Technical Report No. 7

The Nepal National Vitamin A Program: A Program Review and Cost Analysis

September 1997

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September 1997

Recommended Citation

Fiedler, John. PhD. September 1997. *The Nepal National Vitamin A Program: A Program Review and Cost Analysis*. Technical Report No. 7. Bethesda, MD: Partnerships for Health Reform Project, Abt Associates Inc.

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Contract No.:	HRN-5974-C-00-5024-00
Project No.:	936-5974.13
Submitted to:	USAID/Nepal
and:	Robert Emrey, COTR Health Policy and Sector Reform Division Office of Health and Nutrition Center for Population, Health and Nutrition Bureau for Global Programs, Field Support and Research United States Agency for International Development

Abstract

Vitamin A deficiency is a significant public health problem and a major cause of child mortality and morbidity in Nepal. The Nepal National Vitamin A Program (NVAP), begun in 1993 in 32 of the country's 75 districts where vitamin A deficiency rates are highest, has been considered by many to be a highly successful, model program. The program consists primarily of distributing high-dose vitamin A capsules to all children 6 to 60 months of age during twice-yearly campaigns. The campaign is complemented by on-going treatment of clinical zerophthalmia and other acute infections in health facilities throughout the country. The capsule distribution is carried out by a previously existing network of Female Community Health Volunteers (FCHVs) that has been reinvigorated by the highly visible and universally acclaimed success of the National Vitamin A Program. These volunteers are generally illiterate women who have been selected by their communities. Much of the program's activities have thus far been devoted to training health and community workers in vitamin A promotion and distribution. An important strategy of the program has been the empowerment of the FCHVs, which has been accomplished by organizing, training, and motivating community workers and other representatives from education, agriculture, and other sectors, as well as political representatives, to support the FCHVs. Estimates of average rates among targeted children range from 53 to over 90 percent.

The United States Agency for International Development (USAID) in Nepal, which has provided much of the program's funding, requested the Partnerships for Health Reform (PHR) Project to conduct a detailed cost analysis of the program to determine how USAID's investment was spent, the annual recurrent costs of the program, and how much it will cost to expand the program nation-wide. The analysis shows that, assuming different coverage rates, the cost of the program per child ranges from US$0.81 to $1.09 for one capsule, and from US$0.68 to $1.65 for two capsules. Program development and administration costs make up an estimated 38 percent of the overall annual, recurrent costs of the program, and the costs of training make up 30 percent. The analysis estimates that the cost of expanding the program nation-wide will be US$6.5 million over five years. Once the program is national, the estimated incremental recurrent costs will be around US$1.3 million per year. The report ends with a discussion of key issues regarding the sustainability and institutionalization of the program.

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Acronyms

AHW	Auxiliary Health Worker
ANM	Auxiliary Nurse Midwife
ARI	Acute Respiratory Infection
CHL	Community Health Leader
CSFP	Child Survival and Family Planning Project
DHO	District Health Officer
DHS	Department of Health Services
FCHV	Female Community Health Volunteer
HET	Health Education Technician
HKI	Helen Keller International
HPI	Health Post In-Charge
IEC	Information, Education and Communication
EPI	Expanded Program of Immunization
FHS	Family Health Survey
FY	Fiscal Year
ISTI	International Science and Technology Institute
JSI	John Snow Inc.
LMD	Logistics Management Division
MASS	Management Support Services Pvt. Ltd.
MCHW	Maternal and Child Health Worker
MOH	Ministry of Health
NGO	Non Government Organization
NHIECC	National Health Education Information and Communication Center
NHTC	National Health Training Center
NMIS	National Multipurpose Interview Survey
NNJS	Nepal Netra Jyoti Sangh
NVAP	National Vitamin A Program
OMNI	Opportunities for Micronutrient Interventions Project
ORS	Oral Rehydration Salts
PHO	Public Health Officer
PHR	Partnerships for Health Reform Project
PVO	Private Voluntary Organization
RHTC	Regional Health Training Center
SHP	Sub-Health Post
SHPI	Sub-Health Post In-Charge
TAG	Technical Advisory Group
TOT	Training of Trainers
UNFPA	United Nations Fund for Population Activities
UNICEF	United Nations Children's Emergency Fund
USAID	United States Agency for International Development
VAD	Vitamin A Deficiency
VDC	Village Development Committee
VHW	Village Health Worker
VITAL	Vitamin A Logistics Project

Acknowledgments

The author would like to thank all of the members of the Technical Assistance Group (TAG) for giving so openly and freely of their time and patience in explaining and describing the structure, operations, history and philosophy of the National Vitamin A Program during his two-week stay in Kathmandu. The untiring, determined, yet always cheerful efforts of the Director of the TAG, Mr. Ram Kumar Shrestha, the TAG's Medical Director, Dr. Chet Pant, and Judy Hollander, Technical Advisor to the TAG, were particularly noteworthy and indispensable.

PHR would also like to thank Project Assistant Priya Satow for her hard work and thoroughness in preparing and formatting this document.

Executive Summary

Introduction and Background

At a National Vitamin A Workshop held in Kathmandu on February 11-12, 1992, the recommendation was made that Nepal develop a national, multi-sectoral vitamin A program in 32 priority districts, phased in over four years. The recommendations of the workshop, "Guidelines for the Implementation of the National Vitamin A Deficiency Control Program in Nepal," provided the terms of the reference for the National Vitamin A Program (NVAP).

Implementation of the NVAP was initiated in April 1993 with financial and technical assistance from the United States Agency for International Development's (USAID) Office of Health and Family Planning. This support was provided initially through the Vitamin A Logistics Support (VITAL) Project (from January 1993 to April 1994) and then through the Opportunities for Micronutrient Interventions (OMNI) Project from May 1994 to July 1997. Since March 1995, OMNI has subcontracted with Helen Keller International (HKI) to manage the project's resources. UNICEF has provided financial support for promotion and the purchase of vitamin A capsules. The Technical Assistance Group (TAG), a Nepali non government organization (NGO) that was created specifically to assist the Ministry of Health (MOH) in implementing the program, carries out the training, with logistics support provided by a private, for-profit organization, Management Support Services Pvt. Ltd. (MASS). The TAG is also responsible for the program's monitoring and supervision activities.

As originally designed, the NVAP was to include three basic activities:

> distribution of prophylactic high-dose vitamin A capsules to children 6-60 months of age in the 32 priority districts to reduce child mortality and morbidity,

> treatment of clinical xerophthalmia, severe malnutrition, prolonged diarrhea and measles in all of Nepal's 75 districts, and

> promotion of dietary changes through nutrition education, home gardening, food preservation and increased literacy among women to increase production and regular consumption of vitamin A-rich foods, targeting pre-school children and pregnant and lactating women, and to improve breastfeeding and child feeding practices in the 32 priority districts.

From its inception through the end of December 1996, the NVAP has focused its efforts and resources overwhelmingly on organizing and conducting multi-sectoral training in vitamin A. When the program is introduced in a new district, the TAG conducts training of MOH primary health care personnel at the district, health post and community (FCHV) levels to educate them about vitamin A, to train them in the logistics of the vitamin A campaign distribution days, and to empower the FCHVs. Trainees also include representatives of the Ministry of Education, the Ministry of Local Development, the Ministry of Agriculture, and non-government organizations. From July 1993 to December 1996, NVAP trained 38,549 persons, including more than 17,000 FCHVs.

From October 1993 to March 1997, there have been seven two-day vitamin A capsule distribution campaign days. The NVAP undertakes a mini-survey following each distribution campaign to determine coverage and, more generally, to assess the performance of the NVAP during the campaign. According to the mini-survey findings, the coverage of capsule distribution has consistently been in the 80 to 85 percent range of the target population in all of the priority districts incorporated into the program. (As discussed below, these coverage rates are controversial, and a variety of other estimates have been made.)

In addition to the capsule distribution days and related training, the program includes extensive training in vitamin A treatment protocols, which has been national in scope. Working with the Nepal Medical Association and the Institute of Medicine, the NVAP has successfully incorporated the vitamin A case treatment protocols into the pre-service and in-service training curricula for physician and paramedical personnel in all health institutions and health training centers throughout the country. More than 2,300 physicians and paramedical personnel have received training in treating vitamin A deficiency.

The Purpose of the Study

Upon request from USAID/Nepal to the OMNI Project, the Partnerships for Health Reform (PHR) Project was asked to conduct a cost analysis of the National Vitamin A Program to account for how USAID's investment has been spent, to determine the annual recurrent costs of the program, and to estimate the cost of expanding the program nation-wide. PHR sent a health economist to Nepal in March 1997 to conduct this analysis.

The USAID mission requested five types of cost analyses:

1) an accounting of how the $3.2 million that USAID has dedicated to vitamin A-related efforts in Nepal since April 1993 has been spent;
2) an analysis of the start-up costs of the NVAP;
3) an analysis of the annual, incremental, recurrent costs of the NVAP;
4) an estimate of the costs of extending the NVAP into the country's remaining 43 districts to make it nation-wide in scope; and
5) an estimate of the long-term, annual, recurrent costs of a national program.

The NVAP is considered by many international nutrition experts to be a model program. In the interest of promoting understanding of the program and to provide an essential context for interpreting the cost estimates, this report provides a detailed description of the program, as well as of the system of Female Community Health Volunteers, which is considered the linchpin of the NVAP. In addition, information on the content and objectives of the training, as well as on the number and type of trainees at each level of training—district, health post and community—is provided. The report highlights the TAG's approach to motivating, training and empowering FCHVs, which has led to a ground swell of bottom-up activity, reform and revitalization of the MOH.

Major Findings of the Cost Analysis

Total USAID Vitamin A Expenditures, 1993-1997

USAID/Nepal earmarked $3.25 million of its Child Survival and Family Planning Project for vitamin A-related activities in Nepal by fiscal year from April 1, 1993 through July 15, 1997. Several prominent Nepali officials have expressed interest in learning how that money has been spent. As of March 12, 1997, $2.6 million of these monies had been spent. Most of the unexpended monies, 70 percent, are 1996 commitments.

Start-up Costs of the NVAP

Efforts to assemble the necessary database to develop estimates of the start-up costs of the NVAP were unsuccessful. This report instead provides a detailed description of the start-up activities to enable countries considering a similar program to understand what was involved in starting this program and to plan and budget accordingly.

Annual, Incremental, Recurrent Costs of the NVAP

1. Overall Costs

The NVAP piggy-backs onto a number of already-existing MOH personnel, units and sub-systems which, in the view of USAID/Nepal, are operating well below their capacity. Using USAID's assumption that MOH personnel are under-utilized, undertaking the NVAP does therefore not require any additional MOH resources (costs), nor does it entail giving up any goods or services the MOH currently provides. The underemployed MOH resources involved in implementing the NVAP are primarily personnel. To the extent that non-personnel inputs are required, most are provided directly or financed by USAID or UNICEF, which also provide some critical personnel inputs into the program. These costs provided by USAID and UNICEF are the incremental costs of the NVAP which are the focus of this step-down cost analysis. The cost estimates were developed for a hypothetical program year, as opposed to any actual year, because the NVAP's dynamic and phased nature made it difficult to use an actual year for the analysis. The hypothetical year's activities most closely approximate those of 1996, when the project was at its peak level of activity.

Working closely with TAG and HKI staff, the PHR Health Economist identified and costed out eight specific activities of the NVAP. The results show that program development and administration takes up 38 percent of the annual recurrent costs, and training—both initial and refresher—takes up another 30 percent. The vitamin A capsules themselves account for only eight percent of the total recurrent costs of the program.

2. Costs per Child Covered

There is no universally accepted measure of the coverage of the NVAP. The TAG estimates that its coverage is about 85 percent of the eligible population of 1,993,000 children aged 6 to 60 months. A mini-survey conducted by New Era in five districts in Karnali Zone found the coverage to be above 90 percent. The 1996 Family Health Survey estimated that nationally (not only in the 32 priority districts), the coverage of the NVAP is about 32 percent of all children aged 6 to 35 months, and in the terai (plains), where all but one of the districts are in the NVAP, the rate was estimated at 53 percent. The 1995 Nepal National Multiple Purpose Interview Survey (NMIS) found that in the six districts that it surveyed, all of which were among the 32 priority districts, 71 percent of the

children aged 6 to 35 months had received at least one vitamin A capsule, and 35 percent had received two or more.

These coverage estimates were used and modified to come up with estimated costs of the program per child. The estimated costs per child range from Rs. 45 to Rs. 60 (US$0.81 to US$1.09) for a child receiving one capsule, and from Rs. 38 to Rs. 92 for a child who received two capsules (US$0.68 to US$1.65).[1] If we exclude the one-time costs of training, these ranges fall to Rs. 31 to 41 (US$0.55 to US$0.71) for one capsule and Rs. 26 to Rs. 62 (US$0.46 to US$1.12) for two capsules. (See Annex G for complete set of summary tables and figures)

3. Training Costs

USAID requested that the training costs of the program be analyzed separately for the country's three ecological zones—the terai, the hills and the mountains—as well as by the three levels or sites of training (district, health post and community). The highest cost districts—the hills—spend an average of 30 percent more on all training compared to the average district in the lowest cost ecological zone, the terai. The average district's total cost per trainee varies even more across ecological zones; these costs are lowest in the terai, intermediate in the hills and highest in the mountain districts. Total (initial, refresher and orientation) training costs in the average mountain district are Rs. 2,398 per trainee, 98 percent higher than the cost in the average terai district (Rs. 1,213), and 36 percent higher than that of the average district across all zones (Rs. 1,761).

AVERAGE INCREMENTAL COST PER CHILD OF RECEIVING ONE OR TWO VITAMIN A CAPSULES THROUGH THE NVAP*

SOURCE OF COVERAGE ESTIMATE		TOTAL NO. OF CHILDREN	COVERAGE ESTIMATE	AVE. COST PER CHILD TOTAL COST	AVE. COST PER CHILD COST EXCLUDING TRAINING	
TAG	TWO CAPSULES/YEAR	1,694,050	85%			
	RUPEES				38	26
	US$				$0.68	$0.46
ADJUSTED FHS**	ONE CAPSULE/YEAR	1,056,290	53%			
	RUPEES				60	41
	US$				$1.09	$0.74
ADJUSTED NMIS**	ONE CAPSULE/YEAR	1,415,030	71%			
	RUPEES				45	31
	US$				$0.81	$0.55
ADJUSTED NMIS**	TWO CAPSULES/YEAR	697,550	35%			
	RUPEES				92	62
	US$				$1.65	$1.12

* Based on the total cost estimates in Table 15.
** See the text for an explanation.

The major sources of variation in the total cost of training in the three ecological zones are:

1) the difference in the average number of FCHVs trained at the community level;
2) the difference in the average number of training sites per health post;
3) variation in the average number of health posts per district;
4) variation in the average number of per diem travel days.

The Cost of Expanding the NVAP into the Country's Remaining 43 Districts

[1]The exchange rate used in this report is US$1 = Rs. 55.88.

A phased implementation plan for extending the NVAP into the remaining 43 districts of Nepal was developed. This plan identifies the number, type and timing of discrete activities, taking into account cost differences of the different ecological zones that the 43 districts cover. It is assumed that the program expansion will start in July 1997 and will end in December 2002, and that it will be structured in the same manner as the current NVAP. The NVAP will again be phased into new districts five at a time. With 43 districts, there will therefore be nine phases.

The cost estimates for the expansion of the program are again incremental; that is, they assume that the MOH's capacity to undertake these activities in the new districts and to expand its central and regional level field supervision activities can be increased without a need to increase personnel costs or to sacrifice their other activities. It is also assumed here that the cost of planning/coordination and general program development and administration will not increase. The total estimated cost of extending the NVAP into the remaining 43 districts of Nepal, while maintaining the promotion, distribution, monitoring and supervision activities in the original 32 priority districts of the project, is Rs. 358.6 million, or US$6.5 million. The average annual total cost of the project would be US$1.2 million.

The Long Run, Incremental Recurrent Costs of the NVAP

USAID has identified the activities essential to maintaining the operation of the NVAP on an on-going basis, after nation-wide implementation. These activities consist of: the vitamin A capsule distribution campaigns, promotion and monitoring and supervision.

If it is assumed that all of the planning/coordination and general program development and administration activities must still take place; that is, the responsibilities for these activities could not or would not be absorbed by the MOH without cost, then the annual direct cost of these activities is estimated to be Rs. 73.4 million or US$1.3 million. If the portion of these activities carried out by Helen Keller International could be absorbed without additional cost by the TAG or by the MOH, the long-term, incremental, annual recurrent costs of the NVAP would be reduced by about one-quarter, to Rs.54.4 million, roughly US$1.0 million.

Concerns and Issues Regarding the Sustainability of the NVAP

Below are a number of issues that need to be addressed if the NVAP is to become institutionalized and sustainable over the long-term:

1. lack of incorporation and institutionalization of the NVAP into the MOH;
2. need to include MOH personnel costs in the cost analysis;
3. need for a longer term solution to Vitamin A deficiency in Nepal, such as dietary change and the development of family gardens;
4. Need for the NVAP to develop a training strategy to accommodate the new population-based approach to the FCHV system
5. weak link in the FCHV system: the absence of an adequate supervisory system for the village health workers;
6. perceived need for and demise of the coordinating committees;
7. potential danger of loading up the FCHVs with too many additional responsibilities (i.e., killing the "Golden Goose");
8. sustainability of the TAG.

1.0 Introduction

Nepal is a small, landlocked country with 22 million inhabitants. Both the country and its population are highly diverse. Nepal has more than 75 ethnic groups. While Nepalese is the national language, in many isolated pockets, particularly in the mountainous regions of the country, only an ethnic dialect is spoken. The country has three distinct ecological zones, each forming a belt across the entire expanse of the country along an east-to-west axis. The southern-most belt is the terai, a lowland plain that is part of the Ganges River basin, where summer temperatures can rise to 140 degrees Fahrenheit. The terai constitutes 23 percent of the country's total land area and 47 percent of the Nepali population. Geographically the largest of the three ecological zones is the "hills," which accounts for 42 percent of the land and 45 percent of the population. The hills is a transitional zone between the terai and the Himalayan Mountains, which form the mountain zone, the northern-most belt. The mountain zone makes up 35 percent of the Nepal's land area and includes eight of the world's 10 highest mountains. Eight percent of Nepalese reside in the mountain zone.

As the measures of health status and other indicators of development presented in *Table 1-1* show, Nepal is a very poor, rural country. Only 10 countries in the world have a per capita gross national product that is lower than that of Nepal (US$200). Only four countries in the world have a less urbanized population (World Bank, 1997). These characteristics—an impoverished, largely illiterate, culturally-diverse, rural population speaking many different dialects, together with the diverse ecological zones of Nepal, constitute a daunting set of parameters that make any effort to undertake a national health program of any sort a monumental task. These characteristics have been important factors conditioning the design, implementation, success and sustainability of the National Vitamin A Program.

Table 1-1
Health Status and Other Indicators of Development of Nepal

INDICATOR	VALUE
LIFE EXPECTANCY (YEARS)	54
INFANT MORTALITY RATE (PER 1,000 LIVE BIRTHS)	95
MATERNAL MORTALITY RATE (PER 100,000 LIVE BIRTHS)	520
PREVALENCE OF MALNUTRITION (UNDER FIVE)	70%
UNDER THREE: UNDERWEIGHT	46%
UNDER THREE: STUNTED	47%
LITERACY RATE (ADULT)	
OVERALL	27%
MEN	41%
WOMEN	14%
PER CAPITA GROSS NATIONAL PRODUCT	US$200
POPULATION BELOW POVERTY LINE	70%
URBAN POPULATION	13%

SOURCE: World Bank, World Development Report, 1996, Selected World Development Indicators.

1.1 Background on Vitamin A Deficiency in Nepal

Vitamin A is an essential micronutrient for normal vision and ocular functioning. Vitamin A deficiency (VAD) can result in night blindness and other manifestations of xerophthalmia that can result in blindness in early childhood. In addition, inadequate intake and absorption of vitamin A impairs the immune system and can increase the severity and complications of measles, diarrheal disease, acute respiratory infections and other infectious diseases, and can consequently heighten the risk of death from these illnesses.

Three major studies conducted between 1988 and the early 1990s identified vitamin A deficiency as a significant public health problem in Nepal. Working in different areas of Nepal, the three research projects found the prevalence of Bitot's spots to range from 2.1 percent in children 1 to 10 years old in seven districts of the terai, 2.9 percent among children 0 to 5 years of age in the Sarlahi District (also in the terai), and 8.2 percent among children less than six years old in a mountain district of Jumla.[2] Starting from different assumptions and employing different approaches, two of the three research projects (Sarlahi and Jumla) concluded that periodic dosing of children 6 to 60 months of age with high-dose vitamin A capsules resulted in significant reductions in child mortality—on the order of 25 to 30 percent. The findings of the research projects were discussed at a National Vitamin A Workshop held in Kathmandu on February 11-12, 1992. The workshop recommended that Nepal develop a national vitamin A program. It further recommended that the program:

- be organized under the auspices of the Ministry of Health,
- be multisectoral in its approach—involving the Ministries of Agriculture, Education and Local Development, as well as non-government organizations,
- be phased-in in the 32 highest risk districts over a period of four years, and
- rely upon Female Community Health Volunteers (FCHVs) to distribute the capsules, with MOH hospitals, primary health care centers, health posts, and sub-health posts treating cases of vitamin A deficiency.

