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THE INDONESIAN FOOD AND NUTRITION SURVEILLANCE SYSTEM: A REVIEW OF THE DEVELOPMENT, CURRENT STATUS AND FUTURE DIRECTIONS.

BY

GEOFFREY C MARKS AND JERE D HAAS

CORNELL NUTRITIONAL SURVEILLANCE PROGRAM

DIVISION OF NUTRITIONAL SCIENCES

CORNELL UNIVERSITY

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EXECUTIVE SUMMARY

In this report we review the development of nutritional surveillance activities in Indonesia, their current status and recommend areas to be strengthened. The Indonesian surveillance efforts are unique in the comprehensive approach that has been taken. Additionally, Indonesia is pioneering many aspects of food and nutritional surveillance, having no similar experience in other countrites on which to draw.

The Food and Nutrition Surveillance System has three main components: the Timely Warning and Intervention System (TWIS), designed to address recurrent food consumption shortages in selected districts; surveillance for national planning and policy formulation; and, surveillance for planning and program management at the provincial and district levels.

The system has had to be developed in stages. This review comes during the expansion of TWIS to new areas, during the transition to implementation of FNSS activities for national planning and policy formulation, and during the development of surveillance within the provinces. USAID has provided continued funding and other support for these activities since their inception in 1978. This support has been critical for the general development of the FNSS.

TWIS is now operational in 28 districts prone to food consumption crises, and evaluations of the Central Lombok TWIS suggest that the system has contributed to preventing crises since it has been operational. This experience has also demonstrated the value of combining information from a variety of sources for addressing food and nutrition concerns in the districts, and reportedly provides a good model for other areas of administration.

Surveillance is sufficiently established at the national level to undertake analyses and projects concerning a range of food and nutrition issues. Some of these are relevant to the policy and planning needs of individual Ministries (particularly Health and Agriculture), while many meet needs across Ministries and sectors. Thus the principles and practice of surveillance are becoming well established at this level. At present, the main limitation for undertaking many of these studies is the limited institutional capabilities for the specialized analysis or studies needed.

Surveillance activities to support provincial and district level planning and program management are operational in three provinces. But these are new to the provinces and so it is too soon to expect concrete examples of their role in the adminstration. In addition, the application of nutritional surveillance to program planning and management is not well

developed. This methodology and the capability for provinces to undertake relevant research will need to be addressed during the next stage of development of the FNSS. Despite this, there appears to be a high level of interest and support within the provinces.

The Ministry of Health initiated the FNSS activities and has provided the major support for its development, with significant support from other groups. Recently the focus of the FNSS activities has broadened to include more non-nutrition activities, and there is considerable interest in agencies and institutions whose primary interests are population, agriculture, agro-economic research, social research, demography, and public health. Although the relative role of the MOH will lessen as this develops, the MOH will continue to be the principle user of FNSS information, and to provide the main support.

We conclude that a good foundation has been laid for the implementation and expansion of the FNSS, but that studies to develop further the FNSS are essential. Much of the focus to date has been on technical issues and methodology. This was appropriate and will continue to be important. However, the main focus has recently shifted to information use and decision making relevant to food and nutritional problems. This is new ground with little experience on which to draw, particularly at the provincial and district levels.

PREFACE

In this report we review the development of nutritional surveillance activities in Indonesia from 1978 through to 1986. The report was prepared for the Indonesian National Family Planning Coordinating Board (BKKBN), the Ministry of Health and USAID, Jakarta.

The work of developing the Food and Nutrition Surveillance System has involved many people and most have been acknowledged in individual project reports. The following people have made notable individual contributions to supporting and determining the direction of the FNSS efforts as a whole: Dr Soekirman (BAPPENAS), Prof A Loedin (NIHRD - Director), Mr Ig. Tarwotjo (Head, DOCN), Prof D Karyadi (CRDN - Director), Mr Djumadias Abunain (CRDN), and Prof Sajogyo (IPB). The USAID Office of Population and Health in Jakarta has supported the initiatives of the Government throughout the FNSS development, both through funding and other logistic support. Key persons were: Dr C Johnson (during initial discussions with the GOI), Mr N Studzinski and Dr D Calder (during the original development of TWIS), Ms J Klement and Dr E Voulgaropolous (during later development of TWIS and expansion of the FNSS for policy and program purposes). Lastly, Cornell University has been

integrally involved in the development of the FNSS through discussions regarding the content and direction of the FNSS, by assisting in the development of technical aspects, by providing technical assistance during the pilot projects, and through staff training. The main contributors were: Dr M Latham (who participated in the original conceptualisation), Dr JP Habicht and Dr RM Brooks (since the early phases of development), Dr J Mason (during the later development of TWIS), and Dr J Haas (during the expansion of the FNSS for policy and program purposes).

Sources for this report:

We drew heavily from a range of documents in preparing this report. These are not acknowledged individually in the text, but the main sources are listed as references.

In addition, we want to acknowledge those that read the draft of this report and participated in discussions concerning its content: Mr Djumadias Abunain, Dr RM Brooks, Dr JP Habicht, Prof D Karyadi, Dr P Pinstrup-Andersen (Cornell), Prof Sajogyo, Dr Soerkirman, Dr Soetedjo (BKKBN), Dr Sudarti (CBS), Mr Ig. Tarwotjo. They are, of course, not responsible for the content or for possible errors.

GLOSSARY OF TERMS

The following terms and abbreviations are used in the report:

BAPPEDA	-	Provincial Planning and Development Agency (Badan Perencanaan Pembangunan Daerah)
BAPPENAS	-	National Planning and Development Agency (Badan Perencanaan Pembangunan Nasional)
BKKBN	-	National Family Planning Coordinating Board (Badan Koordinasi Keluarga Berencana Nasional)
BPGD	-	Nutritional Improvement Board (Badan Perbaikan Gizi Daerah)
BULOG	-	The Indonesian national agency that buys, stores, transports and sells rice to maintain a ceiling price for rice (Badan Urusan Logistik)
Bupati	-	Head of District level administration
CAER	-	Center for Agro-Economic Research
CBS	-	Central Bureau of Statistics
CRDN	-	Center for Research and Development in Nutrition
DOCN	-	Directorate of Community Nutrition
DSP	-	Development Studies Projects (USAID)
FNPA Consortium	-	Food and Nutrition Policy Analysis Consortium
FNSS	-	Food and Nutrition Surveillance System

GOI	-	Government of Indonesia
IPB	-	Bogor Agricultural Institute (Institut Pertanian Bogor)
MOA	-	Ministry of Agriculture
MOH	-	Minstry of Health
NI Team	-	Nutrition Information Team
NIHRD	-	National Institute of Health Research and Development
NSMS	-	Nutritional Status Monitoring System
PEM	-	Protein-energy malnutrition
Puskesmas	-	Community Health Center for Subdistrict
Repelita	-	Five-year development plan
SKDN	-	Reporting system of the Family Nutrition Improvement Program (UPGK)
SUSENAS	-	National Socioeconomic Survey
TWIS	-	Timely Warning and Intervention System
UPGK	-	Family Nutrition Improvement Program (Usaha Perbaikan Gizi Keluarga)

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I. INTRODUCTION

1. GENERAL

The Government of Indonesia (GOI) has made great advances during the last eight years (1978-86) in its efforts to develop a nutritional surveillance system to support the objectives of the national nutrition policy. This has involved developing mechanisms and an institutional framework to link information concerning food and nutrition in the community with the policy and program decisions that are expected to have an impact on nutrition. The Indonesian efforts are notable in the comprehensive approach that has been taken to this "watching over nutrition", or nutritional surveillance.

During this eight year period there have been many projects and other activities undertaken to lay the foundations for the Food and Nutrition Surveillance System (FNSS). They have been described in individual reports. This document aims to give an overview of these activities and review their current status. Sections II and III describe the history and development of the surveillance activities; Section IV reviews the current status of the FNSS while Section V makes recommendations for future work.

The four main pilot studies carried out under the USAID

Development Studies Projects I and II are summarised in the appendices.

2. WHAT IS NUTRITIONAL SURVEILLANCE?

The concept of nutritional surveillance is derived from disease surveillance. It involves systematically providing relevant information to government and non-government decision makers so as to promote decisions that lead to improvements in nutrition. It was originally proposed as a means of giving timely warning of the need to intervene to prevent critical food consumption shortages in famine areas and for more localised crises. But the scope was quickly expanded to be applied to two more general objectives: to aid long term policy and planning decisions; and, to provide input for program management and evaluation.

Having nutrition as a focus, though, introduces some special demands. Malnutrition is generally regarded as a health outcome, whereas activities to overcome many of the fundamental causes of malnutrition come under the responsibility of various administrative sectors including: health, agriculture, rural development, family planning, welfare, education and others. As a result of this, nutritional surveillance activities are often multi-sectoral. That is, information generated by one sector will need to be considered for policies and planning in other

sectors, and analyses and indicators may draw on information generated by several different sectors.

