulses	26.15	5.54	19.11	1.40	0.04
TOTAL		6.13	21.18	1.55	0.05
Vegetables	460.85	92.40	50.78	2.45	0.21
Fruits	138.92	29.29	22.63	0.26	0.13
MEAT					
Tinned	0.42	0.08	0.14	0.01	0.01
Beef	16.78	3.54	3.26	0.62	0.07
Buffalo	0.39	0.08	0.07	0.02	0.01
Pork	0.74	0.16	0.40	0.02	0.05
Mutton	0.98	0.21	0.20	0.03	0.01
Poultry	3.41	0.72	0.59	0.13	0.04
TOTAL		4.79	4.66	0.83	0.19
Eggs	28.36	5.97	9.11	0.70	0.75
FISH					
Fresh	62.48	13.22	13.32	1.64	0.67
Dry	39.69	8.50	15.26	3.16	0.28
Tinned	1.65	0.35	0.60	0.07	0.03
TOTAL		22.07	29.18	4.87	0.98
MILK					
Cow	145.70	30.64	20.53	0.98	1.25
Buffalo	31.00	6.55	5.17	0.23	0.35
Milk foods	19.96	2.12	8.60	0.34	0.35
TOTAL		39.31	34.30	1.55	1.95
OILS & FATS					
Coconut	464.17	94.84	434.42	4.40	40.70
Coconut oil	47.67	10.07	90.66	-	10.07
Butter	0.41	0.11	0.79	-	0.09
TOTAL		105.02	525.87	4.40	50.86
T O T A L			2201.29	42.56	57.25

*Calculated using conversion factors given in: Income and Food Consumption Report to the Government of Sri Lanka by T.T.Poleman October 1973.

SOURCE: Statistical Abstract of Sri Lanka 1973, from Participatory Development and Dependence, The Case of Sri Lanka, The Marga Institute, Colombo, October 1977.

Although vitamin and protein-rich foods are generally available and evenly distributed throughout Sri Lanka, there are area and caste differences in the families' consumption patterns. The Vellalas, a segment of the Tamil population, have strict caste prohibitions on certain foods. The most devout are vegetarians, and nearly all of them abstain from beef, pork, turtle and certain fishes.[22] The association of fishing with low-caste occupations sometimes prevents families from supplementing their diet with fish; however, when necessary, most will include this readily available source of iron and protein in their diets. Meat such as beef, pork, and goat is available from butcher stalls in the cities, but the prices tend to be high and the quality low.

Income affects the number of meals consumed each day and how elaborate they are. The norm is to consume three meals each day and afternoon tea. Rice is eaten at every meal, with the morning rice usually left over from the previous night's meal. In the rural areas rice is not consumed in the morning, breakfast usually consists of a hot sambal (a dish made with ground chilies, onions, fish and coconut, or just boiled yams and coconut). Tea is usually included in this meal. At midmorning

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[22] Richard Nyrop, Area Handbook for Ceylon, Washington, D.C.: The American University, 1971, pp, 108-109.

some may have a refreshment of tea or coconut milk. The largest meal of the day comes at noon. It can include pol hodi (coconut milk soup), stew, and rice with a vegetable or dried fish garnish. There is afternoon tea and pastries for those who can afford it, followed by a light supper of rice and curry. Normally found in the diet are rice, cereals, potatoes, onions, peppers, tomatoes, carrots, cabbages, nuts (especially the coconut), and fruits such as pineapple, oranges, pumpkins, bananas, mangoes, and papaws.[23]

The etiquette of eating is very strict in Sri Lanka. It is customary to rinse the mouth before meals, to eat only with one's right hand and to observe the caste distinctions of ritual pollution. Accepting food from a person of lower caste is usually considered polluting. Those of lower caste cannot use the same utensils or cups when frequenting teahouses and often must drink out of a coconut shell. A Government-run school lunch program ran into opposition until arrangements were made for seating children of different castes separately and for hiring a high-caste cook.[24]

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[23] Ibid., pp. 136-137.

[24] Ibid., p. 101.

D. Government Programs

The Government has had a long-standing policy of food subsidies that has attempted to protect the most vulnerable sections of the population from hunger and starvation. Sri Lanka's public food distribution system dates from World War II. It was introduced initially by the British Colonial Government as a measure to enforce food rationing but became popular and has remained in effect since that time. The organization of the food subsidy program involves the Government purchasing food from farmers, mainly rice, and from abroad -- rice, wheat and sugar -- to be distributed to the public through a nationwide network of government-controlled outlets.[25] Each citizen is issued a food ration card and allocated a free ration of rice, a ration of rice at controlled prices, and a ration of sugar at subsidized prices. Other essential food items, such as spices and powdered milk, are also available through this system at prices considerably lower than what they would draw on the black market. Wheat flour is now freely available at both private and public outlets at about 70 percent of actual cost. This system of food subsidy and

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[25] Davidson R. Gwatkin, p. 8.

rationing ensures relatively equitable distribution of foodstuffs throughout the population.[26]

In a given year, 30 to 35 percent of Sri Lanka's calories and 25 to 30 percent of its protein move through this food distribution system. Subsidies for food are funded from general Government revenues; hence the cost of operating the food distribution system is a major item in the Government of Sri Lanka's annual budget. It accounts for about 15 percent of annual government expenditures, a figure five times that which is spent on defense.[27]

In addition to the national food subsidy program, the Government of Sri Lanka, with the enlisted aid of foreign donors, sponsors several supplementary feeding programs. As of the last Five-Year Plan, maternal and child nutrition was designated an important item in the preventive services health program. Action was to be taken to issue milk, other dairy products, and dietary supplements at antenatal and child welfare clinics to improve nutrition levels and to increase the popularity of dairy goods. The national milk feeding scheme was to be reorganized to reduce

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[26] The Marga Institute, Participatory Development and Dependence, The Case of Sri Lanka, Colombo: The Marga Institute, October 1977, p. 18.

[27] Op. cit., p. 9.

the cost of administration and distribution. In order to prevent adulteration and contamination it was decided to issue dry milk instead of fresh milk to lactating mothers and children.[28]

The Freedom From Hunger Campaign, operated co-jointly by the Medical Research Institute and the Ministry of Agriculture and Lands, works on specific nutritional-improvement projects. They have developed recommended hospital, and maternal and child diets, conducted surveys, and developed nutrition education materials. Medical research has been sponsored for the prevention of goiter and anemia and it has been suggested that all salt for human consumption be iodized.[29]

In addition to Government of Sri Lanka-sponsored dietary supplementation activities, foreign aid groups, most notably CARE, participate in suplementary feeding programs to combat existing malnutrition.

The largest of these programs, the thriposha program, is the source of much controversy among nutritionists and health planners in Sri Lanka. The thriposha program is aimed to deliver supplemental nutrition to children between the ages of six months

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[28] Ministry of Planning and Employment, The Five Year Plan, 1972-76, Colombo: Government of Ceylon, November 1971, pp. 116-117.

[29] Richard F. Nyrop, p. 136.

and five years. The target population is 550,000 children, though the total number of malnourished children is estimated to be 800,000. The cost of the program to the Government of Sri Lanka is Rs. 19 million, which covers only 25 percent of the production and packaging costs. The balance of the program costs are covered by CARE. Thriposha food consists of biscuits designed to be a palatable and nutritious suplement to the child's diet.

A monthly ration is distributed free of charge to the mothers of children considered to be malnourished. The estate population, however, must pay Rs .50 for each packet of thriposha unless the estate is part of a polyclinic. Only 50 percent of the island's estates currently are. This situation is particularly inequitable since indications are that the estate children are among the most severely at risk nutritionally. This is not, unfortunately, the only problem associated with the thriposha program.

There are numerous reports of a lack of monitoring in the distribution of the thriposha, where mothers will report to several clinics and collect their month's supply of biscuits from each one. There is a certain prestige associated with the processed, manufactured food supplements which acts as a disincentive to mothers who do strive to feed their infants well.

It encourages a kind of dependence on the supplement as many mothers avoid developing the proper weaning foods and delay making the transition to feeding the baby from the "family pot." In an effort to expand the benefit of the program and decrease the neonatal death rate associated with undernutrition, 65,000 portions of thriposha have been distributed to pregnant and nursing mothers. This also poses problems, because the women share with the family and, eating last, they seldom are able to consume any of that which is intended solely for them.

The Sarvodoya Shramadana Centers around the country have become involved in distribution of the thriposha to some 12,000 children. Their approach attempts to alleviate some of the difficulties associated with the program by designing a monitored distribution system which is linked to the provision of integrated health service, health education and community mobilization. They are also involved in developing a modified thriposha-like substance that does not contain maize (which must be imported) and that can be produced locally and inexpensively.[30]

The supplementary feeding programs have been criticized as being "Band-Aid" responses to the situation because they are not

[30] Extracted from conversation with Dr. Beatrice de Mel, Medical Research Institute, Colombo.

aimed at the root causes of the problem. In addition, they depend on individuals having access to health and educational facilities. The particular problem with the school feeding programs has been that the children reached are only those attending school -- very often the poor do not go to school. Also, supplemental feeding at school age is an after-the-fact gesture for many children, as they have already passed the most vulnerable years in terms of physical and mental development. While recognized as stopgap measures, they are needed for the short term in Sri Lanka while other programs directed toward the underlying cause of malnutrition -- insufficient economic growth, unemployment, and low agricultural production -- are designed and implemented.[31]

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[31] Robert R. Natnan Associates, Inc., pp. 31-32.

IV. ENVIRONMENTAL SANITATION

A. Introduction

The lack of general environmental sanitation is a major health hazard facing the Sri Lankan people today. While the standard of living in Sri Lanka is the highest in South Asia,[1] living conditions, nevertheless, are overcrowded, inadequate, and unsanitary. Development in environmental sanitation schemes has not kept pace with population growth, migration and changing needs. This section will attempt to highlight the environmental health situation in Sri Lanka, commenting briefly on sectoral deficiencies and avenues for intervention. Topics to be included in the discussion are: water supply; sewerage systems; housing; food sanitation; solid waste disposal; irrigation; industrial pollution; and environmental administration.

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[1] Davidson, R. Gwatkin, "Nutrition Planning and Physical Well-being in Kerala and Sri Lanka," prepared for Intercencia/AAAS Symposium, February 1973, Washington, D.C.: Overseas Development Council, January 1978, p. 1.

B. Water Supply

World Bank estimates show only 19 percent of the population have access to water which is suitable for drinking and domestic purposes.[2] Only one percent of the households in Sri Lanka have what WHO refers to as "a reasonable public water supply system." The majority of the population obtain their water from unprotected wells, springs, tanks, and rivers open to contamination.[3] However, although the nationwide standard of water supply service, in terms of the number of people served and the adequacy and safety of the supplies, is generally very low, still there appears to be an equitable distribution of the water available within the urban, rural and estate sectors of the population. Between sectors there are great differences in percent coverage of service and potability of water supplied as evidenced by the relatively reliable estimates of service levels by sector generated by the 1971 housing census. The findings of this survey are shown in Table IV-1.

As can be seen from the table, nation-wide only 20 percent of the housing units have any piped water supply whatsoever. Broken down by sector, 45 percent of the urban housing units have

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[2] The World Bank, World Development Report, 1978, Washington, D.C.: The World Bank, August 1978, p. 108.

[3] Op. cit., p. 353.

Table IV-1

Percentage of Housing Units With Domestic Water Supply, 1971

Source	Sri Lanka	Urban	Rural	Estate
Piped water on tap				
Inside unit	4.4%	16.3%	1.1%	5.2%
Outside unit but within premises	7.9%	10.2%	1.0%	48.0%
Outside premises	7.8%	18.8%	2.7%	21.6%
Water from well:	68.8%	50.5%	81.9%	15.4%
Other sources (stream, river, tanks)	8.9%	2.0%	11.0%	7.3%
Unspecified	2.3%	2.1%	2.3%	2.5%

Total Units: 2,217,478

Source: 1971 Housing Census, Government of Sri Lanka, in Environmental Assessment of Sri Lanka sponsored by The Library of Congress.

access to piped water, only five percent of the rural households, and an impressive 75 percent of the estate housing units have access to piped water. The urban sector has the largest percentage of housing units with piped water within the house (16.3%), however over half of the households in the cities still draw their water from wells, streams, rivers and tanks.[4]

In Colombo, the piped water supply dates back to the early 19th century when the city obtained its water from wells and canals. The water for the city comes from a reservoir and treatment facility at Labugama (completed in 1886), and a similar facility at Kalatuwawa. It is supplemented by supplies from the Kelani Ganga, a large river which discharges into the Indian Ocean just north of the capital. The water treatment systems consist of aeration, pre-chlorination, chemically assisted coagulation, sedimentation, filtration, post-chlorination and pH adjustment. Maintenance of treatment plants is often hindered due to shortages of spare and replacement parts requiring foreign exchange. With population increases in the urban areas resulting in greater demand for water, coupled with failures in the southwest monsoon, it has become increasingly difficult to deliver a 24-hour water suply to Colombo. There have been times

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[4] 1971 Housing Census.

when the impounding reservoirs for the city have been depleted to the point of being virtually empty, and water supply has been reduced to four to six hours of service per day. In addition to water shortages in the supplies feeding piped water systems, much of the water in the systems is lost or subject to waste and contamination.[5]

In the rural sector, a much smaller percentage of the population has access to piped water supplies. Almost 95 percent of the rural households still draw their water from other sources, most often wells. In an effort to improve housing facilities island-wide the Government of Sri Lanka plans to extend coverage with piped water supplies through house connections, yard connections and public standposts to a significant number of housing units in the rural sector.

Although the data show the estate sector to be less advantaged in terms of housing and nutrition, as a group it has the highest percentage of housing units with access to piped water. The number of households with indoor piped water supplies is only slightly above the national average, and yet 48 percent of estate housing units are provided with yard connections to piped water supplies.[6] It is difficult to assess the quality of

[5] Compilation of various international organization sources.

[6] Interpretation of data contained in Table IV-2.

water delivered as there is seldom any bacteriological monitoring, filtration or chemical treatment. It is safe to assume that, like the water supplies to the rural and urban sectors, the delivery systems are generally outdated, overused, and subject to contamination from human waste and industrial pollution.