The Government of Nepal committed itself to the proposed program and adopted the ambitious goal of eliminating VAD in Nepal by the year 2000.

1.2 The Original Design and Evolution of the NVAP

The recommendations from the National Vitamin A Workshop were developed into a formal document, "Guidelines for the Implementation of the National Vitamin A Deficiency Control Program in Nepal," which was released in November 1992. With some relatively minor modifications, the guidelines have served as the terms of the reference for the National Vitamin A Program. Implementation of the NVAP was initiated in April 1993 with financial and technical assistance from the United States Agency for International Development's (USAID) Office of Health and Family Planning, and with financial support for the promotion and purchase of vitamin A capsules by UNICEF/Nepal's Health and Nutrition Office.

[2] Bitot's Spots—dry, scaly patches on the cornea—and night blindness are the two most common manifestations of vitamin A deficiency.

As originally designed, the NVAP was to include three basic activities:

> distribution of prophylactic high dose vitamin A capsules to children 6 to 60 months of age in the 32 priority districts to reduce child mortality and morbidity,

> treatment of clinical xerophthalmia, severe malnutrition, prolonged diarrhea and measles in all of Nepal's 75 districts, and

> promotion of dietary changes through nutrition education, home gardening, food preservation and increased literacy among women to increase production and regular consumption of vitamin A-rich foods, targeting pre-school children and pregnant and lactating women, and to improve breastfeeding and child feeding practices in the 32 priority districts.

The short-term strategy consisted of a phasing-in of the program in 32 priority districts which have been identified as having a high prevalence of xerophthalmia. The phasing of the program into these 32 districts was carried out according to the following criteria:

> the prevalence of xerophthalmia,

> the absolute size of the target population (children 6-60 months),

> the existence of trained FCHVs in the district,

> the presence of active NGOs interested in and capable of supporting the project, and

> the presence of complementary activities of other ministries.

For logistical reasons, it was decided that all the districts included in a particular phase be contiguous. The highest prevalence of xerophthalmia is in the terai region, which is also where the highest concentrations of the target population live. The central terai was identified as the top priority of the program and it was there that the first phase of the NVAP was implemented.

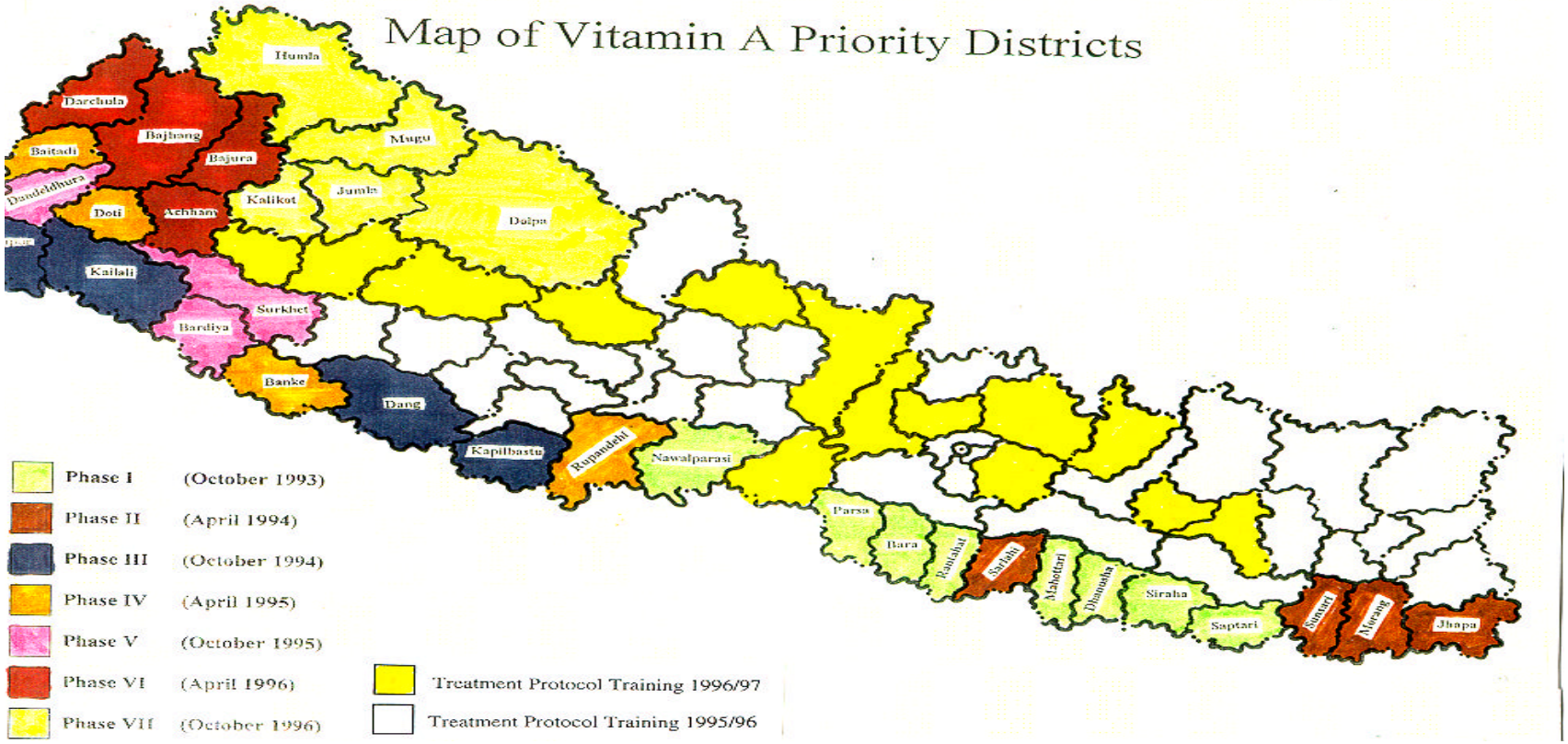
The relative paucity of data on the prevalence of xerophthalmia in the districts of the Far Western and Mid-Western regions prompted the implementation of a prevalence survey in those regions, which was conducted under the auspices of the NVAP in 1993. The results of this survey, combined with other already existing prevalence data on the remaining districts, were used in combination with the criteria described above to develop a seven-phase program implementation plan, with each phase marked by the introduction of the program into between three and seven new districts. The seven phases are shown in the map on the following page (*Figure 1-1*), and described in *Table A-1* in *Annex A*. The long-term plan is to incrementally expand the program's coverage, eventually making it national in scope.

The NVAP is designed to "piggy-back" onto the existing MOH health care delivery system, most importantly, its FCHV network. Most of the resources required to implement the program do not require any net additional outlays of money by the MOH. Instead, these resources are incremental additions to the responsibilities and activities of different employees and different parts of a public health system that is considered largely under-utilized.

Figure 1-1

NEPAL

Map of Vitamin A Priority Districts



The program's resources have been focused overwhelmingly on capsule distribution-related activities, particularly the training of FCHVs, who together constitute a network that has served as the principle means of implementing the program in the 32 priority districts. The MOH has identified one FCHV in each ward as the primary person responsible for the delivery of health services in the community. The FCHVs receive training in vitamin A capsule distribution and nutrition education during their initial 12-day training. One session of their first two-day semi-annual refresher training meetings is also devoted to vitamin A. Thereafter, the FCHVs review vitamin A issues during their general refresher training meetings.

The capsule distribution and training components of the program are being implemented using a multi-sectoral approach. The Ministries of Health, Agriculture, Education, Culture and Local Development, several NGOs, and other agencies are involved. The dietary supplementation intervention consists of distributing high dose (200,000 I.U.) vitamin A capsules during two-day campaigns held in mid-April and mid-October. The NVAP undertakes a vitamin A campaign Figure promotion in the two-week period prior to the capsule distribution days. Most of these activities are very localized in orientation and scope.

From its inception until the end of December 1996, the NVAP trained 38,549 persons including more than 17,000 FCHVs. The breakdown of all trainees by type and sector is shown in *Figure 1-2*. *Table 1-2* contains a detailed look at the composition of trainees and the timing of the training provided by the NVAP.

Figure 1-2
Breakdown of Trainees for Initial NVAP Trainings by Type and Sector

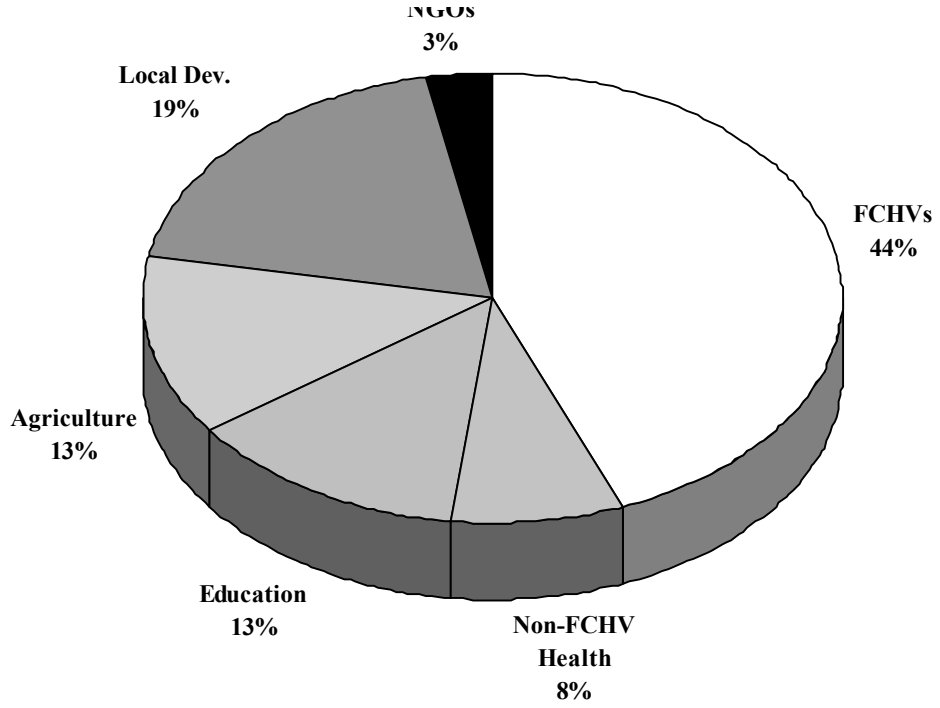


Table 1-2
National Vitamin A Program: The Composition of Participants in TAG-Led Initial Vitamin A Training Sessions

A. NUMBERS OF PARTICIPANTS BY SECTOR

PHASE	DATE	TOTAL HEALTH*	NON-FCHV HEALTH	FCHV	AGRICULTURE	EDUCATION	LOCAL DEV.	NGOs	TOTAL
I	Oct-93	7,776	1,144	6,632	2,109	1,640	693	294	12,512
II	Apr-94	2,374	74	2,300	646	858	401	113	4,392
III	Oct-95	2,358	443	1,915	516	489	1,353	135	4,851
IV	Apr-95	2,639	530	2,109	690	786	2,033	193	6,341
V	Oct-96	1,269	315	954	374	375	833	158	3,009
VI	Apr-96	2,227	410	1,817	567	910	1,670	62	5,436
VII	Sep-96	1,638	334	1,304	61	15	191	102	2,007
TOTAL		20,281	3,250	17,031	4,963	5,073	7,174	1,057	38,548

B. ANNUAL PERCENTAGE DISTRIBUTION OF PARTICIPANTS BY SECTOR

PHASE	DATE	TOTAL HEALTH*	NON-FCHV HEALTH	FCHV	AGRICULTURE	EDUCATION	LOCAL DEV.	NGOs	TOTAL
I	Oct-93	62%	9%	53%	17%	13%	6%	2%	100%
II	Apr-94	54%	2%	52%	15%	20%	9%	3%	100%
III	Oct-95	49%	9%	39%	11%	10%	28%	3%	100%
IV	Apr-95	42%	8%	33%	11%	12%	32%	3%	100%
V	Oct-96	42%	10%	32%	12%	12%	28%	5%	100%
VI	Apr-96	41%	8%	33%	10%	17%	31%	1%	100%
VII	Sep-96	82%	17%	65%	3%	1%	10%	5%	100%
TOTAL		53%	8%	44%	13%	13%	19%	3%	100%

*Total Health = FCHV + Non-FCHV Health

The NVAP undertakes a mini-survey following each distribution campaign to determine coverage and, more generally, to assess the performance of the NVAP during the campaign. These surveys are the most important monitoring/supervisory activity of the NVAP. According to the mini-survey findings, the coverage of the capsule distributions has consistently been in excess of 80 percent of the target population in all of the priority districts incorporated into the program. The New Era survey conducted in five districts of the Karnali Zone also found the coverage to be above 90 percent, using the similar survey methods. (As will be discussed below, there is considerable controversy about the coverage rates of the NVAP. Two national surveys suggest that the coverage rate is more on the order of 60 percent.)

In addition to training related to capsule distribution and campaign distribution days, the program has provided extensive vitamin A treatment protocol training. In contrast to the capsule distribution-related activities which have been focused in the 32 priority districts, this activity has been national in scope. Working with the Nepal Medical Association and the Institute of Medicine, the NVAP has worked successfully to incorporate the vitamin A case treatment protocol into the pre-service and in-service training curricula for physician and paramedical personnel in all health institutions and health training centers throughout the country. During the most active phase of the protocol training, between March 1995 and October 1996, 2,294 persons were trained. (The protocol is presented in *Annex B.*)

To date, the NVAP has also focused overwhelmingly on the supplementation program. To the extent that nutrition education activities have been pursued, they have primarily consisted of the FCHV and treatment protocol training curricula, rather than constituting a national education activity for the general public.[3]

The medium-term strategy calls for expanding the vitamin A capsule distribution program to all of Nepal's 75 districts, which is scheduled to take place from 1998 to 2003. The long-term strategy is to eventually phase out the distribution of capsules, while increasing the production and consumption of vitamin A-rich foods by increasing nutrition education efforts, and promoting kitchen gardens and maternal literacy.

1.3 The Purpose of the Study

Upon request from USAID/Nepal to the Opportunities for Micronutrients Interventions (OMNI) Project, PHR was asked to conduct a cost analysis of the National Vitamin A Program to account for how USAID's investment has been spent, to determine the annual recurrent costs of the program, and to estimate the cost of expanding the program nation-wide. PHR sent a health economist to Nepal in March 1997 to conduct this analysis.

Discussions with USAID/Nepal identified some important cost-related policy issues that USAID/Nepal is interested in addressing. The absence of baseline data, together with the range of vitamin A activities that have been on-going in Nepal for many years, make it difficult to adequately control for a number of confounding factors. This prompted the decision to restrict the study to a cost analysis as opposed to a cost-effectiveness analysis. USAID requested that the study analyze the following:

[3] An exception is the smaller Vitamin A NGO Program (VAN), run by Helen Keller International (HKI) and operating in six districts, which focuses entirely on home gardening.

- *Total USAID Vitamin A Expenditures, 1993-1997.* USAID/Nepal has requested that one section of the study track in a very general manner how the $3.2 million that USAID has dedicated to vitamin A-related efforts in Nepal since April 1993 has been spent. Several prominent Nepali officials have expressed doubt about whether that sum of money has been allocated to vitamin A-related work in Nepal over the past four years. USAID/Nepal is interested in responding to this inquiry and accounting for these monies.

- *Start-Up Costs of the NVAP.* The Mission is also interested in attempting to identify the start-up costs of the NVAP. "Start-up costs" refers to the cost of undertaking the various activities which are one-time in nature and were undertaken in order to initiate the NVAP. Their estimation is of particular interest to those attempting to estimate the cost of replicating this program in another country. Their estimation, however, is problematic in the case of the NVAP: they occurred at least four years ago, and there are few records available to identify the specific content of these activities or to ensure that the costs identified are all-inclusive. An additional complication is that a portion of these costs were incurred by the now defunct VITAL Project, a vitamin A field support project implemented by International Science and Technology Institute (ISTI). Hence, while an estimate of total start-up costs could be made by adding up all of USAID's costs, there is relatively little description of the specific activities that generated those costs. This limitation undermines the usefulness of this line of inquiry for other countries' efforts. The lack of detail makes it impossible to gauge how activities should be modified for use in other settings.

- *The Annual Recurrent Costs of Operating the Current Program.* USAID also expressed interest in conducting a standard cost analysis, which constitutes the heart of this report. It involves identifying the major activities of the NVAP and quantifying the annual costs of each of these activities. It also estimates the average incremental costs per child for one and two capsules per year, using different estimates of coverage.

- *Projection of Costs of Expansion into 43 New Districts.* USAID/Nepal also noted that it wanted estimates of the costs of expanding the NVAP into the country's other 43 districts, with differential cost estimates by the country's three ecological zones (terai, hills, mountains).

- *Long-Term Recurrent Costs of a National Program.* USAID/Nepal requested an analysis of the recurrent costs of the NVAP, and identified the specific elements and activities of the program that the agency considers essential to ensure the functioning of the NVAP in an effective and sustainable manner. Specifically, they identified the following inputs and activities as recurrent cost elements:

    - Vitamin A capsules,

    - Vitamin A-specific training materials,

    - Promotion activities and materials for vitamin A capsule distribution campaign days,

    - Monitoring for vitamin A capsule distribution campaign days (specifically, mini-surveys), and

[a] Supervision by MOH Central Office personnel for vitamin A capsule distribution campaign days.

2.0 Detailed Description of the Nepal National Vitamin A Program

2.1 Financing and Administration of the NVAP

The USAID financial support for the NVAP is provided via the Agency's centrally-funded OMNI Project,[4] which has subcontracted Helen Keller International to manage the USAID vitamin A resources. HKI's activities include:

> Providing on-going technical assistance for the NVAP to the Nutrition Section of the Child Health Division, Department of Health Services of the Ministry of Health (MOH/DHS);

> Assisting the Nutrition Section of the Child Health Division to provide vitamin A policy and program guidance to the MOH, district-level and NGO staff in implementation of the national vitamin A strategy;

> Providing assistance with implementation, coordination, monitoring and assessment of the NVAP and capacity-building of the Child Health Division's Nutrition Section to phase in all aspects of project management to the permanent MOH structure during the initial five-year program period;

> Assisting in planning and coordination of the NVAP between collaborating ministries, NGOs, and donor agencies, in partnership with the Child Health Division and the National Planning Commission;

> Serving as the financial conduit for USAID funding to a Nepali Technical Assistance Group (TAG), which collaborates with the Chief of the Nutrition Section of the Child Health Services Division, MOH in conducting the following activities:

> Provide training in case treatment protocols to medical personnel in all 75 of Nepal's districts to assure that children with severe malnutrition, severe diarrhea, xerophthalmia, or measles are provided appropriate vitamin A treatment;

> Assist in integrating the vitamin A capsule distribution campaign into the primary health care program in the 32 priority districts;

> Conduct multi-sectoral introductory and refresher training and planning workshops for the NVAP at the district and health post levels;

> Assist in logistics management, monitoring, supervision and reporting in support of the national vitamin A capsule distribution campaigns.

[4] OMNI's predecessor project, VITAL, implemented by the International Science and Technology Institute (ISTI) provided support to the MOH/DHS and NGOs/PVOs in implementing the NVAP from its inception until March 1994.

HKI also provides administrative support, as well as much of the coordination with other NGOs and with UNICEF, and has provided leadership in planning and coordinating this multi-sectoral effort.

The bulk of the training activities are actually carried out by the TAG. The formation of a technical assistance group to assist the MOH/Nutrition Section in designing and carrying out the training was recommended at the February 1992 workshop. This recommendation was included in the NVAP Guidelines which were subsequently produced and adopted by the Government of Nepal. The process of developing the TAG began in April 1993 with the inception of the NVAP. The TAG is a Nepali NGO that grew out of another NGO, NNJS, which was founded in the early 1980s to investigate the relationship between vitamin A and blindness, and which worked closely with the University of Michigan in a USAID/Nepal project. The TAG was developed with the aim of providing a local organization to work with VITAL (and later OMNI and HKI) on the vitamin A program.

The TAG, which has grown from a staff of four persons at its onset to 36 persons (as of March 1997), is responsible for designing and conducting the training and has carried out most of the monitoring and supervision activities, as well as much of the rather limited information, education and communication (IE&C) activities. The TAG also works with the Chief of the Nutrition Section, Child Health Division to coordinate the training of Female Community Health Volunteers with the National Health Training Center (NHTC). In addition, the TAG coordinates with the National Health Education Information and Communication Center (NHIECC) for development of communications materials, and with the Logistics Management Division (LMD) for supplies.