A good example of this is the use of nutritional surveillance for implementing the Indonesian policy promoting the "small, happy and healthy family". Planners responsible for the family planning program (in BKKBN), routinely analyse the data provided by the reporting system of the child weighing program (SKDN). By doing this they can evaluate how well the overall objectives of the policy are being met. In a similar way, the nutritional outcome of promoting secondary food crops, or of a particular pricing policy, would require drawing on nutritional information as well as agricultural and economic information.

The FNSS was developed to facilitate and promote this practice. This has involved identifying potential uses and users of nutritional information; characterizing the types of information most useful; developing mechanisms for providing relevant information to those that will use it; and training the users. Section III describes this in detail.

The Indonesian surveillance system has developed, better than any other country, the use of nutritional surveillance as a strategy for supporting national nutritional objectives, a use first proposed a decade ago. The concept was first promoted internationally at the World Food Conference of 1974. Nutritional

surveillance programs began to be established in developing countries from about 1976 onward. The methodology and experience from these have been discussed in various international forums including meetings of ASEAN countries in Manila in 1976 and 1978, and in regional workshops in Cali, Colombia (1981), Nairobi Kenya (1982), and Bangkok, Thailand (1983). The approaches that have been taken are varied, but none are as comprehensive as the Indonesian efforts.

For the remainder of the report we will discuss the FNSS in terms of its three general components: the Timely Warning and Intervention System (TWIS); surveillance for policy decisions; and, surveillance for program decisions. As well as having different objectives, they were developed somewhat independently.

II. BACKGROUND AND PRIORITIES IN THE DEVELOPMENT OF THE FNSS

A BRIEF HISTORY

Indonesia has enjoyed rapid social and economic development since the second Five-Year Development Plan (Repelita II; 1973/4-1978/9). The GNP has grown 4.2-11.3 percent each year since 1973, as compared with a population growth rate of 2.13-2.32 percent. In this period of rapid development malnutrition was a serious concern for policy makers and planners. Epidemics of malnutrition had been a common feature in certain critical areas of Java, Bali, the Nusa Tenggara Provinces and other areas in the eastern part of Indonesia. At the same time, long term malnutrition was widespread. As of 1973, the GOI has explicitly included nutrition improvement amongst its national policy objectives for development.

The epidemics of malnutrition were associated with periodic food crises and included protein-energy malnutrition (PEM) and hunger edema. The usual diets of the poor in many communities was marginally adequate to meet their needs, giving little leeway for coping with fluctuations in food prices, food availability, or employment. Many factors, such as poor harvests and seasonal unemployment were associated with food consumption shortage and malnutrition in these groups.

The long term malnutrition included PEM, vitamin A deficiency, iodine deficiency, and iron deficiency anaemia. Of these, PEM was the most widespread. It is undoubtedly a major reason for the poor health of many Indonesians, affecting all ages groups, but particularly children and pregnant and lactating women. Of these types of malnutrition, PEM has also been the most difficult to alleviate because it is so closely associated with conditions of poverty. Nutrition programs conducted solely within the health sector have a limited capacity to overcome the basic causes of the disorder.

In Repelita III (1978/9-1983/4) emphasis extended to the issues of basic needs and equity. In this context, the widespread long term (endemic) malnutrition was again a major concern, and the incidence of overt or acute malnutrition "could not be tolerated" (Soekirman, 1983).

Nutritional objectives were explicitly incorporated into several policies and multi-sectoral programs. For example:

* Food Diversification for "not-by-rice-alone" policy in 1974;
* Home-gardening policy (started 1974, extended 1978);
* Family Planning and Nutrition integration policy in support of the "small and happy family" (1978);
* Nutrition - Water Supply - Immunization - Oral Rehydration Policy (1980).

Further integration has occurred since then with the mutual

agreement between the Ministry of Health (MOH) and BKKBN in 1983 to integrate five programs: nutrition, family planning, immunization, diarrheal disease control and MCH. The integration was accelerated by Presidential instruction in 1986.

Nutritional surveillance was regarded as a strategy for supporting these and similar initiatives. In 1978, the GOI proposed the development of a National Nutritional Surveillance System (later called the Food and Nutrition Surveillance system). The National Institute of Health Research and Development (NIHRD) in the Ministry of Health led this early work, through the NIHRD's Center for Research and Development in Nutrition (CRDN). USAID supported this initiative and has funded development work and the implementation of pilot projects to establish a feasible methodology for some of the components. Cornell University has provided technical assistance to this through the Cornell Nutritional Surveillance Program.

The first steps taken included reviewing the concerns of authorities responsible for nutrition in Indonesia. First priority was given to alleviating the epidemics of malnutrition associated with food consumption shortages. Other surveillance objectives were to be addressed once an effective "system" was developed to cope with the food crises. An important recommendation was that the surveillance system should not be developed as a completely new system, but should take advantage

of existing data collection and intervention activities.

The conventional way of dealing with the food consumption crises was for relief actions to be implemented once acute malnutrition was reported to the local government and assistance requested. Nutritional surveillance represented a strategy for warning about impending crises and intervening to prevent malnutrition before it became serious. This became known as the Timely Warning and Intervention System (TWIS). The first field projects were started in 1979. CRDN led the research and development work to design an appropriate TWIS, with support from the Bogor Agricultural Institute (IPB). In May 1982, the first TWIS started operating in the district of Central Lombok in West Nusa Tenggara, followed by Boyolali, Central Java, in August 1982. CRDN staff were located in the field to assist with the operation, but by the end of the first year the Central Lombok TWIS was operated solely by local staff. IPB worked with a local university in each location to conduct operational research and to train the staff. The TWIS was strongly supported by the local government in the project areas.

At the end of Repelita III, the Ministry of Home Affairs and the Ministry of Agriculture (MOA) produced a map showing the areas of Indonesia that were prone to critical food crises. They pushed to have TWIS's developed in 12 provinces. This was incorporated into Repelita IV. A national TWIS team was

established, coordinated by the Directorate of Community Nutrition (DOCN) with support from CRDN and IPB. The team included a steering committee, technical team and advisory group. The national TWIS teams worked with the provincial governments in several provinces to establish provincial level teams and recruit the involvement of local universities. USAID funded a study under the second development studies project (DSP-II) to facilitate the expansion of TWIS. This study developed methods to identify areas that would benefit from a TWIS, and drafted manuals to support the work involved in implementing TWIS in the designated areas. This work is ongoing. Further expansion to the remainder of the 12 provinces is planned to be carried out with funding obtained from the World Bank to support the implementation of FNSS activities. TWIS is currently being developed, or is operational, in 28 districts of 9 provinces.

The TWIS was addressing an urgent concern of some communities. A workshop held in January 1980 discussed the priorities and the potential scope of nutritional surveillance activities in Indonesia. The workshop concluded that TWIS should be first priority but that other surveillance objectives should be addressed once TWIS was developed. The second major concern, and a much larger problem was the long term malnutrition affecting communities in most regions of the country. Dealing with this had been an explicit development objective in Repelita II and Repelita III. It was felt that it had to be alleviated in

a systematic way. But the diverse conditions in Indonesia, and the size of the country made it difficult to define the issues, much less alleviate the problem.

In 1983/4 the development of nutritional surveillance was reviewed. A national workshop was held to evaluate the work that had been done and to decide on future directions. In addition to supporting the implementation of TWIS in the 12 provinces, the workshop participants recommended that nutritional surveillance should be used to support the programs and policies aimed at alleviating PEM and other long term malnutrition. Thus the scope of the system was broadened. The name "Food and Nutrition Surveillance System" was adopted to stress the importance of sectors outside of health. The recommendations from this workshop were accepted by the government and were formally included as an objective of Repelita IV (1983/4-1988/9). The five year plan contains the following statement:

> "Meanwhile, the SKPG (Food and Nutrition Surveillance System) that began in Repelita III (the third five year plan) will be extended in the areas covered and in its purposes. The system is designed to do the following: first, to give timely warning of an emerging "food crisis" caused by emergencies such as drought, disaster, pest attack, flood etc.; and second, for the purposes of planning, management, and evaluation of food and nutrition improvement programs, including those already underway.

For the first purpose, the SKPG will be expanded to several areas in 12 provinces that have food problems. For the second purpose, it will research and develop available information needed for planning, management and evaluation of programs. In doing the second task, it is hoped to influence several policies in the field of food and nutrition improvement, and that the welfare of the people will be measured with more precision in the future."
(Translation from the Food and Nutrition Section of the five year plan (10-22), 1984)

The mandate given the FNSS was very broad. Recognizing that the job of overseeing and coordinating the FNSS activities would be a major task, the MOH formed a new subdirectorate in the Directorate of Community Nutrition to be responsible for this. Activities since 1984 have been coordinated by the subdirectorate.

One of the first tasks following the workshop was to draw up the Master Plan for the Food and Nutrition Surveillance System (its development was supported by USAID). This comprehensive document presented the overall framework and directions for the FNSS for the period 1984 to 1990. Some details of the Master Plan have been revised since then but the general framework and objectives remain the same. The two additional areas to be

developed were: surveillance for policy decisions; and surveillance for program decisions.

