

# Country Development Strategy Statement

**FY 1984**



# INDIA

January 1982

Agency for International Development  
Washington, D.C. 20523

BEST AVAILABLE

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COUNTRY DEVELOPMENT STRATEGY STATEMENT  
FY 1983 - FY 1987

USAID/India  
January 1982

## Introduction

### I. Analysis

#### A. Current Economic Situation and Prospects

1. Recent Economic Performance
2. Sixth Five Year Plan (1980-1985)
3. GOI Structural Adjustment Program

#### B. Constraints to Broadly Based Economic Growth

1. Overview
2. Role of the Private Sector in the Economy
3. Macroeconomic Policy Reform
4. Sectoral Policies: Agriculture, Energy and Population
5. Human Resources and Institutions
6. Technology Development, Transfer and Extension

### II. Strategy

#### A. Strategy Overview

1. Overall Program Strategy
2. Program Concentration
3. U.S. and Indian Private Sector
4. PL-480 Resources
5. Housing Investment Guarantees

#### B. Food Production and Rural Employment

1. Strategy Summary
2. Agricultural Research and Education
3. Irrigation Efficiency

#### C. Energy and Natural Resources Management

1. Strategy Summary
2. Alternative Energy
3. Forestry and Watershed Management

#### D. Fertility and Mortality Reduction

1. Strategy Summary
2. Population Activities
3. Nutrition Upgrading
4. Rural Health and Family Planning Systems

### III. Planning Levels

#### A. Assistance Planning Levels

#### B. Portfolio Management

## Map

## Introduction

This submission updates the approved strategy contained in the FY 1983 Country Development Strategy Statement (CDSS) and incorporates the revisions set forth in "AID's Assistance Strategy for India" (New Delhi 19182, October 16, 1981). The proposed strategy would improve the balance between food, energy and population by assisting India to achieve her objectives in food production and rural employment, energy and natural resources management, and fertility and mortality reduction. The strategy envisages major efforts in three areas - irrigation efficiency, forestry and watershed management, and health/population/nutrition - where AID technical and financial resources can make a significant contribution to the achievement of Government of India (GOI) objectives. These are complemented by science and technology development programs in several highly promising areas - agricultural research, alternative energy and contraceptive technologies - and by two significant programs implemented by U.S. private sector agencies - Food for Work (Catholic Relief Services) and oilseed development (Cooperative League of the USA).

The proposed strategy supports U.S. foreign policy interests, and has been reviewed and approved by the Country Team. Despite its low per capita GNP, India is the world's eighth largest economy, and a significant factor in world markets. It is the dominant economic and political force in South Asia and a major spokesman on North-South issues. The U.S. is the largest supplier of commercial imports (excepting petroleum) and ranks second in private foreign investment. U.S. assistance to India will help demonstrate that despite differences in some regional and global policies, we wish to maintain mutually beneficial relations, which in turn can help ameliorate the adverse impact of U.S. and Indian strategic differences in the region. U.S. bilateral assistance will also demonstrate, along with our multilateral

assistance and encouragement of increased private sector activity, our continuing commitment to assisting India in maintaining economic growth and stability in a democratic society.

This submission follows the standard CDSS format. The analysis section provides an update on India's recent macroeconomic performance and prospects and outlines the structural adjustment program supported by the recent agreement on utilization of the Extended Fund Facility of the International Monetary Fund (IMF). It also describes the constraints to broadly-based economic growth in terms of AID's "new emphases" - economic policy reform, private sector involvement, development of human resources and institutional capacity, and technology development, transfer and extension. The strategy section discusses the ways in which AID can assist the GOI to address these constraints by providing access to a broad range of U.S. private and public sector technical and financial resources. The final section projects assistance levels for the period FY 1983-1987 by sector and sub-sector, and sets forth USAID's proposals for management of the resulting project portfolio in a manner consistent with constrained personnel levels and enhanced emphases on technology transfer and timely program implementation.

## 1. Analysis

### A. Current Economic Situation and Prospects

#### 1. Recent Economic Performance

India's economic growth since Independence has been modest. The average growth rate in real terms was 3.5% annually during the period 1950-51 to 1980-81. However, since population grew at an average rate of 2.1%, per capita incomes grew at 1.4%. As of 1979, India's per capita Gross National Product (GNP) of \$190 placed it 16th from the bottom among the 155 countries for which data are available.<sup>1/</sup>

Despite sluggish growth, India has made significant progress in a number of areas. The industrial sector, which consisted primarily of textiles and agricultural processing as of 1947, has diversified rapidly, and now covers the whole range of manufactures from chemicals to electronics. The share of industry (including mining) in GNP has increased from 15% as of 1950-51 to 26% as of 1980-81, while the agricultural sector's share has declined from nearly 60% to below 40%. Manufactures now account for 60% of exports, as compared to the low-income country average of 30%. Foodgrain production since 1950-51 has increased at about 3% annually. This is a major achievement and has allowed an increase in per capita foodgrain consumption. Life expectancy increased from 32 years in the 1940s to 54 years by 1981, indicating that a broad spectrum of the population has benefitted from better nutrition and improvements in public health services.<sup>2/</sup> Overall literacy rose from 17% as of 1951 to 36% in 1981 and

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<sup>1/</sup> Unless otherwise specified, the figures used in Section I are from Center for Monitoring Indian Economy (CMIE), Basic Statistics Relating to the Indian Economy, Volume I, All India, Bombay, September 1981. For the GNP ranking and other comparisons see the IBRD's World Development Report 1981, Annex, World Development Indicators.

<sup>2/</sup> For an analysis of the increase in life expectancy in India and its implications, see Rati Ram and Theodore W. Schultz, "Life Span, Health Savings, and Productivity", Economic Development and Cultural Change, April 1979.

female literacy increased from 8% to 25% during the same period. Although India ranks 16th from the bottom in per capita GNP, it ranks much higher-43rd from the bottom - in terms of Physical Quality of Life Index (PQLI), which combines life expectancy, literacy and infant mortality.<sup>3/</sup>

Long-term all-India averages conceal significant variations in development performance over different time periods and among states. Haryana and Punjab, for example, whose combined population is comparable to that of Colombia or South Korea, maintained growth rates of net domestic product of 5.2% over the 1960s and 1970s. The percentage of the population below the GOI poverty line in 1977-78 (\$86 per year per capita in rural areas and \$100 in urban areas) was 25% and 15% in these states, respectively. By comparison, Bihar and Madhya Pradesh achieved growth rates of only 2.4% and 2.8%, and had 57% and 58% of their population below the poverty line, respectively (or well above the all-India average of 48%).<sup>4/</sup> Over time, India's GNP growth decelerated from the 1950s to the early 1970s, but entered a new phase of acceleration in the mid-1970s. Annual growth in GNP declined from 3.8% in the 1950s and 3.5% in the 1960s to 3.3% in the 1970s, and industrial growth fell from 7.4% to 6.4% to 4.3% over those three decades. However, from 1975-76 to 1980-81 annual GNP growth averaged 4.4%, industrial growth averaged 4.9% and agricultural growth averaged 4.2%, despite a disastrous drought in 1979 which brought about a 15% drop in agricultural output, a 1% fall in industrial output and a 5% decline in GNP:

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<sup>3/</sup> Morriss D. Morris, Measuring the Conditions of the World's Poor (New York, Pergamon Press, 1979), Appendix B.

<sup>4/</sup> CMIE, Basic Statistics Relating to the Indian Economy, Volume II, States, Bombay, October 1981.

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India: Economic Indicators, 1975-76 to 1980-81

	<u>1975-76</u>	<u>1976-77</u>	<u>1977-78</u>	<u>1978-79</u>	<u>1979-80</u>	<u>1980-81</u>	<u>Annual Growth</u>
Real GNP (% change)	9.9	1.3	8.2	5.8	-5.0	7.0	4.4
Industry (% change)	5.5	9.5	3.9	7.6	-1.4	4.1	4.9
Agriculture (% change)	15.2	-7.0	14.4	3.5	-15.5	19.2	4.2
Foodgrains (mn.metric tons)	121.0	111.2	126.4	131.9	108.9	129.9	
Foodgrains (% change)	21.2	-8.1	13.7	4.4	-17.4	22.1	4.9
Wholesale Prices (% change)	-6.9	12.0	0.4	4.5	21.4	16.5	7.5

The drought of 1979-80 was accompanied by severe constraints in the availability of coal, power and transport services, a rapid increase in world petroleum prices, and rapid inflation. The recovery from the "infrastructure crisis" was slower than expected in 1980-81, but industrial output grew by 4.1% and agricultural output rebounded sharply largely due to normal rainfall. Inflation as measured by the wholesale price index (on a point-to-point basis) declined from 21% in 1979-80 to 16% in 1980-81.

6/ Prospects for 1981-82 appear good. Rapid improvement in the power situation since late 1980 is providing a significant stimulus to industrial production, which may increase by about 10% in 1981-82. Rains were somewhat below average for the summer (kharif) crops, but above normal for the sowing of the winter (rabi) crops. Foodgrain production should equal or slightly exceed the 1980-81 level, and production of other crops (which account for 32% of the agricultural production index) may increase by about 10%. Consequently GNP growth may

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5/ Figures in last column are annual compound growth rates between 1974-75 and 1980-81.

6/ For an excellent recent review of India's current economic situation and prospects see U.S. Embassy, New Delhi, "Economic Trends Report India," November 1981.

reach 5%, and inflation could decline to 10% or less. If this performance can be sustained, the accelerated growth of the last half of the 1970s will represent an important turning point in Indian economic development.

2. Sixth Five Year Plan (1980-85)

The GOI's Sixth Five Year Plan for the period 1980-81 to 1984-85 sets a GNP growth target of 5.2%, industrial and agricultural output growth targets of 7.8% and 5.2% respectively, and a foodgrain production growth target of 3.9%.<sup>7/</sup> The GOI estimates that achievement of these targets would itself generate employment and incomes sufficient to reduce the proportion of India's population below the poverty line (or "poverty ratio") from about 48% in 1979-80 to 40% in 1984-85. The key elements of the agricultural growth strategy are an 80% expansion of fertilizer consumption, an increase in the coverage of high-yielding varieties from 20% of total cropped area in 1979-80 to 30% in 1984-85, and expansion by nearly 3 million hectares per year in the area under irrigation.

The second element of India's strategy for rural poverty reduction consists of replication on a national scale of a series of rural development programs - the Integrated Rural Development Program (IRDP), the National Rural Employment Program (NREP) and the Operation Flood dairy development program - which were tested on a more limited scale in the 1970s. These programs are specifically targetted on rural families below the poverty line-<sup>8/</sup> farmers cultivating 2 hectares or less, landless laborers, and artisans. The GOI estimates, probably ambitiously, that full implementation of these programs coupled with accelerated agricultural and industrial growth could

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<sup>7/</sup> Government of India (GOI), Planning Commission, Sixth Five Year Plan 1980-1985, January 1981.

<sup>8/</sup> For a useful recent assessment of these programs and their employment impact, see Raj Krishna, "The Economic Development of India", Scientific American, September 1980.

bring the rural "poverty ratio" down to as low as 30% by 1984-85.

Since the rural poor generally suffer from inadequate access to social infrastructure and services, the third element of India's rural development strategy is the Minimum Needs Program, which sets targets for access to family planning, health and nutrition services, water supply and sanitation, and education. During the Plan period, the GOI hopes to increase the percentage of couples using contraceptives to over 36% (as compared to 27% at present), reduce infant mortality from 125 to 106 per 1000, and increase primary school enrollments in the 6-11 age group from 84% to 95%.