A local for-profit entity, Management Support Services Pvt. Ltd. (MASS) has provided logistics support for the training sessions, including paying the per diems and training allowances of trainees and non-TAG trainers, hiring and paying a support person to provide general assistance at the training, and organizing and paying other meeting costs.

UNICEF's involvement has been very focused. It purchases the vitamin A capsules and provides support for the promotion of capsule distribution days in the form or leaflets and radio spots.

Further information on the contracting agencies receiving USAID funds to support the NVAP is given in *Section 3.1.2*.

2.2 The NVAP Linchpin: The Female Community Health Volunteers

The Female Community Health Volunteer program is the linchpin of the NVAP. It is the FCHVs who distribute the vitamin A capsules on distribution days. There is significant overlap between the strengths and weaknesses of the FCHVs and those of the NVAP. In order to understand the NVAP—its costs, its effectiveness, and its evolution—and to be able to assess its sustainability, it is necessary to understand the FCHV program. Below we provide a detailed analysis of the FCHV program.

2.2.1 Background

Nepal is divided into five development regions and 75 districts. Each district is subdivided into village development committees (VDCs) which are further subdivided into wards. Health services are delivered through a system of government hospitals, primary health care centers, and health posts. NGOs also have a significant presence in Nepal and provide health services as well. A major recent initiative of His Majesty's Government of Nepal has been the development of sub-health posts and the commitment that the government will establish a sub-health post in every VDC in the country and within a two-hour walk of any Nepali. While the concept of the sub-health post includes a basic facility (which is to be built or donated by the community on land donated by the community), many VDCs do not yet have a sub-health post facility. In these instances, the sub-health post staff either uses some other public facility or designates one or more homes of staff as the focus point for the delivery of primary health care services. It is estimated that sub-health posts have been set up in 3,900 of the country's 4,000 VDCs. Sub-health posts are staffed by Auxiliary Health Workers (AHWs), Village Health Workers (VHWs) and Maternal and Child Health Workers (MCHWs).[5] Roughly half of the sub-health posts' staff are paid for by their respective VDC, the other half by the central government through the MOH/DHS.

The FCHV program began in 1988. It was first started in the 27 districts of the Central and Mid-Western Development Regions, and was expanded in subsequent years to include all of Nepal's 75 districts. As of March 1997, there were reported to be about 43,000 FCHVs. The Government of Nepal has attempted to involve the community in both health education and the delivery of primary health care services since 1982, when it initiated a "Mothers' Group Program" (Chataut, 1994; p.2). This program consisted of organizing groups of mothers to identify health problems and to serve as health education resources for the community. In the mid-1980s another program, the Community Health Leader (CHL) Program, was introduced in 14 districts. This program involved training mothers to identify and treat basic health problems, and was short-lived. One of the foci of the program was maternal health and it was decided that the program, which consisted of primarily male volunteers, had a gender problem. The CHL program was modified, switched to exclusively female volunteers, and renamed the Female Community Health Volunteer Program. Like its predecessor, the FCHV Program builds on Mother's Groups. At the beginning, the FCHV Program called for each village or ward to have one FCHV, who was to be selected by the local Mothers' Group, on the assumption that a mothers' group existed in each village or ward (Chataut, 1994).[6]

2.2.2 Recruitment and Selection of the FCHV

While the design of the FCHV program calls for each local Mothers' Group to select its FCHV from among its ranks, in reality, many wards do not have a Mothers' Group. This has commonly resulted in the FCHV being assigned by a local official—most commonly the ward chief—or by a representative of the Ministry of Health, usually the health post in-charge (HPI). In some instances a Mothers' Group has been formed for the express purpose of identifying a FCHV. The implication, of course, is that the degree of organization at the community level is considerably less than was presumed in the design of the program. Hence, the work of the FCHV, and particularly the need to

[5] The AHW was first introduced in 1992 as what is commonly described as a "mini-doctor." The AHW is initially trained for 14 months, compared to 3 months for both an MCHW and a VHW.

[6] The FCHV Program has again been modified and is in the process of implementing a new population-based strategy. The implications of the new strategy are discussed in *Section 4.0*.

organize the community, has been considerably greater than program designers had originally thought.

The MOH/DHS established the following criteria to provide guidance to Mothers' Groups in the selection of FCHVs. They must be:

> a local resident,

> willing and capable of working as a volunteer, and

> at least 20 years old.

In addition, preference is given to:

> married women with one or two children,

> literate women, and

> women already involved in social work or health-related activities.

2.2.3 The Objectives of the FCHV Program

The objectives of the FCHV are: a) to educate mothers and community members about primary health (focusing particularly on safe deliveries, child care, and family planning) and b) to encourage the use of health services. Each FCHV is given a 12-day initial training in basic general health care, first aid, and hygiene[7]. Thereafter, each FCHV is supposed to participate in two-day review meetings every six months.

Upon completion of their initial training, FCHVs are given a small drug kit free-of-charge, which contains Gention Violet, Paracetamol, Jeevan Jel (ORS), cotton, tincture of iodine, scissors, oral contraceptives, condoms, a soap case, and soap. The original idea was that some of these supplies would be replenished by the ward, while others—such as the oral contraceptives, condoms and ORS—would be restocked free-of-charge by the health post. While a small number of FCHVs are reported to sell some of their supplies (with the intent of attempting to establish a revolving fund), in most instances, the FCHVs' first-aid kits are quickly depleted and generally not replenished, or, at best, only haphazardly replenished.

By the early 1990s, the FCHV program had reportedly become largely moribund. Some have questioned the long-term viability of the concept; how long can monthly meetings, headed by a local, often illiterate, woman whose major duty is to lead health education classes for her neighbors, provide adequate information to maintain sufficient interest and participation? Once her stock of supplies is depleted, what does the FCHV have to attract her neighbors? The NVAP has helped to change this scenario. By passing out vitamin A capsules in, what is by all accounts, a highly visible and highly valued program, the NVAP has become a potent force in reestablishing the FCHV Program. This is a benefit of the NVAP that is difficult to quantify, but is widely acknowledged and regarded as highly valuable.

[7] The initial FCHV training was originally for 15 days, but has been reduced to 12 days. The analysis of program costs uses the 12-day figure.

2.2.4 General Training of the FCHV

The curriculum for the initial 12-day general FCHV training (not the vitamin A-only curriculum) was developed by the MOH/DHS National Health Training Center (NHTC), working in conjunction with a number of experts in primary health care and family health. The NHTC developed an FCHV training manual in 1988, which has subsequently undergone two revisions. There are two versions of the manual; one for literate persons and one for illiterates. The NHTC has also developed a detailed training plan, which lays out the initial and refresher training sessions, specific topics to be covered, the sequencing of topics, and the amount of time to be spent on each.

In the first version of the training manual, only a few paragraphs were devoted to vitamin A. With each of the two subsequent revisions of the manual the relatively importance accorded vitamin A has increased. In the current manuals, four pages of the literates' training manual and six pages of the illiterates' manual (out of a total of 65 and 75 pages, respectively) are devoted to vitamin A. The NHTC structured training schedule calls for spending one-third of the 7.5 total hours devoted to nutrition on vitamin A (i.e., 2.5 hours).

The NHTC does not directly conduct all of the FCHW training, nor does it directly train the FCHVs. The MOH/DHS uses a training of trainers (TOT) strategy in which the NHTC trainers ("super-master trainers") develop curricula and train master trainers. There are five Regional Health Training Centers (RHTCs), each staffed with two to four master trainers. Generally, the NHTC super-master trainers train the master trainers of the RHTCs, who in turn train the district-level Health Education Technicians, of whom there is usually one in each district. It is not uncommon, however, for other district-level persons to be trained instead of, or in addition to, the Health Education Technicians, such as the Assistant Trainer, the EPI Supervisor, the AHW, the Auxiliary Nurse Midwife (ANM), or the Public Health Nurse. The District Health Officer (DHO) decides who among his district staff will be trained. In addition to district personnel, all of the health post in-charges in the district attend the district-level training, which is usually led by trainers from the RHTC or the NHTC.

The district-level trainees, in turn, train health post personnel. Generally, the HPI, with the assistance of a district-level trainee and either an NHTC or an RHTC trainer, lead the initial training for health post staff. The health post trainees include the ANM, the AWH, and the sub-health post in charge (SHPI). Those trained at the health post level (usually the HPI and the SHPI) then train the FCHVs, with assistance from a district-level trainer.

2.2.5 NVAP Training of the FCHV

FCHVs have only two training sessions devoted exclusively to vitamin A—a session during the 12-day initial training, and another in the first semi-annual review meeting. Thereafter, vitamin A training is incorporated into the more general FCHV semi-annual review meetings. In addition to the FCHVs, vitamin A community-level training is given to Village Health Workers (VHWs), Maternal and Child Health Workers, ward members, field workers in Women in Development and in agriculture, and NGOs.

The *training of trainers* in vitamin A follows the same process as described above for the general FCHV training, which involves training district-level personnel, health post and sub-health post staff. TAG trainers usually lead the initial vitamin A training session at the district level, with participation of NHTC and RHTC trainers, and also take part in the training of health post and sub-health post staff, as well as the training of FCHVs and other community-level workers.

TAG Program Coordinators participate in, but try not to lead, the health post and community-level vitamin A training sessions. Instead, they try to use these sessions as a type of on-the-job training for their newly trained trainers (e.g., HPIs, SHPIs, AWHs). This scheme is the ideal of what is intended to happen. TAG personnel report, however, that they often are forced to take a more prominent role in these training, due to the shortage of trainers. The high rate of turnover of personnel at both the district and health post levels (especially of HPIs), coupled with the fact that District Health Officers exercise considerable power in determining who will be trained at the district level, are obstacles to efficiently and effectively institutionalizing vitamin A training capability.

The objectives of the FCHV vitamin A training are:

- To impart knowledge about vitamin A; specifically to:
  - explain the importance of vitamin A,
  - identify and explain the causes of vitamin A deficiency, and
  - identify locally available sources of vitamin A.
- To describe and walk through a vitamin A capsule distribution day's activities, in order to develop the qualitative skills essential to ensuring successful vitamin A capsule distribution.
- To describe and demonstrate how to present vitamin A information in order to foster the self-confidence of the FCHVs in providing nutrition education and to motivate them to do so.

2.2.6 Cultivating the Critical Role of the FCHV in the NVAP

The process by which the NVAP has collaborated with other sectors has raised the stature of the FCHVs in their communities and has been an important source of motivation for FCHVs, who are generally poor, illiterate volunteers. The success of the NVAP has also brought national attention and recognition to the critical role that FCHVs have played in the program. The NVAP has been able to breathe new life into the FCHV network and transform it into an important vehicle for improving the public health care system. It has been able to do so as a result of: 1) the multi-sectoral approach to the FCHV training which emphasizes process and empowerment, and 2) the TAG's well-planned and highly structured program which engenders trust and thereby confidence, commitment and dedication. These two factors are discussed in detail below.

FCHVs are women who have been elected from their local Mothers' Group because "they have something special: leadership qualities, personal strength, respect in the community, and the desire to improve the health delivery within their community....Their main incentives are to increase their knowledge base through health training, to share their knowledge within their community, to distribute goods, and to receive community recognition as a health professional." (Hollander, 1997; p.4).

FCHVs—especially those who are literate—are also motivated by the government policy of giving them preferential treatment when there is an opportunity to hire a Maternal Child Health Worker, which is a permanent, paid position at the sub-health post level. The dearth of employment opportunities in Nepal—especially for women—makes this an effective enticement. As of October

1994, it was estimated that roughly one-quarter of all MCHWs had been selected from among former FCHVs (Chataut, 1994; p.12).

The NVAP uses a multi-sectoral approach to encourage and, in effect, to "jump-start" the community working together and networking. The TAG-led training bring together important members of the community to meet with the FCHV, to recognize her role and to support her both in the logistics of the distribution campaign day requirements, and in generally educating the public about vitamin A. This recognition and the act of working together empowers and motivates the FCHV. TAG personnel talk of how it is the *process* that is the most critical aspect of the training they provide; while the training curriculum itself is important, they insist that it is of less significance.

Another important, more fundamental and more concrete way in which the NVAP has empowered the FCHV has been by giving her something to do—maintaining a registry or census of all children five years of age and under in her jurisdiction—and giving her something that the community values and wants—vitamin A capsules. The registry serves several purposes. First, in developing the registry the FCHV must initially visit every household in her community. Through this process she has the opportunity to promote vitamin A to mothers and becomes known as the person in charge of the vitamin A capsule distribution day and a source of information on vitamin A; in short, a community health resource. This again exemplifies how the process used to implement the program has empowered the FCHV.

Second, the child registry helps the FCHV to organize her work and is used to make the vitamin A capsule distribution day more efficient. By having children's names and ages already on the registry, the only thing that is required to record that a specific child has received his/her dose on distribution day, is placing a check mark next to his/her name. This keeps the amount of time devoted to record-keeping tasks to a minimum on the busy distribution days. At the same time, the registry becomes a tool for determining coverage of the program, and a record for monitoring the program at the village level, enabling children who have not been dosed to be quickly identified.[8] The registry is checked by the VHW, the FCHV's supervisor, and other health and ward officials, and thereby becomes a tool of accountability and feedback, as well as an instrument to motivate the FCHVs.[9] An important part of the FCHV's training involves instructing her in how to use the register.

Another key element in making the NVAP successful—although much more subtle and easy to overlook—also relates to motivating and empowering the FCHV; namely the need to effectively engender and maintain their trust. If the NVAP is to continue to rely on volunteers and to be successful, the relationship between the TAG/MOH and the FCHV must be based on trust. That is, the FCHV's expectations—based on what they have been told by the TAG and how the NVAP has been structured—must always be met. The FCHV's empowerment is a delicate and critical thing, at least at this relatively early stage in the development and institutionalization of the program. If the

[8] The use of the registry for determining coverage has proven less than satisfactory. The VHW, the supervisor of the FCHV, is theoretically charged with maintaining a registry of the entire community. It is reported that VHWs regard the FCHV's registry as redundant and an infringement on their own domain of duties, and have therefore downplayed the need for the FCHV to maintain the registry. Not surprisingly, this has contributed to deterioration in the quality and coverage of the FCHVs' registries. The findings of several of the mini-surveys, too, suggested that there were some irregularities and shortcomings of the registries, which further undermines the credibility of the registries as a source of comprehensive and up-to-date data on children 60 months and younger and as a means of calculating coverage rates of the program. Nonetheless, the registry remains an important tool for FCHVs to: (1) become intimately acquainted with the community, (2) raise the topic of vitamin A and remind people about the capsule distribution day, and (3) streamline the administration of the capsule distribution days.

[9] It was originally planned the these data would be submitted to the VHW and by them to the health post, then the district office and eventually to the central MOH's National Management Information System office. The plan for this information system, however, has not been effectively implemented.

FCHV is made to look ineffective or otherwise unable to meet the expectations of her community because of supply problems, scheduling problems, or other shortcomings, the effect is to undermine her credibility, respect, effectiveness and power. As a result, making the NVAP a well-structured, standardized program that works in a timely, predictable and widely understood manner, is—according to the TAG Training Coordinator, an imperative of the program.

Another approach that the NVAP has adopted in motivating FCHVs has been to give them decorative pins with the NVAP logo that they can wear and conspicuous green tote bags marked with the NVAP logo, both of which readily identify them as workers in this prestigious program. In addition, they are given posters that they can display to demonstrate their participation and role in the program.

3.0 Estimates of the Costs of the NVAP

As described in the first section of this report, USAID requested PHR to conduct five different cost analyses of the NVAP. This section describes each of these analyses in detail.

3.1 Total USAID Vitamin A Expenditures, 1993-1997

USAID earmarked US$3.25 million of its Child Survival and Family Planning Project for vitamin A-related activities in Nepal by fiscal year from April 1, 1993 through July 15, 1997.[10] Several prominent Nepali officials have expressed interest in learning how that money has been spent. This section addresses this concern, albeit at a very general level. The source of the data reported in this section is the USAID/Nepal Financial Management System, using USAID's internal cost accounting categories.

3.1.1 Breakdown of Commitments and Expenditures by Program Activity/Element

As may be seen in *Table 3-1*, of the $3.25 million, $2.6 million had been spent by March 12, 1997. Seventy percent of the unexpended monies are 1996 commitments.

Table 3-1
USAID Child Survival and Family Planning Project:
Status of Financial Commitments for Vitamin A by Fiscal Year

FISCAL YEAR	COMMITMENT	EXPENDITURES	REMAINDER
1993	$702,466	$689,022	$13,444
1994*	$743,395	$743,395	$0
1995*	$1,347,857	$1,168,425	$179,433
1996*	$455,157	$144	$455,042
TOTAL	3,248,875	$2,600,956	$647,919

*** The entire MASS commitment of $236,878 for the August 15, 1995 - July 15, 1997 period is included in the 1995 figures, inflating the 1995 totals and deflating the 1996 totals from their actuals.**

Note: Fiscal year runs from mid-July to mid-July; e.g., fiscal year 1993 (FY93) starts July 15, 1993 and ends July 14, 1994.

Table 3-2 shows the breakdown of the $3.25 million by activity or element. As shown in the table, the bulk of these monies have been spent on technical assistance, which accounted for $1.4 million, 44 percent of the total commitment and 41 percent of total expenditures to date. The rest of the monies have been spent on four other activities. Ranked in order of commitment amounts, these are: field support (26 percent), local NGO/PVO (18 percent), commodities (9 percent) and training (2 percent). *Table 3-2* also shows the proportion of committed funds spent and unspent by program activity or element as of March 12, 1997. The largest proportion of unspent funds are those

[10] The fiscal year (FY) of the U.S. Government runs from October 1 through September 30.

committed to technical assistance and field support, which account for 56 percent and 40 percent of the total, respectively. Further detail on the breakdown of these monies is given in *Table A-2* in the Annex.

Table 3-2
USAID Child Survival and Family Planning Project: Breakdown and Status of Funding Commitments for Vitamin A Program Activity/Element

PROGRAM ELEMENT NUMBER	COMMITMENT	EXPENDITURES	UNLIQUIDATED
1: TECHNICAL ASSISTANCE	1,444,876	1,078,778	366,098
	44%	41%	57%
	100%	75%	25%
2: TRAINING	51,275	45,000	6,275
	2%	2%	1%
	100%	88%	12%
3: COMMODITIES	304,599	304,599	0
	9%	12%	0%
	100%	100%	0%
5: FIELD SUPPORT	853,258	591,156	262,101
	26%	23%	40%
	100%	69%	31%
8: LOCAL NGO/PVO	594,966	581,522	13,444
	18%	22%	2%
	100%	98%	2%
TOTAL:	3,248,974	2,601,055	647,918
	100%	100%	100%
	100%	80%	20%

3.1.2 Breakdown of Expenditures by Contractor/Agency

The following agencies have received USAID funding for NVAP activities:

1. **The International Science and Technology Institute (ISTI)** was the prime contractor for the VITAL Project, the vitamin A field support project of AID/Washington's Office of Nutrition until March 1994. VITAL was the original agency working with the MOH/DHS in implementing the NVAP. Roughly half of ISTI/VITAL's expenditures ($311,521) were spent on local NGO/PVO support. These monies supported the Nepali NGO, NNJS (the TAG's predecessor) and the TAG during the formative period of the TAG and the NVAP.

2. **John Snow Inc. (JSI) and Helen Keller International (HKI)** JSI is the prime contractor for the USAID centrally-funded OMNI Project, the follow-on project to VITAL. After the VITAL Project ended in March 1994, there was a three-month hiatus before the OMNI Project began in July 1994. Since March 1995 HKI has been contracted by OMNI to administer the NVAP.

3. **The Technical Assistance Group (TAG)**, originally a subcontractor to ISTI/VITAL and now subcontractor to JSI/OMNI, is responsible for the implementation of the NVAP training program, and for most monitoring, supervision and IEC activities.

4. **Management Support Services Pvt. Ltd. (MASS)**, a private, for-profit Nepali firm, has provided logistical support for the NVAP's massive training activities since the start of the program in 1993. In each year of the NVAP, payments to MASS have constituted a significant proportion of total USAID-financed NVAP expenditures. Until August 1995, MASS was paid directly by OMNI and VITAL out of its Delivery Order Funds' (these payments were reported as field support). Under the ISTI/VITAL contract, payments to MASS constituted 80 percent of all Field Support expenditures and 36 percent of total ISTI/VITAL's NVAP expenditures. In Fiscal Year 1995, MASS expenditures constituted 31 percent of total JSI/OMNI's NVAP expenditures. Since August 15, 1995 MASS has been paid directly by USAID/Nepal through a supplemental financing mechanism that was established by an amendment to the original Child Survival and Family Planning Project Contract.[11]

5. **The Comptroller General of the Government of Nepal** has received USAID monies earmarked to support the FCHV Program and the NVAP (called "Red Book" funds). As seen in *Table A-3* in the Annex, as of March 1997, only about half of these monies have been spent. USAID has decommitted $121,633 of the unexpended original allocations. This rate of spending is actually above the MOH average of 44 percent that it has posted in recent years, and which has resulted in the MOH having some of its original financial allocations rescinded (National Planning Commission/HMG & UNICEF, 1994, p.32).