In developing the Master Plan it was recognised that, for some of the objectives of the FNSS, suitable data were not routinely available, and indicators and methods of analysis not well established. Consequently, three pilot projects were implemented to test the feasibility of methods of data collection and analysis needed to support the FNSS. The Master Plan also proposed the study of methods to facilitate the expansion of TWIS to new areas (mentioned above). These projects were subsequently funded by USAID.

The first of the pilot projects tested a nutritional status component to be integrated into the modules of the National Socioeconomic Survey (SUSENAS). The project was carried out by the Central Bureau of Statistics (CBS). In the pilot project CBS demonstrated that it was feasible to add a nutritional assessment component to SUSENAS. At present the component assesses protein-energy malnutrition amongst children under five years of age using anthropometry. It was incorporated into the regular SUSENAS for 1986. It was planned to add the component for the next two years, and then every second or third year after that. These data, together with the socioeconomic and other data already collected will form a valuable database for policy and planning analyses.

The second of the pilot projects was coordinated through the Academy of Nutrition in Jakarta. The project tested a protocol for the collection and preliminary analysis of data for program management and evaluation at the provincial level. The data included: the nutritional status (PEM) of children under five years of age; infant and child mortality; and, participation in selected programs. Community health center staff in selected areas of three provinces carried out the field work (West Sumatra, South Sulawesi and Central Java). The experience of the project suggests that recurrent surveys of this type would be feasible, providing a range of indicators for the provinces, representative at the subdistrict level. This was successfully implemented in the same three provinces in 1986. It was planned to expand the monitoring system to be operational in eleven provinces over the next five years.

The Third of the pilot projects was carried out by the group working on nutritional surveillance at IPB. The investigators combined the data from the three province study (above), with village characteristics data which is routinely collected and available in the provinces (PODES surveys). They conducted analyses to identify village level characteristics which are associated with malnutrition. These types of analyses can be conducted at the provincial and national levels. The output would support both policy analysis, and program planning and

evaluation.

This series of pilot projects was completed by mid 1986. The activities developed have been implemented on a broader scale, along with other key activities. The experience of implementing TWIS in new areas suggests, though, that a lot of work remains to be done in promoting the FNSS within the provinces, training of staff, and adapting the surveillance activities to meet local needs and conditions. Financial support was obtained through the World Bank to implement many of these activities over the next five years. The initial emphasis in these activities has been given to implementing and developing capabilities at the national level.

In October 1986 a workshop was held in Cipanas to discuss food and nutrition policy studies. The broad base of support for nutritional surveillance at the national level was demonstrated by the range of participants at the workshop, which included staff from: BAPPENAS, CBS, CRDN, BULOG, IPB, BKKBN, Litbangkes, Directorate of Community Nutrition MOH, Nutrition Academy, USAID, World Bank, Helen Keller International, Ford Foundation, UNICEF, Swiss Embassy, Cornell University, and Community Systems Foundation (Ann Arbor). The workshop recommended a series of policy studies and established priorities for these over the next few years.

A workshop was also held in November 1986 with the heads of selected districts (the Bupati) and provincial planning offices (BAPPEDA). At this workshop the participants and members of the national FNSS steering committee discussed the objectives and activities of the FNSS and began to develop mechanisms to implement the activities of the FNSS within the provinces. The participants at the workshop recommended that the work begun with the FNSS special projects should continue. They also agreed that TWIS was an appropriate instrument for developing local program participation. These efforts have been followed up by the DOCN.

From this brief history it is evident that the notion of nutritional surveillance, and the objectives of the FNSS have evolved over the last eight years. This is largely because nutritional surveillance is a new concept, and it has developed with the experience that Indonesia has had. Differences between areas within Indonesia, "fine tuning" of activities to adapt to these, and mid-course adjustments to cope with new concerns or priorities suggest that considerable more development will take place. But it appears that the basis has been well established.

III. GENERAL DEVELOPMENT OF THE FNSS COMPONENTS

1. INTRODUCTION

Whereas Section II provided an overall history of the FNSS activities, this section focuses on the development of the individual components of the FNSS. The first to be developed was the TWIS, beginning in 1979. The system has been operational since 1982. The development of surveillance for policy and program decisions was begun in 1984, with the drafting of the Master Plan for the FNSS. In following this plan, the initial emphasis was placed on national level needs, and activities to address these are currently being implemented. Surveillance for provincial and district needs has been developed, but is less advanced than the other areas. These three general components of the FNSS are described separately.

All of the nutritional surveillance activities contribute to the general objective of providing relevant information systematically to decision makers so as to promote decisions that lead to improvements in nutrition. Having a surveillance "system" implies a coherent set of activities to achieve this goal. Some of the activities, such as the TWIS, operate at the district level and are loosely linked to national data collection

and decision making. Other activities, such as the NSMS and provincial level studies, are operationally district and provincial, but are also closely linked with national activities and directed toward decision making at the national level.

2. THE TIMELY WARNING AND INTERVENTION SYSTEM

2.1 Background

Priority in the development of the FNSS was given to the Timely Warning and Intervention System. A food security system (BULOG) had been developed to prevent fluctuations in the price and availability of rice, the staple food (BULOG bought, stored, moved and sold rice to maintain the price and availability in all areas of Indonesia). But even with a well functioning BULOG, food consumption shortages occurred in critical areas. Early investigations showed that failure of income amongst the landless and land-poor at times of crop failure did not permit this group to purchase the available food. TWIS was developed to warn of these impending crises so that action could be taken to minimise their impact.

The early work also showed that many of the decisions about interventions that could be taken to alleviate the crises were made by the head of the district, the Bupati. As a result of this, the development of the TWIS concentrated on a system to be

operated by the local government officials in the food consumption crisis areas. This was to be coordinated within each province by a subcommittee of the provincial Food and Nutrition Board. This board is chaired by the governor and has amongst its members the heads of the government services.

The TWIS was first developed and applied in Central Lombok, a district of West Nusa Tenggara. This project is described in the appendices. The present discussion will outline the approach that is now being applied to the development of TWIS in new areas.

2.2 Steps in designing a TWIS

The current steps in designing TWIS in new areas include:

i. feasibility study by the national TWIS team and provincial officials (the latter become the provincial TWIS team) to assess whether any district in the province would benefit from TWIS;

ii. workshop/meeting in the province to decide steps to be taken as a follow-up to the assessment;

iii. development of suitable indicators (observation and prediction) to be used in each district;

iv. development of a system of data management at various administrative levels (collection, analysis and reporting);

v. establishment of linkage between that information and decisions about interventions to prevent the crises.

These are discussed in turn.

The provincial officials involved (the provincial TWIS team) include staff from both the provincial FNSS group (a group that coordinates the provincial FNSS activities) and from a local university. The involvement of the university is needed because the FNSS groups have limited resources and experience to undertake the studies needed to identify areas and set up TWIS's. The extent of these studies will be more limited as the TWIS is more widely applied, and more experience gained. The initial screening is currently based on a combination of a 'mapping' of the province by factors that are associated with food crises, and analyses of secondary data. This is backed up by site visits to selected areas and discussions with local officials.

After an area is designated as suitable for the development of TWIS, a study is undertaken to investigate recent food consumption shortages in the district. This involves describing: the occurrence and severity of crises in the last five years; the causes and signs of the consumption shortages; interventions used for overcoming consumption shortages; district mechanisms for detecting the shortages and making decisions to start and stop interventions; and, constraints in dealing with the crises. In some areas the problem may vary between subdistricts. This is also investigated. Based on this information, an agricultural-employment calendar is constructed for the food crisis areas.

Likely indicators are assessed against the calendar.

The indicators have been of two types: those that predict the drop in food consumption; and those that reflect concurrent drops in consumption. To date the predictive indicators have relied on agricultural information because the food crises have been caused loss of employment and income associated with the agricultural situation. The indicators have used data on the land area planted for the main crops in the district, areas damaged and harvested, and data on crop yields. The current food consumption has been assessed by collecting data on the types of staple foods eaten in a sample of households during the period leading up to the harvest. The sample has included ten marginal households in each subvillage. The marginal households tend to change their staple food when their incomes become more limited. This is the group most affected by food crises.

With more experience in developing TWIS's, these preliminary studies will become more focussed and straightforward by concentrating on those factors known to be useful in similar areas.

The appropriate procedures for data management and linkage with management decisions vary. An example from Central Lombok is as follows. The agricultural data (area of rice harvested, rice production estimates, rainfall, rice area planted, area of

crop destroyed) are collected from the villages by agricultural extension workers. These data are included in the routine monthly reporting system of the agricultural service. At the subdistrict, they are compiled and analysed by the subdistrict TWIS team. This team includes members from the agriculture and health services, and is coordinated by the head of the subdistrict Public Welfare section. The team also coordinates the collection of the food consumption information and visits problem areas to observe the situation. The results are then reported to the head of the subdistrict. At the district level, the data are assessed for the whole district by the district TWIS team and the results reported to the head of the district as well as to the participating agencies, particularly agriculture, health and social welfare. A meeting is called by the district head to discuss the results, organise to confirm them with direct observation, and decide about the intervention. The meetings may be held monthly for several months before the harvest, and biweekly during the time when consumption shortages are likely or are occurring.