The GOI estimates total public and private sector Plan expenditures during the Sixth Five Year Plan at \$215 billion (in 1979-80 prices). Public sector development expenditures account for \$122 billion. The sectoral allocations reflect continued emphasis on energy (whose 27% share of Plan allocations may be further increased) and on agriculture, rural development and irrigation, which together account for 25%. In order to mobilize resources on the scale required, the Plan projects a further increase in the economy's savings ratio from 22% to 25% and an improvement in the financial performance of public sector enterprises. Although there is some scope for additional taxation (particularly in agriculture), India's tax ratio of 16% GNP is already high by low-income country standards. At the time of Plan formulation, the GOI projected the contribution of external resources (net of debt service) at about \$14 billion. This included increased commercial borrowings and a drawdown of foreign exchange reserves, as well as \$ 7.4 billion in concessional assistance (net of debt service on past assistance).

Reaching the figure of \$7.4 billion in net concessional assistance flows will require gross aid disbursements during the Plan period of approximately \$13 billion. This implies a gradual increase in annual

aid commitments and disbursements, which were \$3.5 billion and \$2.4 billion in 1980-81 respectively. The members of the World Bank-led India Consortium accounted for \$ 2.1 billion of total disbursements, and Eastern European and OPEC countries for the rest. The World Bank is by far the largest single donor, with commitments of \$1.7 billion and disbursements of \$850 million in 1980-81. The prospective decline in IDA lending for India will probably be offset by increased World Bank lending on IBRD terms, but the offset may be only partial. The other major donors are the U.S., the United Kingdom, France, Germany, the Netherlands, Japan, Sweden, and the European Economic Community (EEC).<sup>9/</sup>

### 3. GOI Structural Adjustment Program

Although India was hard hit by the 1973 oil price increase, the balance of payments moved into surplus after 1975 on the strength of favorable price trends, declining foodgrain imports and rising remittances (primarily from Indian workers in the Middle East). Foreign exchange reserves increased from less than 3 months' coverage of imports in 1974-75 to over 9 months coverage by 1978-79.<sup>10/</sup> However, the trade deficit rose from \$ 1.5 billion in 1978-79 to \$ 3.3 billion in 1979-80 in response to the 1979 oil price increases, which doubled India's oil import bill to \$ 4 billion (or 50% of export earnings). A further increase in the oil import bill to \$7 billion in 1980-81 moved the balance of payments into deficit, and reserves (excluding gold) declined from a peak of \$ 7.7 billion in August 1980 to \$5.0 billion in September 1981 (equivalent to about 3 1/2 months' imports at the projected 1981-82 import level).

The prospect of continued high oil import payments over the Sixth Plan period led the GOI to request IMF support under the Extended Fund Facility.

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<sup>9/</sup> Details on commitments and disbursements by donor through 1980-81 are available in IBRD, "Economic Situation and Prospects of India", April 15, 1981. Tables 4.1 - 4.3.

<sup>10/</sup> This discussion is drawn from World Bank Economic reports on India for 1980 and 1981 and IMF, "India: Use of Fund Resources - Extended Fund Facility", October 6, 1981.

The IMF approved an Extended Agreement in November 1981 at a level of \$ 5.6 billion (SDR 5 billion). Under the agreement, India is eligible to draw up to \$ 1 billion by March 1982, \$ 2 billion between June 1982 and June 1983 and \$ 2.6 billion between June 1983 and June 1984. Drawings will be subject to IMF review of GOI structural adjustment measures, including accelerated oil exploration and development, continued rapid expansion in the availability of coal, power and rail transport, increased production of imported items such as steel, fertilizer and oil-seeds, acceleration of export growth from 5% per annum at present (in volume terms) to 9% per annum by the end of the Plan period, continuation of liberal import policies, reductions in government borrowings, further improvements in public sector resource mobilization and pricing policies, and appropriate incentives for more rapid production growth in the private sector.

B. Constraints to Broadly Based Economic Growth

1. Overview

The basic cause of poverty in India, as discussed in the FY 1982 and FY 1983 CDSS, is slow growth from an extremely low base. Slow growth has resulted primarily from suboptimal performance in the industrial sector, both with respect to rate of growth and impact. Agricultural growth in general and foodgrain production growth in particular have averaged about 3% per annum. This is close to the targets set in successive five year plans and compares favorably with performance in other countries. Moreover, periods of rapid agricultural growth have coincided with reduction in the rural poverty ratio and improvements in rural income distribution,

indicating that agricultural growth is broadly based.<sup>11/</sup> Industrial growth, on the other hand, has lagged far behind target, particularly in the decade after the mid-1960s. After 1966 industrial growth was only about one half the 1951-1981 growth rate of 6% and one-third the target of 9%. Poor industrial growth resulted in India's slipping from the world's 12th largest industrial producer in 1960 to 23rd in 1980.<sup>12/</sup> Industrial growth has been relatively capital-intensive, and has not contributed adequately to employment growth. While industry's share of GNP increased from 15% to 26% in the past 30 years, as noted above, the share of the labor force employed in industry remained at 11%. This absence of a structural employment shift into industry over such a long period is probably unique among developing countries, and has placed a disproportionate burden of employment creation on the agricultural sector, with its rapidly increasing man/land ratio.

India has had several advantages in its drive for industrialization, including a large internal market, a traditional entrepreneurial class, and a reasonably well developed transportation system. The natural resource base is fair overall, and India is reasonably well endowed with energy resources. Coal resources are ample (although the high ash content of Indian coal creates problems in utilization), there is substantial hydroelectric potential, and petroleum production could increase from

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11/ This issue is discussed at length in the FY 1982 CDSS, Section I.B and the FY 1983 CDSS, Annex. The most important references are Montek S. Ahluwalia, "Rural Poverty in India: 1956/57 to 1973/74", in India: Occasional Papers, World Bank Staff Working Paper No. 279, May 1978, and National Council of Applied Economic Research (NCAER), Changes in Rural Income in India, 1968-69, 1969-70, 1970-71, New Delhi, 1975. The NCAER survey was financed by AID, and will be repeated in 1982 under the NCAER Rural Household Survey project approved in FY 1982.

12/ CMIE, Basic Statistics Relating to the Indian Economy, Volume 1: All India, September 1981, Table 14.7.

40% of requirements at present to as much as 70% by the mid-1980s.<sup>13/</sup>

The major constraints to industrial growth have been inadequate financial resources, poor government policies and poor management, particularly in the public sector. Financial constraints have been important, and a recent review of developing country data for the 1960s and early 1970s cited India as "the principal case in which slow growth can be attributed to a substantial extent to the limited supply of external capital".<sup>14/</sup> Nevertheless, India's performance in mobilizing domestic resources has been well above average, and has resulted in an increase in the domestic savings ratio from 10% in 1950-51 to an estimated 22-23% in 1980-81. Unfortunately, the rise in India's savings and investment ratios has been accompanied by increases in incremental capital-output ratios (ICOR) in most sectors, with the result that higher investment has not paid off in higher industrial or GNP growth.<sup>15/</sup> The poor response of production and productivity growth to investment reflects technological and human resource constraints. However, it also reflects inefficiencies which pervade India's industrial sector and are attributable in large part to past policies of import substitution and public sector bias, which are now undergoing modification. These policies and the current reforms are discussed below, following a brief section on the role of the private sector in India's economy.

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<sup>13/</sup> For recent assessments of India's energy resources, see USAID/India, "Energy, Environment and Forestry" prepared for the Asia Bureau Conference on Energy, Environment and Forestry, Manila, November 12-16, 1979; IBRD, "Economic Situation and Prospects of India: April 15, 1981, Chapter 4; and the Embassy's November 1981 Economic Trends Report.

<sup>14/</sup> Hollis Chenery, *Structural Change and Development Policy* (New York; Oxford University Press, 1979), p. 449.

<sup>15/</sup> A review based on 1950-1971 data concluded that "only 28 developing countries out of 101 had a worse performance with respect to the ICOR than India". See Martin Wolf, "Capital and Growth in India: 1950-71"; in *India: Occasional Papers*, World Bank Staff Working Paper No. 279, May 1978.

In the sectors USAID proposes to work in - agriculture, forestry, and energy, and population, health and nutrition, the overall policy environment has been generally favorable (see Section I.B.4 below) and the role of the private sector has been broadly appropriate. While there is room for further adjustments in broad policies and in the role of the private sector in these fields, the principal constraints to more rapid growth or more efficient and equitable provision of services are institutional and technical. These constraints are discussed in sections I.B.5 and I.B.6.

## 2. Role of the Private Sector in the Economy

The private sector dominates the Indian economy, accounting for 93% of employment and 80% of GNP.<sup>16/</sup> The public sector includes administration and defense and social services but also includes a wide range of economic enterprises, from railways, power and manufacturing to most of the banking system. The public sector excluding administration and defense accounts for less than 4% of employment, 15% of GNP, and 8% of domestic savings, but accounts for 28% of the economy's capital stock and absorbs 42% of total investment.

In the agricultural sector, production is almost entirely in private hands (with the exception of a few government seed farms), as are industries based on agricultural processing. Agricultural support services and surface irrigation works are in the public sector. Input supplies are divided between the public and private sectors; the private sector accounts, for example, for 45% of fertilizer production. In manufacturing, heavy industry (e.g. pig iron, steam turbines, shipbuilding, petroleum refining, power generation) is in the public sector, and the public sector accounts for

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<sup>16/</sup> This section is based upon CMIE, "Public Sector in the Indian Economy", August 1981.

half of the output of India's 250 largest enterprises. Nevertheless, the private sector accounts for 75% of employment and 78% of output for manufacturing overall. Some public sector enterprises are efficiently run, but according to a recent survey of public enterprises, after-tax profits of large private sector companies averaged 14% in 1979-80, whereas the average for public sector enterprises was -1% (due largely to uneconomic administered prices). The GOI is concerned about the poor performance of the public sector and is now moving vigorously to improve its management and increase its productivity.

### 3. Macroeconomic Policy Reform

In addition to heavy emphasis on investment in the public sector, India's past industrial policy was characterized by a bias toward import-substitution, capital-intensity and technological self-reliance.<sup>17/</sup> These policies were implemented through a comprehensive system of controls on imports, capital flows, exchange rates, interest rates, investment, and basic prices. Because these policies have been held largely responsible for slow production growth, exacerbation of inflationary pressures, balance of payments disequilibrium and technological obsolescence, the GOI has been shifting toward a greater export orientation, liberalisation of imports (including technical knowhow), increased reliance on the private sector, more favorable treatment of private foreign investment, and more realistic factor and product pricing.

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<sup>17/</sup> For two recent and highly readable articles on the subject, see Raj Krishna, op.cit., and "India:Treadmill or Take-off" A Survey", The Economist, March 28, 1981. A more comprehensive but more dated assessment of India's industrial policy is available in Lawrence Veit, India's Second Revolution: The Dimensions of Development (New York: McGraw-Hill, 1976), Chapter 9. Veit was the U.S. Treasury's Financial Attache in India in the early 1970s.

These recent efforts to move toward a more open economy are discussed in detail in the Embassy, IBRD and IMF documents cited in Section IA above.