6. **City Advertising Service** was hired to provide assistance in developing radio and TV spots, and has been the least important agency, receiving a total of only $213.

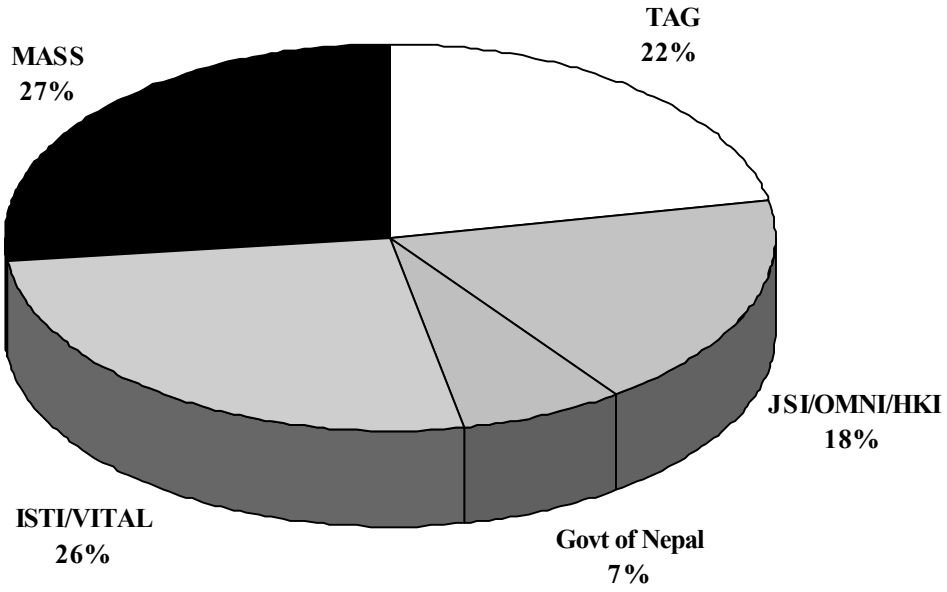
Figure 3-1 shows how the $2.6 million of USAID expenditures for the NVAP was distributed through these agencies.

From the project's inception until March 1997, the TAG received a total of $581,522, or 22 percent of the total spent thus far. Concerning MASS, the changing contractual arrangements between USAID and MASS make the distribution of funds to MASS less than transparent. As already noted, MASS was a subcontractor to, and was paid directly by ISTI under the VITAL Project, and later by JSI under OMNI, up until August 1995. Since then, MASS has been contracted directly by USAID. If we extract from the VITAL and OMNI contacts the sums paid to MASS and add to this the total amounts USAID paid MASS directly, we find that MASS has received a total of $710,013 or 27 percent of the total $2.6 million spent up to March 1997. The TAG and MASS therefore together accounted for about half of the total

[11] This change was made so as to reduce the costs of using MASS; it enabled by-passing OMNI and payment of its overhead expenses.

Figure 3-1
Breakdown of USAID Vitamin A Expenditures by Contractor/Agency

*These are the monies that had been spent as of March 1997 of the total USAID commitment of $3.2 million to Vitamin A.



USAID expenditures up to March 1997. The allocation to the Comptroller General of the Government of Nepal accounted for another seven percent of the total.

The remainder of the monies, 44 percent, were accounted for by VITAL (26 percent) and OMNI (22 percent)—the latter including expenditures on its subcontracts with Helen Keller International.

Finally, it should be noted that the $3.25 million of the Child Survival and Family Planning Project is not the only source of USAID expenditures on the NVAP. Additional sources of USAID financing include resources it has devoted to the Johns Hopkins University Child Survival Fellows, who have dedicated a considerable amount of their time to the NVAP. Estimates of the value of this assistance are provided in *Table 3-3*.

Also, additional monies to the NVAP have been provided somewhat indirectly through the USAID Child Survival and Family Planning (CSFP) Project's support of the FCHV program, through the project's family planning and population components. The amounts provided to the FCHV Program are listed in *Table 3-4* for three of the past four years, along with the contributions of other international agencies (data for 1995/96 were not available).

Table 3-3
Additional USAID Costs for Field Support:
Johns Hopkins University Child Survival Fellows

November 1, 1994 - September 30, 1996			**23 months, 1 person @ 60%**	**170,486**
	FY 1994	**8 months**	**59,299**	
	FY 1995	**12 months**	**88,949**	
	FY 1996	**3 months**	**22,237**	
	TOTAL:		**170,486**	
January 1, 1997 - December 31, 1998			**24 months, 1 person @ 100%**	**219,225**
	FY 1996	**6 months**	**54,806**	
	FY 1997	**12 months**	**109,613**	
	FY 1998	**6 months**	**54,806**	
	TOTAL:		**219,225**	
TOTALS:	**FY 1994**	**8 months**	**59,299**	
	FY 1995	**12 months**	**88,949**	
	FY 1996	**9 months**	**54,806**	
	FY 1997	**12 months**	**109,613**	
	FY 1998	**6 months**	**54,806**	
	TOTAL:	**47 months**	**367,474**	**367,474**

Table 3-4
The FCHV Program Budget

YEAR	Gov. of Nepal	USAID	UNFPA	UNICEF	TOTAL
1993/94	**475**	**15,028**	**19,867**	**14,724**	**50,094**
	1%	**30%**	**40%**	**29%**	**100%**
1994/95	**3,262**	**18,285**	**18,697**	**16,651**	**56,895**
	6%	**32%**	**33%**	**29%**	**100%**
1996/97	**3,571**	**16,613**	**22,946**	**13,992**	**57,122**
	6%	**29%**	**40%**	**24%**	**100%**

*** 1995/96 data are not available.**

****in thousands of rupees**

3.2 Start-up Costs of the NVAP

Efforts to assemble the necessary database to develop estimates of the start-up costs of the NVAP were unsuccessful for a number of reasons. First of all, PHR was unable to obtain data on VITAL expenditures and activities from ISTI since the VITAL Project ended more than three years ago, its records have been archived, ISTI headquarters has moved twice since the end of the VITAL Project, and its Vice President for International Health has only been in that position since early 1996. PHR also was not able to learn if core monies from OMNI had been spent on NVAP activities or to obtain more disaggregated expenditure data regarding OMNI's pre-HKI activities. Moreover, it was difficult for TAG and MOH staff to reconstruct specific start-up activities, and to speculate about the resources and costs involved in those activities. A review of the financial records that were available from the TAG and HKI also proved to be inadequate for undertaking this analysis; they were too aggregated and were not broken down by activity.

Why are we interested in this question about start-up costs? The most worthwhile response would seem to be: "because other countries are interested in understanding how, what many regard as a model program, began, and want to have an idea as to how much it would cost them to try to do the same thing." In the interest of informing this question, it was decided that a descriptive account should be developed of the types of activities and other start-up considerations essential to starting a similar program. Providing insight for those wishing to undertake the same type of program is the guiding principle that was adopted in determining how to define "start-up" costs and in deciding how much of the current program and its context to describe. The unique nature of Nepal compels us to provide a detailed discussion of the program to enhance understanding of the generalizability of the findings of this study—not only the start-up cost component, but all of the other components as well.

3.2.1 Vitamin A Deficiency Prevalence Survey as Input into the Project Design and Implementation Plan

The long history of vitamin A research and capsule distribution activities in Nepal makes it exceedingly difficult and somewhat arbitrary to define the start-up activities of the NVAP. Much of the considerable, relatively localized, research efforts that were undertaken during the three major vitamin A studies of the 1980s contributed to understanding the nature and distribution of vitamin A deficiency in Nepal and, as such, directly influenced the design of the NVAP.

The two most important findings of these three studies were: 1) that vitamin A supplementation is a highly effective means for reducing child morbidity and mortality, and 2) that the distribution of vitamin A deficiency (VAD) was highly uneven and thought to be much more prevalent in the terai. These findings were of fundamental importance in paving the way for the development of the NVAP; they encouraged the Government of Nepal to commit to eliminating VAD throughout the country by the year 2000, and led to designing a project that targeted the highest VAD prevalence districts in the country, followed by a gradual phasing-in of the program until its coverage was nation-wide.

While there were specific data for a number of districts considered high priority, there was no information about the magnitude of the problem in some areas. In order to prioritize the western districts in the 32 priority districts, it was found necessary to conduct a special VAD prevalence study in 1992-93. This study is considered to be part of the start-up costs of the NVAP, since it was undertaken for the sole purpose of prioritizing the 32 districts that were to be included in the NVAP.

3.2.2 The Development of the Program Guidelines

The February 1992 meeting which brought together representatives of the MOH/DHS, other agencies of the Government of Nepal, indigenous and international NGOs, and international donors—most prominently USAID and UNICEF—was another critical step in the start-up of the NVAP. Indeed, the program guidelines, which were largely produced by the participants at the meeting and subsequently endorsed by the Government of Nepal, have served as the blueprint for the NVAP, and have been closely adhered to since, with only minor modifications.

Among other things, the guidelines called for the establishment of a technical assistance group to assist the MOH in establishing the program. When the NVAP began operations in April 1993, the TAG was comprised of four persons. Shortly thereafter, four former staff persons of the previous USAID Child Survival Project were hired. With the first capsule distribution scheduled for October 1993, just six months into the program, it was necessary to get the program up and running as quickly as possible. The original plan called for the MOH's Nutrition Section to hire Program Coordinators who would be dedicated to the NVAP. The Ministry underwent a major restructuring at that time, and it was decided that the TAG would have to provide the Program Coordinators. Twelve Program Coordinators were soon hired.

3.2.3 Training Curriculum Development and Training of Trainers

One of the first activities of the NVAP was the development of action plans and training curricula. The TAG sponsored a five-day workshop to train trainers at the national level in June 1993. The trainees included the TAG's 12 Program Coordinators, representatives of the MOH and NGOs, and trainers from a number of organizations, including:

> the National Health Training Center,

> the five Regional Health Training Centers,

> the Ministry of Agriculture,

> the Ministry of Women in Development, and

> the Ministry of Education.

Following this TOT workshop, the TAG requested the MOH and each sector to conduct training at the district level. The response, however, was less than adequate: only a few trainers became involved and they came prepared to serve primarily as resource persons. The TAG's response was to devise a new strategy in which TAG trainers would be responsible for the bulk of the training. The new strategy also called for mass mobilization at the district level by having the entire staff of all of the health posts in a single district trained at the same time. These mass training were thought to be an effective means of promoting the vitamin A training sessions and raising general awareness about vitamin A, as well as a way of being more efficient (i.e., less costly).

Initially, there was but a single TAG training curriculum, a three-page document. The TAG now has separate manuals for initial training, refresher training, orientation training, training of trainers, and focus group training. Each manual is a well thought-out, comprehensive 15- to 40-page document that explains not only what to do, but also the rationale for doing it. The manuals continue to evolve in response to perceived needs.

3.2.4 Contributions from the Previous Child Survival Project to the NVAP Start-Up

In addition to some of the personnel that the NVAP—specifically the TAG—inherited from the preceding USAID Child Survival Project, some of the equipment that the NVAP has had since its inception were actually materials that had been purchased by the same USAID project. This included a computer and other office equipment, and a car. (A jeep was also donated by UNICEF.) Many of the NVAP's initial information, education and communication materials and messages were also products inherited from the first Child Survival Project.

The Treatment Protocol Training component of the NVAP benefited even more from work that had been carried out under the former Child Survival Project. In fact, the Project Director of the previous project became the Medical Director of the TAG. For the most part, he simply continued much of the work that he—as probably the foremost pioneer of vitamin A research in Nepal—had begun under that project and during his tenure with NNJS, a local NGO formed in the mid 1980s to address eye care problems in Nepal.

In short, many of the start-up costs of the NVAP were paid by others or paid in previous years. Therefore, estimating the value of their contribution to the start-up of the NVAP is inevitably a difficult and highly precise undertaking. But an even greater obstacle to estimating start-up costs has been the lack of access to historical financial records.

As a result we have no information about the likely possibility that VITAL, OMNI and/or any other centrally-funded project spent some of their core monies on the start-up activities of the NVAP.

3.2.5 Developing Organizational Relationships and *Modi Operandi*

3.2.5.1 Training and Training Logistics: The Division of Labor Between the TAG and MASS

The start-up work of the TAG entailed developing working relationships and a *modus operandi* with each of the organizations involved in the training, as well as with UNICEF, NGOs, and, most importantly, with Management Support Services Priv. Ltd. (MASS), the private firm that USAID had directed the TAG to rely upon for all logistics matters. Due to the critical importance of coordination and timing in a campaign-style activity, the relationship between MASS and TAG has been an essential one.

While there exists some tension between the two organizations—owing chiefly to their different goals, objectives, and perceptions of their respective roles—the NVAP has not suffered from this division of labor. Indeed, in some regards, just the opposite is true; having MASS directly responsible for the management and financing of training logistics has enabled the TAG's training operations to be relatively more streamlined and efficient than they would have been otherwise. In part, this is because of the function of the director of MASS, who sees himself and his organization as the budget watchdog. Perhaps motivated by the desire to secure more USAID logistics support projects, MASS has proven to be somewhat of a stickler in ensuring that all persons paid travel allowances and per diem are those who are supposed to receive training (due to their position), that they attend the entire training and that they are paid at a pre-determined, fixed rate. MASS's perception of its role and the tension in its relationship with the TAG is apparent in the tenor of the notes that MASS prepared in request to our explanation of the purpose of this study and our

response for particular data. Rather than simply providing the information, MASS prepared the notes as a cover sheet to orient the analyst to their point of view (see *Annex C*).

3.2.5.2 Program Implications in Changing Contracts and Contractual Relationships

As noted above, over the life of the NVAP there has been a change in the prime contractor of the project, changes in the in-country implementing agency and changes in the contractual relationships between the major actors involved in the NVAP. This has resulted in cumbersome interruptions in what would normally be a steady, evolving relationship between collaborators. This could only have slowed the pace of program development and implementation, including the development of program procedures and workplans. These delays most likely resulted in higher costs than there would have otherwise been.

3.3 Annual, Recurrent Costs of the NVAP

This section is the most detailed of the five distinct cost analyses conducted in this report. The analysis develops annual, incremental, recurrent cost estimates of specific NVAP activities, broken down, where appropriate, by the country's three ecological zones. These are not the total costs of the NVAP. As has been described in the first two sections of this report, the NVAP piggy-backs on a number of already existing MOH/DHS personnel, units and sub-systems which, in the view of USAID/Nepal, are operating well below their capacity. Undertaking the NVAP, therefore, does not require any additional MOH resources, nor does it entail giving up any goods or services that the MOH currently provides or produces. The underemployed MOH resources involved in implementing the NVAP are primarily personnel. To the extent that non-personnel inputs are required, most are provided directly or financed by USAID or UNICEF, which also provide or finance some critical personnel inputs into the program. These costs are the incremental costs of the NVAP, which are the focus of this cost analysis.

3.3.1 Methodology

3.3.1.1 Data Collection

The materials for this analysis were collected in the course of a 12-day, in-country consultancy. The bulk of the time in-country was spent working with TAG and HKI personnel in their NVAP offices. In addition, interviews were held with key staff of the MOH/DHS—including the Head of the Nutrition Section, and officials of the Child Health Division, the Logistics Management Division, the National Health IEC Center, the NHTC, and the Financial Management Unit—as well as with officials of USAID/Nepal, UNICEF and MASS.

The interviews were used to:

> identify and obtain copies of documents describing the structure, operations and financing of the program,

> obtain descriptions of key program activities from staff and their opinions and ideas about the program,

> obtain input in devising a taxonomy of the key activities of the program.

> identify important contextual factors affecting the performance of the program, and

> identify what are regarded as the key policy issues and concerns about the program.

While there were found to be a number of general descriptions of the program that had been put together for a variety of reasons, no detailed description of the program's structure, operations and activities and their evolution over time, or explanation of the rationale for the program's design, were available. The first order of business was to assemble this information in order to be able to understand this complex program and the role of the different actors involved in its implementation.

3.3.1.2 Identifying Cost Centers: The Primary Activities of the NVAP

See *Table 3-5* for the key activities that were identified with the assistance of the primary actors implementing the NVAP. These activities will constitute the framework for categorizing the costs of the program. In effect, each identified program activity constitutes a cost center in the cost analysis.

While HKI and the TAG had prepared a type of cost analysis prior to this consultancy, they used a cost accounting framework which categorized most costs by objects of expenditure (e.g., travel, supplies, etc.). Although training was broken out, all training activities were grouped together. This cost accounting approach provided very limited understanding of the costs of the different major activities of the program, or of the various options and tradeoffs involved in implementing the program's major activities. As such, it provided a starting point for constructing a more detailed and managerially useful cost analysis framework based on activities. The activity-based approach will provide greater understanding of how specific changes in the program can affect the program's costs, and it will be more useful in attempting to estimate the costs of expanding the program to the country's 43 remaining districts.

Table 3-5
Nepal National Vitamin A Program: Major Activities/Costs Centers

1. Training: Levels and Types
- **1.1 District Level**
  - **1.1.1 Initial**
  - **1.1.2 Refresher**
  - **1.1.3 Orientation**
- **1.2 Health Post Level**
  - **1.2.1 Initial**
  - **1.2.2 Refresher**
- **1.3 Community Level**
  - **1.3.1 Initial**
  - **1.3.2 Refresher**
- **1.4 Treatment Protocol**

2. Information, Education, and Communication (IE&C)/Promotion

3. Monitoring and Supervision
- **3.1 Mini-surveys**

4. Planning and Coordination*
- **4.1 Planning and training distribution days.**
- **4.2 Coordination and Networking: Start-up and ongoing with**
  - **a) MOH/DHS/FHD/Nutrition Section**
  - **b) MASS**
  - **c) Other governmental agencies: Ministry of Agriculture, Ministry of Local Development, Ministry of Education**
  - **d) NGOs**
  - **e) USAID**
  - **f) UNICEF**

Planning and coordination activities include the annual national meetings and the national NGO coordination meeting, as well as an estimate of time just "keeping in touch."

5. General Program Development, and Administration

This category is a catch-all/left-overs category which includes: institutional development/capacity building, advocacy, and general administration.

***This list is not an all-inclusive, comprehensive section: some planning and coordination activities are included in the General Program Development/Administration section.**

A. TAG Cost Algorithms

TAG's costs of the different activities listed in *Table 3-5* have been developed using a combination of methodologies. Working closely with TAG staff, algorithms were devised to identify the personnel, travel, time, and materials inputs of the major TAG activities. These include: initial and refresher training (both disaggregated by district, health post and community/FCHV level), as well as district-level orientation; promotion activities; and the mini-surveys.

This analysis uses a hypothetical calendar year of operations for a number of reasons. Since the frequency, and in some cases the intensity with which some of these activities have been undertaken has varied over the life of the project, the particular level or mix of activities actually undertaken by the TAG in any given year may vary somewhat from those identified here. The program has also been dynamic; the activities mix of the TAG has not remained static, nor has the content of many of the activities. The training curricula, for instance, have evolved markedly over the course of the program.

Furthermore, the TAG has experimented with various efforts, some of which have proven successful, and been adopted as part of the standard program, and others that were one-time undertakings because they were not successful, too expensive or not considered institutionally viable. For instance, the strategy of having the districts' statistical assistants oversee the mini-surveys was abandoned after 16 of them were trained because of turnover and because they were generally not the same individuals the DHOs sent to do the work. Also, the TAG, in its early phase, started to go into schools to educate children about the importance of vitamin A. However, because of time constraints, other responsibilities and a relatively small programmatic payoff, this activity was stopped. The TAG also began a new type of monitoring and supervision in December 1996 which involves convening local focus groups to review the recently completed capsule distribution campaign. These one-time, or discontinued activities no doubt cost money, but they cannot be regarded as core activities of the NVAP and are therefore not included in this analysis.

All told, the year which most closely approximates the level and mix of activities analyzed here is 1996. Even in 1996, however, there were some deviations from the number and type of activities identified in this cost analysis. For example, the mini-survey conducted following the April capsule distribution day covered 17 districts, the largest number of districts ever covered in one round of surveys.[12] In October, the TAG did not do any mini-surveys, but instead hired a private firm to survey only the five newly incorporated mountain districts. In sum, while the activities in the hypothetical year used for the cost estimates are very similar to the type, number and level of intensity of activities conducted by the TAG in 1996, they are not exactly the same.

The algorithms developed to estimate the TAG costs for each of the three types and sites of training are presented in *Tables A-4* through *A-6* in *Annex A*.