C. Sewerage Systems

As regards excreta disposal in Sri Lanka, only one city, Colombo, has a sewerage system. Most of the sewage collection system in the capital city was installed some 60 years ago and, despite recent extensions and renewals, the major part of the system remains old, overloaded and provides no waste treatment. Of the housing units in the area, approximately 45 percent are connected to the system. The municipality is divided into two drainage areas: flows from the northern part of the city receive minimal treatment for removal of a proportion of the solids and are then discharged into the Kelani Ganga; flows from the southern area are discharged directly to the sea by means of a short outfall. Reports from the Colombo Municipal Council, which maintains and operates the system, state that some of the trunk and subsidiary sewers are overloaded, pumping station capacities

are inadequate and sewers continually overflow to surface water drains.[7]

For the housing units within Colombo not connected with the sewerage system, and for housing units in other urban areas, excreta disposal is effected through latrines -- primarily bucket type. As of the 1971 housing census, 20 percent of the urban population lacked service altogether.

Table IV-2 provides sectoral comparisons of latrine facilities as of 1971. As the figures show, the excreta dispoal facilities for the rural sector are the most deficient, with two percent of the housing units with flush toilets, 56 percent with some other type of latrine and 42 percent with no latrine facilities.

The estate sector fares much better in terms of sanitation facilities. Though only eight percent of the housing units have flush toilets, the estate sector has the largest number of water seal latrines (33.9 percent of the housing units) and only 13.4 percent of the housing units are without some type of latrine facility.

There are government programs under way to improve facilities for excreta disposal in areas where they continue to

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[7] Compilation of various international organizational sources.

Table IV-2

Percentage of Housing Units With Latrine Facilities by Sector, 1971

Facility	Sri Lanka	Urban	Rural	Estate
Flush toilet				
inside unit	3.7	12.9	1.2	3.7
outside unit	3.1	9.8	1.0	4.5
Water seal	14.3	19.2	9.9	33.9
Bucket type	4.8	19.4	1.9	4.1
Pit	38.8	18.3	44.4	38.2
None	34.3	19.1	41.5	13.4
Unspecified	1.2	1.3	1.0	2.2

(Total Units: 2, 217, 478)

Source: 1971 Housing Census, Government of Sri Lanka, in Environmental Assessment of Sri Lanka sponsored by Library of Congress.

be inadequate. Under the "aided scheme of latrine construction" the government provides financial assistance for poorer households in rural areas to enable them to construct sanitary latrines. In 1973, Rs. 400,000 was allocated for this program, Rs. 224,345 of which was actually expended. In areas where filaria are endemic, assistance is given to convert bucket systems to water seal latrines.[8]

D. Housing

Overcrowding, coupled with inadequate environmental sanitation in and around the households, is a serious problem in Sri Lanka. Table IV-3 shows the percentage distribution of housing units, by number of persons in Sri Lanka. The largest percentage of housing units contain between four and six persons per household.

In the country as a whole, the average house size is two-roomed.[9] In the urban and rural sectors, three-roomed houses are the norm, while in the estate sector, two-roomed houses are most

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[8] Environmental Assessment of Sri Lanka, (draft), supported by Library of Congress.

[9] Rooms include: living room, store room, bedroom, kitchen, enclosed verandah, but not bathroom, latrine or open verandah.

Table IV-3

Percent Distribution of Housing Units,
By Number of Persons: 1971

Persons per housing Unit	Percent
All housing units	100.0
1 person	6.1
2 persons	8.1
3 persons	11.1
4 persons	12.9
5 persons	13.6
6 persons	12.6
7 persons	11.0
8 persons	8.7
9 persons	6.2
10 persons and over	9.7
OTHER HOUSING UNIT MEASURES	
Number of housing units	2,217,478
Mean number of persons per housing unit	5.6
Median number of persons per housing unit	5.4

Note: A housing unit is defined as a place of residence which is separate from other places of residence and which has independent access. Of the total number of housing units, 85 percent were occupied by single households. A household is defined as a single person or group of persons living together and having common cooking arrangements. Data on size of household are not available. Housing data are from a 100-percent tabulation for urban areas and a 10-percent sample tabulation for other areas.

Source: Bureau of the Census, Country Demographic Profiles, Sri Lanka, Washington, D.C.: U.S. Dept. of Commerce, November 1977, p. 14.

commonly found. The average number of persons per room in urban and rural sectors was 1.72. In the estate sector it averages as much as 2.4.[10]

As can be seen in Table IV-4, in single-roomed houses the average occupancy level was 4.23 persons per room for the urban sector, 4.54 for the estate sector, but only 3.81 persons per room for the rural sector. Of the dwellings in the estate sector, 30.57 percent are one-roomed, where an average of five persons live without any specialized use of space. The rural and urban sector inhabitants tended to have more adequate housing in terms of number of rooms with only 10.2 percent and 11.6 percent respectively of one-roomed houses.[11] Housing in the estate sector appears to be the most limited, with 74.9 percent of the houses either one or two-roomed.

The nationwide average for overcrowding, using more than two persons per room as the definition for overcrowded, was 40 percent. Disaggregating the data by urban, rural and estate sectors, the estate sector again fared the worst, with figures of 35 percent, 37 percent and 75 percent repectively.

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10 "Housing Deficiencies of Low-Income Households," in "Poverty in Sri Lanka," Annual Budget Submission, Annex A, Colombo: USAID, May 1978, p. 47.

11 Ibid.

Table IV-4

Size of Housing and Occupancy Rate By Sector

Size of House No. of Rooms	URBAN Percent of Houses	URBAN Percent of Persons	URBAN Average Persons per Room	RURAL Percent of Houses	RURAL Percent of Persons	RURAL Average Persons per Room	ESTATE Percent of Houses	ESTATE Percent of Persons	ESTATE Average Persons per Room	ALL ISLAND Percent of Houses	ALL ISLAND Percent of Persons	ALL ISLAND Average Persons per room
1	11.60	8.50	4.23	10.20	6.91	3.81	30.57	26.47	4.54	12.58	9.11	4.07
2	23.31	22.20	2.75	26.72	24.71	2.60	44.31	44.36	2.62	27.93	26.14	2.63
3	25.56	26.48	1.99	27.60	28.05	1.91	16.03	18.22	1.98	26.03	26.80	1.93
4	17.83	18.31	1.48	17.09	18.55	1.53	4.53	6.27	1.81	15.92	17.32	1.53
5	11.39	12.68	1.29	8.46	9.70	1.29	1.32	1.15	0.91	8.25	9.43	1.28
6	4.30	4.33	0.97	4.96	5.70	1.08	1.51	1.69	0.98	4.48	5.05	1.06
7	3.54	4.22	0.98	2.32	2.99	1.04	0.38	0.56	1.00	2.34	2.98	1.02
8 - 10	2.04	2.57	0.84	2.29	2.85	0.83	0.75	1.01	0.78	2.08	2.62	0.83
11 - 14	0.43	0.71	0.78	0.30	0.45	0.71	0.38	0.29	0.36	0.33	0.48	0.69
Over 14	0.0	0.0	0.0	0.06	0.09	0.50	0.19	0.04	0.05	0.06	0.07	0.14
Not Stated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	100.00	100.00	1.72	100.0	100.0	1.72	100.0	100.0	2.40	100.0	100.0	1.77

Source: Survey of Consumer Finance Table 39 1973, from USAID. Annual Budget Submission, FY 1980, Sri Lanka Columbo, Department of State, May 1978, Annex A.

A note about the housing in the estate sector is important. Not only do the statistics show the dwellings in the estate sector to be the most substandard, and certainly the most physically and emotionally stressful, further the householders have no choice in regard to their housing. The houses are provided by the proprietors of the estate.

Aside from overcrowding, other shortcomings in housing facilities include a lack of cement flooring, inadequate roofing, and no access to bathing facilities. With regard to flooring, 53.95 percent of the island's houses have either clay or pressed earth floors.[12] Table IV-5 shows, in the estate sector, as much as 90 percent of the housing units are without cement floors. Flooring is important in the case of low-income households because most of these people sleep on straw mats on the ground.

Roofing is another important factor in ensuring the health of a dwelling's inhabitants. The majority of the houses in Sri Lanka are without tiled or asbestos roofing though most estate line rooms have roofs of galvanized aluminum sheeting.[13] As for bathing facilities, Table IV-6 shows only seven percent of houses in Sri Lanka to have bathrooms either inside or outside of the

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[12] Ibid., p. 48.

[13] Ibid., p. 48.

Table IV-5

SHORTCOMINGS IN HOUSING FACILITIES BY SECTOR

	Urban	Rural	Estate
One-roomed houses	11.60%	10.20%	30.57%
Overcrowding (room-wise)	35%	37%	75%
Housing without cement floors	26.32%	57.24%	90%
Without tiled or asbestos roof	48.98%	55.99%	82.45%
Without latrines	39.1%	43.6%	29.4%
Without pipe-borne water inside or outside house	51.9%	96.0%	12.4%

Source: USAID Annual Budget Submission, FY 1980, Sri Lanka. Colombo: Department of State, May 1978, Annex A, p. 48.

Table IV-6

Percentage of Housing Units With Bathing Facilities, 1971

Facility	Sri Lanka	Urban	Rural	Estate
Bathroom				
inside	4.0%	15.8%	.8%	3.7%
outside	2.9%	11.7%	.3%	5.8%
Well water	53.3%	52.6%	59.8%	11.8%
Other (river, stream, tank)	34.8%	14.4%	34.4%	74.1%
Unspecified	4.9%	5.6%	4.6%	5.7%

(Total Units: 2,217,478)

Source: 1971 Housing Census, in Environmental Assessment of Sri Lanka, (draft), sponsored by the Library of Congress.

housing unit. In the urban sector 16 percent of the housing units have indoor bathrooms, whereas in the rural sector the figure represents less than one percent of the total housing units.

Judging by the number of rooms, persons per room, housing materials and the availability of bathing facilities, housing in Sri Lanka is seriously deficient. In terms of availability of space, the estate sector is the most overcrowded, however based on housing materials and sanitation, the rural sector is generally the worst off. Health education is successful as an intervention in the transmission of disease, given substandard housing facilities, however large scale expansion and rebuilding of housing units is indicated for significant improvement in the physical and mental health of most of Sri Lanka's people.

E. Food Sanitation

Information on food sanitation measures, aimed at safeguarding products as they move from the raw production stage to the consumer, is not readily available for Sri Lanka. Most of what can be said about food sanitation in Sri Lanka, therefore, must be based upon second-hand sources and conjecture. It is quite possible that the paucity of data on control programs, in

itself, gives strong indication as to the status of food sanitation within the country.

Though limited in terms of population protected, there are sanitation control laws and inspection criteria for most permanent food establishments, such as restaurants, food stores and food processing plants. Food sanitation programs for large-scale food distribution and processing establishments are said to be fairly effective, however, the percent of the population with any contact with their products is very small.[14] Frozen and canned foods are expensive and hard to find. For example, a jar of commercially processed preserves is reported to cost the average person almost an entire day's wages.[15] The benefits of food sanitation, then, are felt primarily by the well-to-do urban dwellers who are the only ones that can afford packaged and processed foods and eating in restaurants.

The remainder of the populace--the less well-off urban inhabitants, and the rural population--are not covered by any formal food sanitation programs. For the rural population this tends to pose less of a problem. Here, the food chain from

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[14] S. Rajagopalan, Guide to Simple Sanitary Measures for the Control of Enteric Diseases, Geneva: World Health Organization, 1974, p. 67.

[15] Conversation with Dr. Paul Woolley, Pennsylvania State University, recent WHO consultant for Sri Lanka.

producer to consumer is usually simple and direct. The minimal handling and quick consumption of the food decreases the risk of contamination and spoilage. Of course, home processing and preserving practices are not free from risk but, overall, rural inhabitants tend to suffer less from food sanitation problems than their urban counterparts.

In the urban environment, an extended food distribution network multiplies the risk of illness associated with contaminated foodstuffs. The main purveyors of food, particularly in the cities, are vendors. These persons may be itinerant, transient and sometimes in poor health. The problem of sanitation for the vendors, and the markets in which they may sell their food, is a major one throughout the developing world.

In addition to attempting to build new markets with water supplies, and impose various control requirements upon the vendors, there must be radical changes in food distribution and consumption habits.[16] Open air cafeterias that serve hot food throughout the mid-day, are common. There are also vendors who pedal around on bicycles all day delivering hot meals to businessmen in their offices. Practices such as these, despite

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[16] Op. cit.

most precautions that may be taken, provide the perfect medium for the growth and transmission of food-borne disease.[17]

In a country with such high rates of gastrointestinal illnesses and enteric diseases, including cholera, intervention in the food sanitation sector should be part of a total environmental sanitation program. Targetting efforts at safe water supply and excreta disposal systems alone will not be entirely fruitful. With food sanitation, as in most other aspects of environmental health programming, the role of health education and community participation in conjunction with more stringent control measures is an extremely important one and an encouraging potential avenue for low-cost intervention.[18]

F. Solid Waste Disposal

Solid waste disposal is not a currently relevant environmental health concern in the Sri Lankan experience. Unlike the situation in certain more developed countries, researchers in the field have explained that waste of any kind is a luxury that Sri Lanka cannot afford. The presence of solid waste imples an abundance of materials and a degree of

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[17] Op. cit.

[18] S. Rajagopalan, p. 67.

technological specialization so that it is more cost-effective to discard things than to save and reuse them. This is not the case for Sri Lanka where materials are scarce, imports are banned and the economy is threatened.

Very little is ever thrown away in this country where such a premium is placed upon glass, wood and all paper products, metal and plastics. Even that which is placed on the street for trash collection, (primarily in the cities and by foreigners or affluent Sri Lankans), will be rummaged through by scavengers looking for that which can be recycled or sold. Paper is retrieved, washed, dried, and sold again. Glass is always reused — in fact there is a deposit required for all glass products purchased. Metal products such as coat hangers and aluminum foil are very valuable. They are always recycled. Plastic bags or any kind of plastic containers are precious and will never be left discarded. Because of the shortages of so many things taken for granted elsewhere, there is very little solid waste which requires disposal. As a result, the cities are very clean and there are no dumps in and around them.[19]

In the rural sector there are even fewer processed materials and packaged goods available to be discarded. Edible waste, if

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[19] Impressions and Statements gathered from conversations with Paul Woolley, Penn. State University.

not consumed by the family, is fed to animals. As mentioned in the food sanitation section, there is very little frozen or canned food, hence domestic solid waste generation is minimal.