The following examples illustrate the kinds of measures being adopted:

- Effective this year, the private sector has been allowed to establish new power plants to supplement public sector electricity generation.
- In order to reduce budgetary support to the public sector, the GOI raised the prices of most public sector products in 1981: cement by 16%, aluminum 18%, steel 20% and petroleum products 18-30%.
- After an absence of nearly a decade, multinational corporations have been asked to assist in oil exploration efforts. A U.S. multinational (Chevron) has been selected for final negotiations for an off-shore drilling blocks off the coast of Saurashtra.
- Since 1975, the GOI has successively reduced the top income tax bracket from 97.75% to 66% to encourage savings and investment in the private sector.
- The GOI has appointed a high level Economic Administration Reforms Commission (EARC) headed by L.K. Jha, onetime ambassador to the United States and economic advisor to Mrs. Gandhi. Jha has ministerial rank and reports directly to the Prime Minister. Appointment of a Chairman of Jha's status indicates the seriousness of the GOI's commitment to reform. The EARC's first report (on rationalization of tax procedures) has already been submitted, and will be the basis for tax reforms to be introduced on April 1, 1982 for the Indian 1982-1983 fiscal year.

The cumulative effect of the GOI's recent policy changes is to create an economic environment in which most factor and product prices are reasonably realistic and competitive forces are stronger. India's exchange rate has been at realistic levels for some time, and interest rates (which range from 12.5% to 19.5% for most borrowers) are strongly positive in real terms at the projected 1981-82 inflation rate of 10% or less. Controlled prices of many products and services have been revised recently to reduce or eliminate losses and subsidies, and controls have been relaxed for imports, external borrowing, and investment. However, the government's ability to maintain the

momentum of policy reform cannot be taken for granted. There is strong political opposition to the reduction of subsidies, and there are vested interests in the bureaucracy and in industry which are threatened by the relaxation of controls.<sup>18/</sup> However, if the government can implement the measures called for in the IMF Extended Agreement, and can maintain the recent excellent performance of the coal, transport and power sectors, the medium-term prospects for accelerated industrial growth should be good.

#### 4. Sectoral Policy Reform: Agriculture, Energy and Population

India's agricultural policies have been reasonably favorable since the mid-1960s, when two successive droughts, huge PL 480 shipments, and the development of high-yielding wheat varieties (HYV) led to establishment of a "new agricultural strategy". The key elements of the new strategy were rapid introduction of HYVs, expansion of fertilizer supplies, increased investment in irrigation, and the maintenance of stable incentive prices for wheat and rice, combined with the establishment of foodgrain buffer stocks.<sup>19/</sup> These policies have been successful in accelerating foodgrain production, although production trends are subject to various interpretations because of the size of the annual fluctuations in output. Accordingly to one recent analysis, the annual foodgrain production growth rate increased

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18/ For an excellent analysis of the vested interests created by controls, see Padma Desai and Jagdish Bhagwati, "Socialism and Indian Economic Policy", World Development, April 1975.

19/ The "new agricultural strategy" is described and analyzed in Susanta K. Ray, Ralph W. Cummings, Jr., and Robert Herdt, Policy Planning for Agricultural Development (New Delhi: Tata-McGraw Hill, 1979). The evolution of India's foodgrain management system, including review of foodgrain pricing policies and terms of trade since the 19th century, is analyzed in John Wall, "Foodgrain Management: Pricing, Procurement, Distribution, Import & Storage Policy", in India: Occasional Papers, op.cit.

from 1.85% in the 1960's to 2.74% in the 1970s.<sup>20/</sup> Wheat, however, has accounted for most of the acceleration. HYV rice has not been nearly as successful until recently, and growth rates for pulses and for the other cereals (corn, sorghum and millet) has actually declined.<sup>21/</sup> In any case, accelerated foodgrain production growth has permitted relative foodgrain prices to decline during the last decade.<sup>22/</sup> This has benefitted the rural population below the poverty line (who generally devote about 60% of their expenditures to foodgrains) and may be one of the major explanations for the decline in the rural poverty ratio from 54% in 1972-73 to 51% in 1977-78. The GOI is now modifying its pricing policies and allocations to provide more adequate support for foodgrains other than wheat, and for crops such as oilseeds and sugar.

The GOI's energy policies have also been reasonably sound in the past decade, particularly with respect to petroleum. Petroleum product prices have been deliberately maintained at high levels to encourage conservation, and oil exploration is being pursued with assistance from

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<sup>20/</sup> Yoginder K. Alagh and P.S. Sharma, "Growth of Crop Production:1960-61 to 1978-79 - Is It Decelerating", Indian Journal of Agricultural Economics, April-June 1980.

<sup>21/</sup> T.N. Srinivasan "Trends in Agriculture in India, 1949-50 - 1977-78", Economic and Political Weekly, Special Number, August 1979. For the IBRD's analysis of foodgrain production trends, see IBRD, "Economic Situation and Prospects of India", May 1, 1980, Chapter 2, and IBRD, "Economic Situation and Prospects of India", April 15, 1981, Chapter 6.A.

<sup>22/</sup> The wholesale price index for foodgrains in 1980-81 (1970-71 = 100) was 216.6, whereas the index for all commodities was 256.5.

multinational oil companies. Coal had suffered to some extent from uneconomic pricing as well as poor management, but this is being corrected. Coal production, which had stagnated at 100 million tons per year, reached 114 million tons in 1980-81 and should attain the 1981-82 target of 124 million tons. This, together with improved railway performance, has had a favorable impact on power generation, which was 12% higher in April-<sup>23/</sup> November 1981 than the same period in 1980. India is also following sound policies and allocating increased resources for renewable energy development, as discussed in Section II.C. below.

In the population sector, recently released data from the decennial census has provided the impetus for a major shift in policy direction. Prime Minister Gandhi has publicly expressed the need for the government to "revitalize" the nation's family planning program following a three year period of diminished activity during which the contraceptive prevalence rate stagnated at about 23%. This revitalization involves increased emphasis on the acceptance of temporary, non-terminal methods of family planning for the Sixth Plan target of 36.5% contraceptive prevalence by 1985. The Plan projects that the numbers of acceptors using temporary measures will increase seven-fold from 1981-1985 while the numbers of acceptors electing sterilization will less than double.

##### 5. Human Resources and Institutions

By comparison with most low income countries, education and basic institutions are well developed in India. Major investments in the 1960's (some with AID participation) resulted in a network of high quality agricultural universities, technical institutes and business schools.

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<sup>23/</sup> For an excellent overview of policies and prospects in India's commercial energy sector (coal, power, oil and gas), see IBRD, "Economic Situation and Prospects of India", April 15, 1981, Chapter 5.

Similarly, past investments in training and institution building (including AID-financed participants trained in the U.S.) have created a set of strong institutions at the Center, including key ministries and organizations such as the Indian Council of Agricultural Research (ICAR), the Central Water Commission (CWC), the Rural Electrification Corporation (REC), and the All-India Institute of Medical Sciences (AIIMS).

Inadequate human and institutional capacity nevertheless remains a significant constraint to more rapid and broadly based development. India's human resource and institutional base, while impressive in terms of absolute numbers or size, is still very thin. In an international comparison of human and physical capital per member of the labor force, for example, India ranked ahead of several countries (including South Korea) in terms of physical investment, but was at the bottom of the list (below Ghana and Nigeria) in terms of educational levels.<sup>24/</sup> As in other countries skills and institutions are strongest at the center, and become progressively weaker at lower levels (in India's case the 22 states, 400 districts, 5000 development blocks, and 575,000 villages). This creates a particular challenge for broadly-based development, because it is at the lowest levels (particularly in rural areas) that development institutions must undergo the greatest reform in their operations in order to provide adequate access to inputs and services.

This is particularly true of the three "core" USAID program areas—surface irrigation, forestry and watershed management, and population/health/nutrition. In all three cases, well-established institutions with

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<sup>24/</sup> Stephen P. Heyneman, "Investment in Indian Education: Uneconomic," World Development, August 1980, Table 5. Educational levels refers to average years of schooling per worker.

strong professional traditions (in civil engineering, forestry, and medicine, respectively) are reorienting their whole approach as they implement farmer-based and village-based programs. These programs require a broader range of professional disciplines, greater participation by paraprofessionals as well as farmers and villagers, a much greater emphasis on management at all levels, and in many cases new technical packages. India has a good base for undertaking these institutional reforms, but the magnitude of the task should not be underestimated.

#### 6. Technology Development, Transfer and Extension

The points made about India's human resource and institutional development above also apply to the capacity to develop and spread appropriate technologies. India is often cited as having the third largest pool of scientific and technological manpower in the world (behind the U.S. and the USSR), and the capacity for scientific and technological achievement is clear from such fields as agricultural research, space and nuclear engineering. In per capita terms, however, India is probably not above the developing country average in scientific and technical manpower. Like professional manpower in general, scientific manpower is spread very thinly. Consequently, it is not possible for India to keep abreast of technical developments in all fields, and in many areas the concentration of effort is not large enough to produce original research or innovations across a broad front. India has the capacity to absorb new technologies but must maintain access to technological developments elsewhere in order to progress.

Regarding the spread of technologies, there is often inadequate emphasis on the adaptation of innovations to specific situations, and the systems for extension or commercialization are generally weak despite the long history of efforts to adapt technologies to village conditions.

The major exception is probably agricultural extension, which has a long tradition and is now going through a major strengthening with the adoption of the Training and Visit System (with World Bank Support).<sup>25/</sup> In other areas, the weaknesses parallel the institutional weaknesses discussed above. India has a strong base for technical innovation, but the spread of appropriate technologies to the village level requires both continued access to technical developments elsewhere and further expansion of the capacity to diffuse improved technologies to the farm and the village.

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<sup>25/</sup> For a brief description and assessment of the system, see Daniel Benor and James Q. Harrison, "Agricultural Extension: The Training and Visit System", World Bank, May 1977.

## II. AID Program Strategy

### A. Strategy Overview

#### 1. Overall Program Strategy

The general objective of U.S. development assistance is to promote broadly-based economic growth and to strengthen appropriate development institutions. This objective is particularly relevant to India, which accounts for well over half of the poor people in AID-assisted countries. Given the pressure of population on resources in a country which accommodates one-sixth of global population on one-fortieth of the world's land area, the most urgent requirement is to support the expansion of India's capacity to improve the balance between food and energy on the one hand and population on the other.

Regarding food, efforts to increase the growth rate of food production must be supplemented by efforts to stimulate effective demand for food by increasing rural employment and incomes. Programs to channel food to vulnerable groups who are not adequately reached by overall increases in per capita food supplies are also necessary. Although India's domestic production has been adequate to meet the market demand for foodgrains in recent years, the food people can afford to buy still meets only about 85-90% of nutritional requirements. Moreover, large numbers of pregnant and nursing mothers and infants and children are seriously malnourished.

With respect to energy, over half of India's rural energy is supplied by wood and by agricultural wastes. Since the scope for increased reliance on petroleum is limited, ways must be found to expand fuelwood supplies and develop other alternatives to petroleum. Increased production of fuelwood and other forms of biomass can also make an important

contribution to food production, since the production sites for fuelwood are often watersheds. Proper management of watersheds is necessary for adequate development of soil and water resources for agricultural production.

Finally, reduced population growth depends primarily on reductions in fertility, which come about both through better access to family planning services and through changes in attitudes regarding desired family size. Declines in desired family size are a response to improved socio-economic conditions, particularly reduced infant and child mortality, female education, and female employment.