B. Training Costs

The training activities related to capsule distribution have already been described, but a word about the nomenclature used in this report is in order here, to avoid confusion. The TAG provides three different types of training in vitamin A. Its largest and most expensive activity consists of training MOH personnel and others at the district, health post and community/FCHV levels. Training at all three of these levels consists of an initial training session of three days and a refresher training of two days. After the TAG-led initial and refresher vitamin A-specific training sessions, the district has an additional one-day orientation training when the MOH is taking over the program. Throughout this report, when "training" is referred to, we are referring to all of these training activities.

As has already been noted, however, these are not the only training activities of the NVAP. In addition, the TAG provides vitamin A-specific training (again both an initial and a refresher course) to interested municipalities. Whenever this activity is referred to in this report, it is labeled specifically "municipality training." The third general type of training that TAG provides is treatment protocol training, which is for physicians and nurses.

A large portion of the cost of the NVAP consists of the vitamin A-specific training sessions provided by the TAG at district-, health post- and community-level meetings. As already noted,

[12] This appears to be the maximum number of districts that the TAG could survey given its other responsibilities and duties and the still-growing number of districts in the program. This is suggested by calculating the number of full-time equivalent program coordinators, program coordinator supervisors and trainers required to perform all of their activities as estimated in the cost calculations. The sum of the time of the various activities of the 18 TAG training cadre—the program coordinators, program coordinator supervisors and trainers—equals 16.7 full-time equivalents.

most of the direct costs of these meetings are paid for by MASS. MASS prepares a budget for every TAG training session and assigns a staff person to attend each session. The MASS representative: 1) pays the rent of the training site, when necessary; 2) pays trainees their travel and per diem allowance; 3) arranges and pays one administrative assistant to provide general support in conducting the meeting and particularly in paying out and obtaining signed receipts for payment of per diems and training allowances; 4) provides and pays one or two laborers to provide general support in setting up the meeting place, preparing tea, copying and handing out materials; 5) arranges and pays for tea and biscuits for breaks; and 6) provides and operates the equipment necessary to show training films or video cassettes.

MASS also pays the MOH personnel who serve as trainers in these sessions a travel per diem and training allowance. It does not, however, pay TAG trainers or their expenses. These costs are paid for by the TAG, as are all of the costs of the other non-training-related activities which the TAG undertakes (promotion, monitoring and supervision, planning and coordination, and general program development and administration).

C. The MASS/Logistics Cost Algorithms

MASS records of its actual payments were used to develop algorithms for costing logistics support. Constructing these algorithms involved identifying the number of participants of each type attending each type and site of training in each ecological zone. Since MASS does not maintain electronic files containing this information, it was necessary to develop estimates from hand-written records. Since these data were not aggregated, it was necessary to develop from these individual training session records profiles of what could be regarded as a prototype, and to generalize the prototype across all other training sessions of that type. For each type of training, it was necessary to develop two different prototypes: 1) one to identify the number and mix of trainees, and 2) one to identify the specific cost reimbursement rates associated with each training logistic component for each level. Separate training session profiles were developed for 1) a district-, 2) a health post- and 3) a community (FCHV)-level training in each of the three ecological zones, for a total of nine prototypes. The nine prototypes are shown in *Tables A-7 through A-15 in Annex A*. *Table A-16* summarizes the nine prototypes.

MASS was very helpful in providing detailed information essential to developing these prototypes, including detailed budgeted and actual cost profiles for each of the three training levels in six representative districts (two for each of the three ecological zones), and summaries of the numbers and types of trainees at each of the three levels of training in these same six districts. These documents were used to develop a first draft of the prototypes which underwent minor modifications after being compared with actual data from the six representation districts.[13]

The resulting algorithm was used to estimate the number and composition of trainees at each level of training (averaged over all three ecological zones). These estimates are presented in *Table 3-6*, which may be compared with the actuals presented back in *Table 1-2*. As seen in *Figure 3-2*, the cost model-based estimates very closely approximate the actual number and composition of NVAP trainees.

[13] The minor modifications were made to ensure that the total numbers of each type of trainees as estimated by the cost model were reasonably close to the reality. This required making an assumption about the number of training centers per health district, which when combined with the actual number of health posts per district and the estimated number and composition of trainees at each level of training (developed on the basis of the MASS-provided "most representative" district examples), was used to generate an estimate of the total number and the composition of participants at each level of training in a given ecological type of district.

D. IEC/Promotion

In each district where the TAG team has already conducted both initial and refresher training, a TAG person—usually a Program Coordinator—returns to undertake activities to raise the population's awareness of the upcoming distribution of vitamin A capsules. In districts where the TAG is currently conducting either initial or refresher training, these same promotional activities are carried out by the TAG personnel who are conducting the training. Since TAG research has shown that many Nepali women do not recall dates well, the promotion periods are scheduled no more than three weeks before the distribution campaigns to ensure good coverage.

Promotional activities include radio and television advertisements broadcast on nation-wide channels, radio spots on regional channels, movie house slides that are shown before the feature film, distribution of pamphlets, local announcements, playing specially prepared vitamin A audio cassettes at village gatherings and spray painting messages.

The TAG and HKI both have budgets for promotional activities. In addition, UNICEF prints and gives to the TAG for distribution roughly 25,000 leaflets per capsule distribution campaign. UNICEF also gives the TAG monies (in 1996, about US$7,000) to be used for additional printed materials, and for radio and television spots. UNICEF's five regional offices also support the development and broadcasting in Nepali, as well as in five dialects, of vitamin A campaign radio spots, which are broadcast on radio channels with regional coverage. The TAG information specialist also produces semi-annually and distributes 12,000 copies of an 18-page newsletter, *AMRIT*. The development and printing costs of the newsletter, and the remainder of the TAG information specialist's time are included in the estimates of the "promotion" activity costs.

E. Monitoring and Supervision

The primary monitoring and supervising activity of the NAVP consists of mini-surveys of the mothers or caretakers of the target-aged children, and of the FCHVs. The surveys are conducted in the weeks immediately after the semi-annual campaign distribution.

The first mini-surveys covered all of the districts in the NVAP. Eventually, however, the cumulative number of districts incorporated into the project came to exceed the capacity of the TAG to survey all of the them. Thereafter, the TAG surveyed all of the newly incorporated districts, three-quarters of those in the previous phase, and half of the districts in each of the earlier phases of the program. Given its current staffing levels and its current responsibilities, the TAG has the capacity to conduct mini-surveys in about 17 districts per distribution day (i.e., twice a year).

Although surveys have been conducted after each of the eight capsule distribution campaigns to date, the results of only five of the surveys have been written up. All but one of the eight surveys were conducted by the TAG, which also wrote four of the five Mini-Survey Monitoring Reports. The survey following the October 1996 capsule distribution and its write-up were done by a local consulting firm, New Era, under contract. The hiring of New Era was largely in response to criticism that the mini-surveys were not objective. *Annex D* contains a discussion of the dual purposes of the mini-surveys, presents an analysis and discussion of key findings over the life of the project and makes some suggestions as to how to improve the use of this monitoring tool.

The TAG costs of monitoring and supervision are the costs of conducting the mini-surveys plus the remuneration of the TAG monitoring specialist.

The central-, regional- and district-level MOH officials also supervise the vitamin A capsule distribution days. In the first year of the project, the meager level of per diem paid by the Government of Nepal and shortages of other critical inputs (e.g., gasoline) discouraged this supervision. Believing that this was an important activity contributing to the effectiveness and sustainability of the NVAP, USAID has provided a budget to pay for the incremental costs of supervision. These monies have been allocated by USAID to the government's Comptroller General (the Red Book account).

F. Planning/Coordination and General Program Development and Administration

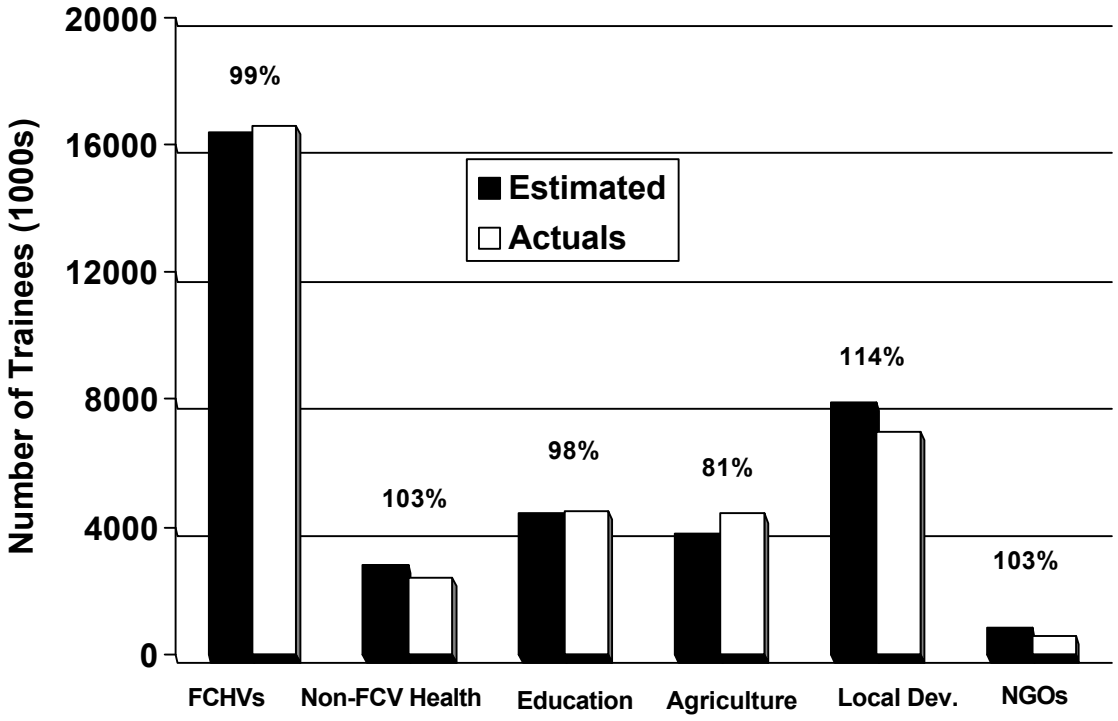
These two categories of activities represent residual costs. After the resources required to produce all of the other activities—which are more discrete and readily identifiable—were quantified, their total costs were summed and subtracted from the total 1996 expenditures of the NVAP. The residual was the total of: 1) planning and coordination and 2) general program development and administration. Similarly, personnel not assigned to particular activities were assigned to these two residual categories of activities. Rather than leave this entire residual in a single, non-descript block, an effort was then made to identify and separate out planning and coordination activities, and the remainder was labeled "general program development and administration."

Table 3-6
Breakdown of NVAP Training Participants by Type and Site of Training

	DISTRICT TRAINING		HEALTH POST TRAINING			COMMUNITY (FCHV) TRAINING			GRAND TOTAL	
TYPE OF INITIAL TRAINING PARTICIPANT	AVG. NO. PER DISTRICT	32 DISTRICT TOTAL	AVG. NO. PER HEALTH POST	AVG. NO. PER DISTRICT	32 DISTRICT TOTAL	AVG. NO. PER H.P. TRAINING CENTER	AVG. NO. PER DISTRICT	32 DISTRICT TOTAL	AVG. NO. PER DISTRICT	32 DISTRICT TOTAL
HEALTH	28	896	5	55	1,760	26	572	18,304	655	20,960
EDUCATION	2	64	10	110	3,520	0	0	0	112	3,584
AGRICULTURE	4	128	1	11	352	5	110	3,520	125	4,000
NGOs & OTHERS	1	32	1	11	352	1	22	704	34	1,088
LOCAL DEVELOPMENT	3	96	3	33	1,056	0	0	0	36	1,152
WOMEN IN DEVLPMNT	10	320	1	11	352	0	0	0	21	672
VDC/WARD MEMBERS	0	0	2	22	0	9	198	6,336	220	6,336
TOTAL	48	1,536	23	253	8,096	41	902	28,864	1,203	38,496

SOURCE: Author's estimates based on MASS and TAG data.

Figure 3-2
Cost Model Estimates of Breakdown of Trainees for Initial NVAP
Training as a Percent of the Actual Numbers Trained



3.3.2 Results of the Analysis of Annual, Incremental of the Nepal National Vitamin A Program

The cost estimates in this and the next two sections are all reported in current rupees.[14]

3.3.2.1 Total Training Costs

Figure 3-3 presents the total training cost per district. These estimates include the costs of the TAG and MASS. A more disaggregated analysis of these totals, broken down by district, health post and community level, is presented in *Table 3-7*. In the highest cost districts, the hills, an average of 30 percent more is spent on all training than in the average district in the lowest cost zone, the terai.

[14] The exchange rate used throughout this report is US$1 = Rs. 55.88 .

Figure 3-3
Total Cost of TAG Training by Type of District (TAG + MASS Costs)
(millions of Rupees)

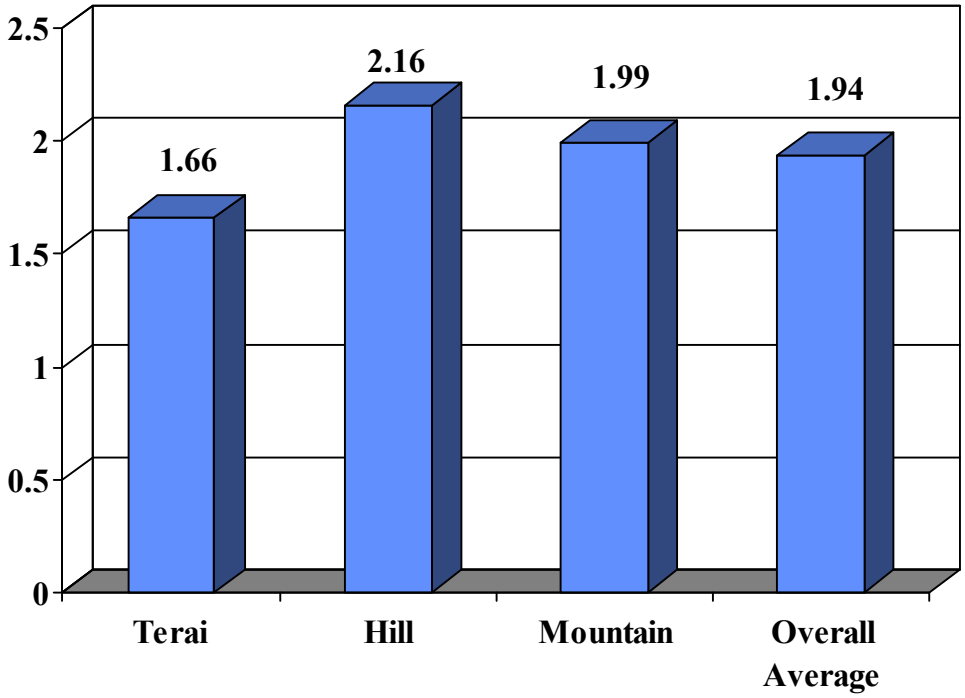


Figure 3-4 and *Table 3-8* show the training costs per trainee. These show that the average training cost per trainee varies even more across ecological zones, with the average cost of Rs. 2,398 per trainee in the mountain districts, nearly double that of the average of Rs.1,213 in the terai, and 36 percent higher than the average of Rs.1,761 for all zones.

The major sources of variation in the total cost of training in the three ecological zones are:

1) the difference in the average number of FCHVs trained at the community level, which ranges from only 19 in the mountain districts, to 40 in the hills districts and 52 in the terai;

2) the difference in the average number of training sites per health post, which ranges from the mountain districts' high of 2.4, to 1.7 in the hills and 1.0 in the terai;

3) variation in the average number of health posts per district, with the mountain districts having smallest number, 9.8, the terai, 10.4, and the hills districts the most, 10.8;

4) variation in the average number of per diem travel days. In the terai, where travel distances are relatively short due to population density, the terrain is easier to navigate and there is a relatively good and inexpensive public transportation system, no per diem travel days are usually paid. In the hill and mountain areas, four days of per diem are allocated on average.

Figure 3-4
Total Training Cost Per Trainee (TAG + MASS Costs) (in Rupees)

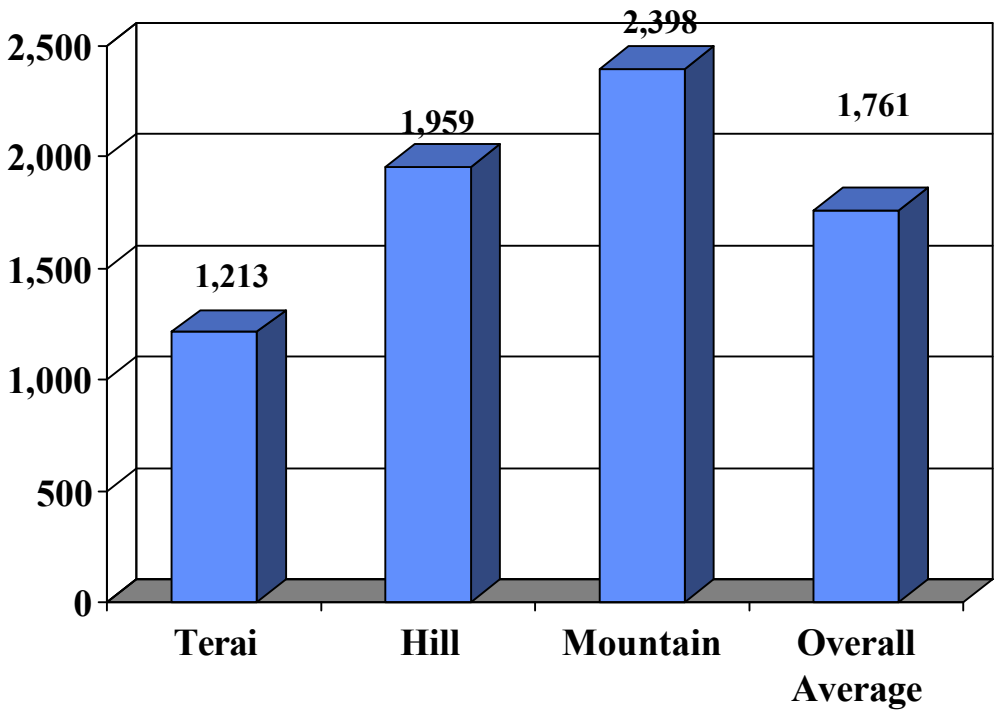


Table 3-7
Total Training Costs Per District By Level/Site of Training in Rupees

ECOLOGICAL ZONE OF DISTRICT	LEVEL / SITE OF TRAINING DISTRICT**	HEALTH POST	COMMUNITY	TOTAL TRAINING COSTS
A. TERAI	255,777	521,422	1,014,744	1,661,178
B. HILL	284,945	757,162	1,244,055	2,155,397
C. MOUNTAIN	283,885	660,272	1,181,569	1,994,961
D. DISTRICT AVG. OF THE 32 PRIORITY DISTRICTS	274,869	646,285	1,146,789	1,937,179

*** Includes TAG costs and MASS logistics costs.**

****District costs include 1-day orientations.**

Table 3-8
Average Total Training Costs Per Trainee by District and Level/Site of Training in Rupees

ECOLOGICAL ZONE OF DISTRICT	LEVEL / SITE OF TRAINING DISTRICT**	HEALTH POST	COMMUNITY	TOTAL TRAINING COSTS
A. TERAI	5,329	2,182	938	1,213
B. HILL	5,938	3,053	1,547	1,959
C. MOUNTAIN	5,914	2,935	2,114	2,398
D. DISTRICT AVG. OF THE 32 PRIORITY DISTRICTS	5,726	2,721	1,407	1,761

*** Includes TAG costs and MASS logistics costs.**

****District costs include 1-day orientations.**

3.3.2.2 Total Training Costs Per Municipality

Table 3-9 presents the total costs of conducting training at the municipality level. The total cost of an initial training in an average municipality is Rs.44,428, while that of a refresher training is Rs.19,202. Thus the total cost of providing a full course of training—initial and refresher—in a municipality is Rs.63,630. The NVAP provides an average of about eight such training per year.

3.3.2.3 Total Training Costs Per Treatment Protocol Training Session

Figure 3-5 and *Table A17* in the Annex present the cost estimates of treatment protocol training. These one-session training are estimated to cost Rs.72,152 in a terai district and Rs.111,252 in either a hill or a mountain district. Thus, treatment protocol training in the hill and mountain districts costs an average of 54 percent more than in a terai district.

3.3.2.4 Promotion Costs

Table 3-10 presents NVAP promotion costs broken down into promotion activities for capsule distribution campaign days (e.g., radio and television spots, the printing and distribution of leaflets and the cost of TAG personnel field visits), publishing the newsletter, *AMRIT*, and other general costs. Two-thirds of all promotion costs consist of capsule distribution campaign day-related activities. The *AMRIT* newsletter costs about Rs.135,000 to produce per year (12,000 copies of two issues per year). Total promotion costs average about Rs.181,000 per district per year, a relatively small amount compared to the training.