In the industrial sector there is undoubedly some solid waste production, however it is on a much smaller scale than in more developed countries. As economic development and urbanization proceed, solid waste disposal likely will become a greater area for concern. At the present time, regulations and procedures concerning solid waste disposal in the domestic and industrial sectors do not exist or, if they do, they are difficult to monitor and enforce. Once widespread action is called for with regard to solid waste in Sri Lanka, it may be even more difficult to implement than in more developed countries with a history of solid waste disposal problems because the consciousness and orientation toward solid waste as a priority area in environmental health intervention has not existed previously.

G. Irrigation

Of the total land area of Sri Lanka (16.2 million acres), about five million acres are used for agriculture, 9.3 million acres are forested and the remaining 1.9 million acres are bodies

of water, urban and other areas. About half of the forest land is potentially suitable for agricultural development. The majority of the land area, however, is in the dry zone.

The Manawelli Ganga, Sri Lanka's largest river with a catchment of 4,000 square miles, is the principal source of water available for irrigation in the dry zone. The Manawelli Ganga Development Scheme is a 30 year plan for the development of agriculture by irrigation. Over 900,000 acres are intended to receive water from the Manawelli, some 650,000 acres of which are currently undeveloped land. Stage I of the project - supplying water to 130,000 acres of existing irrigated land through refurbishing and expanding old systems, has been completed. Stage II will involve a variety of activities aimed at developing agricultural productivity over the longer term in an area of 106,000 acres.[20]

For economic reasons, the Government of Sri Lanka places great emphasis on irrigation projects to increase the amount of cultivable land and develop agricultural self-sufficiency. There are mixed feelings as to the public health implications of large-scale irrigation and movement of the population into the

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[20] W. Paul Weatherly and John H. Arnold Jr., Environmental Assessment of Stage II of the Mahawelli Ganga Development Project, Washington, D.C.: USAID, September 1977, p. 1.

malarious regions of Sri Lanka's dry zone. Environmental assessments carried out on the Manaweli Ganga Development Scheme indicate that, initially, the incidence of malaria will probably increase both in the newly developed regions and in those areas from which the water has been diverted. New breeding habitats for malaria-carrying mosquitoes will be created as a consequence of irrigation.[21] Offsetting this, however, the implementation of the scheme will increase the water storage in the major tanks and reduce the storage in the small village tanks which are currently a habitat for mosquitoes. Further, the improvement of natural drains will remove tailwater from the fields which stagnates and provides breeding grounds for mosquitoes. It is felt that the net effect of irrigation on malaria transmission will be to reduce the incidence of malaria, though prophylactic malaria monitoring is clearly indicated.[22]

In addition to malaria, the incidence of other water-borne diseases is expected to increase initially, with changes in the population density and proximity of people in homestead areas. Though schistosomiasis does not occur in Sri Lanka due to the absence of the snail which serves as the intermediate host for

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[21] Ibid., p. 5.

[22] Selected international organizational sources.

this disease, outbreaks of cholera, typhoid, and other water-borne diseases are possible. Poor sanitation practices are expected to be a problem in the new agricultural areas. The boiling of drinking water is not widely practiced and, with deforestation and resultant scarcity of cheap firewood, it may become prohibitively expensive as a sanitation measure.[23]

A final potential public health problem associated with the expansion of agriculture through irrigation is an increased risk of pesticide poisoning. The introduction of greater quantities of agrochemicals poses risk of accidental contact with poisons from careless disposal or use of pesticides. Instructions in safety precautions and a uniform code of warning labels on all pesticides will prevent some of the accidents. As with most of the environmental health problems implied in the massive irrigation scheme, a combination of health education, community participation and government controls will effect the greatest accomplishments in safeguarding those who settle in the new agricultural areas.[24]

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[23] Op. cit.

[24] Ibid.

H. Industrial Pollution

Systematic industrial development in Sri Lanka has only begun since independence in 1948. Industry concentrates primarily on the production of consumer goods, the majority being manufactured in small scale industries in the private sector. There are no data on pollution from these small-scale industries, however it can be expected that private sector chemical, textile, paper and food production operations could lead to pollution. It is known that these activities demand large quantities of water for manufacturing processes and invite indiscriminate use of natural resources, both of which impact directly on the environment and indirectly on human health.[25]

Geographically, industry has been concentrated in the southwest, in and around Colombo. The Government of Sri Lanka now is attempting to spread industrial development to other regions of the country which will disperse the environmental load and lessen the effects of industrial pollution.

The public sector is responsible for heavy industry in Sri Lanka through several large state-owned firms producing cement, chemicals, steel and petroleum products. The state-owned firms are reported to be the major polluters of the Sri Lankan

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[25] Draft of Environmental Assessment of Sri Lanka sponsored by the U.S. Library of Congress, Section 5.3.

environment.[26] Table IV-7 shows the state-owned firms recently associated with industrial pollution. As can be seen, from examination of the table, in several cases the type of pollution from a particular industry and the control measures are unknown.

The attitude, oft-seen in the developing world, is that the benefits of industrial development to the economic growth outweigh the risks involved in industrial pollution. If industrial development proceeds unchecked, the depletion of natural resources and environmental pollution will soon be very grave problems. Control measures, however, imply a forward-thinking shifting of priorities and a certain amount of economic flexibility which are not necessarily present in Sri Lanka today. Preventive activities with regard to industrial pollution are more easily executed and less expensive than post facto or crisis intervention, however the public awareness and mobilization in support of control measures with are not present given the relative newness of the problem and the urgency for economic development and employment opportunities.

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26 Ibid.

Table IV-7

Industrial Operations and Pollution in Sri Lanka

Industry	Location	Ownership	Production/Output	Source of Raw Materials	Pollution	Controls
Ceylon Cement	Kankesanturi, Puttalam, Galle	state	Combined production of 417,815 tons in 1973; 474,000 tons in 1974, meets S.L. demands for concrete; 5,000 tons exported in 1973	Sri Lankan limestone: Jaffna Peninsula and Aruwakulu	Plants at Kankesanturai and Puttalam reported to be polluting with kiln dust	plants have been ordered to install electrostatic precipitators
Sri Lanka Tire Corporation	Kelani	state	truck tires, agricultural tires, car and jeep tires, tubes	Sri Lankan rubber; oil based raw materials(important)	not known	not known
Paranthan Chemical Corporation	Paranthan	state	manufacture and sale of caustic soda, chlorine, hydrochloric acid, table salt; byproducts such as ferric chloride, zinc	Sri Lankan salt, important materials	has emitted into the environment, chlorine originally intended for DDT manufacture	not known
Ceylon Petroleum Corporation	Colombo	state	produces fuel oil, naphtha, bunker fuels, marine diesel, marine lubricants, aviation gasoline and turbine fuel, refinery produced 1,672,000 tons or refined products in 1973	imported crude oil	sulfur dioxide emissions	not known
National Textile Corporation	Veyangoda, Thulhiriya, Pugoda	state	[illegible] form spinning, weaving, [illegible] production of yarn	imported raw cotton from Egypt (14,043,336 lbs. in 1973)	untreated alkali and sizing effluents	not known
Spray Dried Milk Factory	Ambewela	state	powdered milk	National Milk Board	alkali and milk washings enter water supply of neighboring villages	not known
Eastern Paper Mills Corporation	Valaichenai	state	production capacity of 22,500 tons per year; 19,338 tons of paper products in 1973	straw (major raw material); S.L. sources, waste paper	alkali and particulate wastes from the plant said to destroying the aquatic environment along the eastern coast in the vicinity of the plant	not known

Source: Draft, Environmental Assessment of Sri Lanka sponsored by the Library of Congress, Section 5.3.

I. Environmental Health Administration

There are three ministries concerned with basic sanitary measures in the Government of Sri Lanka. They operate through five agencies charged with specific functional responsibilities. Chart IV-1 details the institutions involved in the water supply and sewerage sector. The National Water Supply and Drainage Board (NWSDB) is the principal implementing agency for urban and rural water supply and drainage schemes.[27] Chart IV-2 outlines the functional divisions of institutions involved in the environmental sector.

The provision of pipe-borne water supplies and sewerage was part of the Government of Sri Lanka's program to improve preventive health services as stated in the last Five-Year Plan (1972-76). A list of the approved water supply schemes to be undertaken by the Department of Water Supply and Drainage as part of the 1972-76 Five Year Plan is given in Table IV-8. During the 1972-76 period it was proposed to construct water supply systems in 100 rural areas at an estimated cost of Rs 22 million or US$ 1.5 million. A scheme to improve and expand water supplies to the Greater Colombo area and other urban areas on a priority basis was also initiated. A phased program was undertaken to

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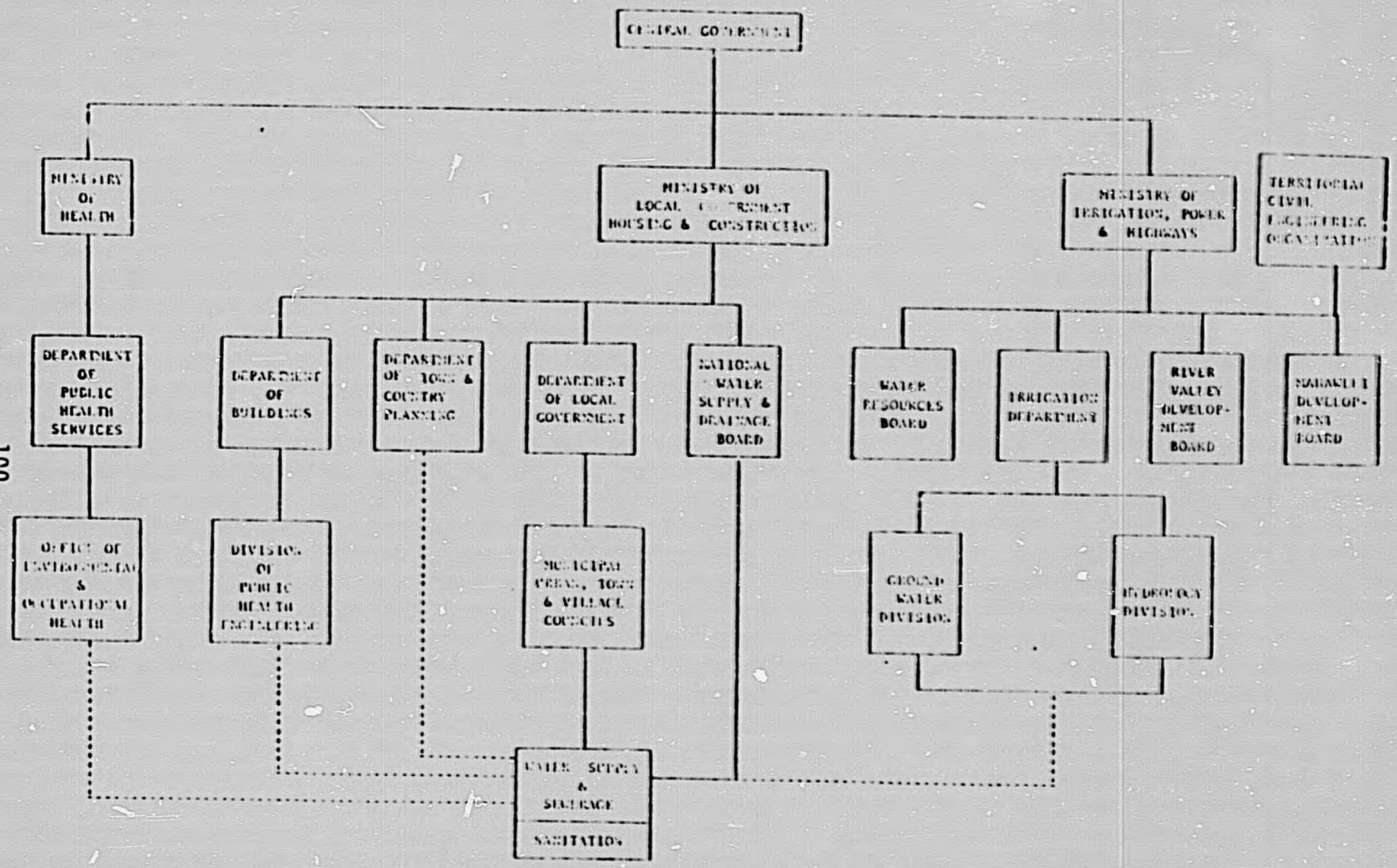
[27] Community Water Supply and Excreta Disposal in South-East Asia. New Delhi: World Health Organization. South-East Asia Series No. 4, p. 14.

Chart IV-1

INSTITUTIONS INVOLVED IN THE SECTOR



Source: Compilation of various international organizational sources.

Chart IV-2

SECTOR INSTITUTIONS ACCORDING TO FUNCTIONS

Activity	Urban	Rural
Planning, Macro and Sector	Ministry of Local Govt. Housing and Construction National Water Supply & Drainage Board Ministry of Plan Implementation	Ministry of Local Govt. Housing & Construction National Water Supply & Drainage Board Ministry of Plan Implementation
Project Generation	Ministry of Local Govt. Housing & Construction, Department of Local Government National Water Supply & Drainage Board	The District Political Authority or District Minister in addition to the institutions as for Urban Schemes
Project Selection	Department of Local Government National Water Supply & Drainage Board	Department of Local Government National Water Supply & Drainage Board The District Political Authority or District Minister
Project Design	National Water Supply & Drainage Board	National Water Supply & Drainage Board
Project Execution	- do -	- do -
Project Supervision	- do -	- do -
Operation and Maintenance	Smaller schemes - by the Local Authority Major schemes - Headworks by NWSDB Distribution System by Local Authority or NWSDB	The Local Authority (initial period of operation by NWSDB)

Source: Compilation of various international organizational sources.