Based on these considerations, the appropriate sector goals for AID are expanded food production and rural employment, expanded energy supplies, especially from forestry and watershed management, and reduced fertility and mortality. An AID assistance strategy for India must attempt to combine available resources in ways which maximize their long-term impact on these sector goals. The available resources are the expertise of the U.S. private and public sectors, AID's financial resources, and AID staff. With respect to U.S. expertise, we assume that the United States will maintain a strong comparative advantage in most fields of agriculture including irrigation and forestry, in some fields of alternative energy, in contraceptive and other medical technologies, and in the development and management of service delivery systems. Regarding funding levels, we assume that development assistance resources for India will remain constant or increase slightly in real terms, and that Title II resources will remain constant or decline slightly in real terms. Regarding staff, we assume that U.S. direct hire (USDH) and foreign service national (FSN) staffing levels will increase slightly, and that USAID will be able to attract experienced and highly competent USDH and FSN technical personnel.

Given these assumptions, we believe that AID can have the greatest long-term impact on the stated sector goals by concentrating on three subsectoral objectives: improving the efficiency of irrigation systems, developing institutions for local management of forest and watershed resources, and expanding public and private technical capacity and institutional infrastructure for the delivery of rural family planning, nutrition and health services. The achievement of these objectives requires large investments and major institution-building efforts over an extended period, and can draw upon U.S. expertise in predominantly private American institutions. These three primary areas of concentration would be supplemented by two subsidiary program thrusts designed to take advantage of unique US resources. The first would support collaborative relationships between U.S. and Indian institutions to improve technologies relevant to the sector goals. Development of these relationships would draw upon the joint Indo-U.S. sub-commissions on Agriculture and on Science & Technology, and would concentrate on finding solutions to problems in agricultural research, alternative energy resource development, and health and family planning. The second would utilize Title II food and the management capabilities of U.S. PVOs to support the sector goals. These strategy elements are discussed more fully in the following sections.

We believe that this strategy would have a significant impact on India's institutional capacity to develop and spread new technologies. In those sub-sectors where we project a major long-term involvement (surface irrigation, forestry and watershed management, and health/population/nutrition) we expect that AID emphasis on sector reviews, studies of key issues, and program monitoring and evaluation will support the continued evolution of sub-sector policies in desirable directions. This will include an enhanced role for the

private sector through more meaningful participation of farmers and villagers in key programs (irrigation, forestry, health, nutrition) and a broader role for the private sector in contraceptive production and distribution. This proposed strategy does not include program lending, nor does it suggest a direct role for USAID in encouraging and supporting macroeconomic policy reforms and a greater general role for India's private sector. However, macroeconomic policy issues are addressed by the World Bank through its chairmanship of the India Consortium, and by the International Monetary Fund in conjunction with India's Extended Fund Facility drawing.

## 2. Program Concentration

The AID strategy in India has evolved from the approach recommended in 1978 by a high-level U.S. strategy team led by Charles Lindblom of Yale University.<sup>26/</sup> The team's recommendations assumed U.S. development assistance for India totalling \$2 billion over five years, along with severe restrictions on U.S. staff levels in New Delhi and a limited role for technical assistance. Their recommendations consequently stressed the opportunities for large-scale resource transfers in agriculture and health and family planning, in sub-sectors characterized by sound policies, established institutions, and ample absorptive capacity. This resulted in the original program which featured major resource transfers for fertilizer promotion, agricultural credit, rural electrification and malaria control, supplemented by small planned programs for technical collaboration in agricultural research and alternative energy.

This strategy began to be modified in FY 1980 with the inclusion of a grant component in the Rajasthan Medium Irrigation Project and the planning of substantial technology transfer activities into the Integrated Rural Health and Population project. But with the Reagan Administration much more emphasis

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<sup>26/</sup> "U.S. Bilateral Assistance to India: A strategy for the Early 1980s", June 1, 1978.

was directed toward technology transfer and institution building. This accelerated trend was reflected in the design of the FY 1981 Madhya Pradesh Social Forestry project, preparation of the Project Paper for the FY 1982 Maharashtra Irrigation Technology and Management Project, and the preparation of the FY 1983 Project Identification Documents. At the same time USAID has been progressively eliminating the projects which are resource transfers only. The FY 1983 CDSS proposed that rural electrification receive no further support. After discussions with the Administrator in March 1981 USAID officials negotiated a reduction of \$50 million in the fertilizer promotion program. FY 1982 will be last year for the agricultural credit program. Obligation of the balance of the amount authorized will meet AID's commitment to a highly worthwhile project and will close out the stage of large-scale resource transfers.

The shift from a program with several large resource transfer projects to a program consisting solely of projects with technology transfer and/or institution building as a major focus calls for tight sectoral and sub-sectoral concentration to keep staffing and project management requirements within reasonable bounds. Support of active technology transfer efforts in USAID's three broad program categories of Food Production and Rural Employment, Energy and Natural Resources Management, and Fertility and Mortality Reduction requires resident technical expertise in six fields: agricultural research, irrigation, forestry/watershed management, population, nutrition and health. In terms of substantive technical issues, however, these six fields fall naturally into two broad "clusters": agricultural research and land and water management on the one hand and health/population/nutrition on the other. Although competent U.S. technical staff will be required as project managers in each of the six technical fields, the fact that these six fields "cluster" in this fashion will permit USAID to

deal with Indian and U.S. institutions in terms of these two broad technical areas and to concentrate Mission technical efforts accordingly.

USAID will also continue the geographic concentration in northern and western India discussed in the FY 1983 CDSS. This will apply particularly to irrigation and forestry/watershed management, but there is also a substantial degree of emphasis on these same states in the projects under the Fertility and Mortality Reduction program category.

### 3. U.S. and Indian Private Sector

There is considerable scope within the proposed strategy for both U.S. and Indian private sector institutions to be a source for new technologies and a channel for their transfer to rural areas.

In the past, our focus in the private sector was primarily on U.S. and indigenous private voluntary organizations. However, over the past year we have identified important areas where a greater role for U.S. universities, American and Indian management consulting firms, and U.S. manufacturing firms can be developed. For example, USAID has identified private medical institutions and pharmaceutical companies as key participants in population and health activities. In particular, research in new contraceptive technology has potential for collaboration between India and U.S. drug firms. Irrigation, forestry, and agricultural research offer major opportunities for collaborative arrangements with U.S. universities. In addition, USAID will be relying on both Indian and U.S. private management consulting firms to assist with project monitoring and implementation (see III B. below). Indian research institutions will carry out the substantial operations research components included in a number of projects, particularly in the health, nutrition, and population sectors.

In the voluntary sector, the Mission relies on U.S. PVOs for management of PL 480 Title II resources. CARE and Catholic Relief Services (CRS) have

substantial physical and staff resources at the field level for administering and monitoring the food program. We are also collaborating with them in designing ways to upgrade nutrition programs to which they supply U.S. food. Another U.S. PVO, the Cooperative League of the USA (CLUSA), is managing the U.S. inputs to a program for the development of oilseeds cooperatives. We also see a key role for the Indian private voluntary sector in the health field, and have obligated a Special Foreign Currency Appropriation (SFCA) grant to finance small-scale projects involving PVO health and family planning systems. Involvement of U.S. private voluntary organizations beyond the areas discussed above can best be accomplished through centrally financed mechanisms such as matching grants. Organizations such as Appropriate Technology International (ATI) and the Family Planning Association International (FPAI) continue to operate effective technology transfer programs through direct contacts with counterparts in the Indian voluntary sector.

#### 4. P.L. 480 Resources

Since the FY 1983 CDSS submission, USAID has done considerable work in further integrating Title II food aid with the proposed development strategy. The premise for justifying a continuing Title II program is contained in the discussions of India's food grain supply in the FY 1983 CDSS as noted in Section II.A. 1 above. India has made great strides in basic food grain production, but an adequate food/population balance requires continued major efforts aimed at closing the country's large nutrition gap.

Assuming a slightly declining level of Title II resources in real terms over the planning period, USAID's objective is to improve the effectiveness of Title II food in addressing that nutrition gap. This objective is supported by four key documents: 1) AID/W Policy Discussion Paper, Food Aid and Development (July 1981) which addresses the role of food aid in the context of broadly based development goals and its program implications; 2) the evaluation of

USAID/India Title II program conducted by Community Systems Foundation in 1979; 3) the report by David Sahn of Community Systems Foundation in 1980 on the rationale for improved targetting for MCH programs; and 4) the 1980 Shortlidge report on the school feeding or Mid-Day Meals program. These four documents, plus the Mission's current evaluation of the CRS Food for Work program, provide the basis for continuing the current phase-down of school feeding programs by 10% per year in dollar terms through FY 1986 and maintaining Food for Work (FFW) and Maternal and Child Health (MCH) programs at current tonnage levels approximately through FY 1987. The Food for Cooperatives program is straightlined in dollar terms after FY 1983, assuming the Mission decides to consider a follow-on to the current oilseeds cooperative activity beginning FY 1986. Each of these programs is discussed further below.

USAID's conclusions regarding the impact of school feeding programs on nutrition levels and on school enrollments, attendance and retention remain the same as in last year's CDSS. However, given the size of the school feeding program even at the proposed reduced levels, USAID is undertaking an evaluation to assess more precisely the program's effect on primary school enrollment, retention and attendance rates. This study is based on existing records for all CARE-assisted states and will be available in late FY 1982. At that point USAID will determine whether a more comprehensive study based on surveys in selected states will be necessary. Meanwhile, USAID continues to press CARE and CRS to concentrate on school feeding programs in poorer rural areas, and to upgrade their management to improve nutritional and educational impact. The continuation of these programs after 1986, and at what levels, will depend upon results of the studies, and on the progress of CARE and CRS programs along the lines discussed above.

USAID is also proceeding with a significant redesign of MCH programs administered by both CARE and CRS. Upgraded programs will be financed by

Development Assistance funds in the case of CARE's program, and by Operational Program Grant (OPG) funds in the case of CRS. With reference to the CARE program, this redesign involves phasing over of the existing CARE MCH program into an activity which integrates nutrition education and health services with supplemental feeding directed at the most severely malnourished children and at pregnant and lactating mothers. USAID and CARE are working on a basic set of criteria against which less effective programs would be phased out, and Title II food would be concentrated on villages in which upgraded feeding programs are active or have potential for upgrading to a more targeted approach. The CRS MCH upgrading proposal employs targeting and health and nutrition education criteria similar to the CARE program. It is proposed to start in FY 1982 and be completed by FY 1987.

The Food for Work program continues to represent the second highest priority (after MCH programs) for use of Title II foods. It creates approximately one hundred thousand person-years of employment annually in the rural sector, most of it to relieve seasonal unemployment among landless workers and marginal farmers. Construction work includes land clearing and levelling, creation of agricultural infrastructure such as small dams, wells and farm-to-market roads, and housing. The FFW program is being evaluated during FY 1981-83 to assess its impact on the employment and nutritional status of food recipients, and on rural development more generally (through the impact of the assets created). The evaluation will also assist CRS in developing an improved planning and monitoring system for Food-for-Work.

PL 480 resources will also continue to support a major private sector activity through the Oilseed Growers Cooperative Project implemented by the National Dairy Development Board (NDDDB) and monitored by CLUSA under an OPG. This project will receive up to 160,000 metric tons of edible oil through FY 1985, which will be monetized to support development of oilseed production,

processing and marketing cooperatives in five to six states. The project's target is to organize village-level cooperatives covering 350,000 oilseed farmers by FY 1986, who would be selling over 1.5 million metric tons of oilseeds and groundnuts through the cooperative system. The research and extension component of the project will encourage farmers to adopt new technologies, which should increase yields by up to an estimated 30%. Increased production should contribute to stabilization of both supply and prices of oil in the private market. An evaluation of the program's phase I will be carried out in mid-1982. It will provide the basis for determining the amount of Title II vegetable oil to be included in a second transfer authorization to be signed in support of the program's Phase II (FY 1982-86), as well as guidance on modification of the overall design. By the end of FY 1984, the Mission will consider whether a follow-on activity along the lines of this prototype should be undertaken.