3.3.2.5 Monitoring and Supervision Costs

Table 3-11 shows the NVAP costs of monitoring and supervision. This category includes the costs of the mini-surveys, other general TAG monitoring costs, and the money that USAID allocates to the MOH for field visits by central, regional and district-level officials during capsule distribution campaigns. Total monitoring and supervision costs per district average nearly Rs.317,000. Nearly 80 percent of these costs are devoted to the mini-surveys.

3.3.2.6 Planning/Coordination Costs

The NVAP's planning and coordination costs—which, as noted earlier, are not all-inclusive—are estimated to cost a little over four million rupees annually, an average of about Rs.126,000 per district.

3.3.2.7 General Program Development and Administration

This residual category is the largest single "activity" cost of the NVAP, accounting for Rs.24.3 million, 37 percent of the total cost of the NVAP.

3.3.2.8 Total Annual, Incremental, Recurrent NVAP Costs: By Activity and Agency

Figure 3-6 shows the distribution of the NVAP's total annual recurrent costs by activity and *Figure 3-7* by agency. This information is also presented in *Table 3-12*. The single most important cost category is general program development and administration, which accounts for 38 percent of all NVAP costs. Overall, training accounts for 33 percent of the total costs of the NVAP, while promotion, and monitoring and supervision account for 9 percent and 7 percent, respectively. The cost of vitamin A capsules provided by UNICEF constitutes a mere 9 percent of the total costs of the NVAP.

Table 3-9
MUNICIPALITY TRAINING COSTS
(Rupees)

TYPE OF TRAINING COST COMPONENT	NO. OF PART.	RATE	NO. OF DAYS	TOTAL COST
INITIAL TRAINING: TAG Training Costs				
1. PER DIEM COSTS (Trainers)	**3**	**450**	**4**	**5,400**
2. TRANSPORTATION COSTS (Vehicles)	**1**	**4,000**	**4**	**16,000**
3. TAG PERSONNEL COSTS (Trainers)	**1**	**379**	**4**	**4,553**
4. MATERIALS				
25 Rupees per trainee	**25**	**25**		**625**
200 Rupees per trainee	**30**	**200**		**6,000**
TOTAL TAG INITIAL TRAINING COSTS:				**32,578**
Mass Logistics Support Costs				
1. TRAINING ALLOWANCE				
1 Mayor	**1**	**150**	**2**	**300**
1 Vice Mayor	**1**	**150**	**2**	**300**
1 Health-related Person (Municipality)	**1**	**150**	**2**	**300**
1 Executive Officer (Municipality)	**1**	**150**	**2**	**300**
1 Chief DHO (and/or PHO)	**1**	**150**	**2**	**300**
4 Others	**5**	**150**	**2**	**1,500**
5	**15**	**60**	**2**	**1,800**
30 Volunteers	**30**	**60**	**2**	**3,600**
SUBTOTAL	**55**			**8,400**
2. SUPPORT STAFF				
Administrative Assistant	**1**	**75**	**2**	**150**
Laborer	**2**	**50**	**2**	**200**
3. REPREODUCTIONS & OTHER MATERIALS				**300**
4. RENTAL (1 hall @ 300 per day)				**300**
5. MEETING EXPENSES	**50**	**25**	**2**	**2,500**
TOTAL MASS INITIAL TRAINING COSTS:				**11,850**
TOTAL INITIAL TRAINING COSTS (TAG + MASS) PER MUNICIPALITY:				**44,428**

Table 3-9
(Continued)
MUNICIPALITY TRAINING COSTS
(Rupees)

TRAINING COST COMPONENT	NO. OF PART.	RATE	NO. OF DAYS	TOTAL COST
REFRESHER TRAINING: TAG Training Costs				
1. PER DIEM COSTS (Trainers)	**3**	**450**	**2**	**2,700**
2. TRANSPORTATION COSTS (Vehicles)	**1**	**4000**	**2**	**8,000**
3. TAG PERSONNEL COSTS (Trainers)	**3**	**379**	**2**	**2,277**
TOTAL TAG REFRESHER TRAINING COSTS:				**12,977**
MASS Logistics Support Costs				
1. TRAINING ALLOWANCE				
1 Mayor	**1**	**150**	**1**	**150**
1 Vice Mayor	**1**	**150**	**1**	**150**
1 Health-Related Person (Municipality)	**1**	**150**	**1**	**150**
1 Executive Officer (Municipality)	**1**	**150**	**1**	**150**
1 Chief DHO (and/or PHO)	**1**	**150**	**1**	**150**
4 Others	**5**	**150**	**1**	**750**
5	**15**	**60**	**1**	**900**
30 volunteers	**30**	**60**	**1**	**1,800**
SUB-TOTAL:				**4,200**
2. SUPPORT STAFF				
Administer Assistant	**1**	**75**	**1**	**75**
Laborer	**2**	**50**	**1**	**100**
3. REPRODUCTIONS & OTHER MATERIALS				**300**
4. RENTAL				
(1 hall @ 300 per day)				**300**
5. MEETING EXPENSES	**50**	**25**	**1**	**1,250**
TOTAL MASS REFRESHER TRAINING COSTS:				**6,225**
TOTAL REFRESHER TRAINING COSTS (TAG+MASS) PER MUNICIPALITY:				**19,202**
TOTAL TRAINING COSTS PER MUNICIPALITY: (INCLUDES INITIAL & REFRESHER TRAININGS, TAG PLUS MASS COSTS)				**63,630**

Figure 3-5
Average Treatment Protocol Training Costs Per District in Rupees

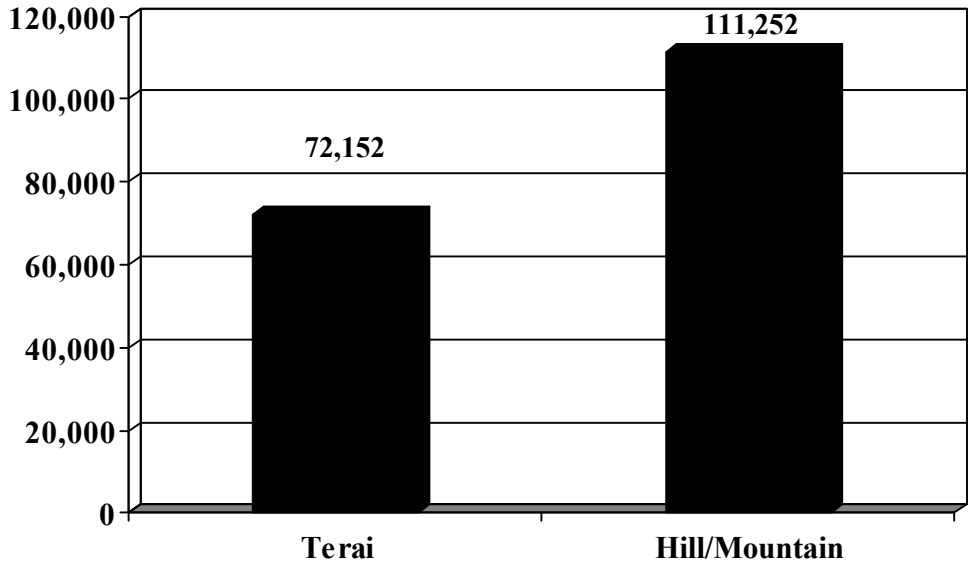


Figure 3-6
Composition of the NVAP's Total Annual, Incremental Costs by Activity/Costs Center

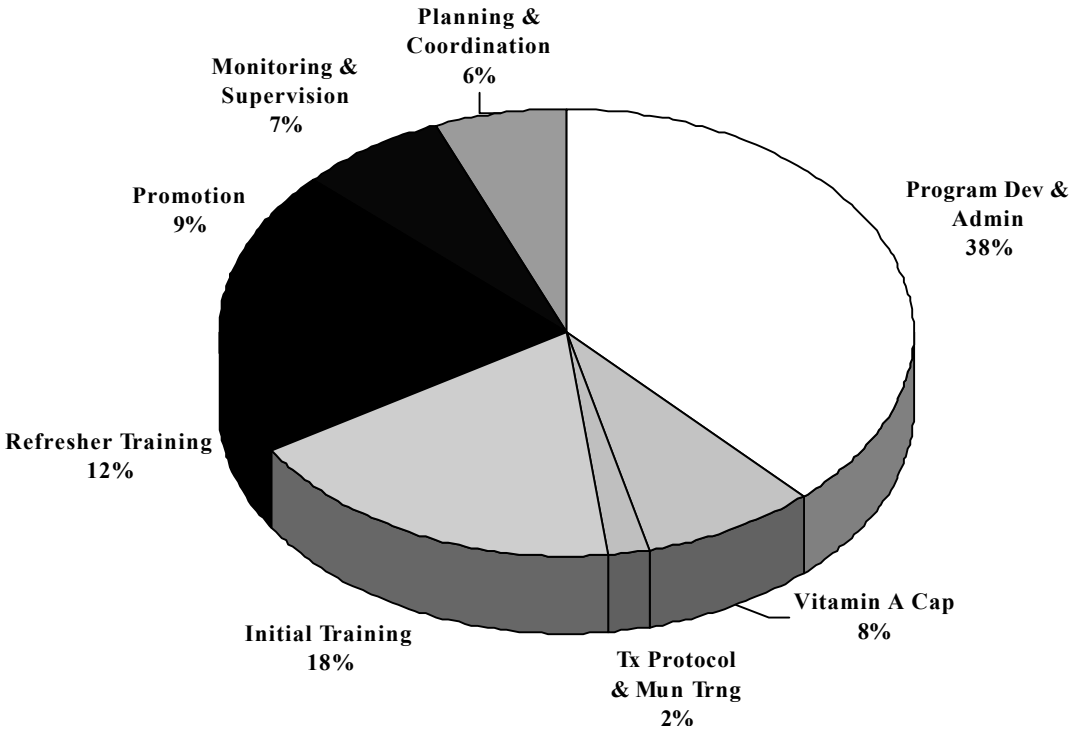


Table 3-10
Promotion Costs

A. VITAMIN A CAPSULE DISTRIBUTION DAY PROMOTION	
1. PROMOTION COMMUNICATION COSTS	
A. PER DISTRIBUTION:	**15,000**
B. PER DISTRICT PER YEAR:	**30,000**
2. PROMOTION MATERIALS PRODUCTION COSTS	
A. PER DISTRIBUTION:	
On-site production costs per district	**5,000**
B. PER DISTRICT PER YEAR:	**10,000**
3. TAG PERSONNEL COSTS FOR PROMOTION PERIOD	
(CAMPAIGN and DISTRIBUTION: 16 days travel, 16 days on-site)	
A. PER DISTRIBUTION:	
1) PER DIEM COSTS:	
20 persons for 16 days at 450/day	**144,000**
2) SALARY COSTS:	**242,694**
20 persons for 32 days at 450/day	
640 person days (=2.46 FTEs) at 98,656/year	
3) TOTAL PERSONNEL	**386,694**
B. PER YEAR:	**773,388**
C. PER DISTRICT PER YEAR:	**33,626**
4. TAG TRANSPORTATION / VEHICLE COST FOR PROMOTION	
A. PER DISTRIBUTION:	
5 vehicles at 4,000/day for 16 days =	**320,000**
B. PER YEAR:	**640,000**
C. PER DISTRICT PER YEAR:	**27,826**
5. UNICEF: LEAFLETS AND RADIO ANNOUNCEMENTS	
40,000 leaflets were produced and distributed to the priority districts for distributing in the two week period before VA capsule distribution day. The average cost per district (1 rupee/leaflet) is:	**1,250**
Each of the five regional offices spends approximately Rs. 15,000 per distribution developing radio spots in native languages and paying for their being broadcasted twice a day for 14 days (12 immediately before and the two distribution days).	**4,700**
The UNICEF Central Office in Nepal contributed Rs. 388,112 , or about 12,200 per district to TAG for promotional activities in 1996.	**12,200**
DISTRIBUTION DAY PROMOTION COST PER DISTRICT PER YEAR:	**119,602**
B. OTHER, MORE GENERAL PROMOTION ACTIVITIES	
1. AMRIT (Newsletter)	
TAG staff and consultants' time:	**14,800**
12,000 issues, 2 per year, 5 rupees per issue:	**120,000**
TOTAL	**134,800**
2. GENERAL PROMOTION	
(The rest of the TAG IEC person's time plus TAG and HKI expenditures on advertising, promotions, posters and charts)	**1,814,160**
TOTAL ANNUAL COST OF OTHER, MORE GENERAL PROMOTION ACTIVITIES	**1,948,960**
PRORATED SHARE PER DISTRICT	**60,905**
TOTAL AVERAGE PROMOTION COSTS PER DISTRICT PER YEAR:	**180,507**

Table 3-11
Monitoring and Supervision Costs

A. THE COST OF CONDUCTING THE MINI-SURVEYS		
1. TAG PERSONNEL COSTS PER MINI-SURVEY		
20	**Program Coordinators and Supervisors**	
70	**Days per distribution**	
450	**Per diem**	
379	**TAG average daily personnel salary**	
1,160,600	**TOTAL TAG PERSONNEL COST PER MINI-SURVEY**	
2. TAG TRANSPORTATION COSTS PER MINI-SURVEY		
3	**Vehicles**	
70	**Days**	
4,000	**Vehicle rental cost per day**	
840,000	**TOTAL TAG TRANSPORTATION COST PER MINI-SURVEY**	
Interview forms, etc. per mini-survey		**100,000**
4. TOTAL COST PER MINI-SURVEY:		**2,100,600**
5. TOTAL COST PER MINI-SURVEY PER DISTRICT:		**123,565**
(Based on 17 districts surveyed in April 1996)		
TOTAL COST PER MINI-SURVEY PER DISTRICT PER YEAR:		**247,129**
(Based on 17 districts surveyed in April 1996)		
B. OTHER TAG MONITORING COSTS		
(Remainder of Monitoring Specialist's time prorated over 32 districts)		**7,973**
C. MOH COSTS OF SUPERVISING PER YEAR		
1. TRAVEL ALLOWANCES		
A. CENTRAL LEVEL		**160,000**
B. REGIONAL LEVEL		**175,000**
C. DISTRICT LEVEL	**(Rs. 31,868 per district)**	**1,019,776**
2. TRANSPORTATION		**335,909**
3. FUEL FOR CENTRAL LEVEL SUPERVISION		**115,000**
4. SUPERVISION	**(Rs. 40,000 per district)**	**160,000**
TOTAL MOH SUPERVISION COSTS:		**1,965,685**
PRORATED MOH SUPERVISION COSTS PER DISTRICT (32):		**61,428**
TOTAL MONITORING & SUPERVISION COSTS PER DISTRICT:		**316,530**

Figure 3-7
Composition of the NVAP's Total Annual, Incremental Costs by Agency

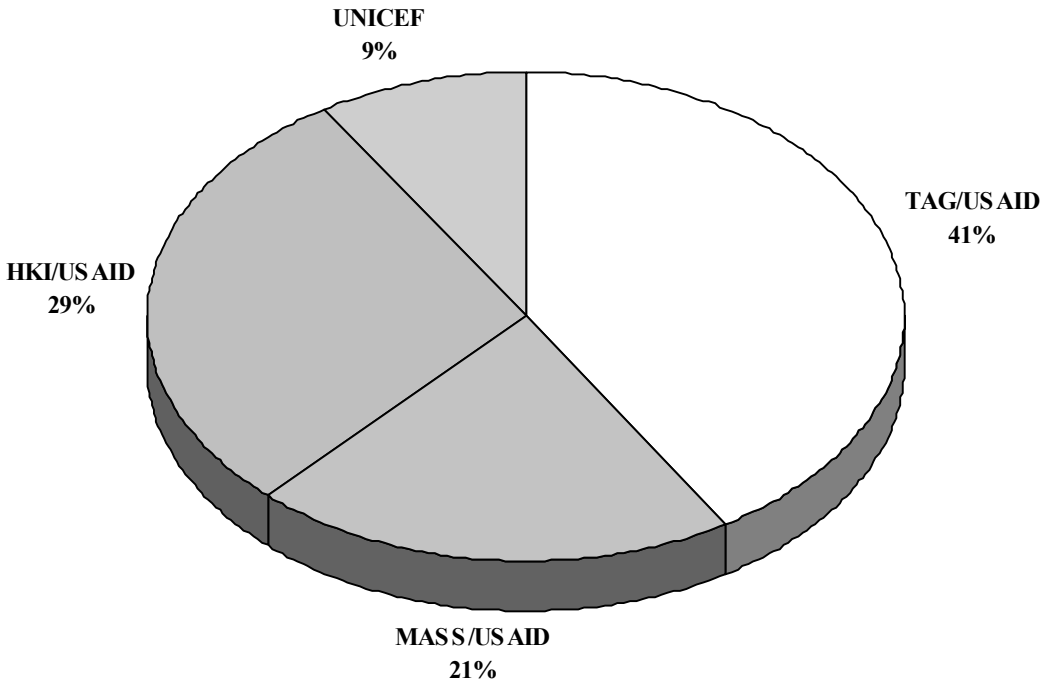


Table 3-12
Total Annual, Incremental Costs of the NVAP by Activity/Cost Center and Agency

ACTIVITY/COST CENTER	TAG COSTS	LOGISTICS (MASS) COSTS	HKI COSTS	UNICEF COSTS	TOTAL NON-MOH COSTS	PERCENT DISTRIBUTION
1. INITIAL TRAINING	4,759,806	6,524,300			11,284,106	18%
2. REFRESHER TRAINING	2,517,138	6,165,540			7,682,678	12%
3. ORIENTATION TRAINING	308,830	99,820			408,650	1%
4. TREATMENT PROTOCOL TRAINING	453,887	382,550			836,437	1%
5. MUNICIPALITY TRAINING	349,497	94,800			444,297	1%
6. PROMOTION	4,873,689		233,100	538,112	5,644,901	9%
7. MONITORING & SUPERVISION	4,209,173				4,209,173	7%
8. PLANNING & COORDINATION						
a) PERSONNEL	308,124		2,939,030		3,247,154	5%
b) OTHER	707,742		83,250		790,992	1%
c) TOTAL	1,015,866		3,022,280		4,038,146	6%
9. GENERAL PROGRAM DEV. & ADMIN. (I.E., ALL OTHER, UNASSIGNED TAG COSTS)						
a) PERSONNEL	1,122,012		6,011,233		7,133,245	11%
b) OTHER	6,554,147		9,500,496		16,054,643	25%
c) TOTAL	7,676,159	1,153,099	15,511,729		24,340,987	38%
10. VITAMIN A CAPSULES				5,002,326	5,002,326	8%
TOTAL: Rupees	26,164,045	13,420,109	18,767,109	5,540,438	63,891,700	100%
TOTAL: US$	471,424	241,804	338,146	99,828	1,151,202	
PERCENT OF FINANCING BY AGENCY:	41.0%	21.0%	29.4%	8.7%	100.0%	

Tables 3-13, 3-14 and *3-15* present the total costs and the proportion of total costs accounted for by each NVAP activity of the TAG, MASS and HKI, respectively. *Figures 3-8, 3-9* and *3-10* show the composition of each agency's expenditures by type of activity. As judged by their historical average level, the TAG's costs may initially appear high. The reader must recall, however, that this is not an average year. Rather, this is cost of a year (most closely approximated by 1996) when the project was at its peak level of activity, with two phases each of initial, refresher and orientation training, and two mini-surveys in 15 to 20 districts each.

3.3.2.9 Estimates of Average Incremental Costs Per Child

UNICEF's vitamin A capsule costs are based on the average actual cost (including freight) paid by UNICEF in its most recent bulk purchase (US$0.021 per capsule) multiplied by the quantity of vitamin A capsules which the TAG expected to distribute in the April 1997 capsule distribution campaign in the 32 NVAP districts (which included an average of 6,700 for each of the 23 municipalities).[15] Experience has lead the TAG to add a buffer to its estimated needs to take into account wastage. For the April 1997 campaign distribution, this buffer stock was the equivalent of an additional 21 percent of the estimated need. The requirements for the April 1997 distribution campaign are estimated at 1,993,000 capsules for the 32 districts, plus 153,000 for the 23 municipalities, plus a buffer stock of 450,660, for a total of 2,596,660 capsules.

There is no universally accepted measure of the coverage of the NVAP. The TAG estimates that its coverage is about 85 percent of the eligible population of 1,993,000 children aged 6 to 60 months. A mini-survey conducted by New Era in five districts in Karnali Zone found the coverage to be above 90 percent. The 1996 Family Health Survey (FHS) estimated that nationally (not only in the 32 priority districts), the coverage of the NVAP is about 32 percent for children aged 6 to 35 months, and in the terai where all but one of its districts are priority districts) the rate is 53 percent. The 1995 Nepal National Multipurpose Interview Survey (NMIS) found that in the six priority districts that it surveyed, 71 percent of the children aged 6 to 35 months had received at least one vitamin A capsule, and 35 percent had received two or more.