Table IV-8

APPROVED WATER SUPPLY SCHEMES

Project	*Estimated cost Rs.*	*Project*	*Estimated cost Rs.*
Projects in South-West Coastal Area		**Rural Water Supply Schemes**	
Galle	21,600,000	*(a) U.N.I.C.E.F. Financed*	
(Kelaniya to Hendala) Stage I	26,200,000	100 Rural Schemes	22,000,000
Ambalangoda	4,900,000		
Kalutara—Stage I	13,300,000	*(b) Other Schemes*	3,000,000
		Rakwana	
Total	66,000,000	Weraduwa	
		Elpitiya	
Urban Water Supply Schemes		Mawathagama	
Weligama	2,400,000	Mudunckada	
Pelmadulla	550,000	Udukumbura	
Samanthurai	1,340,000	Nelundeniya	
Ruwanwella	975,000	Wariyapola	
Yevangoda	2,900,000	Narammala	
Gampola	1,430,000	Hiripitiya	
Balangoda	1,650,000	Pussellawa	
Ratnapura—Stage I	7,600,000	Talahena	
Bandarawela	1,850,000	Araly South	
Hambantota (Augmentation)	3,300,000	Araly North	
Batticaloa	2,125,000	Nainativu	
Polonnaruwa	5,260,000	Baswatte	
Kilinochchi	2,950,000	Pundalu Oya	
Amparai—Stage II	3,490,000	Karainagar	
Rambukkana	1,130,000		
Kurunegala	13,000,000		
Kehelwatte	2,150,000		
Hingurakgoda	2,500,000		
Peliyagoda	1,200,000		
Mawanella	2,200,000		
Total	60,000,000	Total	25,000,000

Source: Ministry of Planning and Employment, The Five Year Plan, 1972-1976, Colombo: The Government of Ceylon, November, 1971, p. 113.

provide pipe-borne water and sewerage to major medical institutions that lacked such facilities. Government assistance was to be heightened during the Plan Period to intensify health education and enlist community participation in the construction of latrines for urban and rural areas.[28]

In the multilateral sector, UNICEF committed US$1 million in 1970 to bring safe drinking water to 100 rural communities over a five year period. Technical and administrative problems and an increase in the cost of water pipes, pumps, and accessories, however, resulted in only 55 of the water supply schemes covering approximately 100,000 people having been completed by 1977.[29] Community participation in the water schemes was extremely important, with 50 percent of the local costs being met by the village council.

Despite these efforts large underserved populations and areas remain with generally an inadequate and/or inoperative environmental sanitation scheme. The present rate of water supplies construction is not sufficient to achieve the WHO Water Decade objective of 100 percent coverage by the year 1990.

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28 Ministry of Planning and Employment, The Five Year Plan, 1972-76, Colombo: The Government of Ceylon, November 1971, p. 117.

29 Annual Budget Submission, Sri Lanka FY 1980, Annex C, p. 358.

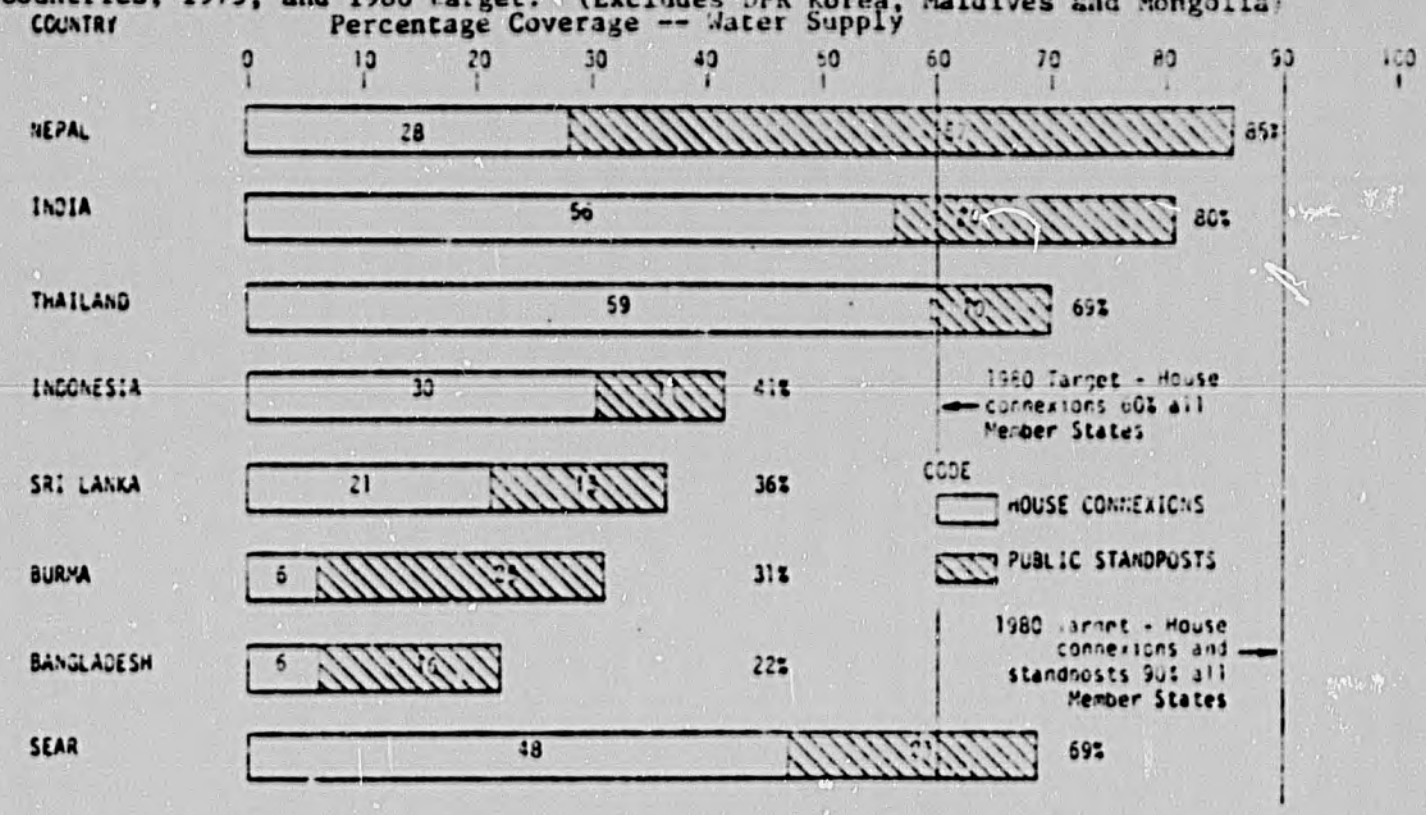
Certain areas of the island present geological situations which make water systems development difficult and expensive. Also there is inadequate emphasis by local authorities on water supply and excreta disposal programs.

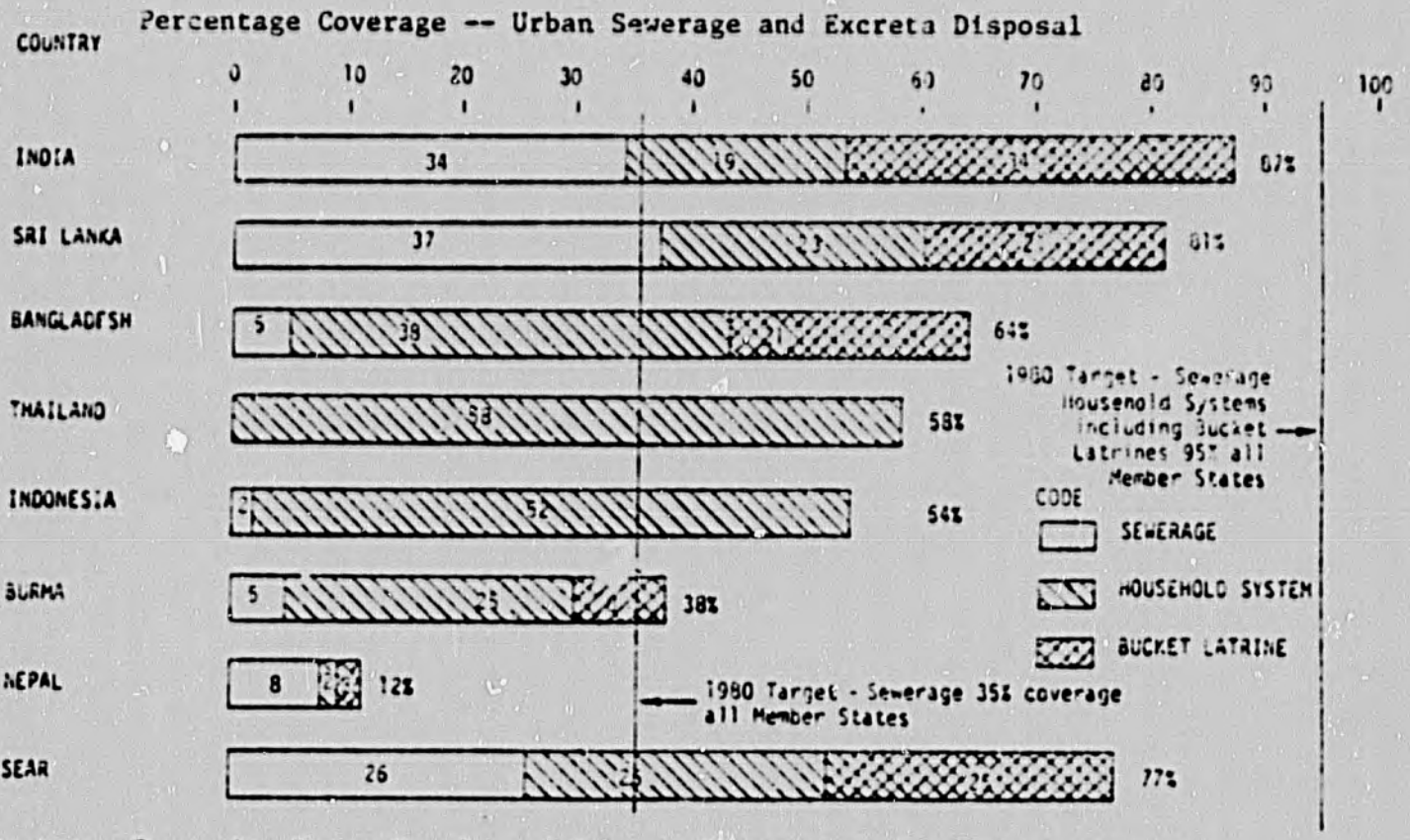
At the central level the government has not set any concrete goals for the water supply and sanitation sectors. These sectors are linked to the government's programs which aim to construct 100,000 new houses within the next several years. There is a general lack of sectoral coordination and a severe bottleneck in the NWSDB's project preparation capacity. While a high national literacy rate enables environmental health education efforts to be fairly effective in protecting the population from the hazards of the adverse environment, this can only be viewed as a stopgap measure.

The Government needs to set explicit goals for the water supply and sanitation sector which will include forward planning based on rational project selection criteria. Operation and maintenance standards should be raised and preventive maintenance introduced. Finally, external financial assistance and technical cooperation needs to continue in order to meet 1980 extension of coverage goals as highlighted in Charts IV-3 and IV-4.

Chart IV-3

Percentage Coverage Urban Water Supply and Urban Sewerage and Excreta Disposal in Sear Countries, 1975, and 1980 target. (Excludes DPR Korea, Maldives and Mongolia)