##### 5. Housing Investment Guarantees

About 22% or 150 million of India's population live in urban areas. Adequate urban housing facilities remain a significant problem for India. While the number of units required for rural areas is much larger than for cities, the problem of housing finance is more acute in urban areas than in the villages. Given public sector financing constraints, the GOI's current five-year plan places substantial emphasis on private sector financing for urban housing.

AID HG assistance can enhance private sector resources in expanding the coverage of local housing programs. In FY 1981 a Housing Investment Guaranty (HIG) for \$30 million was authorized for the support of the shelter program of the Housing Development Finance Corporation (HDFC), a private sector organization with a housing program in six states. It lends principally to private corporations which in turn on-lend funds to middle and low-income employee

groups for shelter financing. An HIG for a private sector entity such as HDFC is perhaps a first for the Agency. Prospects for a continued relationship with this organization appear bright for a longer-term relationship lasting through the current CDSS period.

## B. Food Production and Rural Employment

### 1. Strategy Summary

Given the importance of the agricultural sector in India's economy, agriculture must not only provide for an improvement in per capita food supplies, but must also provide a major impetus to overall employment generation and income growth. Thus the GOI has set ambitious but attainable production growth rate targets for 1980-85 of 3.9% per annum for foodgrains overall (including 4.3% and 4.2% respectively for wheat and rice), 5.0% for oilseeds, and 4.8% for dairy products. Achievements of these and other agricultural production targets would support employment growth estimated at 3.5% per year in agriculture, and would enable the agricultural sector (including forestry and fisheries) to absorb 15 million of the projected 34 million additional person-years of employment generated during the Sixth Five Year Plan period.

The GOI's strategy for food production and rural employment combines efforts to consolidate and spread the agricultural production gains of the "green revolution" with targeted rural development programs aimed at raising households above the poverty line. The first set of programs emphasizes expansion of agricultural infrastructure and input supplies, especially irrigation, HYV seeds and fertilizer. The second set consists primarily of the National Rural Employment Program (rural works, including food-for-work) and the Integrated Rural Development Program (which includes special programs for small and marginal farmers, dairying and rural enterprise development.

USAID has reviewed all major GOI agricultural and rural development programs to determine those areas where U.S. technical expertise and financial assistance is likely to have the greatest impact. In some areas, institutions are relatively well developed and relatively little technology transfer is appropriate. This applies to the major resource transfer programs in agricultural credit, fertilizer promotion, and rural electrification, which are now being phased out. In some areas, other donors are already providing adequate support. This is true particularly of the state extension systems being strengthened under a series of World Bank projects. In other areas, there does not appear to be significant scope for assistance of a type which AID would provide. This applies to the constituent programs of the NREP and IRDP (rural works, dairying, rural enterprises, etc.) which were reviewed thoroughly in the FY 1982 CDSS and the FY 1983 CDSS.<sup>27/</sup>

The two areas where AID can make its most important contributions are agricultural research and education and irrigation development. U.S. agricultural universities with support from AID and the Ford and Rockefeller foundations were heavily involved in the development of India's agricultural research institutions in the 1950s and 1960s. Although these institutions are relatively well established by developing country standards, there is great scope for technology transfer from U.S. universities in solving problem of particular difficulty and supporting further strengthening of higher agricultural education. With respect to irrigation, India is urgently addressing the problem of inefficient irrigation systems, particularly for surface or canal irrigation. There is great interest in U.S. experience in improving

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<sup>27/</sup> For USAID's analyses, see "Targeted Rural Development Programs in India: CDSS Supplement, February 1980, and "Employment in India: An Overview with Special Emphasis on Off-Farm Employment", August 1981.

irrigation efficiencies in the Western U.S., and substantial scope for technology transfer and institution building through the decade of the 1980s, based on active collaboration with U.S. universities.

AID also supports India's food production and rural employment goals through the Title II Food for Cooperatives and Food for Work programs. The CLUSA/NDDB Oilseed Growers Cooperative Project is included in the Sixth Five Year Plan, and could make a significant contribution to groundnut and soyabean production. This would in turn assist India to reduce vegetable oil imports, which have been running at about 1 million metric tons or \$ 600-800 million per year recently. The Food for Work program, by providing 100,000 person-years of employment annually in the creation of rural infrastructure, makes a modest but significant contribution to the GOI's rural employment efforts.

## 2. Agricultural Research and Education

The key to the transition from traditional to science-based agriculture is the establishment of an indigenous capacity for research and innovation. India has made good progress since Independence in building up this capacity. Agricultural research is carried on at 34 national research institutes and 21 state agricultural universities under the coordination of the Indian Council of Agricultural Research (ICAR). The basis for a modern agricultural extension system was created in 1952 with the launching of the Community Development program. Agricultural extension is now being strengthened with the adoption in all of India's states of the Training and Visit system developed by the World Bank. India's research and extension system played a crucial role in adapting the original wheat and rice HYV's to local conditions, and analysis of the productivity of agricultural research

indicate that rates of return to research in India may be on the order of 40-50%.<sup>28/</sup>

In order to reap the full potential of new agricultural technologies, however, India's agricultural research efforts must be strengthened for crops other than wheat and rice (e.g., oilseeds) and for problems other than the development and adaptation of HYVs (e.g., developing means to reduce the dependence of agricultural production on petroleum-based fertilizers). Given the U.S. comparative advantage in agricultural research, USAID and the ICAR have been working to identify high-priority areas for collaboration. The Indo-U.S. Agricultural Subcommittee endorsed a preliminary list of research priorities at its initial meeting in September 1980. This has been further narrowed down to eight topics which deal with important technical constraints to agricultural production: soybean processing and utilization, groundnut production, biological nitrogen fixation, energy in agriculture, agroforestry, agricultural hydrology, control of nematodes, and plant hormones and bioregulators. Several of these topics will be the basis for an FY 1982 Agricultural Research project. Collaborative links between U.S. and Indian universities and research institutes supported under the project will provide a direct mechanism for technology transfer and institutional strengthening. AID support will provide training and workshop activities, imported equipment and professional exchange of scientists. The AID project will also emphasize full utilization of the findings of the various international agricultural research centers, including the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT) in Hyderabad, India.

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<sup>28/</sup> Robert E. Evenson and Yoav Kislev, Agricultural Research and Productivity (New Haven: Yale University Press, 1975), October 6.

Further AID support for agricultural university improvement, and expanded agricultural research and educational development will remain under active consideration. Implementation of the current research project will provide a basis for the development of follow-on activities for funding beginning in FY 1985.

### 3. Irrigation Efficiency

In India's monsoon climate, the key to increased multiple cropping and to shifts from low to high value crops is irrigation. At present, about 30% of India's net cropped area is provided with irrigation facilities. However, the impact on India's farm population is much more pervasive, with more than 34.5 million out of 63.3 million or about 55% of all farm households in 1975-76 having access to irrigation for at least part of their holdings. Food grain yields under irrigation are 2.5 times greater than under rainfed conditions and can be greatly increased per hectare. Although less than a third of foodgrain areas are irrigated, they produce half of the total output. Net incomes are from three to ten times those for rainfed agriculture where reasonably good irrigation management exists, and irrigation often doubles labor use per hectare.

The structure of the irrigation sector is highly diverse, ranging from millions of small wells serving a fraction of a hectare (ha.) to very large canal schemes irrigating a million hectares or more. Most of the public investment goes into surface irrigation projects. These range from small tanks (reservoirs) financed and built at the community level, to minor (200-2,000 ha.), medium (2,000-10,000 ha.) and major (greater than 10,000 ha.) projects constructed by the states and financed by state and GOI funds. Between 1947 and 1980, India increased its irrigation potential (the area commanded by dams, canals or groundwater irrigation facilities) from 19.4 million gross cropped hectares to 56.6 million hectares. Of this total, about 27 million ha. is under public major and medium schemes,

8 million ha. is provided by minor surface schemes, and 22 million ha. is groundwater.<sup>29/</sup>

Groundwater-based irrigation in India has generally been highly productive, but the areas which are suitable for groundwater development are limited to about one-third of India's irrigable area. Under surface irrigation projects, the benefits in terms of crop production have generally not been commensurate with the costs incurred for system construction. While these problems relate to some extent to inadequate farmer access to seed, fertilizer, extension advice, etc., high yields often achieved with privately-controlled groundwater irrigation suggest that the main problems associated with surface irrigation relate to water supply management. Farmers are unlikely to accept the risks involved in shifting to the improved varieties, higher-value crops and higher cropping intensities permitted by irrigation if there are major uncertainties about the timeliness and adequacy of the required water supplies. Consequently the primary contribution to higher returns to surface irrigation must come from improved efficiency in delivering water from the water source to the farmer's field. This requires higher design standards for the main system, extension of more adequate water conveyance and drainage facilities down to the farmer's field, and improved management of the overall system. Given the very large numbers of farmers involved in surface irrigation systems in India, water supply cannot be fine-tuned to the extent of providing water to each farmer on demand, but the rotational water supply systems used in parts of northern India provide a feasible and cost effective alternative.<sup>30/</sup>

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<sup>29/</sup> Gary S. Posz, Bodh Raj and Dean F. Peterson, "Water Resource Development in India", U.S. Embassy, New Delhi, January 1980. This report is included as Annex A in Jack Keller, Wayne Clyma, Mathew Drosdoff, Max Lowdermilk and David Seckler, "USAID/India Irrigation Development Options and Investment Strategies for the 1980s", Water Management Synthesis Special Report No. 4, August 1981.

<sup>30/</sup> For a detailed review and analysis of these problems, see Jack Keller, et al, op.cit.

The Government of India's Central Water Commission (CWC) has correctly diagnosed the problem of low irrigation efficiencies, and has established general guidelines for revised design standards, construction of field channels closer to farmers' fields (generally to the 8 hectare level), establishment of improved rotational water supply systems and enhanced support for crop production through the establishment of Command Area Development Authorities (CADA). However, bringing about the required reforms on major, medium and minor surface irrigation projects covering 35 million hectares and perhaps 20 million farms in widely varying ecological, sociocultural and administrative conditions faces a number of constraints. In addition to shortages of financial resources, the most important constraints are inadequate information on problems in specific systems, lack of familiarity with all of the relevant technical alternatives (particularly for cost-effective water delivery at the lower end of the irrigation system), a weak tradition of collaboration among organizations and disciplines in dealing with irrigation system problems, and inadequate development of management skills at all levels.

The key role of controlled water supplies for high-productivity agriculture, the size of the investment involved and the potential for major improvements in the efficiency of the systems make irrigation a highly desirable area for AID involvement. Moreover, the availability of U.S. expertise, the receptivity to technical collaboration with the U.S. in this area, and the GOI's interest in developing extensive new institutions for irrigation management or training confirm USAID's belief that irrigation should be the major sector of emphasis for the U.S. Development Assistance program in India.

AID's strategy for improving the efficiency of surface irrigation is to assist the GOI and selected state governments in overcoming the constraints noted above by providing an appropriate mix of support for technical collaboration, studies, training and construction. This strategy is based on a review of India's irrigation sector by a team of U.S. irrigation specialists. It will draw heavily

on U.S. technical expertise to strengthen the capacity of national and state-level institutions to deal effectively with the complex problems of water management in surface irrigation systems. The U.S. has a strong comparative advantage in providing this type of support. Largely during the first third of this century, U.S. land grant universities and associated U.S. Department of Agriculture (USDA) laboratories initiated research linking the efforts of irrigation engineers and agronomists and putting the results into practice. Economists and other social scientists also became involved, because the socio-economic environment strongly conditions the functioning of irrigation technology. Although many other countries have developed capabilities in this area, the land-grant universities in the western United States together with USDA together represent the largest and most advanced multidisciplinary resource in this field.