Table 3-16 presents several measures of the average incremental cost of the NVAP per child, based on different estimates of coverage, including the TAG estimate and modifications of the FHS and NMIS estimates. We have taken the FHS finding of 53 percent in the terai and assumed that it also holds for other districts covered by the NVAP. Similarly we have taken the NMIS findings from the six districts and assumed the finding of 71 percent coverage was also typical of all 32 NVAP districts. In doing so, we came up with estimates of the average total cost of a child receiving a single vitamin A capsule of from Rs.45 to 60 (US$0.81 to US$1.09), and for a child receiving two capsules a year, from Rs.38 to 92 (US$0.68 to US$1.65). If we exclude the one-time costs of training, the costs are: for one capsule a year, Rs.31 to 41 (US$0.55 to US$0.71), and for two capsules a year, Rs.26 to 62 (US$0.46 to US$1.12).

[15] Originally, estimates of the number of capsules needed were developed by simply taking estimates by the United Nations Fund for Population Activities (UNFPA) of the target population (ages 6 to 60 months) of the priority districts in which the NVAP was working and adding 10 percent of the target population throughout the country to account for the estimated number of capsules needed for treatment for six months.

Table 3-13
Total Annual, Incremental Costs of the TAG by Activity/Cost Center

ACTIVITY / COST CENTER	ANNUAL COST	PERCENT DISTRIBUTION
1. INITIAL TRAINING	4,759,806	18%
2. REFRESHER TRAINING	2,517,138	10%
3. ORIENTATION TRAINING	308,830	1%
4. TREATMENT PROTOCOL TRAINING	453,887	2%
5. MUNICIPALITY TRAINING	349,497	1%
6. PROMOTION	4,873,689	19%
7. MONITORING & SUPERVISION	4,209,173	16%
8. PLANNING & COORDINATION		
a) PERSONNEL	308,124	1%
b) OTHER	707,742	3%
c) TOTAL	1,015,866	4%
9. GENERAL PROGRAM DEVELOPMENT & ADMIN. (I.E., ALL OTHER, UNASSIGNED TAG COSTS)		
a) PERSONNEL	1,122,012	4%
b) OTHER	6,554,147	25%
c) TOTAL	7,676,159	29%
TOTAL TAG COSTS	26,164,045	100%

Table 3-14
Total Annual, Incremental Costs of MASS by Activity/Cost Center

ACTIVITY/COST CENTER	ANNUAL COST	PERCENT DISTRIBUTION
1. Initial Training	6,524,300	49%
2. Refresher Training	5,165,540	38%
3. Orientation Training	99,820	1%
4. Treatment Protocol Training	382,550	3%
5. Municipality Training	94,800	1%
6. MASS Fee	1,153,099	9%
TOTAL TAG COSTS	13,420,109	100%

Table 3-15
Total Annual, Incremental Costs of HKI by Activity/ Cost Center

ACTIVITY / COST CENTER	ANNUAL COST	PERCENT DISTRIBUTION
1. PROMOTION	233,100	1%
2. PLANNING & COORDINATION		
a) PERSONNEL	2,939,030	16%
b) OTHER	83,250	0%
c) TOTAL	3,022,280	16%
3. GENERAL PROGRAM DEV. & ADMIN. (I.E., ALL OTHER, UNASSIGNED HKI COSTS)		
a) PERSONNEL	6,011,233	32%
b) OTHER	9,500,496	51%
c) TOTAL	15,511,729	83%
TOTAL HKI COSTS	18,767,109	100%

Figure 3-8
Composition of the Annual, Incremental Costs of the TAG

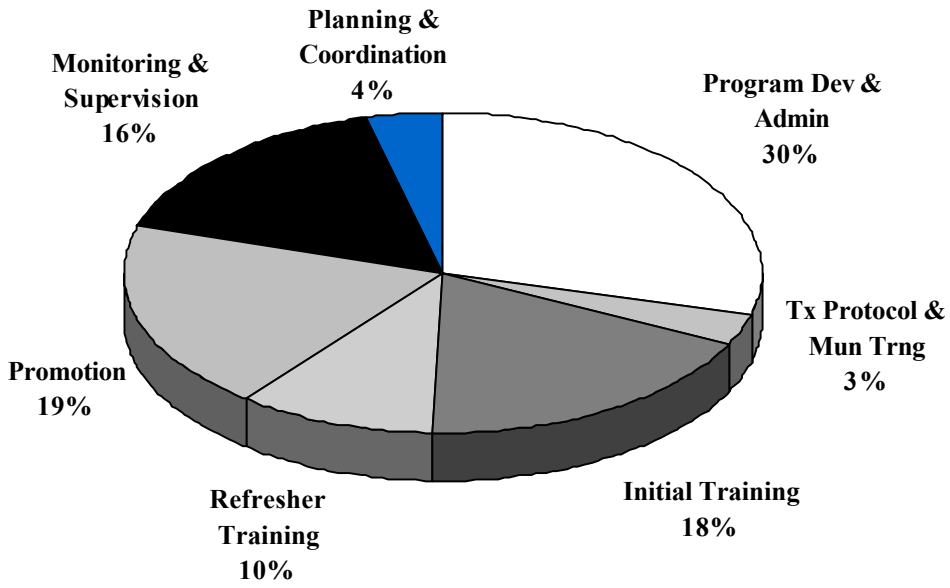


Figure 3-9
Composition of the Annual, Incremental Costs of MASS

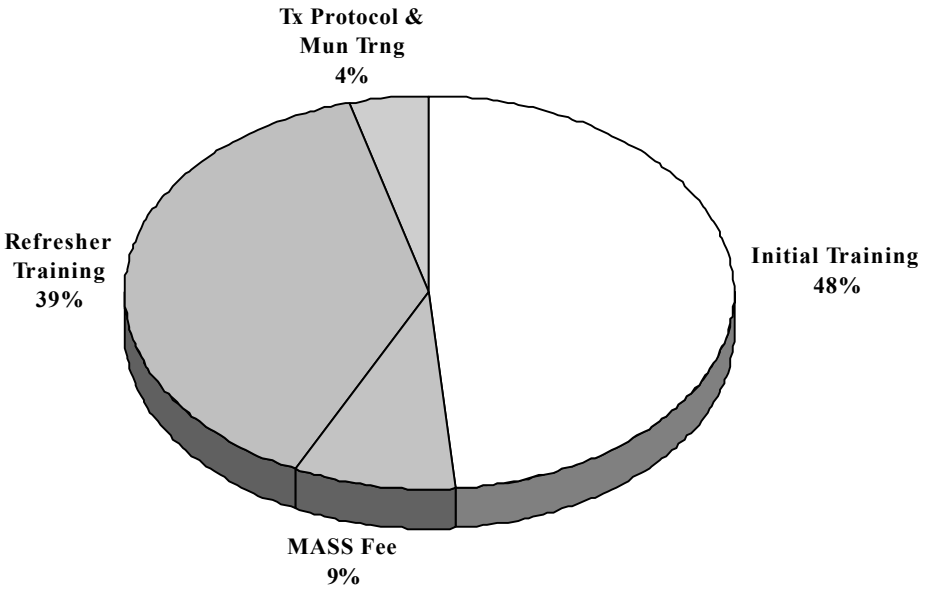


Figure 3-10
Composition of the Annual, Incremental Costs of HKI

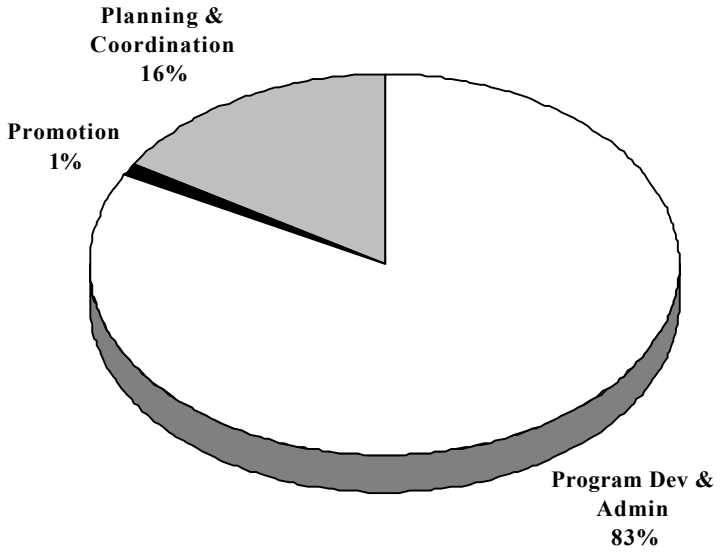


Table 3-16
Average Incremental Costs per Child Receiving One or Two Vitamin A Capsules through the NVAP

SOURCE OF COVERAGE ESTIMATE		TOTAL NUMBER OF CHILDREN	COVERAGE ESTIMATE	AVERAGE COST PER CHILD	
				TOTAL COST	COST EXCLUDING TRAINING
TAG	TWO CAPSULES PER YEAR	1,694,050	85%		
	RUPEES			38	26
	US$			0.68	0.46
ADJUSTED FHS**	ONE CAPSULE PER YEAR	1,056,290	53%		
	RUPEES			60	41
	US$			1.09	0.74
ADJUSTED NMIS**	ONE CAPSULE PER YEAR	1,415,030	71%		
	RUPEES			45	31
	US$			0.81	0.55
ADJUSTED NMIS**	TWO CAPSULES PER YEAR	697,550	35%		
	RUPEES			92	62
	US$			1.65	1.12

*** Based on the total cost estimates in Table 15.**

**** See the text for an explanation.**

3.4 Estimates of the Costs of Expanding the NVAP into 43 New Districts

Tables 3-17 and 3-18 contain information on the number of health posts, the total population and the target population of children aged 6 to 60 months for each of Nepal's 75 districts, organized by ecological zone. Both tables are organized into two sets of columns. The one on the left is labeled "Priority Districts," which consist of the 32 districts that are included in the current program. The one on the right is labeled "Non-Priority Districts," which contain the 43 districts which are to be incorporated into the NVAP over the course of the next vitamin A project.

Comparing the characteristics of these two sets of districts, one can see that, although the total population of children 6 to 60 months is slightly less in the 43 remaining districts than in the 32 NVAP ones (*Table 3-18)*, the new districts differ from the current ones in ways that will significantly affect the costs of extending the program. The project's extension will entail incorporating districts which are more likely to be from the hills, and less likely to be from the terai. In addition, the average number of health posts per district in each ecological zone also varies across the two sets of districts. While, as shown in *Table 3-17*, the mean number of health posts in the mountain districts to be incorporated into the NVAP (9.8) is identical to that of the mountain districts currently in the program, it is in the hill districts where the differences are greatest. The hill districts will comprise the vast majority—nearly 80 percent—of all districts in the extension effort; they currently make up only nine percent of the total NVAP. On average, the new hill districts will have a few more health posts; the mean number increases from 10.8 to 11.2. An increase in the average number of health posts per district has a multiplicative impact on the number of training centers per district, since each health post has from two to four training sites. Thus differences in the number of health posts will generate different training costs at the community/FCHV level. In developing estimates of the cost of extending the NVAP to the national level, the training cost algorithms were modified to take this variation into account. The training cost estimates for the average hill district's community level training are presented in *Table A-18* in *Annex A*.

Table 3-19 presents an implementation plan for the proposed project. This plan is laid out in order to show what needs to be done and when, in order to identify the number and type of discrete activities that will need to be costed out while developing a reasonable timetable for the project. *Table 3-20* presents the cost estimates (in rupees) of each of the phases and activities identified in *Table 3-19*.

It is assumed that the new 5½-year project will start in July 1997 and will end in December 2002, and that it will be structured in the same manner as the current NVAP. The NVAP will again be phased into new districts, five at a time. With 43 districts, there will therefore be nine phases. Each phase is identified by the date on which the first capsule distribution will take place in its districts. Five NVAP activities are identified in the *Table 3-19*. This differs from the NVAP activity list that was put together to estimate the recurrent costs of the present program, since municipal training and treatment protocol training are not included. Treatment protocol training is not included because it will have been completed throughout the entire country at the end of the current NVAP effort, and there are no plans for additional initial or refresher training in this area. The municipal training is not entered into the implementation plan, although it is included in the cost estimates. It is assumed that the TAG will be able to "work it into" this more general schedule, just as it did the training of the 23 municipalities which it undertook during the last three years.

Table 3-17
Number of MOH Health Posts in Nepal by District and Ecological Zone

A. PRIORITY DISTRICTS

DISTRICT	# of POSTS
Terai	
JHAPA	8
MORANG	14
SAPITARI	11
SIRAHA	12
SUNSARI	9
BARA	14
DHANUSA	11
MAHOTTARI	7
PARSA	10
RAUTHAT	10
SARLAHI	12
NAWALPARASI	11
RUPENDEHI	10
BANKE	11
BARDIYA	10
DANG	12
KAILALI	10
KANCHNPUR	9
KAPILBASTU	7
TERAI TOTALS	**198**
	10.4
Mountain	
DOLPA	9
HUMLA	10
JUMLA	9
KALIKOT	9
MUGU	9
BAJHANG	10
BAJURA	11
DARCHULA	11
MTN. TOTALS:	**78**
	9.8
Hill	
DADELDHURA	9
DOTI	10
SURKHET	10
ACHHAM	14
BAITADI	11
HILL TOTALS:	**54**
	10.8
SUB-TOTAL	**330**
	10.3

B. NON-PRIORITY DISTRICTS

DISTRICT	# of POSTS
Terai	
CHITAWAN	8
TERAI TOTAL	**8**
Mountain	
DOLKHA	10
MANANG	9
MUSTANG	9
SINDHUPALCHOWK	11
SANKHUWASABHA	12
SOLUKHUMBU	9
TAPLEJUNG	9
RASUWA	9
MTN. TOTAL	**78**
	9.8
Hill	
KAVRE	10
LALITPUR	11
MAKAWANPUR	11
NUWAKOT	11
RAMECHHAP	12
SINDHULI	11
ARGHAKHANCHI	10
BAGLUNG	9
GORKHA	13
GULMI	12
KASKI	14
LAMJUNG	10
MYAGDI	9
PALPA	10
PARBAT	10
SYANGJA	12
TANAHUN	13
DAILEKH	8
JAJARKOT	8
PYUTHAN	10
ROLPA	11
RUKUM	9
SALYAN	10
BHOJPUR	10
DHANKUTA	13
ILAM	9
KHOTANG	9
OKHALDHUNGA	9
PANCHTHAR	10
KATHMANDU	10
DHADING	17
TEHARTHUM	9
UDAYPUR	10
BHAKTAPUR	9
HILL TOTAL	**359**
	11.2
SUB-TOTAL	**445**
	10.3

Table 3-18
Total Population and Population of Children 6-60 Months in Nepal by District and Ecological Zone

A. PRIORITY DISTRICTS

DISTRICT	TOTAL POPULATION	CHID. 6-60 MNTHS
Terai:		
JHAPA	660,690	73,588
MORANG	753,676	88,233
SAPITARI	517,615	66,740
SIRAHA	512,124	66,981
SUNSARI	523,561	65,360
BARA	467,229	64,237
DHANUSA	606,786	79,187
MAJOTTARI	487,965	62,928
PARSA	419,116	58,018
RAUTAHAT	161,446	58,094
SARLAHI	568,628	71,448
NAWALPARASI	496,721	65,754
RUPENDEHI	592,123	75,045
BANKE	326,877	44,138
BARDIYA	332,675	46,229
DANG	399,118	57,588
KAILALI	486,771	73,655
KANCHNPUR	297,071	43,098
KAPILVASTU	421,614	55,405
TERAI TOTALS	**9,031,806**	**1,215,726**
	85%	**84%**
TERAI MEANS:	**475,358**	**63,986**
Mountain:		
DOLPA	27,387	3,543
HUMLA	38,033	5,118
JUMLA	82,769	12,235
KALIKOT	96,904	13,952
MUGU	39,136	5,690
BAJHANG	151,559	21,140
BAJURA	100,344	14,778
DARCHULA	110,945	14,986
MOUNTAIN TOTALS:	**647,077**	**91,442**
	6%	**6%**
MOUNTAIN MEANS:	**80,885**	**11,430**
Hill:		
DADELDHURA	115,485	16,952
DOTI	181,386	27,219
SURKHET	254,986	37,527
ACHHAM	213,920	31,202
BAITADI	218,653	31,594
HILL TOTALS (n=5):	**984,430**	**144,494**
	9%	**10%**
HILL MEAN:	**196,886**	**28,899**
SUB-TOTAL (n=32)	**10,663,313**	**1,451,662**
	100%	**100%**
PRIORITY MEANS:	**333,229**	**45,364**

B. NON-PRIORITY DISTRICTS

DISTRICT	TOTAL POPULATION	CHILD. 6-60 MONTHS
Terai:		
CHITAWAN	401,373	50,592
TERRAI TOTALS/MEANS: (n=1)	**401,373**	**50,592**
Mountain:	**4%**	**4%**
DOLKHA	190,682	24,946
MANANG	5,470	459
MUSTANG	15,589	1,645
SINDHUPALCHOWK	284,828	36,658
SANKHUWASABHA	154,431	19,472
SOLUKHUMBU	105,876	14,028
TAPLEJUNG	128,359	16,759
RASUWA	40,778	5,043
MOUNTAIN TOTALS: (n=8)	**926,013**	**119,010**
	10%	**10%**
MOUNTAIN MEANS:	**115,752**	**14,876**
Hill:		
KAVRE	352,164	46,122
LALITPUR	288,112	28,190
MAKAWANPUR	352,911	49,017
NUWAKOT	269,913	36,426
RAMECHHAP	206,456	26,980
SINDHUL	248,425	33,245
ARGHAKHANCHI	197,929	30,313
BAGLUNG	251,896	34,933
GORKHA	272,343	34,989
GULMI	290,225	42,015
KASKI	329,487	39,731
LAMJUNG	164,562	19,383
MYAGDI	108,106	13,959
PALPA	256,939	37,353
PARBAT	156,511	20,233
SYANGJA	318,086	42,894
TANAHU	296,056	38,290
DAILEKH	205,096	29,762
JAJARKOT	125,000	18,329
PYUTHAN	191,154	29,804
ROLPA	194,409	28,104
RUKUM	171,326	25,691
SALYAN	198,884	29,494
BHOJPUR	213,890	26,628
DHANKUTA	160,127	19,567
ILAM	256,782	33,511
KHOTANG	231,740	31,347
OKHALDHUNGA	149,633	19,331
PANCHTHAR	192,038	26,780
KATHMANDU	785,800	73,252
CHADING	306,491	40,566
TEHARTHUM	112,251	14,201
UDAYPUR	251,176	34,267
BHAKTAPUR	191,337	22,027
HILL TOTALS: (n=34)	**8,297,255/88%**	**1,076,734/88%**
SUB-TOTAL (n=43)	**9,624,641**	**1,246,336**
	100%	**100%**
NON-PRIORITY MEANS:	**223,829**	**28,985**

Table 3-19
Proposed Implementation Plan for Extending the NVAP
into the 43 Remaining Districts in Nepal*

BEGIN IMPLEMEN-TATION OF:	VA CAPSULE DISTRIBU-TION DATE	NVAP ACTIVITY SCHEDULE				
		INITIAL TRAINING	REFRESHER TRAINING	ORIENTATION TRAINING	PROMOTION & DISTRIBUTION	MONITORING & SUPERVISION
Phase 1	Oct-97	Phase 1			Phase 1	Phase 1
Phase 2	Apr-98	Phase 2	Phase 1		Phases 1 & 2	Phases 1 & 2
Phase 3	Oct-98	Phase 3	Phase 2	Phase 1	Phases 1 thru 3	Phases 1, 2, 3
Phase 4	Apr-99	Phase 4	Phase 3	Phase 2	Phases 1 thru 4	Phases 1, 2, 3, 4
Phase 5	Oct-99	Phase 5	Phase 4	Phase 3	Phases 1 thru 5	Phases 2, 3, 4, 5
Phase 6	Apr-00	Phase 6	Phase 5	Phase 4	Phases 1 thru 6	Phases 3, 4, 5, 6
Phase 7	Oct-00	Phase 7	Phase 6	Phase 5	Phases 1 thru 7	Phases 4, 5, 6, 7
Phase 8	Apr-01	Phase 8	Phase 7	Phase 6	Phases 1 thru 8	Phases 5, 6, 7, 8
Phase 9	Oct-01	Phase 9	Phase 8	Phase 7	Phases 1 thru 9	Phases 6, 7, 8, 9
On-going NVAP	Apr-02		Phase 9	Phase 8	Phases 1 thru 9	Phases 7, 8, 9 & X*
On-going NVAP	Oct-02			Phase 9	Phases 1 thru 9	Phases 7, 8, 9, & X*
On-going NVAP	Dec-03				Phases 1 thru 9	Phases 8, 9, & X*