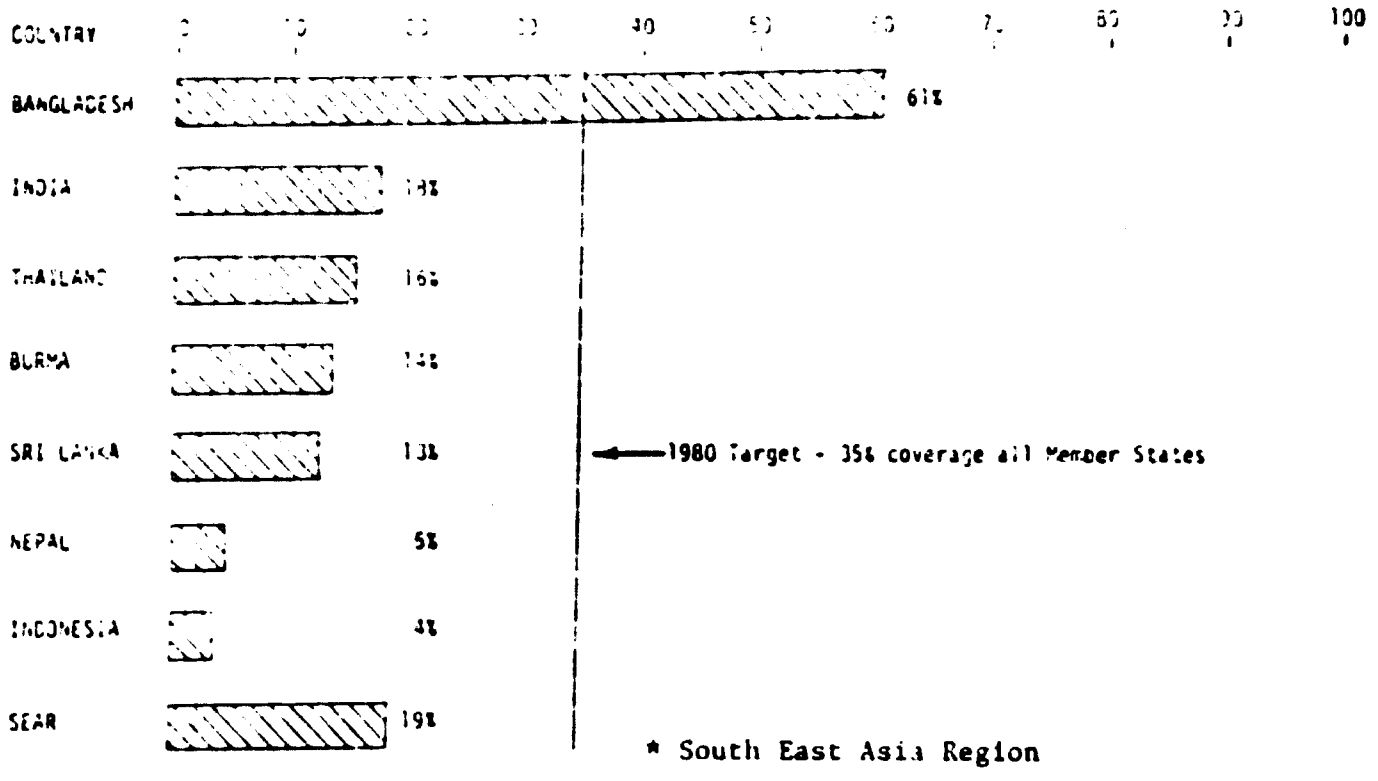


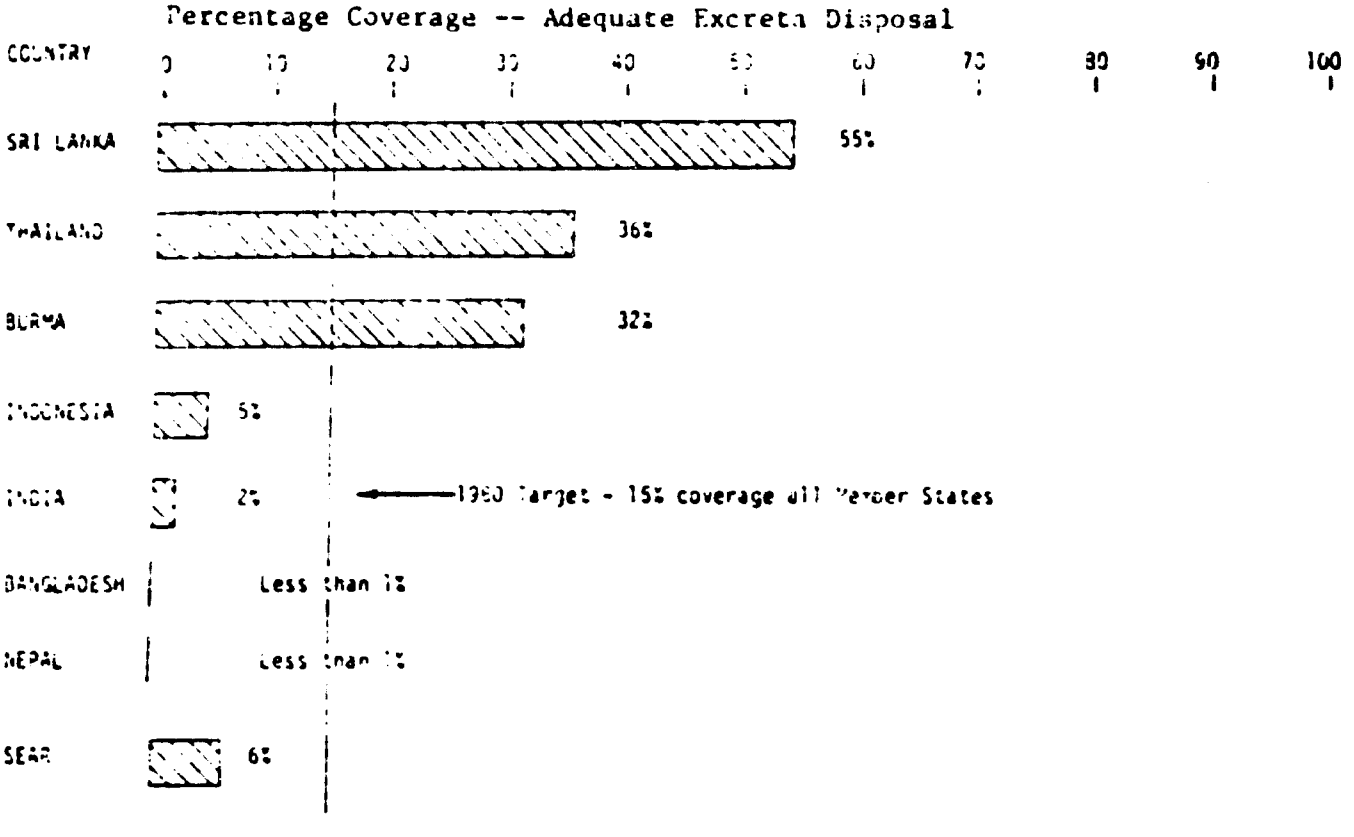


Source: Community Water Supply and Excreta Disposal in South-East Asia, New Delhi: World Health Organization, South East Asia Series, No. 4.

Chart IV-4

Percentage Coverage, Reasonable Access to Safe Rural Water Supply and Adequate Excreta Disposal in Sear* Countries, 1975, and 1980 target (Excludes DPR Korea, Maldives and Mongolia)





Source: Community Water Supply and Excreta Disposal in South-East Asia, New Delhi: World Health Organization, South East Asia Series No. 4.

V. NATIONAL HEALTH POLICY AND SECTOR PLANNING

The Government of Sri Lanka has been and is deeply committed to social welfare. An aspect of this orientation includes continued attention to improving and maintaining the health of the populace. An organized health service has been in existence for over a century, with substantial investments in the development of health services having been made throughout the last 35 years. During the last Plan period (1972-76) about two percent of the estimated gross national product and seven percent of total government expenditure was allocated for health services.[1] These investments, which are considerably higher than public expenditures on health services in many developing countries, underlie the comparatively impressive health indicators of Sri Lanka relative to neighboring countries.

The Ministry of Health is responsible for operating the health care services for the entire country as well as formulating policy and planning. The political head of health

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[1] Ministry of Planning and Employment, The Five Year Plan, 1972-76, Colombo: Government of Ceylon, November, 1971, p. 113.

services, the Minister of Health, under the new constitution introduced in 1972, wields ultimate executive power and establishes Government health sector policy. (This is then relayed to the Ministry of Planning and Employment for inclusion in the Five Year Plan.) Assisting the Minister of Health is a Deputy Minister and a Secretary of the Ministry. The Secretary functions as a liaison between the Minister and the Director of Health Services. The health services are administered from the central ministry, but much responsibility is delegated to the peripheral heads. The work load is divided up functionally under the Director of Health Services by five Deputy Directors. One of these five Deputy Directors has responsibility solely for planning.[2]

Rapid changes in the socio-economic structure of the people of Sri Lanka have necessitated constant review of the existing health policies and adaptation of plans to suit the modified environment. The traditional policy orientation toward provision of curative services, to the relative neglect of the important area of preventive services, has undergone rethinking and redirection over the 1970's. Despite the attempted shift from curative to preventive services recently, it must be noted still

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[2] S.D.M. Fernando, "Health Services of Sri Lanka," NIHAE Bulletin, Vol. IX, No. 2-1976, p. 126.

that approximately 75 percent of the health budget is spent on providing a relatively high technology curative medical service on an individual commodity basis.

The health strategy for 1979-83, as put forth by the Planning Commission in the absence of a new formal Five Year Plan, is designed to improve the health status of the population through increased emphasis on preventive health care coupled with organizational changes in the curative service. There are seven major components to the newly adopted health strategy.

A major development and expansion of health manpower is seen as a prerequisite for change in the organization and improvement in health care services. Manpower shortages exist at all levels of the health system due to attrition, historic shortages and increased demand for services. An increase in training facilities and intake, particularly of doctors, nurses, assistant medical practitioners, public health workers and community health workers is necessary to meet current and future needs. Expanded training facilities for doctors and assistant medical practitioners will be provided during the plan period through the new medical facilities at Jaffa and the Universities at Matara and Batticaloa. The Institute of Hygiene at Kalutara is to be strengthened to provide adequate public health training to doctors, midwives, public health nurses and health inspectors and

the intake into nursing schools has been increased to 1,200 students per year.[3]

The health program will aim at reducing infections and infestations through immunization, improvement in environmental sanitation and water supply and the strengthening of the specialized campaigns for diseases requiring intensive attention. Investments, just in the sub-sector of water supply, will total Rs 1,131 million over the period 1979-83. They will include: the completion of 100 rural water schemes with UNICEF assistance; minor water supply schemes costing some Rs. 98 million; commencement of work on the Rs. 310 million South West Coastal Water Supply Project; and major investment in the Greater Colombo, Galle and Negombo sewage systems estimated at Rs. 338 million.[4] In addition health education programs are undergoing revision to meet the particular health needs of the people in various regions with maximum participation by every member of the health delivery team. Immunization levels are to be increased with measures to ensure coverage of all children before their first birthdays.[5]

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[3] Selected international organizational sources.

[4] Ibid.

[5] S.D.M. Fernando, pp. 116-117.

Another aspect of the prevention initiative characterizing the government's health plan involves nutrition supplementation and education of those considered at risk, mainly pregnant and lactating mothers, infants and pre-school children. Coupled with this is a renewed emphasis on family spacing and control on a voluntary basis despite the fact that family planning and population policy are historically volatile issues in Sri Lanka's national health policy and sectors planning. The effect of excessive child-bearing on individual and family health and welfare -- undermining the health of the mother and paving the way for malnutrition and related increases in infant mortality -- is seen as a direct impediment to economic and social development. The policy, therefore, is that family planning is a necessity which should be made available to all segments of the population rather than confined to a privileged few. The administration of family planning-related activities now falls under the Family Health Bureau which is part of the Colombo Group of Hospitals. There still exists strong ethnic and political sensitivities attached to the whole family planning program despite the endorsement of the central government.[6]

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[6] Op cit.

Improvements will be made in the delivery of the curative services through organizational changes aimed at: 1) counteracting the urban concentration of personnel; 2) improving drug supply and other supporting services to lower level treatment centers; and 3) establishing a referral system which places emphasis on paramedical treatment, discouraging the bypassing of lower level units and thus freeing highly qualified personnel for more specialized work. A new hospital, financed by the Japanese government, will be built at Peradeniya and the one at Galle will be replaced, costing an estimated Rs. 211 million. Rs. 22 million will be spent on additions and improvements to the General Hospital and the Colombo Group of Hospitals. This will significantly expand teaching facilities. The only dental hospital on the island will be updated and the ongoing program of setting up dental clinics in major hospitals and schools will be continued with assistance from New Zealand. Health facilities for the Mahaweli Area will be developed during the plan period using the provided budget of the Mahaweli Development Board.

In terms of improving supporting services, there are plans to purchase 512 vehicles to replace old and unreliable vehicles and expand the transport capability of the health care sector. In addition, Rs. 114 million of electro-medical equipment and Rs. 38 million of surgical and auxiliary equipment will be needed to improve treatment technology. The construction of lodgings and

work buildings in rural areas is scheduled in order to increase the availability of medical staff. The project is expected to cost Rs. 145 million. A central drug store, central laundry facilities and garages, at an additional project cost of Rs. 29 million, will be provided to reduce losses and replacement cost in these areas.[7]

The improvement of the drug manufacture, supply and distribution system is another key component in the national health sector plan. The importation of drugs has been recently liberalized -- the private sector now is permitted to import drugs directly and to distribute them. In the future, the State Pharmaceuticals Corporation (SPC) is to concentrate on importing allopathic drugs for the State sector and to compete with other importers in buying drugs for the private sector. The SPC is also considering local manufacture of drugs and other products, perhaps in collaboration with foreign manufacturers. The Ayurveda Drugs Corporation (ADC) will function somewhat independently, importing, manufacturing locally and distributing the drugs needed in the government ayurvedic hospitals and the free ayurvedic dispensaries.[8]

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[7] Ibid.

[8] Ibid.

A final component of 1979-83 planning involves the extension of curative training and research facilities for the Ayurveda health services. Eight new hospitals will be provided during the plan period with the existing ones upgraded and assistance provided to the locally-run dispensaries. The number of medical graduates from the Ayurvedic Medical Colleges will be increased and stricter controls will be placed on the traditional and non-institutionally trained Ayurvedic Practitioner to ensure excellence and to integrate them into the national family health service. Research will be sponsored on effective methods of treatment, processes for extraction of essential plant properties, and the systematic cultivation, harvesting and storage of medicinal herbs. The expenditure on ongoing activity in the Ayurveda sector will come to Rs.6 million with an additional Rs. 79 million set aside for new projects during the planning period.[9] With Ayurvedic Medicine as with each of the other components of the Government of Sri Lanka's national health policy, the emphasis is on low cost, indigenous preventive medicine and services which can be delivered to the entire population in an equitable and timely manner.

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[9] Ibid.

VI. HEALTH INFRASTRUCTURE

A. Overview of Health Services

By contrast with most countries in the region, Sri Lanka has a large, and well-planned Government-operated health service under the province of the Ministry of Health (MOH). The Government of Sri Lanka, with the emphasis placed on improving public health since independence, has been able to effect penetration of a national health system to all parts of the country, with medical facilities freely available to all segments of the population. Generally there is some health institution available within a 5-mile radius of any given location in Sri Lanka.[1] This is significant in a country where the population is 78 percent rural. There is a broad range of services available in Sri Lanka which includes both Western and Ayurvedic medicine in each of the government and private sectors. According to the 1969-70 Socio-Economic Survey, nearly 73 percent of the demand for medical services is met by the Western System and about 22

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[1] Department of State Telegram #265233, from American Embassy, Colombo to Secretary of State, Washington, D.C., December 1975, p. 1.

percent by the Ayurvedic or indigenous system. The survey also showed that the government sector satisfied 53.7 percent of the demand for medical care (of that 48.6 percent Western and 5.1 percent Ayurveda) and the private sector catered to 41.3 percent of the demand (with 24.8 percent Western and 16.5 percent Ayurveda).[2]

B. Health Facilities and Services

1. Government

Administratively, the country is divided into 16 health divisions, each under a Superintendent of Health Services (SHS). The SHS's oversee the running of the health institutions in their respective health divisions and are answerable to the MOH's Director of Health Services.[3] The organization of health services is shown in Chart VI-1.