Technology transfer and institutional development can only be effective in this sub-sector if innovations are devised, demonstrated and applied in the context of total surface irrigation systems in varying ecological and socio-cultural settings. Consequently AID will finance the modernization and construction of model systems in a limited number of states. Although training and studies will apply to all types of surface irrigation, limited AID resources dictate that financing for construction be limited to medium and minor projects. These projects also provide the advantage of a shorter construction period (3-5 years for minor and medium projects versus 8-10 years for major projects).

This strategy represents an evolution from the original irrigation strategy adopted by USAID when the India program resumed in 1978. AID's portfolio initially included substantial funding for groundwater development through a \$58 million loan to the Rural Electrification Corporation (REC) and a \$ 100 million loan for the Agricultural Refinance and Development Corporation (ARDC),

as well as capital assistance for the Gujarat Medium Irrigation project. Experience with the appraisal of the Gujarat project led USAID in the FY 1980 Rajasthan Medium Irrigation project to include a \$ 500,000 grant component and to emphasize support for GOI and Government of Rajasthan efforts to improve economic and technical design standards, extend the system closer to the individual farm, and carry out studies on various system problems. This emphasis was reinforced by the findings of the team of U.S. irrigation specialists which visited India in November 1980 to assess various assistance possibilities. Their approach was based heavily on earlier AID-financed work on on-farm water management in Pakistan, and their report ("Irrigation Development Options and Investment Strategies for the 1980's") confirmed the importance of improved system design and management at all levels of surface irrigation projects. Their review also provided the framework for extensive discussions with GOI and state government officials regarding the areas in which AID could contribute most effectively. These discussions were the basis for the design of the Maharashtra Irrigation Technology and Management project, and the PIDs for the proposed FY 1983 Water Management and Training, Rajasthan Command Area Development (CAD), and Madhya Pradesh Minor Irrigation projects.

The Water Management and Training project will be the centerpiece of AID's activities in the sub-sector. Under this project USAID will assist the GOI in establishing several water management institutes in states where USAID is involved in systems improvement. Pilot studies will also be financed. This project should institutionalize the capacity to manage improved system and disseminate findings throughout the states involved. Under the project USAID will also assist in establishing a national water management training institute and cadre of water management specialists, which should further enhance the spread of improved practices throughout the country.

This approach complements the program of the World Bank which has been committing an average of about \$ 400 million per year recently to surface irrigation development in India, and will probably continue to do so. With its limited financial resources AID must concentrate on building model systems. AID is also avoiding the large and complex major irrigation schemes financed by the Bank and concentrating on programs which will include attention to farmer organization and downstream development. In this regard, AID has relative advantages over the World Bank per dollar invested in terms of flexibility, depth of technical resources, field staffing, and access to U.S. technical expertise on a long-term basis.

For the period FY 1984 and beyond, continued support for water management studies, demonstrations and training at the central and state levels will be complemented by long-term assistance to a limited number of states to establish "model systems" and build up the overall capabilities of their Irrigation Departments and related agencies. With more efficient model systems in place and operating under diverse conditions, and with improved irrigation institutions and technical and management capabilities, USAID would expect that India could be reaping the gains of greater irrigation efficiencies on a broad scale by the end of 1980's.

C. Energy and Natural Resources Management

1. Strategy Summary

India's energy problems have acquired new urgency recently with the rapid increase in India's oil import bill and the resort to an Extended Agreement with the IMF to mitigate the oil-related balance of payments problems. As noted in Section I.B. 4 above, India's energy pricing policies are sound, and energy development is receiving an appropriate share of planned development expenditures. Since nearly one-half of India's energy is supplied by traditional sources such as fuelwood, India's plans include rapid expansion of forestry programs in all regions of the country.

The major constraints to expanded energy production vary by energy type. For coal, petroleum and electric power the institutions are well developed, but investment is inadequate, management needs improvement and the technologies available are often obsolescent. For renewable energy supplies such as producer gas, solar thermal power or minihydro power more research and demonstration is needed before new technologies are commercially viable. Finally, management of forest resources for timber production has been well-established in India for over a century but the institutions for development of "social forestry" and "environmental forestry" are at a very early stage of evolution, and financial resources are a constraint.

AID can provide limited but significant support to India in all of these areas. The U.S. private sector is already involved in several areas in oil exploration, coal development and power generation, but AID centrally-funded training in fields such as drilling technology, geological assessment and energy management can complement U.S. private sector efforts. In renewable energy development, AID can facilitate collaborative research and development involving U.S. private and public sector institutions. With respect to forestry the U.S. has an excellent opportunity to support the development of new forestry institutions devoted to the establishment of effective approaches to locally-based forest and watershed management. This will require extensive training in management and extension techniques as well as a strengthened forestry research effort. U.S. forestry schools are in an excellent position to provide training and technical assistance for this purpose.

USAID's initial sector strategy for energy and forestry was set forth in the background paper for the Asia Bureau's November 1979 conference on energy, environment and forestry (see footnote 13). USAID will refine its assistance strategy for forestry and watershed management through a sector review to be undertaken by U.S. and Indian consultants beginning in February 1982.

## 2. Alternative Energy

USAID is currently supporting three solar energy sub-projects under its \$2 million Technologies for the Rural Poor Project. Each sub-project is oriented towards agricultural production and involves technical Indian and U.S. academic and public sector organizations. USAID support for other alternative energy development activities such as biomass production and conversion is proposed under the FY 1982 Alternative Energy Resources Development project. The project will finance activities in coal conversion technologies, energy conservation in industry and transport, and information exchange in the new and renewable energies, but the major emphasis is development of alternative energy supplies in the area of biomass production (energy plantations) and conversion (producer gas). Field tests and demonstration activities underway in Indian institutions show near-term promise of wide application and commercial viability. Modest amounts of U.S. technology collaboration can accelerate the pace of development of on-going work and simultaneously strengthen Indian institutions to sustain successes achieved.

USAID will consider a follow-on activity to the FY 1982 Alternative Energy Resources Development project for funding in FY 1985. In addition to support for continued collaboration between U.S. and Indian institutions on demonstration and development, a follow-on project could be expanded to include strengthening of extension or commercialization programs for those technologies which appear particularly promising.

## 3. Forestry and Watershed Management

In the FY 1983 CDSS, Energy, Forestry and Conservation was designated as a major program category. This CDSS reflects continued emphasis on energy and forestry and a new initiative in watershed management under the rubric of Energy and Natural Resources Management.

Despite full recognition of forestry, energy and conservation needs in GOI policy statements, these problems continue to grow more acute. All three

problems are interrelated and stem from the same root cause : population expansion. Agricultural land, firewood, fodder, small timber for housing, farm implements, bullock carts and other forest produce continue to be in short supply. In a country where nearly 80 percent of the population lives in an agrarian village society, these increased demands have led to depletion of communal and private forest lands as well as widespread degradation of government reserves. State and central government needs for forest revenue from commercial sales further increase pressure on the productive land base.

The GOI estimates that 4.2 million hectares of the forest land base have been lost since 1952. Nearly 37 million hectares are designated as protected forest and receive no systematic management. Hence, out of the 75 million hectares officially classed as forest, many hectares are not producing nearly their potential either in terms of revenue or rural needs. Recent estimates by the Ministry of Agriculture for the Sixth Five Year Plan indicate that up to 175 million hectares of forests, agricultural land and waste lands, or 58 percent of the country's total land, need reclamation. Problem areas include sites with saline or alkaline soil, waterlogged soils and areas subject to erosion, as well as degraded forest on natural wastelands. Hill areas consisting of 6.9 million ha. in Himalaya regions of northern India, together with 1.3 million ha. in the western hill regions are in need of integrated programs of watershed management to reduce erosion and maintain a sound ecological and economic base.

On a national scale, the magnitude of India's natural resource problem is massive. Government action programs addressing these problems require funding levels substantially above those of the past and will succeed largely to the extent they are able to develop popular support. The programs must motivate and enable people to meet their own material and financial needs on an equitable and continuing basis. With this in mind a USAID forestry sector assessment noted above will be undertaken to further define needs and refine an overall

sector strategy. Under the present program, the Madhya Pradesh Social Forestry project now being implemented emphasizes development of a forestry extension organization and program to increase production of firewood and fodder at the village level. It provides substantial opportunities to transfer technology through research, training, and operational scale demonstration plantations. The FY 1982 Maharashtra Social Forestry project will have a slightly different emphasis. Because Maharashtra has already established a Social Forestry Directorate, greater stress will be placed on technology transfer through a wider variety of operational demonstrations, e.g. plantations as a part of Command Area Development and Drought Prone Area Programs and for soil and water conservation. Under the FY 1982 Alternative Energy Resources Development project, a research program of biomass production is being evolved oriented to the problems of energy plantations and related social and economic problem. In addition, an agro-forestry research program has been proposed as an eventual component of the Agricultural Research project.

Based on U.S. technical and institutional strengths and USAID's present understanding of GOI priorities, several areas seem promising over the CDSS period. Because other donors are already active in funding social forestry activities, the GOI may not request U.S. support for social forestry projects in additional states. However, there could be substantial scope for follow-on activities to further strengthen the Social Forestry Directorates in Madhya Pradesh and Maharashtra. Also, there may be opportunities to provide support to forestry institutions at the center and at the state level to strengthen their capacity to provide training in extension methods and related social science research and studies. Also, as an extension of the concepts embraced by social forestry programs, AID could support a hill-area watershed management project. The challenge would be to extend the institutional development and

village extension program and planning process from the plains, where it is feasible to work with separate portions of a catchment, to the hill country where the entire catchment must be considered. These possibilities will be fully explored by the sector assessment team.

D. Fertility and Mortality Reduction

1. Strategy Summary

USAID's current strategy in health, population and nutrition is based on extensive analysis of each of these sectors. This analysis reveals the following: (1) A predominantly rural, highly dispersed population of 684 million people, increasing at about 2.2% per annum. This population is characterized by high illiteracy and underemployment, especially among women, high value placed on child labor and male offspring, early marriage and child bearing, and highly diverse cultures and religions with distinctive language and writing systems. Unless rapid reductions in fertility are achieved, population will likely exceed one billion by the year 2000; (2) persistent high infant and child mortality such that 47% of all deaths in the population occur among children under age 5, (in the U.S., children under age five contribute only 2.7% of all deaths); (3) poor nutritional status of pregnant and nursing women which, coupled with infection, low birth weights and harmful child feeding practices results in high incidence of child malnutrition. Malnutrition is the most important contributing factor to high mortality rates in children under age five; (4) direct correlation between high fertility, high mortality and low income levels such that the one-half of India's households identified as living below the poverty line contribute about two thirds of the fertility and suffer about three-fourths of the mortality; and (5) an underdeveloped government health and family planning system in rural areas so that most rural households use other sources of care for their health, family planning, and nutrition problems.

Based on this assessment, USAID's activities in India are based on a fertility reduction and young child mortality strategy. AID/W has concurred with this strategy and it is consistent with Government of India objectives.