The interventions used to prevent the crises have varied according to the cause and timing. On the basis of surveillance information, when planting has failed, seeds have been provided, or assistance given to start secondary crops (corn, soybeans, sorghum). When a shortfall in rice and associated employment has seemed imminent, emergency public works projects have been

planned and implemented in affected areas; and the timing and location of development projects changed to benefit the affected areas. When a consumption shortage has occurred, food credits have been distributed to vulnerable households, and, where needed, rice sold locally at the standard price.

The provincial TWIS team supervises and supports these district level activities, and monitors the food and nutrition situation in the critical areas of the province. At this level the TWIS team comes under the Food and Nutrition Board. With this administrative arrangement the TWIS provides a close linkage between information and decision making about interventions at each of the administrative levels, subdistrict, district and provincial.

2.3 Current development

The TWIS has been found to be very effective in meeting its primary objective of providing timely information so that appropriate interventions can be implemented to prevent the crises. The local governments have also found it to be a good model for management and for promoting cooperation between sectors. Consequently, there is a lot of support both nationally, and within the provinces that are familiar with TWIS, to expand TWIS to new areas. It is planned to develop TWIS in twelve provinces during Repelita IV.

Expansion of TWIS to new areas began in 1982 in Boyolali and later Bali as part of the first project. Since 1983 TWIS's have also been implemented in several other locations. However, problems were encountered during this expansion, including: selected areas not always suitable for TWIS development because the information used in their selection did not adequately reflect a need for TWIS; the method developed in Lombok to identify indicators for TWIS was not always applicable to new areas; and finally, the level of interest and support from local administrators varied.

These issues were addressed under the USAID funded development studies projects (DSP-II; described in Appendices). A systematic approach to evaluating the need and implementing TWIS in new areas is being developed. The project was begun in the provinces of West Sumatra, Central Java and Lampung. Provincial teams were formed and studies conducted to identify areas that would benefit from a TWIS. Along with this work, the national team has drafted a series of manuals to provide guidelines for implementing and operating the TWIS, written for provincial and kabupaten staff. This work is ongoing.

The implementation of TWIS was reviewed at the workshop attended by Bupati and heads of the BAPPEDA in November 1986. The general objectives of the workshop were: to develop

mechanisms for better management and coordination of the national, provincial and district teams; to streamline the implementation procedures and manuals; and, to institute an ongoing evaluation of TWIS. The participants recommended that the work begun under the DSP study be continued, and agreed that TWIS was an appropriate method for developing local program management.

Presently, TWIS has been implemented or developed in 28 districts of 9 provinces.

3. NUTRITIONAL SURVEILLANCE FOR POLICY AND PROGRAM DECISIONS AT THE NATIONAL LEVEL

The development of surveillance for policy and program decisions was a logical progression from TWIS, focussing on the long term impact of national policy decision and programs carried out on a regular basis. The development began with a systematic review to identify decisions that require nutrition information and to characterize the information needed. We begin by summarizing the proposed uses of surveillance information at the national level and the data requirements. From there we go on to describe the activities and institutional arrangements that have been made to support these. Figure 1 outlines the linkages between FNSS activities at the national level.

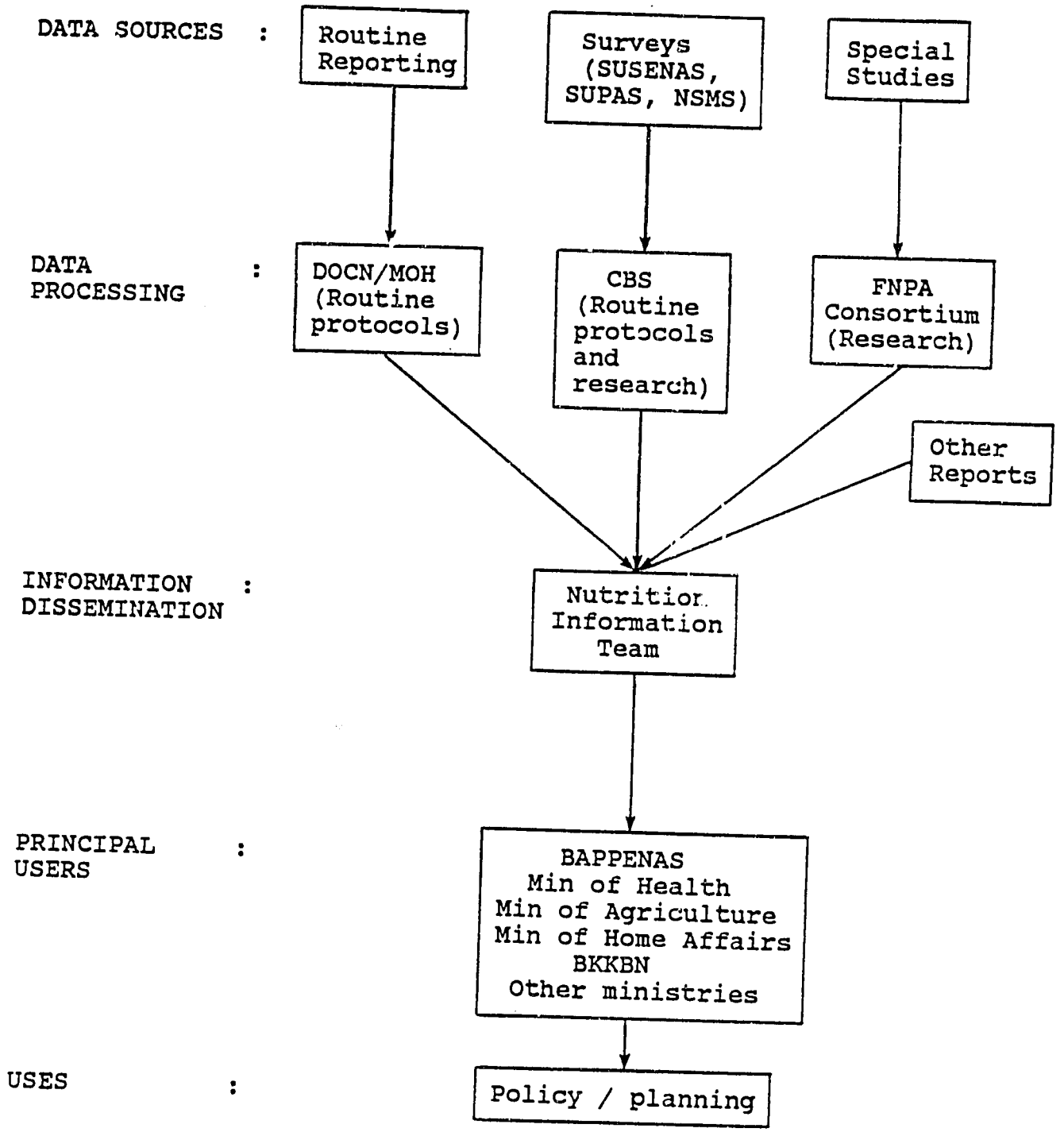

Figure 1: Summary of the linkages between FNSS activities at the national level.

The current status of surveillance for policy and program decisions is reviewed in Section IV below.

3.1 Information Uses and Decisions

Policy is usually made at the national level in Indonesia. Many policies have nutritional objectives, or consequences. The two major agencies most closely involved with decisions concerning these policies are the National Planning and Development Agency (BAPPENAS), and the Coordinating Ministry for Public Welfare (MENKO KESRA). Relevant policy decisions and analyses would include:

a) setting nutrition priorities according to the extent of different types of malnutrition, who is affected, where, the causes, the health and economic benefits and the costs of possible solutions;

b) identifying policies affecting nutrition, primarily those dealing with health, food, economic development, education, and some laws and regulations;

c) considering the nutritional implications of policy decisions, both by estimating the effect before implementation, and assessing its effect after implementation.

With regard to programs, national level officials have primary responsibility for designing programs, securing adequate funding, scheduling and assisting in implementation, solving

important operational problems, evaluating and modifying programs, and deciding which programs should be expanded or cut back. The information required for these activities relates to the operational status of the programs along with knowledge of the outcome and adequacy of the various programs and their components. These decisions are made within the relevant ministries. A more detailed discussion of program management is included in Section IV below.

Data for these policy and program decisions routinely come from program reporting systems, ad hoc surveys and research projects. But, in developing the FNSS, it was felt that additional data needed to be collected for two important areas:
a) the assessment of malnutrition and its determinants at the national level; no nationally representative data were available for PEM, and decisions had to be based on the results of special purpose surveys, or non-representative research findings;
b) for monitoring and evaluating programs; existing efforts relied on data collected during the operation of the programs; this was considered to be generally of poor quality and unknown representativeness.

Ad hoc surveys could address both a) and b) in the short term, but it was decided that routine collection of data relevant to these would be most beneficial. Time series data would expand the capability for analyses for many purposes including

monitoring, evaluations and policy decisions.