As of 1975 there were a total of 2,055 public health institutions in Sri Lanka under the supervision of the SHS's. They consist of three levels of care: hospitals --

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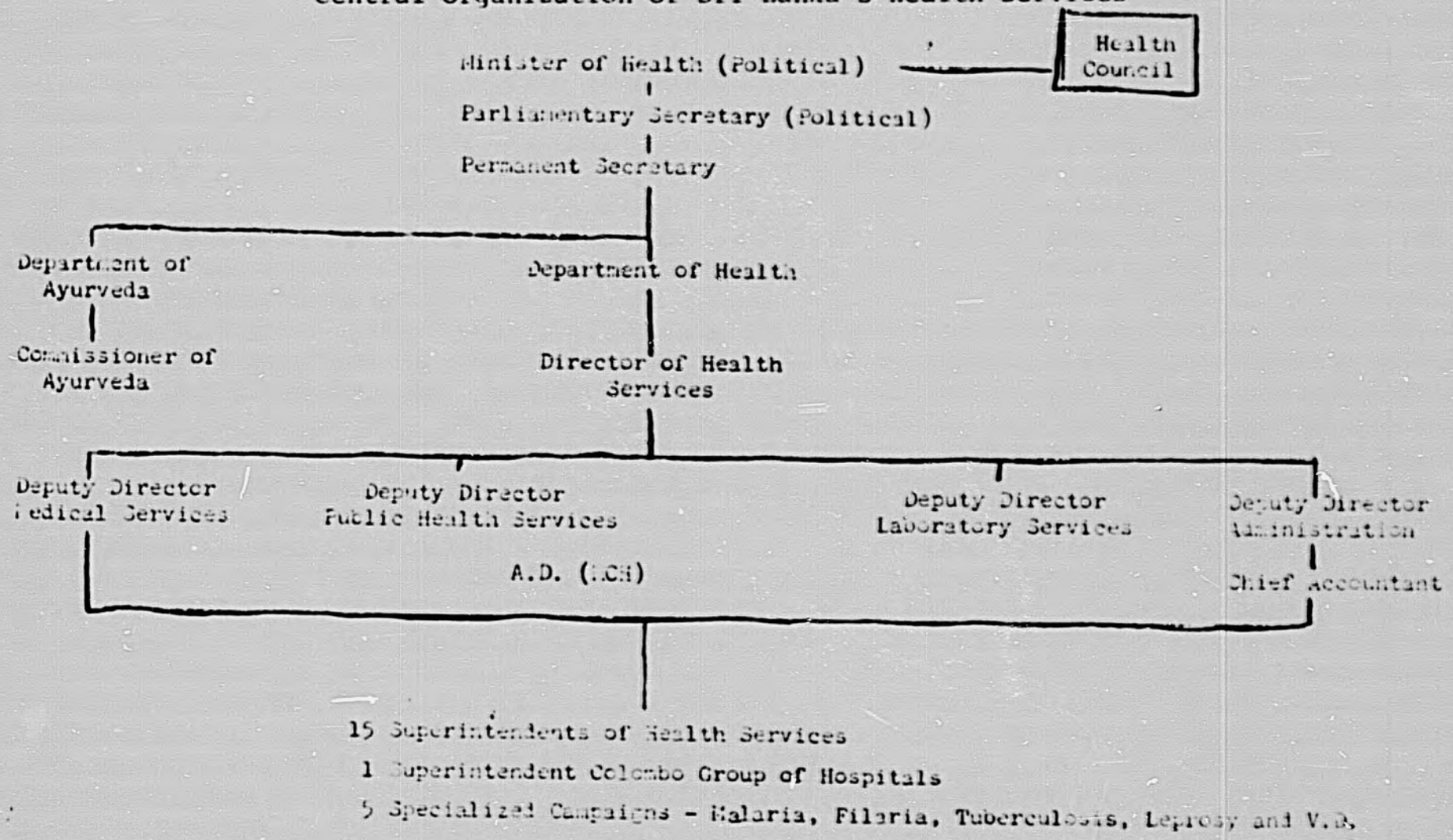
[2] Selected international organizational sources.

[3] S. Nissanga, "Incidence and Pattern of Cancer in Sri Lanka," in T. Hirayama, Cancer in Asia, GANN Monograph on Cancer Research, 18, 1976, p. 259.

Chart VI-1

Central Organization of Sri Lanka's Health Services



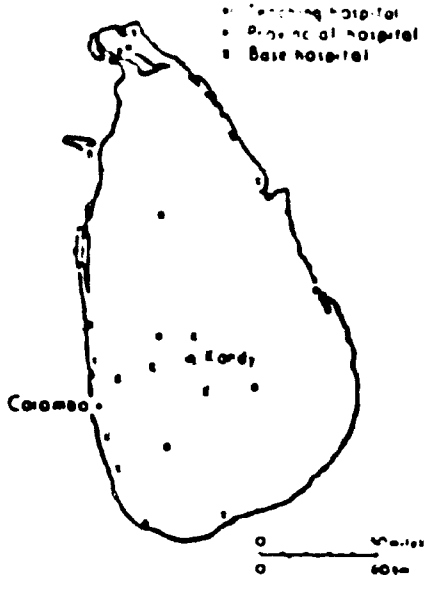
Source: Selected United Nations Materials.

including teaching, provincial, base, district, and peripheral hospitals -- clinics, and health centers.[4] Map 6 shows the geographical distribution of teaching, provincial and base hospitals in Sri Lanka. While the north and southeast have few large hospitals, they also are rather sparsely populated. The composition of government-operated hospital facilities is as follows: at the top of the tiered hospital structure are two teaching hospitals, one in Colombo and another located in Kandy. These institutions are provided with a full specialist staff and a library. At the next level are the provincial hospitals of which there were ten in 1975. Each of these have a full specialist staff, but no library. Under the provincial hospitals are a series of base hospitals staffed with a single physician, surgeon, obstetrician or pediatrician. There were reported to be 12 such base hospitals as of 1975. On a slightly more local level come the district hospitals, of which there were 96 staffed by a non-specialist medical officer and a house officer. At the lowest level of the hierarchy are the peripheral hospitals, 94 in number, which are staffed either

[4] Department of State Telegram #265233 from American Embassy, Colombo to Secretary of State, Washington, D.C., Dec. 1975, p. 1.

Map 7

Geographical Distribution of Teaching, Provincial and Base Hospitals, Sri Lanka



Distribution of teaching, provincial, and base hospitals in Sri Lanka.

Source: Brian Senerviratne, "Post Graduate and Continuing Medical Education in a Developing Country," British Medical Journal, Vol. 3, 1975, p. 214.

by a single doctor working alone or assisted by an apothecary,[5] or by an apothecary alone.[6]

Family health services are provided through the clinics and rural health centers which together comprise 1,174 facilities. The majority of them are polyclinics which integrate health, nutrition and family planning services. Combining curative, preventive, and educational services to the patients and the community at large, they are linked by an ambulance service. Their primary concern is with maternal and child health. The centers offer routine prenatal and postnatal, as well as infant and preschool care. This includes treatment of illness, distribution of free milk, and health education as staffing permits.

The health center usually consists of a dispensary, a medical aid station, a small hospital, and a maternity home. The health units of the centers are responsible for environmental sanitation and mass disease campaigns.[7] The

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[5] An apothecary is a medical worker who, in terms of training, is a mixture of nurse and intern.

[6] Brain Senerviratne, "Post Graduate and Continuing Medical Education in a Developing Country," British Medical Journal, Vol. 3, 1975, p. 214.

[7] Richard F. Nyrop, Area Handbook for Ceylon, Washington, D.C.: The American University, 1971, p. 134.

sanitation inspectors attached to the health units are responsible for the construction and maintenance of clean wells and latrines in schools, public buildings, and private homes.[8]

As with any area, be it developing or industrialized, in Sri Lanka there is somewhat of a concentration of goods and services in the urban centers. Table VI-1 contains the geographic distribution of medical institutions by administrative division of the country. The bed strength, a rough indicator of the availability of medical services, ranges between 20 and 35 per 10,000 population for all regions of the country, with the exception of Colombo where the principal metropolitan teaching hospitals are located.[9]

Forty-two million patients are treated annually at state hospitals and maternal and child health, tuberculosis, leprosy, cancer and mental health outpatient clinics.[10] An average of 5.7 visits are made per person annually to

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[8] Ibid., p. 134.

[9] The Marga Institute, Participatory Development and Dependence, The Case of Sri Lanka, Colombo: The Marga Institute, Oct. 1977, p. 16.

[10] B.H.S. Jayewardene, "Doctors for Export," Far Eastern Economic Review, Hong Kong: Vol. 89, No. 47, November 25, 1977, p. 52.

Table VI-1

MEDICAL INSTITUTIONS AS AT 1.5.1971

Administrative Division	Provincial Hospitals	Base Hospitals	Special Hospitals	District Hospitals	Cottage Hospitals	Peripheral Units	Rural Hospitals	Maternity Homes	Central Dispensaries	Colombo Group of Hospitals	T.B. Units	Mental Hospitals	Leprosy Hospitals	Total beds per 10,000 population	Paediatric beds per 10,000 of (0-14 years) population
Colombo	2	2	5	7	-	6	6	15	51	10	16	3	2	137.4	20.7
Kalutara	-	1	-	6	-	2	5	5	9	-	-	-	-	24.0	3.8
Kandy	1	1	2	18	3	11	10	13	28	-	-	-	-	24.6	3.1
Matale	-	2	-	2	2	5	2	9	16	-	-	-	-	24.1	4.3
Galle	1	-	1	5	1	6	6	5	14	-	-	-	-	22.9	2.4
Matara	-	1	1	6	1	11	7	16	13	-	-	-	-	19.3	1.4
Jaffna	1	1	1	5	1	8	4	13	21	-	-	-	-	34.2	6.0
Vavuniya	-	1	-	4	1	1	4	4	16	-	-	-	-	35.6	3.8
Batticaloa	1	-	2	3	-	9	2	4	27	-	-	-	-	22.2	4.0
Kurunegala	1	-	-	10	-	10	5	11	34	-	-	-	-	24.5	2.2
Puttalam	-	1	-	3	-	5	3	2	20	-	-	-	-	22.9	1.9
Anuradhapura	1	1	1	2	1	7	6	15	25	-	-	-	-	29.5	4.11
Badulla	1	-	-	11	2	6	3	5	26	-	-	-	-	20.5	1.7
Ratnapura	1	-	-	7	1	5	5	2	14	-	-	-	-	28.4	4.2
Kegalle	-	1	-	6	-	2	4	9	16	-	-	-	-	22.3	3.4
TOTAL	10	12	13	95	13	94	72	128	330	10	16	3	2	37.7	4.2

Source: Marga Institute, Participatory Development and Dependence, The Case of Sri Lanka, Colombo: The Marga Institute, Oct. 1977, table 2-12.

government and private, Western, and Ayurvedic medical facilities. The typical Sri Lankan regards the hospital as the proper place to go for care in the event of serious illness. In fact, many who could be cared for at home enter the hospitals, thus, causing serious overcrowding of these institutions. The clinics also tend to be very crowded with reception areas often full of people waiting hours to see the doctor.[11]

The health services of Sri Lanka are plagued by overcrowding of large hospitals, under-utilization of the small medical institutions, and generally poor out-patient services. Specialist facilities are concentrated in the provincial and base hospitals which are not accessible to the vast majority of the rural population. This creates a situation of overcrowding by 50 percent in some 60 medical care institutions and under-utilization by 50 percent of another 100 hospitals. (See Table VI-2) Overcrowding of out-patient services (peripheral hospitals report as many as 1,500 to 3,000 patients per day), and resultant admission of many patients to in-patient departments to be treated, coupled with an inadequate level of operating, X-ray and

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[11] Richard F. Nyrop, p. 133.

Table VI-2

OVER CROWDING IN PROVINCIAL AND BASE HOSPITALS

1	2	3	4	5
Name of Hospital	*Bed Strength as on 30.11.68*	*Total No. of inpatients treated during 1.10.68 to 30.9.69*	*Average daily sick*	*Percentage Col.4. x 100 / Col. 2*
1. Provincial Hospitals	6,974	423,138	8,452	121
2. Anuradhapura	625	35,526	778	124
3. Badulla	520	32,516	787	151
4. Batticaloa	477	17,559	490	103
5. Colombo North	670	42,098	745	111
6. Colombo South	575	45,663	617	107
7. Galle	633	44,990	739	117
8. Jaffna	912	42,521	923	101
9. Kandy	1,131	69,065	1,305	115
10. Kurunegala	800	47,565	1,226	153
11. Ratnapura	631	42,938	844	134
12. Base Hospitals	3,472	246,561	4,202	121
13. Trincomalee	215	12,566	214	100
14. Nuwara Eliya	175	7,591	135	76
15. Negombo	267	28,643	518	194
16. Gampaha	283	26,712	414	146
17. Point Pedro	210	9,070	184	88
18. Kalutara	530	37,[illegible]	626	118
19. Kegalle	478	33,397	507	106
20. Matale	372	21,512	478	128
21. Polonnaruwa	144	11,767	145	101
22. Matara	317	27,381	392	124
23. Chilaw	296	22,765	412	139
24. Mannar	189	7,377	179	97
25. Colombo Group of Hospitals	4,640	180,012	4,612	99

Source: The Five Year Plan, 1972-76, Ministry of Planning and Employment, Government of Ceylon, November, 1971, p. 125.

pathology facilities, often has resulted in excessive average lengths of stay.[12]

With the current imbalance in overseas trading and the consequent shortage of foreign currency in Sri Lanka, availability of equipment and drugs is seriously limited and is thought to have caused a decline in health services in the country.[13] In the past the Government of Sri Lanka is purported to have obtained cheap, non-standardized drugs from the People's Republic of China with a barter agreement for rice.[14]

2. Private Sector

The private sector operates many hospitals and nursing homes, though the majority of health institutions in both urban and rural areas, are Government-run.

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[12] Ministry of Planning and Employment, The Five Year Plan, 1972-76, Colombo: The Government of Ceylon, 1971, pp. 113-114.

[13] "Russian Delegation to Sri Lanka," Journal of the American Medial Association, Vol. 230, No. 8, Nov. 25, 1975, pp. 1205-1206.

[14] Selected U.S. Government Sources.

The Government has begun officially recognizing ayurvedic, or traditional practitioners, for use in the private and public sectors.[15] The Department of Ayurveda, functioning under the Ministry of Health, oversees 10,000 independent Ayurvedic practitioners, 244 Ayurveda dispensaries, six Ayurveda hospitals, and an Ayurveda Research Institute. Ayurvedic medicine is especially important in the rural sector.[16] This indigenous system of herbal medicine is still favored by many, and is seen by the Government as a potential solution to the shortage of medical practitioners. Some feel, though, that the Health Ministry has done nothing substantial to popularize ayurvedic treatment in Sri Lanka. Acupuncture, however, is growing rapidly even without overt government backing. Acupuncture clinics have emerged as appendages to many hospitals, the staff of which have completed special training in China.[17]

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15 Op. cit., p. 1206.