The strategy recognizes the complementarity among nutrition, health, and family planning. USAID believes that an integrated planning approach to achieving fertility and mortality reduction should be followed. Experience in India and elsewhere suggests that reduction in child mortality is concomitant with lowered fertility. The impact of breast feeding on lowered fertility is also well established so that there is a definite link not only between fertility and health, but also between fertility and nutritional status of pregnant and lactating women. In addition, as poor nutrition is a major contributing factor to child mortality, there is a need to improve nutrition during pregnancy and for children below age three where the direct effects of malnutrition on mortality are greatest. Thus to reduce both fertility and mortality in India, USAID programs should couple improvements in family planning services and motivation of the population toward the small family norm with improvements in the health and nutritional status of women and children 0-5 years of age. To accomplish this, USAID assistance is oriented toward delaying the age at first pregnancy, minimizing unintended births in the population, increasing the average time intervals between births and encouraging a smaller completed family size. USAID will also support health and nutrition programs stressing prevention and treatment of infection in children, improvement in pregnancy and delivery care practices, and nutrition rehabilitation through targeted feeding and community-wide health and nutrition education services for pregnant women and malnourished children up to age 5.

The strategy focuses on three major requirements: 1) the need to involve local communities in the implementation of fertility reduction, child mortality reduction, and nutritional improvement efforts; 2) the improvement of overall institutional and managerial capacity in the social service sector to utilize

scarce resources; and 3) the improvement of the quality of training for delivery of services to rural communities.

To address these requirements, projects should draw heavily upon U.S. universities and management consulting firms for improvement of training, management and communication systems for rural application. Effective institution building, especially in rural health and family planning service delivery will be successful to the extent all three elements are improved. This is the premise of the ongoing Integrated Rural Health and Population (IRHP) project.

Technology transfer should also involve significant research efforts undertaken by U.S. and Indian universities. There are major operations research components in both the IRHP and the proposed FY 1983 Social Marketing/Communications projects. The FY 1982 Integrated Maternal and Child Nutrition (IMCN) project will allocate grant funds for research on causes of low birth weight and on weaning foods.

Substantial institutional development in the private voluntary sector is being supported through the ongoing Private Voluntary Organizations for Health (PVOH) project. The objective is to develop management and training systems which support innovative approaches to private sector delivery of rural health, nutrition and family planning services. Also, increasing the capacity of both public and private sector institutions to manage the complex logistics and information requirements of outreach is essential to each of the projects mentioned above.

The private sector plays a key role as both a technical assistance resource, and as beneficiary of resources for increasing its capacity to supplement public sector efforts in social services. The Social Marketing/Communications project recognizes the private sector's role in production and marketing of contraceptives and seeks to expand it. The weaning foods developed under the

IMCN project through private sector research and trials may be produced by small rural-based entrepreneurs. The PVOH project provides resources to the voluntary sector for demonstrating new approaches to delivering rural health services.

## 2. Population Activities

The GOI Sixth Five Year Plan adopts as a target a net reproduction rate (NRR) of one for the entire country by 1995. This will require a decrease in the birth rate from 37/1000 at present to 21/1000 by 1995, and an increase in prevalence of use of contraceptives to over 60% of couples of reproductive age. The immediate objective of the Plan is to reach 36.5% prevalence of use among couples by the end of 1985, or approximately 175 million couple years of contraceptive protection over the Plan period, an ambitious target for the short term. The GOI acknowledges that this will only be achieved by rapid expansion in availability of temporary, reversible methods and effective promotion of information and motivation for their use, especially among younger couples.

The main constraints to achieving the Plan objectives are the combination of complex administrative structures and limited institutional capacity to deliver quality family planning information and services. Plan targets are difficult to translate into operational programs. All public sector family planning activities are funded and organized centrally but are implemented through various bureaucracies, organized and funded at the State and Union Territory level. The system is difficult to coordinate and lead. These problems are compounded by limited production of contraceptives in both the public and private sectors, inadequate logistics systems for contraceptive supplies to rural areas, poor marketing systems for commercial contraceptives, inadequate training and supervisory systems resulting in poor public health services in most states, and weakness in public sector field motivation and mass media programs for rural areas.

USAID has initiated a Multi-Year Population Strategy exercise to review family planning program performance and the socio-economic and cultural constraints to effective family planning programs. It will emphasize the northern states of India where fertility and mortality rates are highest. The strategy will identify critical areas of need and assess U.S. Government and private sector resources that could be made available in India during the next five to ten years. This effort should be completed by June of 1982.

AID's bilateral efforts in population and family planning are being carried out primarily through the existing IRHP and PVOH projects and the proposed FY 1983 Social Marketing/Communications project. The IRHP project is expanding and improving the Government's rural family planning and health services in parts of five states. U.S. resources are being used for improvement in training, management and communications systems for field delivery of basic services in selected districts in five states, with a component for operations research on ways to improve delivery of family planning services and supplies. The PVOH project has similar objectives but channels resources through private sector organizations working in rural areas and small towns. A substantial portion of the total grant is intended for population activities, including improvement in training, management and communications technology, and for operations research to improve private sector delivery of family planning services.

The FY 1983 Social Marketing/Communications project is a broadly based family planning effort which will strengthen the demand for conventional contraception through private marketing channels; increase private sector production of contraceptives; test new product-related marketing strategies; develop improved communications efforts in support of the small family norm; and support biomedical research on new methods of contraception and operations research on community-based distribution of contraceptive supplies. It may also include a pilot activity to test new models of a village-based family

planning outreach system through the public sector. The project stresses application of private sector management resources to improvement and expansion of several elements of the GOI public sector fertility reduction programs.

Before the end of the CDSS planning period, USAID expects that selected components of these projects will be expanded and developed into a new activity based on evaluation and field-based operations research. This new start is planned for FY 86. It is expected to contain significant support for continued collaborative research in new and improved fertility regulation technology, transfer of techniques for quantitative analysis of macro - and micro-level socio-economic data for improved evaluation and large-scale planning, and further support for mass media technology and expansion of innovative activities in village-level communications program.

In addition to bilateral activities, USAID will continue to facilitate GOI access to numerous centrally-funded resources for population and family planning. These currently include the Program for Applied Research in Fertility Regulation (with the Indian Council of Medical Research), various Population Council research grants, and a University of Hawaii School of Public Health, East-West Center program for long-term collaboration in communications planning and training. Central resources are also being applied in India for research on contraceptive safety through International Fertility Research Program, for population and development policy action with Battelle Memorial Institute, and for improving India's census training system through the Bureau of the Census. The Christian Medical Association of India and the Family Planning International Association are concluding arrangements for major grant and technical assistance in family planning. There are over 20 U.S. organizations supported under central contracts which are potential resources for technical collaboration and assistance to India.

### 3. Nutrition Upgrading

Although India has made considerable progress in increasing the production of basic foodgrains over the past two decades, actual per capita foodgrain availability based on nutritional need has barely kept pace with population growth. The previous two CDSS documents analyzed this problem in depth and concluded that despite a progressive closing of the market demand for foodgrains since the middle sixties, inadequate purchasing power among more than half the Indian households is responsible for a large remaining "nutrition gap". The impact of this nutrition gap is concentrated most heavily on Indian children aged 0-5, and pregnant and nursing mothers. Severe malnutrition among 0-5 year old children in India is very high, with over 24 million or one-fifth of the entire age group affected.

The GOI's goal of reducing malnutrition is related directly to its objectives of reducing mortality and improving human productivity. The strategy to accomplish this is composed of three basic elements: 1) large-scale, long-term investments in agricultural research and production infrastructure in the private farm sector to increase and stabilize the growth of food output; 2) operation of a public infrastructure through 350,000 fair price shops which sell basic grains, oil and sugar at subsidized prices, and a National Rural Employment Program which is a food for work program for landless laborers; and 3) shorter-term programs targeted directly at nutrition rehabilitation among the seriously malnourished. The GOI's own evaluations of public nutrition programs, corroborated independently by AID-financed evaluations of Title II programs in 1979-80, has convinced India and other donors alike that food is used most effectively in nutrition programs which select beneficiaries on nutritional grounds, and which integrate basic health, and nutrition education services with supplemental feeding. The GOI's response has been to introduce the Integrated Child Development Services program (ICDS) which will operate in

600 blocks by 1985. That program addresses those constraints, primarily institutional in nature, which the GOI considers key to resolving the nutrition problem: failure to use nutritional criteria to target food and services; poor management; inefficient distribution systems; and lack of integration with basic health, nutrition education and sanitation services. While much of this program is in the public sector, the GOI is relying on the private sector, particularly non-profit institutions, for logistics, publicity and research support.

USAID's involvement in the nutrition sector is the direct outgrowth of AID/W's policy guidance to increase the effectiveness of Title II resources, the Asia Bureau HPN strategy, USAID's child mortality reduction strategy, and the evaluations discussed above. The Integrated Maternal and Child Nutrition (IMCN) project is the core of that effort. It is a two-phase activity requiring a commitment of bilateral dollar and P.L. 480 Title II resources over a ten-year period. It builds upon the Indian ICDS model, and employs several basic principles: 1) use of nutritional criteria to target supplemental feeding to malnourished children and pregnant and lactating women; 2) integration of supplemental feeding with provision of basic health, family planning, and nutrition education services on a community wide basis; 3) establishment of a monitoring and evaluation system for continuous surveillance of nutritional status at the community level; and 4) graduation of children from feeding programs once a pattern of weight gain has been established. To the extent possible, the project will be located in districts which are being upgraded under the IHRP project or GOI and other donor-assisted health upgrading schemes. Dollar funding will be used to improve the management and logistics of nutrition services in rural areas by strengthening the capacity and curricula of training institutions for all levels of project staff, and enhancing the skills of CARE monitoring staff. There will also be a research

component which will assist Indian institutions to investigate causes and prevention of low birth weight, providing opportunity for India-U.S. scientific collaboration. Private sector involvement will include development of high nutrition, low-cost food supplements by small village-based enterprises, and the design of multi-media nutrition education campaigns by commercial advertising firms.

By the end of phase I of IMCN (FY 1987), USAID estimates that about 40% of CARE Title II MCH food will be utilized by IMCN. By FY 86, an evaluation of IMCN phase I, the GOI ICDS program, the IBRD Tamil Nadu Integrated Nutrition Program and the CRS Targeted Maternal and Child Health and Education Project (proposed as an OPG for FY 82), will permit planning for the phase II activity which should complete the upgrading of the entire MCH program.

#### 4. Rural Health Delivery System

As stated earlier, the most serious, persistent health problem in India is the high level of infant and child mortality. Unfortunately, the current rural health system in India is better structured to handle common, non-fatal and sickness problems such as colds, mild diarrhoeas of adults, skin and eye infections rather than dealing with the factors which contribute to high child mortality. USAID studies reveal that greater attention to women's health, particularly during pregnancy and delivery, and stressing health and nutrition education will impact greatly on early child mortality (0-6 months of age). Enhanced child health and nutrition services will impact greatly on children over six months of age.

The FY 83 CDSS described in detail the GOI's model health plan representing its strategy for delivering health care to all by the year 2000. Although ambitious in its objectives, the plan recognizes many key elements necessary to address high mortality in rural areas particularly among children.

These include more emphasis on promotive and preventive aspects of health care, development of peripheral services, and transfer of health knowledge to families through increased community involvement in the primary health care system. The strategy to achieve these objectives involves village workers selected by the community, increase in peripheral paraprofessional workers, increased deployment of child health and maternal health-oriented physicians to Primary Health Centers, and strengthened communications support for rural primary health care systems.