Two data collection mechanisms were developed to meet these needs: the SUSENAS nutritional assessment component; and, the nutritional status monitoring system (NSMS). Both have concentrated on the assessment of PEM using anthropometry (an easy assessment tool) during the development phase. The assessment of other types of malnutrition may be included in the future. These are described in more detail below.

For many of the decisions described above, relevant data have been routinely collected but are inaccessible to the decision maker when needed. Often the decisions require information from different reporting systems, and require that nutrition information be available to program managers and planners in other sectors. Consequently the information has been difficult to locate and retrieve, and so has been ignored for decisions that must be made on short notice. A second concern is that even when information is available there may be no attempt to use it, either because the decision maker is not aware that it is available, or is not aware of the nutritional implications of the decision.

To overcome some of these constraints, a team responsible for Nutrition Information (NI team) at the national level was established within the Directorate of Community nutrition. The

main functions of the staff in this team are to coordinate the compilation and analysis of relevant information, and to disseminate information to decision makers. The team has a central role in the FNSS at the national level. It is described in more detail below. Staff are being trained in data management and procedures for routine analyses.

Because few decisions are made on the basis of raw data, the capability for data analysis is an important issue. Generally some summarisation and analysis has to be carried out. For some purposes this will require fairly straightforward procedures and can be carried out on a routine basis by those involved in the data collection, or NI team. Other analyses will require specialised skills and experience. Analysis protocols are being developed to meet the immediate needs for routine analyses at both the national and provincial levels. At a more specialised level, the capacity to conduct food and nutrition policy analysis is being developed through coordinated activities at a number of institutions. The Bogor Agricultural Institute (IPB) is playing a central role in coordinating these. At present a consortium of institutions is undertaking a series of policy studies recommended at the Cipanas workshop in 1984. The function of the consortium is described in more detail below.

3.2 Coordinating and planning

A good deal of coordination and planning is required to guide the FNSS activities and to promote them amongst decision makers. The NI team fulfills some of these functions on a day to day basis. But a more senior FNSS group has been established within the Directorate of Community Nutrition (MOH) to oversee and coordinate all aspects of the TWIS, Nutrition Information and other activities of the FNSS which involve various departments, agencies and institutions. In practice, the committee includes staff involved in implementing each of the activities. It is responsible for:

a) implementing and supervising all operational activities of the FNSS;

b) coordinating the involvement, work plan and budgets of all departments, agencies and institutions involved in the FNSS activities;

c) establishing and maintaining the technical teams for NI, TWIS and other activities where needed.

The FNSS group has several committees to oversee different aspects of its activities. It is guided by the FNSS Policy Group. Subcommittees include the Research Committee, the Planning Committee, and technical steering committees responsible for each of the special technical components.

3.3 Special Components

The discussion above referred to several special groups or activities that have been developed for the FNSS: the NI team, the SUSENAS surveys, the Nutritional Status Monitoring System, and the Food and Nutrition Policy Analysis Consortium. These meet the needs that are described above: to provide appropriate information; to facilitate data collection from a range of sources; to disseminate the information, either to administrators and planners, or to other groups for further analyses; and, to develop the capabilities for specialised analyses. We now describe them in more detail.

3.3.1 Nutrition Information Teams

The NI team plays a key role in the FNSS. Teams with similar responsibilities are also being established at the provincial level. The general aim is to make sure that relevant nutrition information is available to decision makers. Specific objectives are:

a) assemble nutrition pertaining to nutrition;

b) store nutrition information in such a way that it can be retrieved in a timely fashion by planners, administrators, policy makers and researchers;

c) disseminate nutrition information on a regular basis to key individuals, organisations and institutions, as well as to find

and retrieve nutrition information in a timely fashion on receipt of a special request;

d) coordinate the collection and analysis of nutrition data to support important policy decisions;

e) improve management and administration of the Nutrition Directorate.

At the national level, the team is made up of staff from the Directorate of Community Nutrition (staff representing each subdirectorate of DOCN, under supervision of the Director). Rather than actually undertaking all of the NI activities within the Directorate, the team will function as a coordinating body. Thus the Directorate will be a focal point for questions about nutrition programs and undertake compilation of nutrition information (particularly for the programs), but other institutions will act as a repository of nutrition documents and related information, carry out program/policy related studies and analyses, and disseminate information through education programs, the mass media and technical publications. Under this scheme CRDN, the Academy of Nutrition, the FNPA consortium, and the MOH's Health Education group will play important roles.

3.3.2 The SUSENAS Survey

SUSENAS is the national socioeconomic survey conducted by CBS each year. It uses a sampling frame that gives information

representative at the provincial level. A nutritional assessment component has been added to the survey with two objectives: to provide an estimate of the prevalence of protein-energy malnutrition for each province based on anthropometric measures; and to provide a database for food and nutrition program and policy analyses. The nutritional status assessment component was field tested in Cilacap, Central Java. This project is described in the appendices.

SUSENAS has a core questionnaire and three main modules, one added in turn to the core questionnaire each year. The 1986 SUSENAS survey included the nutritional status assessment component for the first time coupled with the housing and environment module. It was planned to include it with the consumption module in 1987 (which already includes food consumption), and with the labor force module for 1988. This would establish a comprehensive baseline dataset with the potential for investigating the relationship between nutritional status and a wide range of other variables in the sample households. In this way, determinants of malnutrition relevant to policy can be identified and subsequently monitored over time.

After these three years of testing, adding the nutritional component every second year would be sufficient for monitoring purposes, thereby combining the nutritional assessment component with each of the three modules every six years. This is frequent

enough to establish changes and trends in the relationship between nutrition and other factors.

There were no major operational problems with the 1986 survey. All children under five years of age in the sample households (22,000) were weighed by CBS field staff to assess their nutritional status. The children were classified by nutritional status and the data tabulated by hand by the field workers. These data have been compiled and the results published. The raw data on weights and other data are also entered on the CBS computers and more extensive tabulations will be produced in the near future.

The data from the 1986 SUSENAS will be available for use by groups outside of CBS later this year. Some studies that will use these data are already planned by the Food and Nutrition Policy Analysis consortium. It is likely that CBS will also carry out some further analyses similar to that described for the SUSENAS pilot project (see appendices).

CBS is currently undertaking a study to determine how feasible it would be to include additional anthropometric measures (length, mid-upper arm circumference) in the nutritional assessment component. The study is being done with a subsample of the 1987 SUSENAS. If these additional measures are found to be feasible and included in the component, the assessment would

be much more informative than by using weight alone.

3.3.3 Nutritional Status Monitoring System

The Nutritional Status Monitoring System (NSMS) is designed to give regular estimates of the prevalence of PEM and health program participation representative of the area served by each Community Health Center; and for each district, infant and child mortality rates. This information is most useful for program planning and evaluation. The NSMS was field tested with a pilot project in three provinces, West Sumatra, South Sulawesi and Central Java. The project is described in the appendices.

The data collection is carried out by the staff of the health center, generally by a nurse or midwife. They are provided with a list of sample households selected by CBS, based on the CBS sampling frame. Each of these households serves as the center of a cluster of households. When the staff go to the field, they go to each of the selected households and then to surrounding households to complete the sample, following a strict protocol.

At each household they collect several types of data: they measure the recumbent length of children between 6 and 36 months of age to assess nutritional status; the mothers are asked about their participation in a range of health programs, and about

child births and deaths.

An important feature of these surveys is that they collect data based on a CBS sampling frame. That is, the data represent both those that participate in programs and those that do not. This allows staff to assess accurately the coverage and targeting of programs, which cannot be done with data from program reports.

The NSMS was implemented in three provinces in 1986: West Sumatra, South Sulawesi and Central Java. In these provinces data were collected for half of the districts for each province. The plan was to collect data from the other half in 1987, and to continue repeating the two yearly cycle after that.

The data were summarised and tabulated by health center staff. These were passed to district staff and subsequently to the provincial and national levels. The staff involved in the NSMS have already received some training in basic analysis, interpretation and presentation of the information. But the best way of doing this depends on user needs. A study which involves meeting with key users in the provinces and discussing their information needs is planned for 1987. This is essential before standard procedures can be finalised.

Copies of the results from the 1986 surveys are presently available in the relevant districts and provinces, as well as at

the national level.

No major operational problems were encountered during the implementation in West Sumatra or South Sulawesi. However, in Central Java the scale of the undertaking caused some delays (six hundred staff were trained).

The overall methodology for the data collection is established. But it is likely that modifications will need to be made to the protocol in light of the experience of implementing the system in the three provinces. A study was proposed at the Cipanas workshop to evaluate the 1986/87 implementation. The evaluation would focus on each aspect of the implementation process and assess the organizational management.

3.3.4 Food and Nutrition Policy Analysis

A consortium of institutions to undertake Food and Nutrition Policy Analysis (FNPA) is coordinating research and analyses related to food and nutrition policy studies to support policy formulation and program planning. The Food and Nutrition Policy study group provides a good basis for the development of the consortium. Its core working group consists of staff members of IPB, Center of Agro-economic Research (CAER, MOA), Center for Research and Development in Nutrition (CRDN, MOH), DOCN, CBS, Academy of Nutrition, and BAPPENAS. Their roles depend on the

particular project, but in general terms it is thought that a close collaboration between CAER and CRDN would be ideal for the future studies. IPB, CBS and the Academy of Nutrition will provide scientific support as well as trained manpower and expertise, BAPPENAS and DOCN will provide direction for the needs for policy formulation and program planning. In addition, the staff of IPB have experience in working with provincial institutions and may play a key role in transfering this expertise to the provinces.