16 S.D.M. Fernando, pp. 131-132.

17 B.H.S. Jayewardene, p. 52.

C. Manpower

1. Physicians

The overall manpower situation in Sri Lanka as of 1971 is detailed in Table VI-3. The current doctor/population ratio is 25.7 doctors per 100,000 population, excluding ayurvedic practitioners.[18]

Nearly two-thirds of the doctors in Sri Lanka work in the municipal sector, as every newly qualified intern is compelled to join the Government Health Service and serve the State for five years. There were approximately 1,000 physicians in private practice in 1975.[19] As a concession to doctors' demands, and in order to ease the shortage in the private sector, the Government has re-introduced private practice for Government doctors. They are now allowed to practice medicine in private nursing homes and dispensaries, though not in their residences, and no longer have to pay a share of their earnings from consultations to the State as they did under the Channelled Consultation Practice

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[18] Annual Budget Submission, FY 1980, Sri Lanka, Annex C, "Comment on Low-Cost Health Delivery Systems in Sri Lanka," USAID, Department of State, May 1978, p. 1.

[19] "Russian Delegation to Sri Lanka," pp. 1205-1206.

Table VI-3

PROVINCIAL DISTRIBUTION OF MEDICAL AND HEALTH PERSONNEL - 1971

PROVINCE	I Area in Sq.Miles	II Population *	III No.of Births 1971	IV S.M.S.Division	V No.of MOH Areas	IV No. of Auxiliary Health Personnel			
						P.H. Nurses	P.H. Inspectors	P.H. Midwives	Total
Colombo Municipal Council	14 13/32	607,118		Colombo M.C.	1	29	24	70	123
Colombo District	795 27/32	2,272,000	41,507	Colombo	14	150	66	338	534
Kalutara District	623 3/4	751,000	18,525	Kalutara	5	57	36	162	255
Western Province	1432	3,428,577	94,083		20	216	126	570	912
Central Province	2156 3/4	1,977,732	64,810	Kandy & Part of Matale	15	102	22	281	405
Southern Province	2146 1/4	1,662,444	47,994	Galle & Matara	15	114	19	321	454
Northern Province	5429 3/8	874,285	27,079	Jaffna & Vavuniya	10	67	5	198	270
Eastern Province	3840	724,603	26,907	Batticaloa & part of Anuradhapura	6	43	2	128	173
North Western Province	1016 1/8	1,411,645	42,355	Kurunegala & Puttalam	16	94	24	331	449
North Central Province	4140 1/4	535,669	12,661	Part of Matale & part of Anuradhapura	4	42	5	116	163
Uva Province	3277 1/3	810,428	27,575	Badulla	5	35	4	135	174
Sabaragamuwa	1292 1/2	1,519,372	35,516	Ratnapura & Kegalla	10	86	13	267	366
(CEYLON)	25332	12,747,755	381,760		99	799	220	2347	3366

* Census
* Provisional

N.B. - SMS - Superintendent of Health Services
MOH - Medical Officer of Health
P.H.I - Public Health Inspectors
P.H.M - Public Health Midwives
P.H.N - Public Health Nurses

Source; Marga Institute, Participatory Development and Dependence, The Case of Sri Lanka, Colombo: The Marga Institute, Oct. 1977, Table 2-13.

Scheme.[20] These concessions on the part of the Government are an attempt to pacify the currently-practicing Government doctors, and to attract back to the country some of the 657 doctors who resigned from the State health services during Mrs. Bandaranaike's rule (1970-77).[21] Sri Lanka's two medical education facilities graduate approximately 250 doctors every year. However, due to better jobs abroad an average of 180 out of these 250 leave the country each year. The Health Ministry admitted in October of 1977 that it was short of 133 specialists and 141 medical officers for the country.[22] Apart from the problem of emigration of trained medical personnel, there are not enough people electing to apply to medical school. Although the tuition is free throughout the university levels, students prefer government positions for which they can train two to four years instead of the five required for a medical degree.[23] Experts have proposed shortening the medical course with emphasis to be placed on preventive medicine more relevant to the needs of

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20 B.H.S. Jayewardene, p. 52.

21 Ibid.

22 Ibid.

23 Richard Nyrop, p. 134.

the country. such a move would be consistent with the Ministry of Health's emphasis on preventive medicine, and perhaps slow down the "brain drain" of Sri Lanka's medical personnel while making the medical school experience shorter and more appealing for incoming students.[24]

2. Nurses

In contrast to doctors and dentists which are in short supply, nursing is a branch of medicine that is extremely attractive in Sri Lanka. In 1976 there were 100 nurses being trained annually in schools of nursing or at hospitals. There were at that time five applicants for each slot, with half of the nursing students graduating out of every class.[25]

3. Assistant Medical Practitioners and other Auxiliaries/Paraprofessionals

Health Minister Granini Jayasuriya has initiated a new scheme to combat understaffing in health services. He has proposed a shortened 2 1/2 - year training course to prepare assistant medical practitioners to work in rural and

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[24] Op. cit.

[25] Op. cit., p. 134.

difficult areas.[26] Qualified pharmacists who have had elementary training in medicine and surgery are also serving as substitute doctors in rural areas and as directors of rural hospitals and dispensaries. In addition to Assistant Medical Practitioners and Voluntary Community Health Workers, there is a growing core of Public Health Midwives that are integral to the health delivery system. They account for 3-4 million annual home visits providing prenatal care, childbirth assistance, immunizations, and family planning information and counseling.[27]

D. Community Participation

In addition to the cadres of auxiliary health personnel and the ayurvedic practitioners, there are local groups that act in an innovative fashion to promote general public health. The Sarvodaya Shramadana Movement and the Lanka Mahila Samiti are two such groups that work toward community participation in identifying needs at the village level and organizing projects to meet these needs. The emphasis is on utilization of village labor and resources for projects such as the construction of

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[26] B.H.S. Jayewardene, p. 52.

[27] Richard Nyrop, p. 134.

community kitchens, health clinics, and improved water supplies.[28]

E. Health Sector Financing/Expenditures

In order to support its extensive infrastructure of free outpatient and hospitalization services, the Sri Lankan Government spends six percent of the national budget on health. This amounts to a relatively high annual per capita expenditure on health.[29] According to Table VI-4 the per capita annual expenditure on health services for 1974 was RS 24.97 (based on a mid-year population of 13.44 million).

During the previous Government's rule, a token fee of Rs. .25 or US $.02, was charged for outpatient visits, including medicine, in an attempt to meet the country's enormous health bill. However, the new Prime Minister, Julius Richard Jayawardene, abolished even this minimal charge as inconsistent with the policy of a welfare state.[30]

Currently, 80 percent of the health budget is spent on Patient Care Services and 20 percent on Community Health

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[28] Annual Budget Submission, USAID, Annex C, p. 357.

[29] Ibid., p. 353.

[30] B.H.S. Jayawardene, p. 52.

Table VI-4

Hospitals, Beds, Personnel, Patients Treated and Expenditure on Health Services

	1970[1]	1971[1]	1972	1973[6]	1974
No. of hospitals[2]	328	333	335	338	345
No. of beds[2]	37,753	38,521	38,172	38,443	38,562
No. of doctors[3]	1,932	2,120	2,038	2,164	2,185
No. of assistant medical practitioners[3]	1,225	1,205	1,161	1,178	1,125
No. of nurses[2]	5,542	5,005	4,935	6,348	5,288
No. of in-patients treated[4]	2,053,346	2,006,763	2,052,295	2,038,195	1,926,400
No. of central dispensaries	332	336	343	349	356
No. of out-patient visits[1]	29,689,905	29,472,567	22,029,459	20,577,666	20,333,187
Expenditure on health services (RS million)	230.0	240.9	311.5[6]	257.8	335.7

1 For the year ended 30th September.
2 Excludes maternity homes
3 Includes only those in the Department of Health Services
4 These figures do not indicate the number of patients
5 Expenditure over 15 months (October 1971-December 1972).
6 From 1973 onwards figures relate to the calendar year as ended 31 December.
7 15.60 Rupees = 1 U.S. Dollar

Source: Department of Census and Statistics, Statistical Pocket Book of the Republic of Sri Lanka (Ceylon), 1975., Colombo, Sri Lanka: 1975, p. 32.

Services. The majority of the health capital, 71.5 percent, goes to western medical services, as compared with .42 percent for the Ayurveda component of the sector. Because of its relatively low cost to the Government and high acceptance by the populace, it is understandable that the Government is promoting expansion of Ayurvedic health services.[31]

In addition to medical care services, the Government finances five disease-specific campaigns, a supplementary feeding program and a Maternal Child Health Program all under the Supervision of the Ministry of Health.

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[31] Op. cit., p. 354.

VII. INTERNATIONAL ASSISTANCE

A. Introduction

Sri Lanka has had a long and varied history of foreign aid involvement. Since reaching independence in 1948, Sri Lanka has received approximately $1 billion in external economic assistance, the majority in the form of long-term loans and food sales on concessional terms.[1] The necessity for foreign aid rose sharply when, in 1973-75, the world prices for petroleum, food commodities, and fertilizer increased. Sri Lankan products could no longer keep pace with the rising cost of imported goods. Coupled with three severe droughts that cut domestic food production and increased the country's dependence on food imports, the situation strained Sri Lanka's economy and has called for greater foreign economic and technical assistance.[2]

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[1] Department of State, Background Notes, Sri Lanka, Washington, D.C.: U.S. Government Printing Office, December 1976, p. 7.

[2] Bureau of Asia, USAID. Development Assistance Program Assessment for Sri Lanka, Washington, D.C.: Department of State, July 1976, p. 5.

B. Technical Cooperation/Assistance

Foreign aid input to Sri Lanka has consisted of development assistance from multilateral organizations, bilateral groups, and private voluntary organizations. The approximate amount of foreign technical cooperation to Sri Lanka for 1977 was U.S. $22 million. Table VII-1 provides a summary of externally-financed technical cooperation in Sri Lanka in 1977, by donor agency and sector of involvement. As can be seen from the table, the agricultural and irrigation sector was given primary importance by the Government and donors. It received $9 million or 41 percent of the total technical cooperation input. Other sectors of involvement in descending order of magnitude of assistance were education (14 percent), population (12 percent), and health (11 percent).[3]

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[3] Development Assistance Report, Sri Lanka, Colombo, UNDP, June 1978, p. 1

Table VII-1

External Financed Technical Co-operation in Sri Lanka 1977

Sector	UNDP		UN System Other than UNDP 1)		Other 2)		Total	
	$ 000	%	$ 000	%	$ 000	%	$ 000	%
Agr., forestry and fisheries	2,857	54	138*	3	6,401	51	9,096	41
Education	553	11	372*	7	2,100	18	3,025	14
Gen. econ. and soc. pol. & plan.	832	16	20*		473	4	1,325	6
Health	83	2	922 WHO 1,338*	44	117	1	2,460	11
Industry	49				273	2	322	1
Int. Trade	33				330	3	363	2
Labor mgt. and emp.	454	9			816	7	1,270	6
Nat. Resources			150 UNEP	3	66		216	1
Population			2,164 UNFPA	43	723	6	2,587	12
Science & Techn.	5				83	1	88	
Social sec. and other soc. serv.	53	1			82	1	135	91
Transport and comm.	346	7			761	6	1,107	5
TOTAL	5,265	100	5,104	100	11,925	100	22,294	100

*UNICEF, Estimated Figure

Source: Development Assistance Report, Sri Lanka, Colombo: UNDP, 1977, p.4.

Total capital investments from the donor community of more than US $300 million were committed to Sri Lanka for 1977 and subsequent years.

Among the multilaterals, the World Bank disbursement figure for 1977 was US $13.8 million. The major projects involved Agricultural Credit, Mahaweli Ganga, Irrigation and Dairy Development. The Asian Development Bank disbursed, during the same time period, US $7.7 million for a total project commitment of US $77 million. Major projects included area fertilizer development and mineral sands.[4] The UNDP financed U.S. $83,000 in technical assistance during 1977.

Table VII-2 shows the foreign aid component in health projects as related to total expenditure by type of project involvement. It will be seen that foreign aid is concentrated on Community Health Services projects whereas locally financed capital projects have been concentrated on Patient Care Services.

During 1977, US $2.46 million went to health and US $2.887 million to population-related assistance. WHO contributed US $922,000 and UNICEF supported an estimated US $1.338 million in technical cooperation to Sri Lanka. Technical assistance in

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[4] Ibid., p. 3.

Table VII-2

Foreign Aid and Total Expenditure, Foreign Assisted Projects for Health, 1978

Rs.'000*

Program	Project	Activity	1978 Foreign Aid	Total Expenditure
Recurrent:				
1. General Administration	1	General Administration	41	5,061
	3	Training & Scholarships	70	13,396
2. Patient Care Services	2	Provincial and Base Hospitals	89	97,783
3. Community Health Services	2	Family Health	1,862	33,361
	3	Health Education	368	1,553
	6	Malaria Control	33,000	82,045
	Total, Recurrent (above)		35,430	233,209
Capital				
1. General Administration	101	Construction of Permanent Improvements	452	452
	102	Purchase of Vehicles	100	723
2. Patient Care Services	102	Purchase of Vehicles	900	28,906
3. Community Health Services	101	Construction of Permanent Improvements	3,000	3,000
	102	Purchase of Vehicles	178	1,746
	Total, Capital (above)		4,630	34,832

*Rs 15.65 = U.S. $1.00 according to official exchange rate of October 1978.

Source: Compilation of selected international organizational sources.

health offered by other multilateral and bilateral organizations equalled US $117,000 for 1977, this figure representing only one percent of the total budgetary outlay for country assistance of these multilateral and bilateral organizations.[5]

The technical assistance, loans and grants to Sri Lanka health sector activities as of 1977 are detailed in Table VII-3. While this gives a fairly comprehensive picture of the types of projects supported by multilateral, bilateral and private voluntary organizations, there is considerable incomparability in the budgetary figures cited. A significant omission from the list of foreign assistance programs is that of the United States Agency for International Development. For this reason, Table VII-4 is included, which illustrates the planned USAID assistance program to Sri Lanka for FY 77-8.

It proposes activities in rural development, water resource identification and management, expanded research, and self-help projects in order to enhance the country's economic situation and achieve agricultural self-sufficiency.[6]

U.S. aid to Sri Lanka has been terminated twice since independence: once for bartering its rubber to Mainland China in

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[5] See Table VII-1.

[6] Development Assistance Program Assessment for Sri Lanka, Bureau for Asia, AID, July 1976, p. 34.