* assumed Project start date: July 1997

* assumed Project end date: December 2002

X* Starting in April 2002 and thereafter not all new districts may be mini-surveyed. See text for details

Table 3-20
Estimated Cost by Phase and Activity of the Proposed Implementation Plan for Extending the NVAP into the 43 Remaining Districts in Nepal (in Rupees)

BEGIN IMPLEMEN-TATION OF	DISTRICTS NEWLY INC.	VA CAPSULE DISTRIBUT. DATE	NVAP ACTIVITY SCHEDULE							VITAMIN A CAPSULES	TOTAL COST OF NVAP BY PHASE
			Initial Training	Refresher Training	Orientation Training	Promotion	Monitoring & Supervis.	Planning & Coord.	Program Dev & Admin		
Phase 1	4 Mountain	Oct-97	4,797,444		123,534	5,776,312	2,745,567	2,019,073	12,170,494	2,502,782	30,135,206
Phase 2	4 Mountain	Apr-98	4,797,444	3,182,401	123,534	6,498,239	3,023,172	2,019,073	12,170,494	2,504,187	34,318,544
Phase 3	5 Hill	Oct-98	6,510,340	3,182,401	154,417	7,220,265	3,300,776	2,019,073	12,170,494	2,509,532	37,067,298
Phase 4	5 Hill	Apr-99	6,510,340	4,405,140	154,417	8,122,798	3,578,380	2,019,073	12,170,494	2,513,609	39,474,251
Phase 5	4 Hill, 1 Terai	Oct-99	6,510,340	4,405,140	154,417	9,025,332	3,855,985	2,019,073	12,170,494	2,517,483	40,658,264
Phase 6	5 Hill	Apr-00	6,510,340	4,405,140	154,417	9,927,865	4,133,589	2,019,073	12,170,494	2,521,282	41,842,200
Phase 7	5 Hill	Oct-00	6,510,340	4,405,140	154,417	10,830,398	4,411,193	2,019,073	12,170,494	2,524,832	43,025,887
Phase 8	5 Hill	Oct-01	6,510,340	4,405,140	154,417	11,732,931	4,688,797	2,019,073	12,170,494	2,532,149	44,209,341
Phase 9	5 Hill	Oct-01	6,510,340	4,405,140	154,417	12,635,464	4,966,402	2,019,073	12,170,494	2,532,832	45,394,162
On-going NVAP		Apr-02		4,405,140	154,417	13,537,997	5,244,006	2,019,073	12,170,494	2,532,832	40,063,959
On-gong NVAP		Oct-02			154,417	14,440,531	5,521,610	2,019,073	12,170,494	2,532,832	36,838,957
TOTAL COST IN RUPEES**:			55,167,268	32,795,642	1,327,988	81,769,504	34,703,861	18,171,657	109,534,442	22,654,688	358,622,549
	IN US$		994,005	590,912	23,928	1,473,324	625,295	327,417	1,973,594	408,193	6,461,668
AVERAGE ANN. TOTAL COST:			180,728	107,439	4,350	267,877	113,690	59,530	358,835	74,217	1,174,849

*** Includes six additional TAG field workers and semi-annual mini-surveys in 20 districts of the 32 priority districts.**

Assumed Project Start Date: July 1997

Assumed Project End Date: December 2002

****The total cost includes the 2.5 million rupees required for the last 12 municipality trainings, which is not included in the training or Phase figures. The cost of vitamin A capsules for them are the Oct 2002 entry.**

Each phase can be thought of as requiring a set or package of NVAP activities. Some of the activities—the initial, refresher and orientation training—are one-time in nature, while others—promotion, distribution, monitoring and supervision, planning and coordination, and general program development and administration—are recurring. The one-time activities generate one-time costs. Thus, over the life of the project, the one-time costs are phased in and reach a maximum dictated by timing and the capacity of the TAG and the NVAP. Then, after all districts have completed each of the three types of training (i.e., after the October 2002 orientation training in Phase 9 districts), these one-time costs are reduced to zero.

In contrast, the costs of the recurring activities start at zero, increase throughout the course of project as more and more districts are incorporated into the NVAP and eventually—once all the districts are incorporated into the program—they reach a plateau. At this point, the costs of the program can be maintained at this level, or the program's activities and costs can be modified, which can include terminating all activities. As currently structured, these activities end only with the end of the USAID project (as distinct from the program). These activities are what USAID regards as the long-term recurring costs of the program; that is, the minimum essential costs to keep the NVAP functioning nation-wide, after it is fully implemented in all 75 districts.

As seen in *Table 3-19*, the Phase 1 districts will participate in their first capsule distribution in October 1997. By then, it will be necessary to have completed one round of the initial training in the districts of Phase 1, as well as one round of promotion, distribution, and monitoring and supervision. Reading across the second row, Phase 2 will consist of the initial training of Phase 2 districts, refresher training of Phase 1 districts, promotion and distribution in both Phase 1 and Phase 2 districts, and monitoring and supervision in both Phase 1 and Phase 2 districts. Phase 3 consists of initial training of Phase 3 districts, refresher training of Phase 2 districts, orientation training of Phase 1 districts, promotion and distribution and monitoring and distribution of Phase 1, 2 and 3 districts. Phase 4 consists of initial training of Phase 4 districts, refresher training of Phase 3 districts, orientation training of Phase 2 districts, and promotion, distribution, and monitoring and supervision of Phase 1 through 4 districts. Phase 1 has now completed the training cycle and has "graduated" from all NVAP activities, with the exception of promotion, distribution, and monitoring and supervision activities, which are on-going.

Each subsequent phase introduces new districts into the sequential training process, graduates a set of districts from training, and adds districts to the promotion, distribution, and monitoring and supervision, until Phase 6. Beginning with this phase, mini-surveying will be done selectively, since it is assumed that TAG personnel, given their training and other responsibilities, will not be able to conduct mini-surveys in more than about 20 districts. In this proposed program it is assumed that the same approach currently used by the TAG will continue; that is, all districts in a particular phase will be surveyed for their first three distribution campaigns, after which they will be surveyed only periodically, roughly once every other distribution. As the training responsibilities started to phase out, starting in April 2002, the coverage of the mini-surveys will be expanded. The end of the initial training should free up enough TAG field worker time to enable covering an additional 12 districts. The refresher training phase-out would enable covering another eight districts with mini-surveys, and the orientation training phase-out, one more district. Thus, at the time all training will be phased out, starting with the December 2003 capsule distribution, it should be possible to conduct monitoring surveys in 37 of the 43 districts.

Table 3-20 assumes that the promotion, distribution and the monitoring requirements of the *32 districts currently covered* by the NVAP will continue, with 15 to 20 districts surveyed semi-

annually. The mini-survey activity will therefore require the TAG to hire six additional field workers, in addition to the other incidental costs of mini-surveys identified in *Table 3-11*.

The cost estimates contained in *Table 3-20* are again incremental cost estimates; that is, they assume that the MOH's capacity to undertake these activities in the 43 new districts and to expand its central and regional level field supervision activities can be increased without requiring additional personnel costs or requiring them to forego other activities they would otherwise have undertaken. It is also assumed that the cost of planning and coordination and of general program development—which are largely comprised of personnel costs—would not increase.

As seen in *Table 3-20*, the total estimated cost of extending the NVAP into the remaining 43 districts of Nepal, while maintaining the promotion, distribution, monitoring and supervision activities in the original 32 priority districts is Rs.358.6 million, or US$6.5 million. The average annual total cost of the project will be around US$1.2 million.

Annex Table A-19 has the same format as *Table 3-20* and shows the impact on costs if the role of HKI could be eliminated assuming the TAG can assume HKI's current responsibilities. By eliminating HKI, the total costs fall by 24 percent over the life of the project, to an annual average of US $894,747.

3.5 The Long-Run, Incremental Costs of the NVAP

As noted in the preceding section, USAID has identified what it regards as the minimal level of activities essential to maintaining the operation of the NVAP on an on-going basis, after it has been fully implemented nation-wide. These activities are: the vitamin A capsule distribution, promotion, monitoring and supervision. If we assume that planning, coordination and general program development and administrative activities cannot be absorbed by the MOH without cost, then the direct cost of program activities is estimated to be Rs.73.4 million or US$1.3 million per year. The breakdown by activity is presented in *Table 3-21*.

Table 3-21 also shows that if the HKI portion of these activities could be absorbed without additional cost by the TAG or the MOH, the long-term, incremental, annual recurrent costs of the NVAP could be reduced by about one-quarter, to Rs.54.4 million, or around US$1.0 per year.

Table 3-21
Long-Run Incremental, Recurrent Costs of the Nation-Wide, National Vitamin Program* (in Rupees)

NVAP ACTIVITY	ANNUAL COST	ANNUAL COST EXCLUSIVE OF HKI
VITAMIN A CAPSULES	5,078,644	5,078,644
PROMOTION	28,881,062	28,414,862
MONITORING AND SUPERVISION	11,043,220	28,414,862
PLANNING AND COORDINATION	4,038,988	1,015,866
GENERAL PROGRAM DEVELOPMENT AND ADMIN.	24,340,988	8,828,258
In Rupees	73,382,060	54,381,850
In US$	1,322,199	979,853

***It is assumed that the plan to extend the program throughout the rest of the country has been implemented. These are annual costs starting January 2003.**

4.0 Concerns and Issues Regarding the Sustainability of the NVAP

To date, Nepal's National Vitamin A Program has achieved remarkable accomplishments. The program, however, has not been effectively institutionalized within the MOH. This is well illustrated by the fact that the TAG and HKI offices are located several kilometers from the MOH, and per diems still need to be paid to get MOH participation in the program.

This has been something of a chicken-egg type of problem. One the one hand, the NVAP has not been institutionalized within the MOH, in part because the program has been donor-driven and has been organized and administered outside of the MOH. On the other hand, in the early stages of the development of the NVAP, the MOH was undergoing major institutional changes and could not (or would not) provide the necessary cadre of Program Coordinators who constitute more than half of the TAG's personnel and who are the primary interface with the FCHVs. The TAG hired the Program Coordinators only after the program ran into problems due to the shortage of these key staff persons. Thus, the MOH Central Office has not made a financial or staff commitment to the NVAP and, consequently, has not been involved much in the NVAP. This remains a key problem today. The entire Nutrition Office of the MOH/DHS consists of only one person, and she has no support staff. If institutionalization of the NVAP is to proceed, the MOH must make more of a commitment.

Yet, in other ways, the NVAP has been institutionalized, albeit outside of the MOH. The training and promotion materials developed by the program constitute a set of well-developed, highly detailed manuals. These materials were reviewed by the MOH during their development.

Below are a number of other issues which need to be addressed if the NVAP is to become institutionalized and sustainable over the long-term:

1. The NVAP and the Long-Run Solution to Vitamin A Deficiency in Nepal

There is evidence from the mini-surveys (see *Annex D*) that the communication and transfer of knowledge from the FCHVs to mothers is lacking. While the supplementation approach has been highly successful, this suggests that little progress is being made on developing a longer- term solution to vitamin A deficiency, such as dietary change and the development of family gardens.

2. The Need to Include MOH Personnel Costs in the Cost Analysis

This analysis has been based upon the assumption that MOH personnel are currently under-utilized and that therefore, implementing the NVAP does not require additional MOH resources or costs. However, it can be argued that the time that MOH personnel spend in training and supervision activities for the NVAP incurs real costs, and that, therefore, a more accurate analysis of the annual recurrent costs of the program should incorporate these personnel costs.

3. The Need for the NVAP to Develop a Training Strategy to Accommodate the New Population-Based Approach to the FCHV System

The FCHV program was fundamentally modified in 1993 when a population-based strategy was adopted in lieu of the ward-based approach. This reform was a response to recognition of the fact that the number of persons an FCHV was supposed to serve—all those within her ward—often varied dramatically: from densely populated wards in the terai to the sparsely settled mountain wards. With the adoption of the population-based approach, the working area of the FCHV has changed from the ward to her assigned population, and the number of persons assigned a single FCHV varies from 400 in the terai, to 250 in the hills districts, to 150 in the mountains. The implementation of the population-based FCHV program is being phased in. It started with nine districts in 1994/95; another nine were incorporated in 1995/96, and 10 more were phased-in in 1996/97. Full implementation of the program throughout the country will result in a 70 percent increase in the number of FCHVs—from 43,000 to 73,000. The program is supposed to be fully implemented by the end of 1997, but it is unlikely that this timetable will be adhered to. The population-based approach, however, will dilute the impact of the TAG's training and motivational activities in the priority districts, since it will require that additional FCHVs be hired in some of these 32 districts, which have already gone through the initial training cycle. At present, the TAG has no plans to train the new FCHVs.

4. The Weak Link in the FCHV System: The Village Health Workers

The weak point of the FCHV network and its general activities (not only vitamin A) is supervision. The link between these volunteers and the formal health care delivery system is the village health worker. It is widely reported that VHWs, as a whole, have become relatively inactive in recent years. The absence of an adequate supervisory system for community volunteers raises concerns about: a) the ability of the FCHV system to maintain its impressive performance to date, and b) the overall sustainability of the system. The fact that the overwhelming majority of the costs of the FCHV system and its continued development are donor-financed underscores this concern. (See *Table 3-4* for the level and composition of FCHV financing.)

5. The Perceived Need for and Demise of the Coordinating Committees

Another type of promotion, which is not costed out in this study, consists of the activities of the coordinating committees. Coordinating committees exist at each of the three levels (district, health post and community) at which the TAG provides vitamin A training. These committees were designed to be a vehicle for maintaining the momentum of the vitamin A capsule distribution campaign that the TAG training had spawned. They were to provide an organizational forum comprised of representatives of the political system and the health system (primarily, but not only, the MOH). The purpose of the committees was to appoint "someone" to be responsible for making sure that certain things were done to ensure a successful capsule distribution campaign. In addition, these committees were to sustain the dynamism and the energy that the TAG's approach to training had generated and that had empowered the FCHV. The coordinating committees were the TAG's response to its recognition of the importance of supervision to the success of the program. This approach, however, has not proven successful. The strategy now is to simply encourage the routine discussion of the vitamin A program at the regular district and health posts meetings of the coordinating committees. Whether this approach will prove adequate to maintain interest in and commitment to the program is uncertain.

6. The Potential Danger of Killing the "Golden Goose"

As noted earlier, the success of the NVAP piggy-backing on the FCHV and reinvigorating the FCHV network has spawned other similar initiatives. The FCHVs were used to mobilize the community and to deliver the children in a national polio immunization day late last year, and beginning in May 1997, diagnosis and treatment of acute respiratory illnesses is being added to the FCHVs' responsibilities.

The widely recognized success of the NVAP has also encouraged the Government of Nepal to take ownership of the FCHV program and to work more diligently to integrate it on a more permanent basis, after it was reportedly about to discontinue the program in 1994. Paradoxically, the success of the FCHVs in the NVAP, which has encouraged other programs to start to "load-up" the FCHV with additional responsibilities, has sparked off a controversy whether the FCHV will be given too many additional tasks. Some fear that the FCHVs may become so overburdened that they will not be able to continue to carry out the NVAP with the same dedication and in accordance with the demanding schedule of the two semi-annual distributions which is considered a critical factor to the success of the program. Some contend that this is what happened to the Village Health Workers.

7. The Sustainability of the TAG

Finally, another important accomplishment of the NVAP has been the development of the TAG, which, since July 1996, has been an independent NGO. This group of energetic, capable and highly-motivated professionals has begun working in a number of related fields, including micro-enterprise activities. By diversifying its portfolio, the TAG will be better able to survive over the longer-term, if and when USAID funding for the NVAP ceases. The sustainability of the TAG does not appear to warrant great concern.

Bibliography

Bhandari, Ram. "Report of CDD Reactivation Program in Six Districts of the Central Region, March 31 to July 23, 1996," JSI/Nepal, USAID Child Survival and Family Planning Services Project, 1996.

Chataut, Dr. B.D. "Inter-Country Consultation on the Role of Health Volunteers in Strengthening Community Action for Health," October 24-28, 1994, Yangon, Myanmar.

Dawson, Dr. Penny and JeanAnne Ware. "ARI Case Studies from Chitwan and Morang Districts, Nepal," JSI/Nepal, USAID Child Survival and Family Planning Services Project in collaboration with CDD/ARI Section, Child Health Division, DHS, MOH, August 1996.

Hollander, Judith. "AMRIT: Food for the Gods, The Nepal Vitamin A Program." Project Report (draft), 1997.

Institute of Sustainable Development, Kathmandu. "Budget Restructuring to Achieve Human Development Goals in Nepal." Study commissioned by the National Planning Commission HMG/Nepal, with the assistance of UNICEF, September 1994.

Lamichhane, Kumar and Dr. Penny Dawson. "Results of Interviews Conducted with Female Community Health Volunteers (FCHVs) on Diarrheal Diseases," JSI/Nepal, USAID Child Survival and Family Planning Services Project, 1994.

Macro International Inc. "Demographic Health Survey: Nepal 1996," Preliminary data.

Ministry of Health, Department of Health Services, Child Health Division. "Workplan for Support to the National Programme for the Prevention and Control of Vitamin A Deficiency, FY1995/1996."

_____. "Workplan for Support to the National Programme for the Prevention and Control of Vitamin A Deficiency, FY1996/1997."

Ministry of Health, Department of Health Services, Family Health Division. "Plan of Action for Strengthening the Female Community Health Volunteer Program 2053/2054 (1996-1997)."

Ministry of Health, Department of Health Services, Logistics Management Division, JSI, MASS. "District Profile on Logistics Transportation," August 1996.

Ministry of Health, Department of Health Services and the United Nations Population Fund (UNFPA), "Atlas of Population Distribution and Health Facilities: with Regional/District FP/MCH Profiles," 1993.

National Vitamin A Workshop, February 11-12, 1992, Kathmandu, Nepal. "Summary and Recommendations of Group A Discussion: Supplementation Through Mass Distributions of Vitamin A Capsules."

Nepal Netra Jyoti Sangh, Kathmandu Eye Hospital and University of Michigan, School of Public Health, Department of Population Planning and International Health. "Vitamin A Child Survival Project: The Influence of Alternative Vitamin A Deficiency Control Strategies on Xerophthalmia Risk and Nutrition Status among Nepalese Children, 1988-1992," March 1993.

New Era, submitted to Helen Keller International, "Mini-Survey Monitoring Report," November 1996.

Pant, C.R., G.P. Pokharel, F. Curtale, et al. "Impact of Nutrition Education and Mega-Dose Vitamin A Supplementation on the Health of Children in Nepal," *Bulletin of the World Health Organization*, 74(5): 533-545, 1996.

Technical Assistance Group (TAG). "National Vitamin A Program, Mini-Survey Monitoring Report," Kartik 2-4, 2050.

_____. "National Vitamin A Program, Mini-Survey Monitoring Report," Baisakh 6-7, 2051 (April 20-21, 1994).

_____. "National Vitamin A Program, Mini-Survey Monitoring Report", Baisakh 6-7, 2052 (April 20-21, 1995).

_____. "National Vitamin A Program, Mini-Survey Monitoring Report," Baisakh 6-7, 2053 (April 20-21, 1995).

_____. "National Vitamin A Program, District Profile: Bajura," draft, November 1996.

_____. "National Vitamin A Program, District Profile: Bajhand," draft, November 1996.

_____. "National Vitamin A Program, District Profile: Jumla," draft, November 1996.

_____. "National Vitamin A Program, District Profile: Surkhet," draft, November 1996.

United Nations' Children's Fund (UNICEF), "Atlas of South Asian Children and Women," 1996.

Upadhyay, M.P., B.J. Gurung, K.K. Pillai and B.P. Nepal. "Xerophthalmia Among Nepalese Children," *American Journal of Epidemiology* Vol. 121, No. 1: 71-77, 1985.

USAID/Nepal, Memorandum from Charles Llewellyn to Contracting Office on MASS Vitamin A Support, Contract 367-C-00-07-0007-00 Amendment, February 20, 1997.

Ware, JeanAnne, "Results of Interviews Conducted with Female Community Health Volunteers (FCHVs) on Knowledge of Diarrheal Diseases and Use and Availability of Jeevan Jal (ORS) in Kaski District," Peace Corps/Nepal in collaboration with JSI/Nepal, USAID Child Survival and Family Planning Services Project, 1996.

West, Keith P.and Gene R. Howard. "Vitamin A Deficiency and Xerophthalmia Prevention in Nepal," Report on a Consultancy Visit, October 1985.

West, Keith P., R.P. Pokhrel, J. Katz, S.C. LeClerq, S.K. Khatry, S.R. Shrestha, E.K. Pradhan, J.M. Tielsch, M.R. Pandey, and A. Sommer. "Efficacy of Vitamin A in Reducing Preschool Child Mortality in Nepal," *The Lancet*, Vol. 338, No. 8759, July 13, 1991.