The Cipanas workshop of October 1986 identified 23 studies as being of immediate importance. These are in four general areas:

i. food policy analysis at the micro/disaggregated level;
ii. assessment of the past and present nutrition problems;
iii. assessment of the performance of the existing nutrition and nutrition related programs; and,
iv. the nutritional surveillance, TWIS, monitoring and information system.

Terms of reference are being prepared for the studies and possible implementing institutions have been identified. Cornell University will provide technical assistance for some of the studies to be undertaken in the next two years. Several of the studies will use data generated by the SUSENAS nutritional assessment component, and the NSMS, in combination with other

data sources.

4. NUTRITIONAL SURVEILLANCE FOR POLICY AND PROGRAM DECISIONS AT THE PROVINCIAL AND DISTRICT LEVELS

The development of surveillance for provincial and district levels began in 1984, along with the national level activities. Most of the activities described above for the national level will also be implemented in the provinces. Refer to Figure 2 for an overview of these, and for the linkages between the activities. However, many of the details remain to be worked out. We review the application of surveillance for the management of nutrition and non-nutrition programs and then briefly describe the activities planned to support these. These were implemented in West Sumatra, South Sulawesi and Central Java in 1986. The current five-year plan includes developing the FNSS activities in the eleven most populous provinces (covering 80% of the population).

The current status of surveillance for policy and program purposes is reviewed in Section IV below.

4.1 Information Uses and Decisions

Most program decisions are made at the provincial and district levels following broad outlines designed at the national

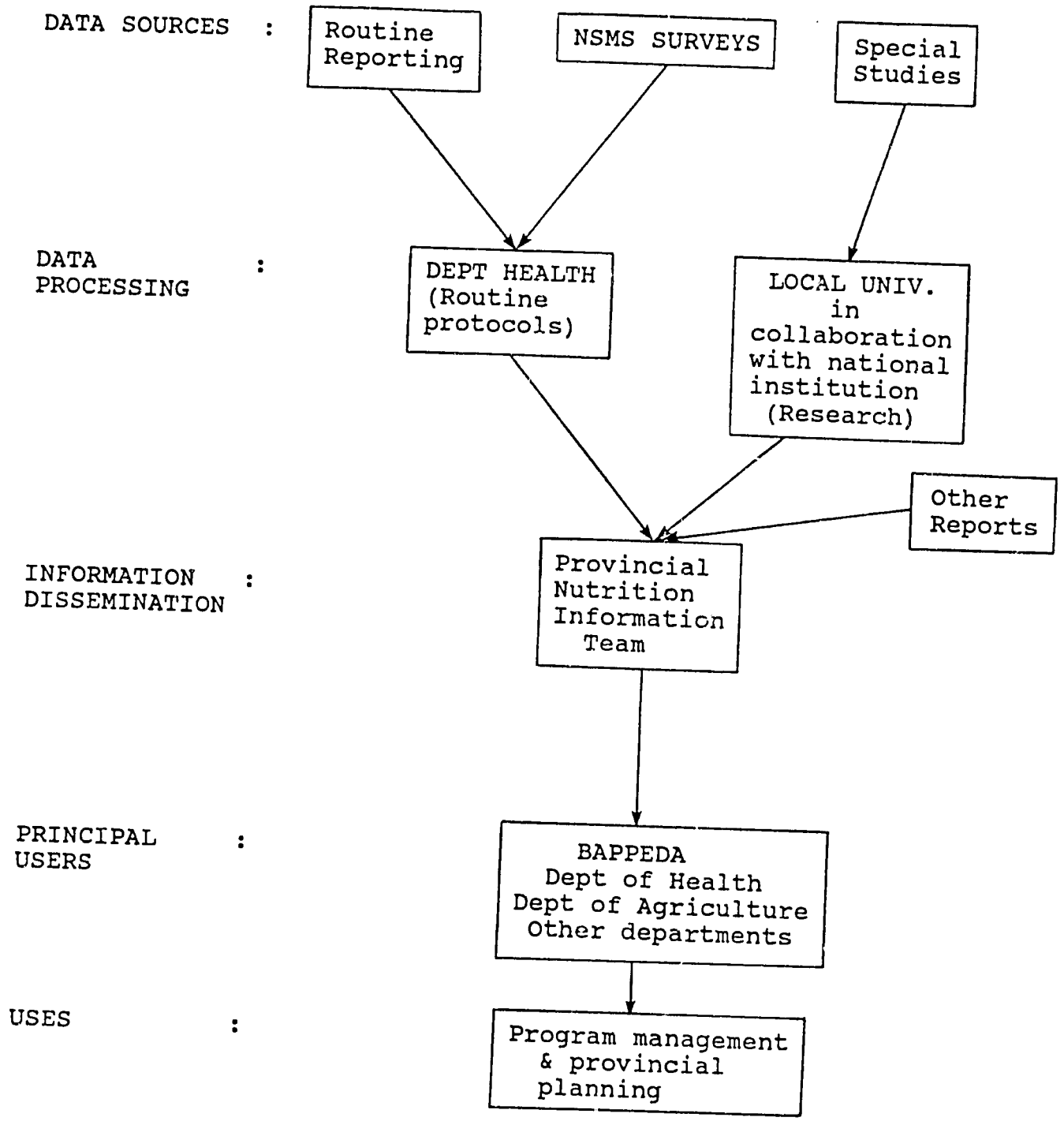

Figure 2a: Summary of the linkages between FNSS activities at the provincial level.

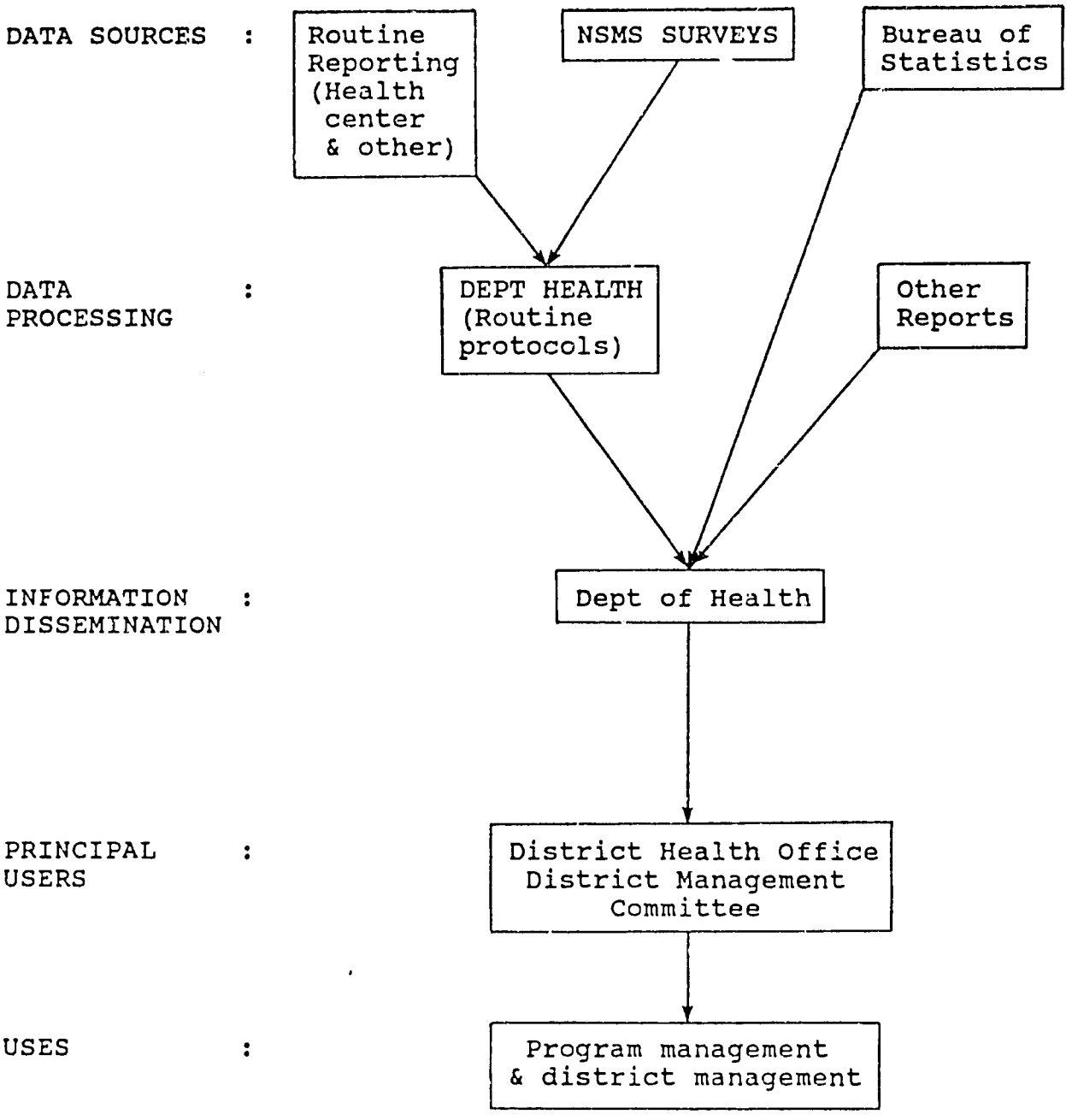

Figure 2b: Summary of the linkages between FNSS activities at the district level.

level. The discussion that follows describes relevant program activities and the types of program decisions for which surveillance information would be relevant. This application of surveillance will be further developed in the near future.