USAID's goal for the health sector in India, reduction of infant and child mortality, derives from the analysis of constraints outlined in the strategy summary and GOI priorities. Achievement of this goal necessitates a sustained emphasis on development of effective management training and communications support systems for delivering primary health and related family planning services in rural areas. The Mission's strategy focuses on training of local workers, development of improved management systems and management capability for both services and communications support, studies in drug policy and logistics systems, and operations research on key constraints in both the public and private voluntary sectors.

The Mission's current program includes the IHRP project, which support these activities in the public sector, and on the PVOH project which supports their application in the private voluntary sector. Based on evaluation of these activities, future projects may include financing of specific functional components such as training, monitoring and operations research for an expanded "area" project, and support for health manpower development by improving the capability of the public health education system to train workers appropriate for the various components of the primary health care delivery system. AID's limited resources preclude major investments in village potable water systems or environmental sanitation.

### III. AID Resource Projections

#### A. Assistance Planning Levels

The indicative planning levels for FY 1983-1987 assume maintenance of development assistance at constant real levels. The Indicative Planning Allocation figure for FY 1987 is \$135 million. This is a reasonable level given the geographic and sector concentration of our portfolio.

Food Production and Rural Employment continues to be the priority area of concentration, accounting for about 61% of planned funding through FY 1987. Irrigation efficiency remains the most important single activity in the portfolio, absorbing over half of the five-year \$560 million budget. Energy and Natural Resources Management will account for approximately 17% of planned allocations. This is a significant increase over the proportion proposed in the FY 1983 CDSS, reflecting a higher priority for forestry and watershed management. Fertility and Mortality Reduction will command 22% of the total budget, approximately the same as last year's projection. The emphasis will be on new activities in population, which will account for over half of the \$124 million allocated to this program area.

Title II levels are projected to decline slightly in real terms but MCH and FFW are projected to remain at current real levels. In FY 1983, MCH will account for 35% of the Title II program, increasing to 40% by FY 1987 when the second phase of the DA-funded nutrition upgrading activity will begin. Food for Rural Works will account for 31% of Title II resources by that year, up from 27% in FY 1983. School Feeding will decline through FY 1986 and will represent only 13% of the Title II program by FY 1987. This amount may be reduced as the Mission re-evaluates priorities for use of food in the other programs. Allocations of vegetable oil to Food for Cooperatives may continue after FY 1983 depending on USAID's assessment of the potential for cooperative development activities.

B. Portfolio Management

Staffing will be the major constraint to managing a project portfolio emphasizing institutional development and technology transfer. FY 1984- FY 1987 will be the period when additional USDH and FNDH personnel will be needed. During this period, the Mission will be implementing the pilot or prototype phases of new efforts begun in FY 1981 - 1983, and designing the follow-on activities, particularly in irrigation, forestry and population. We intend to keep the number of new starts to a minimum, limited to the current sub-sectors.

The evolution from a resource transfer-based to a technology transfer-based portfolio has two major implications. First, introduction of new technologies and management systems will result in projects which are smaller than the major resource transfer projects of the past few years. Projects involving technology transfer and institution building will demand more precise input management, more attention to monitoring and reporting systems, and greater emphasis on evaluation as a tool for project management. This greater complexity will also require that projects have sufficient flexibility incorporated in their designs to anticipate and be responsive to any need for changes. A more personnel-intensive management style will be the result.

Second, the Mission will place greater reliance on long-term personnel services and institutional contracts, funded from project budgets, for project implementation. Although the Mission has a complement of technical advisors in the areas of agricultural research, irrigation, forestry, health/population and nutrition, the increase in the number and complexity of projects means that the current approach to technical assistance which relies primarily upon short-term contract personnel to supplement Mission staff resources will need to be modified. As the portfolio grows in size, we will rely more heavily on contractors for field monitoring/reporting tasks, as well as technical assistance on a longer term basis.

The key issue requiring discussion with the GOI is the degree to which long-term advisors, particularly U.S. advisors, will be funded from project resources. The Mission will explore on a case-by-case basis the requirements for support from Indian and U.S. universities and firms. There is significant scope for local contracting of Indian firms in the areas of operations research, monitoring, evaluation and management assistance. However, there will be specific areas where U.S. technical expertise and monitoring will also be necessary, particularly in agricultural research, irrigation, forestry and watershed management, and systems management for social service delivery. These may be provided through institutional contracts, PSCs, Title XII or other cooperative arrangements with U.S. universities, or through the IPA mechanism.

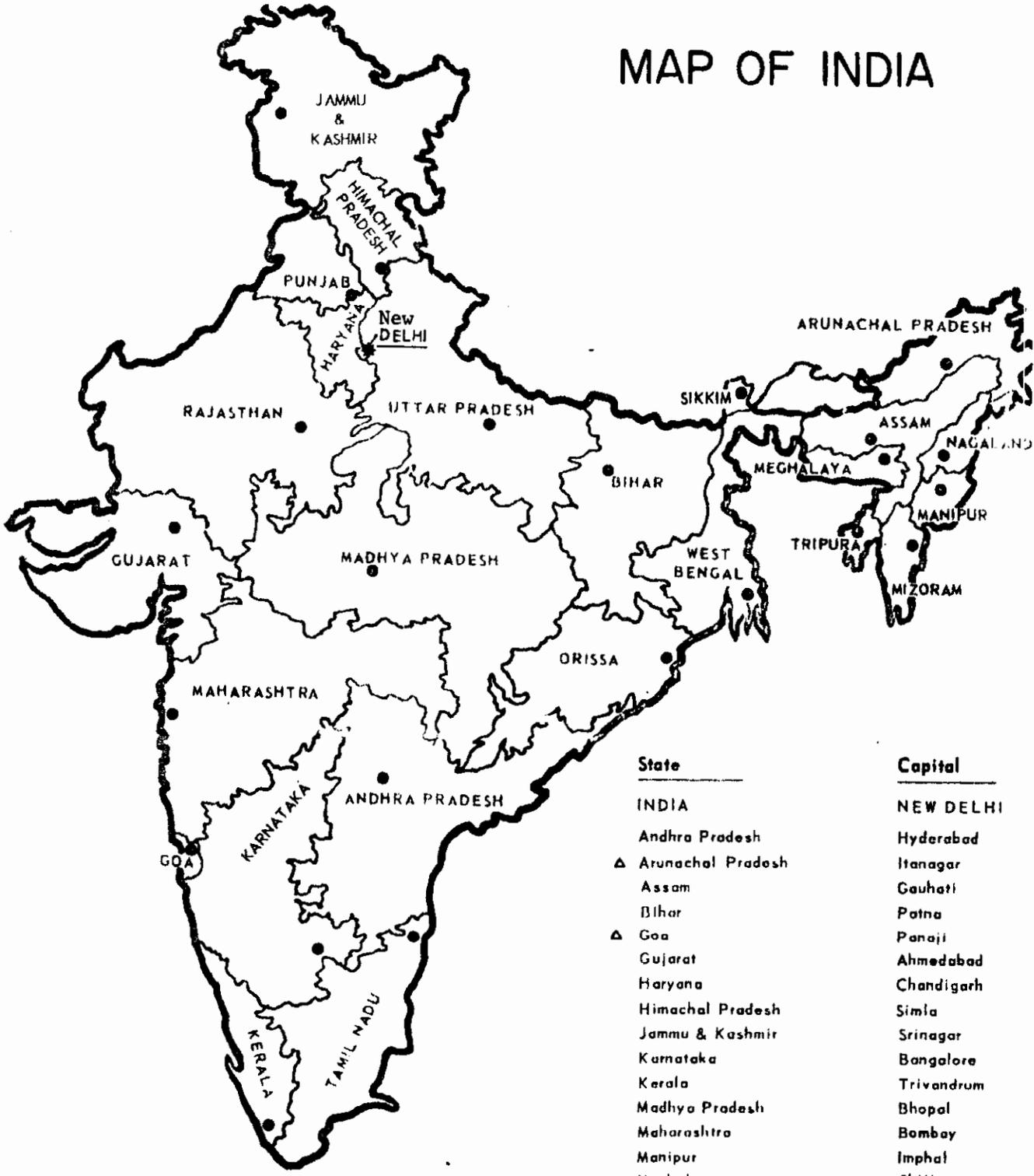
Regarding U.S. direct hire staff, the Mission projects a need for increases of 5 personnel, concentrating on technical staff. The Mission also projects an increase in FSN staff of 11 for technical and support staff. These small increases, which would require clearance by the Ambassador on a case-by-case basis, assume that USAID will strictly limit its sector concentration over the planning period, will emphasize follow-on and replication of current activities, and will maintain a geographic concentration of activities. The sector of greater growth for both USDH and FSN staff remains agriculture, particularly irrigation and water management. This is followed by lesser increases in staff for health/nutrition/family planning as new activities are identified.

USAID/INDIA: PROPOSED FUNDING & STAFFING  
FY 1983 - FY 1987

<u>PROGRAM AREA</u>	<u>Planning Levels (\$ Millions)</u>					<u>Total</u>
	<u>FY 83</u>	<u>FY 84</u>	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>	
<u>Food Production and Rural Employment</u>	40	70	70	80	80	340
Ag Research and Education	-	10	10	10	10	40
Irrigation Efficiency	40	60	60	70	70	300
Food for Rural Works, Title II	(31)	(35)	(40)	(45)	(50)	(201)
Food for Cooperatives, Title II	(14)	(20)	(20)	(20)	(20)	( 94)
<u>Energy and Natural Resources Management</u>	21	20	15	20	20	96
Alternative Energy	-	-	5	-	-	5
Forestry and Watershed Management	21	20	10	20	20	91
<u>Fertility and Mortality Reduction</u>	29	10	25	25	25	124
Population Activities	14	10	10	15	15	64
Nutrition Upgrading	8	-	-	10	10	28
Rural Health and Family Planning Delivery Systems	7	-	15	-	10	32
Food for Maternal and Child Health, Title II	(40)	(45)	(50)	(55)	(60)	(250)
Primary School Feeding, Title II	(28)	(25)	(22)	(20)	(20)	(115)
Development Assistance	90	100	110	125	135	560
(Loan)	(68)	(75)	(83)	(94)	(101)	(421)
(Grant)	(22)	(25)	(27)	(31)	( 34)	(139)
Total PL 480, Title II <sup>a/</sup>	(113)	(125)	(132)	(140)	(160)	(660)
Housing Investment Guarantees	20	20	20	20	20	100
<u>STAFFING</u>	<u>FY 82</u>	<u>FY 83</u>	<u>FY 84</u>	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>
USDH	20	20	23	24	25	25
FNDH	54	54	60	62	63	65
IDI	-	-	1	1	1	1
DH/PIT	4	4	4	5	5	5

<sup>a/</sup> Title II amounts are non-additive.

# MAP OF INDIA



- ★ Capital of India
- State Capital
- △ Union Territory

<u>State</u>	<u>Capital</u>
INDIA	NEW DELHI
Andhra Pradesh	Hyderabad
△ Arunachal Pradesh	Itanagar
Assam	Gauhati
Bihar	Patna
△ Goa	Panaji
Gujarat	Ahmedabad
Haryana	Chandigarh
Himachal Pradesh	Simla
Jammu & Kashmir	Srinagar
Karnataka	Bangalore
Kerala	Trivandrum
Madhya Pradesh	Bhopal
Maharashtra	Bombay
Manipur	Imphal
Meghalaya	Shillong
△ Mizoram	Aijal
Nagaland	Kohima
Orissa	Bhubaneswar
Punjab	Chandigarh
Rajasthan	Jalpur
Sikkim	Gangtok
Tamil Nadu	Madras
Tripura	Agartala
Uttar Pradesh	Lucknow
West Bengal	Calcutta