Table VII-3

Foreign Assistance Projects in the Health Sector, 1977

A. Assistance

Project/Activity (Title)	Source of Assistance	Assistance Committed for 1977 (US$ Equivalent)	Duration of Total Project Begin-end-dates	Nature of Assistance and Location 1977
Family Health Services MCH Care and Nutrition	UNICEF	76/78 $ 563,000	1976-1978	Supplies & Equipment, Training, Research, Transport for 16 AHS Division - MCH polyclinics
Strengthening of the Estate MCH Polyclinic System	UNICEF	76/77 $ 77,000	1976-1978	Supplies, equipment, drugs, vitamins for 10 Family Health mobile clinics
Expanded Programme of Immunization	UNICEF	76/78 $ 181,000	1976-1978	Vaccines, supplies, equipment, cash for training & EPI manual, transport
Production of Freeze Dried vaccines	UNICEF	76/78 $ 22,000	1976-1977	Supplies and equipment
Nutrition and the University of Sri Lanka	UNICEF	76/78 $ 25,000	1976-1977	Transport and Supplies, equipment and cash for surveys
Rural Women's Development Project	UNICEF	76/77 $ 75,500	1976-1977	Supplies and equipment and cash for training 147 centers
Development of Nutrition Education Centers in the Colombo Municipality	UNICEF	76/77 $ 30,000	1976-1977	Supplies, equipment, transport and training stipends, 5 Nutrition Education Centers within Colombo Municipal Council
Urban Nutrition Survey	UNICEF	76/77 $ 80,000	1976-1977	Cash, supplies for nutrition research, Colombo Urban

Table VII-3 (Cont'd)

Project/Activity (Title)	Source of Assistance	Assistance Committed for 1977 (US$ Equivalent)	Duration of Total Project Begin-end-dates	Nature of Assistance and Location 1977
Rural Community Water Supplies Phase 1	UNICEF	72/76 $1,000,000	1972-1978	Supplies, equipment, transport for 55 schemes for rural communities throughout Sri Lanka
Rural Community Water Supplies Phase 11	UNICEF	77/80 $2,969,300	1977-1980	Supplies, equipment, transport, training for 58 schemes serving rural communities with population of 3,000 each, throughout the country
Groundwater Supplies for Rural Communities	UNICEF	77/79 $ 583,600	1977-1979	Supplies, equipment, transport, training for two pilot demonstration projects-one in Hambantota area, the other in the Anuradhapura/Mannar area. A total of 200 villages will be selected
Ayurvedic Medicine	India	--	1977	To assist the Government in promoting ayurvedic medicine as a complement to western medical care. Two advisers and training awards.
Expert in Vaccine Production	UK	--	1977	Two weeks assignment completed late September

Project/Activity (Title)	Source of Assistance	Assistance Committed for 1977 (US$ Equivalent)	Duration of Total Project Begin-end-dates	Nature of Assistance and Location 1977
Medical Center Project	Seventh Day Adventist World Service USA	1977 $ 97,296	-	To support the Lakeside Medical Center in Kandy and to provide assistance to individuals displaced by the Tamil/Sinhalese conflict
Fellowships in Medicine	World Rehabilitation Fund USA	1977 $ 20,000	-	Three trainees for five months basic, prosthetic/orthotic course in India. Assistance to workshops in Sri Lanka
SRL/73/P02Workers Population Education and Family Planning (Plantation Sector)	UNFPA	Total $ 260,649 1977 $ 61,320	1973-1977	To create an awareness of population problems among workers, management and proprietory groups in the Plantation Sector. 1. Experts m/m 8.3 2. Incentive Payments $ 11,076 3. Training $ 18,065 4. Equipment $ 3,763 5. Miscellaneous $ 1,565
SRL/73/P04 Communication Strategy	UNFPA	Total $ 477,672 1977 $ 133,359	1972-1977	The employment of mass media for effective family planning communication and the training of department officials in communication techniques and the production of teaching materials 1. Incentive payments $ 10,552 2. Sub-contracts $ 24,000 3. Training $ 6,042 4. Equipment $ 92,725 5. Miscellaneous $ 50

Project/Activity (Title)	Source of Assistance	Assistance Committed for 1977 (US$ Equivalent)	Duration of Total Project Begin-end-dates	Nature of Assistance and Location 1977
SRL/72/P06 Demographic Training and Research Unit	UNFPA	Total $ 331,573 1977 $ 126,161	1973-1977	To provide: (a) demographic training to under and post-graduate students and government officials (b) research facilities and (c) to give advice to the government. 1. Experts m/m 16.1 2. Admin.Support $ 810 3. Training $ 27,819 4. Equipment $ 4,324 5. Miscellaneous $ 32,908
SRL/72/P02 Training of Women Workers in Rural Development and Population	UNFPA	Total $ 19,833 1977 $ 7,399	1976-1977	To give women in rural areas better understanding of health nutrition, family planning and to train them in setting up viable economic activities like poultry farm, orchid cultivation etc. 1. Experts m/m 1 2. Incentive Payments $ 1,158 3. Training $ 2,106 4. Equipment $ 700 5. Sundry $ 1,000

Project/Activity (title)	Source of Assistance		Assistance Committed for 1977 (US$ Equivalent)	Duration of Total Project Begin-end-dates	Nature of Assistance and Location 1977
SRL/73/P03 Teaching of Human Reproduction, Family Planning and Population Dynamics in Medical Schools	UNFPA	Total 1977	$ 506,552 $ 284,044	1972-1977	To train students of Medical Faculties in Colombo and Peradeniya in the field of health education, community medicine and population dynamics 1. Experts m/m 18.0 2. Admin. Support $ 9,131 3. Incentive Payments $ 44,785 4. Training $ 64,327 5. Equipment $ 120,401
SRL/73/P05 Family Health Education (WHO)	UNFPA	Total 1977	$ 197,408 $ 100,984	1972-1977	The aim of the project is to inform the people about the significance of family health and family planning. Recently, the project has started to concentrate on volunteers to bridge the service gap between health extension worker and the people 1. Experts m/m 27.0 2. Incentive Payments $ 1,550 3. Training $ 8,700 4. Equipment $ 18,871 5. Miscellaneous $ 1,392

Project/Activity (title)	Source of Assistance	Assistance Committed for 1977 (US$ Equivalent)	Duration of Total Project Begin-end-dates	Nature of Assistance and Location 1977
72/P02 Strengthening of Nursing/Midwifery Vocation (WHO)	UNFPA	Total $ 369,035	1973-1977	The project envisages to support the training of nurses and mid-wives in such a way that they will become familiar with population problems in general and with family planning services in particular. 1. Admin. Support $ 6,200 2. Training $ 58,100 3. Miscellaneous $ 3,446
L/72/P02 Strengthening of Nursing/Midwifery Vocation (UNICEF)	UNFPA	Total $ 264,700 1977 $ 67,792	1972-1977	1. Equipment $ 32,201 2. Miscellaneous $ 35,771
SPI/73/P06 Population Education in Schools	UNFPA	Total $ 475,019	1973-1977	The project envisages the intergration of population education in the curriculum of grades 6,7,8, and 9 in make the pupils familiar with population problems and to train the teachers accordingly. 1. Experts m/m 8.0 2. Training $ 115,818 3. Equipment $ 70,584 4. Miscellaneous $ 6,650

Table VII-3 (Cont'd)

Project/Activity (title)	Source of Assistance	Assistance Committed for 1977 (US$ Equivalent)	Duration of Total Project Begin-end-dates	Nature of Assistance and Location 1977
SRL/73/P05 Family Health Education (UNICEF)	UNFPA	Total $ 250,046	1972-1977	1. Admin. Support $ 5,483 2. Incentive Payments $ 2,025 3. Sub-contract $ 1,753 4. Training $ 11,050 5. Equipment $ 99,120 6. Miscellaneous $ 9,699
72/P04 Family Health/WHO	UNFPA	Total $ 643,013 1977 $ 158,796	1972-1977	To project intends to provide family planning services to people to provide orientation courses to medical personnel on family planning and to provide medical equipment to the health institutions. 1. Experts m/m 14.0 2. Admin. Support $ 4,227 3. Incentive Payments $ 1,000 4. Training $ 110,522 5. Equipment $ 1,107 6. Miscellaneous $ 1,081
72/P04 Family Health	UNFPA	Total $ 2,063,639 1977 $ 811,396	1973-1977	1. Admin. Support $ 2,850 2. Incentive Payments $ 67,801 3. Training $ 195,671 4. Equipment $ 455,064 5. Miscellaneous $ 90,010

Project/Activity (title)	Source of Assistance	Assistance Committed for 1977 (US$ Equivalent)	Duration of Total Project Begin-end-dates	Nature of Assistance and Location 1977
	Sweden	Total $ 2,820,000 77-78 $ 645,000 Fiscal year	1975-1978	Financing Family Health Bureau-construction of building for the Family Health Center. Consultants and Contraceptives
Family Health Project in Batticaloa District YMCA	World Neighbors (USA)	Total $ 1,250	1977	Motivated and Educational Programme for Family Planning
	Family Planning Intern Assistant (USA)	Total $ 8,5-- 1977 $ 2,529	1977-1978	Motivational and educational program for Family Planning, Nutrition and Health Care
Population and Family Services Project	Association For Voluntary Sterilization (USA)	Total $ 34,700		To establish headquarters for a National Association for Voluntary Sterilization. To train physicians in the minilaproscopy technique.
Campaign for Breastfeeding	Planned Parenthood	1977 $ 97,226	--	To initiate a female sterilization program in the Maternity Home, Colombo. To support and advertising campaign to make public aware of the benefits of breastfeeding and child spacing.

Table VII-3 (Cont'd)

Project/Activity (title)	Source of Assistance	Assistance Committed for 1977 (US$ Equivalent)	Duration of Total Project Begin-end-dates	Nature of Assistance and Location 1977
Sri Lanka Institute of Occupational Safety and Health and environmental Pollution	ILO Danida Denmark	Total $ 395,380 1977 $ 205,590	1976-1978	To establish an Institute to undertake the systematic identification and control of health and safety hazards in work places
Center for physically handicapped	Catholic Relief Services USA	1977 $ 4,418	1977-1979	To support a center for the physically handicapped in Ceysawl and to assist poor families in Chilaw
Homes for Orphans	Christian Children's Fund USA	1977 $ 66,000	1977-1978	Provides three homes for orphans and neglected children in Colombo, Kandy and Nuwara - Eliya. Also helps to fund two schools and rehabilitation centers for blind and deaf children in Colombo
Sri Lanka Fortified Food Programme (SLEP-Thriposha)	CARE USA	$4,236,000	1977	MCH Nutrition supplement for 400,000 infants pre-school and school children and pregnant mothers
Applied Nutrition Service	CARE USA	$ 165,000	1977	Nutrition, Education Materials and Equipment

B. Loans

Project	Nature and Source of Finance	Commitment '77 and Subsequent years US	Sector	Nature of Assistance Location
Water Supply	IBRD	Total $ 9.2 m	Social Security other social Services	The existing piped water system used by 1.2 million people in Colombo and five towns south of the capital will be improved; new water supply systems will be provided to 410,000 people in towns north of the capital and in two towns on the south-west coast
Malathion	Netherlands	$ 0.94m	Health	Malaria Control Program (WHO)
Equipment and Materials for the Health Sector	Netherlands	$ 2.4 m	Health	Department of Health for Primary and Secondary health care sectors

Table VII-3 (Cont'd)

C. Grants

Project	Source of Finance	Commitment '77 and Subsequent years US	Sector	Nature of Assistance Location
Construction of Teaching Hospital	Japan	$4.2 m (total pledge) $7.5)	Health	To establish a Medical Teaching Hospital at Peradeniya and supply of equipment under the medical cooperation assistance
Malathion	Netherlands	$4 m	Health	Malaria Control Program (WHO)
Foot & Mout Disease Vaccine Production Laboratory	UK	$608,700	Animal Husbandry	Equipment for new laboratory at Polgolla
Malaria Control Project	UK	$1.28 m (total pledge) 4.3 m)	Health	Supply of 50 reconditioned and 70 new Landrovers to transport personnel insecticide and equipment to the spraying areas - anti Malaria Campaign

Source: Compilation of various international organizations sources.

Table VII- 4
Illustrative U. S. Assistance Program
to Sri Lanka, FY 77-80
($000)

	FY 76*	FY77	FY78	FY79	FY80
AID Dollar Funds (All § 203)					
Loans					
Agricultural Research	4,200		5,000		
Paddy Marketing Board	8,400			5,000	
Mahaweli Ganga Development		8,000			
Water Storage, Irrigation Rehabilitation & Development		3-5,000	3-5,000	3-5,000	10,000
Total Loans	9,600	11-13,000	8-10,000	8-10,000	10,000
Possible Additional loan for 1/ Malaria Control		To Be Determined			
Grants All § 203)					
Agri. Research & Training		150	150	0,150	150
Survey of Water Resources			500	0,250	-
Water Use & Management Technical Assistance			300	0,300	300
Rural Development Projects 2/		150	300	0,300	500
Rural Development Admin. 3/ and Training		850	100	0,150	150
Project Development & Support 1/		250	100	0,100	100
Total Grants	- 0 -	600	1,450	1,450	1,200
PL 480 Title I Sales	22,000	17,700 4/	17,000	13,000	10,000
PL 480 Title II Programs	2,500	2,700	3,000	3,000	3,000
Local Currency Resources:					
PL 480 Title I Grantback 5/		2,000	3,000	4,000	5,000

1/ Possibly from Asia Regional Funding
2/ Proposed for implementation as OPG's
3/ For expenditure in following FY
4/ Presumes same quantity as FY 1975 program but lower price for wheat

* For reference

Source: Development Assistance Program Assessment for Sri Lanka, Bureau for Asia, Agency for International Development, July 1976, p.35.

return for rice, and the second time for expropriation of American property.[7] Since 1974 U.S. AID funds supporting programs in Sri Lanka have averaged approximately US $32 million a year, $22 million of which is in dollar-repayable P.L. 480 Food for Peace loans.[8] (P.L. 480 monies do not constitute part of the foreign technical cooperation figure cited).

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[7] Ibid., p. 6.

[8] Department of State, Background Notes, Sri Lanka, Washington, D.C.: U.S. Government Printing Office, December 1976, p. 8.

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