Both nutrition and non-nutrition programs can potentially have an effect on the nutritional state of a community. Malnutrition is largely associated with poverty. Its root causes can be any factors that affect the food availability to an area, to a household or to an individual, as well as factors that affect the living conditions and health of individuals. Thus nutrition programs might affect the nutritional state of a community directly, while many other programs do this indirectly.

Some of the activities of nutrition programs include: identifying and treating cases of severe malnutrition; providing supplementary food to those with malnutrition; giving doses of nutrients (particularly vitamin A, iodine and iron) to those suffering from a deficiency or to vulnerable groups; educating people to improve breastfeeding, weaning and other eating and feeding practices, either to overcome specific deficiencies or more general practices for good health; and, fortifying commonly eaten foods with nutrients such as vitamin A, iron and iodine.

The activities of non-nutrition programs that could affect nutrition are more varied and depend on the sector. The

following list is not exhaustive but includes the main activities.

* Health: mother and child health services; immunization, sanitation and water supply programs, all aimed at reducing the amount of infectious diseases; programs to improve health services in general;

* Population and family planning: small families are more able to devote resources to strategies which promote health and nutrition; family planning activities are also integrated with nutrition activities;

* Agriculture: monitoring of local availability of food stocks (MOA and BULOG); programs supporting main staple and other food production/diversification; horticulture promotion, including home garden promotion; these programs are particularly important when they benefit vulnerable groups, either by increased food availability or increased income;

* Education: formal and non-formal education can improve nutrition where they disseminate information such as improved agricultural and health practices, or improve knowledge and skills which increase income; school health programs;

* Economic: increased income of vulnerable groups usually leads to improved food consumption, education and health care.

For both the nutrition and non-nutrition programs, nutritional information can be used as a basis for decision making during the design, planning, operation and evaluation

phases of the programs:

a) Program Design

i) nutrition: decide on the program objectives and activities according to the prevalent nutrition problems, causes, vulnerable groups, and past experience in dealing with these;

ii) non-nutrition: consider the likely nutritional consequences when deciding between alternative programs and components that would meet the primary program objectives; select the program target group, and program components to maximize the nutrition benefit;

b) Program Planning - both nutrition and non-nutrition: select program areas according to the extent of the nutrition problems; include the nutritional aspects of the program in staff training;

c) Program Operation - both nutrition and non-nutrition: are planned activities being implemented; is the program reaching the nutrition target groups; is coverage adequate;

d) Program Evaluation - both nutrition and non-nutrition: is the nutrition problem being alleviated; what is the adequacy of the program and its components; how can the program be modified to increase its adequacy?

These decisions are made by program administrators and planners at various levels. At the village level the program staff require feedback regarding their performance and the progress of the program. Apart from this their data need is minimal. Subdistrict level staff are generally in the position

of seeing that the village level programs are implemented as planned and supervising on a day-to-day basis. Their decisions involve the allocation of staff time to various program activities and locations. Therefore information on the location, nature and extent of nutrition problems, and process monitoring of the programs are useful as a basis for their decisions. At both the village and subdistrict levels informal communication and first hand observation are as important as a structured data flow. This is in contrast to the district, provincial and national levels where it is no longer possible to depend on first hand observation.

District level officials play a key role in implementing and operating the programs. Many of the decisions outlined above for program planning and operation are made by the head of the district and his staff. They generally have responsibility for coordinating programs, and for organising surveys or undertaking analyses to support the operational decisions. Therefore, information on the location, nature and extent of nutrition problems, process monitoring and evaluating the adequacy of the programs are important for effective decisions. TWIS provides a good model for how the overall FNSS can be developed and operate at the district level. There has been a trend to bring formal planning activities to the district level. As this progresses, the FNSS activities will become even more relevant.

Provincial level officials have substantial responsibility for making decisions concerning which programs to empha .ze and where to locate them. They also are able to modify programs to a certain extent, to improve their effectiveness. Thus, information related to all aspects of program planning, operation and evaluation are likely to be useful for provincial staff. But these decisions are made by many different groups at the provincial level. For example day-to-day decisions concerning nutrition programs are made by program staff in the Provincial Health Office. Program planning and evaluation is more the responsibility of the Nutrition Improvement Board (BPGD) and the Provincial planning and development Agency (BAPPEDA). A similar structure pertains to non-nutrition programs.

4.2 Coordination, planning and special components

The organization of FNSS activities at the provincial level will be similar to that already described for the national level. A provincial FNSS group will be responsibile for overseeing and coordinating the FNSS activities within each province. These groups will probably be a subcommittee of the provincial Nutrition Improvement Board (BPGD), which includes representatives of various departments, but principally health and agriculture. The groups will have a similar range of repsponsibilities as those already described for the national level group, principally to oversee and coordinate the FNSS

activities.

Provincial NI teams will be reponsible for the day-to-day coordination of activities, compiling and summarising relevant information, and disseminating this to decision makers. At the provincial level the NI teams will fulfill the same function as already described for the national level, but the staffing and location will depend on the province. It is likely to be a subcommittee of the provincial BPGD, but it would also need fulltime technical staff. Specialised technical expertise is needed to compile and interpret the nutrition information. They will not be responsible for data analysis. The provincial units will probably have a more direct involvement with planners and decision makers than their national counterparts. But, as with their national counterparts, the provincial teams will rely heavily on local universities and other groups to undertake analyses and special studies.

The Nutritional Status Monitoring System will provide the main source of information for provincial level surveillance. The methodology for these surveys was developed to meet these needs.

These activities have been implemented in three provinces. This limited implementation will be used to further develop the use of surveillance for program management and other needs within

the provinces. It is not clear at present how the FNSS will be organised at the district level. The NSMS provides a valuable source of surveillance information for the districts, as has been described. But other activities remain to be developed.

IV. CURRENT STATUS OF THE FNSS

1. OVERVIEW

The earlier sections of this report have documented the history and development of the FNSS and its components. We now turn to the present state of the practice of surveillance. In this we highlight the main constraints that exist for implementing or expanding the FNSS. Based on this discussion we recommend areas that need to be further strengthened or developed.

In early 1986 a detailed schedule was drawn up for further implementing the FNSS activities at the national level and expanding in the provinces. Surveillance for national policy and program purposes has been progressively developed and will continue, including the special studies that were discussed at the Cipanas workshop in October 1986. For the provinces, the five year plan included implementing TWIS in selected districts of 12 provinces, and introducing surveillance for program purposes in the 11 most populous provinces (covering 80% of the population).

The expansion of FNSS activities is supported by funds under a World Bank loan specifically for this, and counterpart GOI

funds. The schedule for implementing these has been changed for the current year (1987/88), because of a drastic reduction in the GOI budget. Budgetary uncertainty makes it difficult to predict what will happen to the activities in the next few years. The activities funded by the World Bank will be largely unaffected. The work that will be curtailed is that funded directly from the GOI funds, principally operating costs for field activities, and in-country training. The extent to which this constrains individual activities is included in the discussion below.

2. SURVEILLANCE FOR POLICY PURPOSES

Some examples will illustrate how the FNSS functions for policy and planning purposes. BAPPENAS, MENKO KESRA, or other agencies direct their questions concerning food and nutrition to the Nutrition Information team at the Directorate of Community Nutrition. These may be simple requests for information, something requiring a detailed analysis, or a special study: for example - What is the coverage of the Vitamin A distribution program in West Java?; an analysis to assess the impact of promoting secondary food crops on food consumption and nutrition (based on SUSENAS and Agricultural survey data); a field study on the functioning of the existing village rice bank and its impact on food security at household and village level. The NI team would decide who to direct the request to: the request for information may be answered from existing documents held at the

DOCN or Academy of Nutrition, while the analysis and study would be carried out by members of the FNPA consortium.

What are the current constraints to this system? For the Nutrition Information team the main constraints are organizational and lack of experience in information management. The information management is a new activity in the DOCN and it will take some time before they are set-up to respond to all requests. A consultant has been contracted to assist in developing the system and several staff have been designated to undertake training. Two staff from the Directorate are already enrolled in graduate degree programs in the U.S. to equip them to support NI and other FNSS activities. It is intended that other staff will have training in information management, but the funds for this type of in-country training have been cut for the coming year. With regard to the other NI team responsibilities (coordinating data collection, analysis and special studies), many of the team members have been intimately involved with coordinating the development of FNSS activities and have worked with the FNPA consortium. So they are experienced at this.

For the consortium of institutions involved in food and nutrition policy analysis the main constraint is the capacity to analyze data in a way which is appropriate for policy studies. The GOI has recognised that for many of the policy studies planned for the next two years, the key Indonesian institutions

do not have the expertise needed for the appropriate research and analysis. Cornell University will assist in this work to provide some immediate information for policy makers. However, it is essential for future work that the capacity to carry out this work be institutionalized. The Indonesian counterparts to the Cornell researchers will benefit from the research experience. But advanced training for other staff is needed to strengthen the institutions for policy studies. Without this staff development the GOI will continue to depend on foreign expertise to get the information needed by policy makers.

The SUSENAS surveys will be a key source of data for many policy questions. As we noted earlier, the nutritional assessment component was added to the 1986 survey with no major operational problems, and problems are not anticipated for the future. Although not a constraint on present activities, it will be important to continue to include data quality control measures, and to evaluate the usefulness of other indicators (eg: other indicators of PEM, Vitamin A deficiency ...).

In summary, the main constraints for further implementation of surveillance for policy purposes are:

a) lack of staff training and experience in information management within the DOCN;

b) limited institutional capacity to undertake appropriate research and analysis for some policy issues.

3. SURVEILLANCE FOR NUTRITION PROGRAMS

The type of information used, and the way that it will be used depends on the level of administration. At the national level the DOCN receives regular summary reports of program activities from the provinces, and summary reports from those provinces with the NSMS. Using these information the DOCN monitors the status of the programs. In addition, the DOCN undertakes special studies and analyses to evaluate programs, to improve reporting systems, to develop new activities and so on. Many of these overlap with the policy studies (an example is the proposed evaluation of the Family Nutrition Improvement Program, UPGK). The development of the NI team and the FNPA consortium should facilitate these functions. In general terms, the institutions in the consortium have adequate numbers of experienced staff to carry out the scope of work for nutrition programs at the national level.

At the provincial level a different set of constraints exist. To date the work in the provinces has been dominated by technical concerns with the development of the NSMS and TWIS. The major task now is to focus on the uses of the information for program management. In the provinces where the pilot projects were conducted, the health and nutrition staff have been particularly supportive and interested in the outcomes of the

projects. The training sessions for the projects served as a good forum for introducing some of the technical aspects of surveillance. However, for the future expansion of the FNSS, it will be important to demonstrate the usefulness of the costly and time consuming FNSS activities, for both nutrition and non-nutrition programs. The workshop held with Bupati and heads of BAPPEDA in November last year seemed to be successful in generating interest and support amongst these leaders. In 1987 the DOCN will conduct a further study of decision making and information use in selected provinces so as to improve the existing guidelines for analysis and presentation of the nutrition information. This will be relevant to both nutrition and non-nutrition programs.

The provincial NI team will be the central group for FNSS day-to-day activities in the provinces. The NI staff will require expertise in interpreting nutrition information, information management and a limited capacity for data analysis. They will depend on local universities and other institutions within the provinces to undertake more detailed analyses and special studies. At the moment the provinces do not have good capabilities in most of these areas. Some orientation to the FNSS and training was provided during preparation for the NSMS surveys. In addition, NI staff from 3 provinces were designated for special training this year, but it seems that this will not go ahead because of the budgetary constraints.

At the district level and subdistrict levels, staff have been trained during the preparation for the NSMS surveys. This has included discussion of the use and interpretation of information coming from these surveys. This training, and ongoing interactions with provincial staff, will be important for developing the use of these data at the district level. However, there needs to be a careful evaluation of other data needs at this level. The focus has been on national and provincial level needs, and therefore concerned mainly with program planning and evaluation. But the primary responsibilities in the districts and subdistricts are for the day-to-day management of programs. Thus, the types of information needed are quite different. The use of routine reports and other sources of information should be re-examined in light of the additional information now coming from the NSMS surveys. It should be remembered that the NSMS surveys are to be conducted once every two years in any given area. It is likely that other information, on a more frequent basis may be needed for effective program management. One approach to developing the FNSS in the districts and subdistricts would be through adapting the TWIS approach to management, routine reviews of key indicator information, to the management of broader food and nutrition issues.

The NSMS was developed as an additional, reliable source of nutritional status and program information for the provinces. It

was implemented in 3 provinces in 1986 (the same 3 as for the pilot projects). The implementation went well, but experience with TWIS and other programs suggests that modified versions of the system will need to be considered as the NSMS expands to new provinces. It is planned this year to evaluate the implementation of the NSMS in the three provinces. There will be no expansion of the NSMS to new areas in 1987 because of budgetary restrictions. This will give FNSS staff the opportunity to thoroughly assess the first year of operation and also develop the other aspects of the FNSS in the 3 provinces to make sure that the real information needs are being met.

As the NSMS is established in a province it will be useful to review it for other purposes as well. These surveys could include a limited number of other health and program indicators and so broaden its usefulness.

In summary, the main constraints at present for implementing the surveillance for nutrition programs are:

a) the practical application of surveillance for program management is not well developed;

b) lack of NI staff training and experience at the provincial level in nutritional surveillance, for information management and for basic analysis;

c) lack of experience in provincial universities for undertaking research and analysis to support the provincial FNSS.

4. SURVEILLANCE FOR NON-NUTRITION PROGRAMS

Most of the considerations described above for nutrition programs also apply to surveillance for non-nutrition programs. The use of surveillance for program management is not well developed. However, there is already interest in developing close links between some non-nutrition departments and programs and the FNSS. At the national level, many of the studies that are planned in FNPA over the next two years have implications for non-nutrition programs, particularly in health, population and agriculture. The institutions involved in the FNPA consortium come from various ministries and on this basis already have direct involvement with the FNSS. At the provincial level, different provincial departments are involved with the BPGD, which is responsible for FNSS activities in the provinces. However, interest from other departments may depend on being able to demonstrate that surveillance is useful. The success of TWIS is important here since it has demonstrated the value of combining information from various sources to tackle the problem of food consumption crises. The national level studies should also serve to reinforce the value of combining data sources for particular purposes. The study being carried out by the DOCN on decision making and information use should serve to focus some of the efforts at the provincial level.

At present the main constraints to expanding surveillance for non-nutrition programs appear to be:

a) limited development of nutrition information use for non-nutrition programs;

b) limited access to FNSS information.

5. TWIS

TWIS is different from the other FNSS activities in that it has been fully operational for the last 4 years and the national TWIS team has already worked with 9 provinces to set up TWIS's. The main technical problems that were encountered in developing the systems in the new areas were addressed in the DSP-II project. This work streamlined the process of adapting the system for the new areas. It should be further developed now that there is more experience and data to work with. With 28 TWIS's in operation it is possible to move beyond case studies to undertake a more rigorous evaluation of indicators and procedures.

The Bupati of Central Lombok, the district where TWIS has been operational for the longest, strongly advocates implementing TWIS to address food consumption crises. But in addition he argues that the TWIS has provided a good model for general management in his district and he uses a similar approach to address other issues. Field staff are also more careful in their

data collection because they are now aware that it will be used directly by the district management team. Other districts are considering using TWIS to improve their general management even though they do not have recurrent food consumption crises. This aspect of TWIS could be further developed, particularly with regard to integrating other FNSS activities into local government.

The development of TWIS also has advantages for implementing other FNSS activities. It provides a good example of the use of selected information for decision making, and of the usefulness of integrating information from different departments. In addition, by stressing district level surveillance it complements the activities being initiated for the other FNSS components.

At present the main areas to be developed for TWIS are:

a) mechanisms for management and coordination of activities;

b) an ongoing evaluation of TWIS which includes methods of adapting TWIS for new areas, and a more rigorous evaluation of indicators and procedures.

6. AREAS TO BE STRENGTHENED

The FNSS includes many different activities, and these have had to be developed in stages. Thus, we have identified constraints that currently exist for implementing and expanding

the FNSS, while recognizing that many of these will be addressed by planned activities. The constraints fall into two general areas: institutional limitations; and issues where research will be needed for further development. We discuss these in turn.

The main institutional limitations are the lack of experienced or trained staff for the Nutrition Information teams, for undertaking policy analyses at the national level, and for undertaking special studies and research at the provincial level. These are key functions for the FNSS, and successful expansion of its activities will depend on a commitment to developing these capabilities. Suitable training would include: for the NI staff, short term training should be adequate; for policy analyses, advanced training for selected FNPA consortium staff, and experience as a counterpart to outside researchers; for provincial research, advanced training for selected local university staff, and experience through collaborative research with national institutions.

The second group of constraints will need to be addressed by special studies. The main areas to be investigated include: surveillance for program management; further development of surveillance for non-nutrition programs; FNSS activities at the district and subdistrict levels; and an ongoing evaluation of the implementation of TWIS, the NSMS and the SUSENAS survey. Research has been important for developing the FNSS. In the

future, research will continue to be important, but the amount of research relative to the scale of the activities will be much less. Most of the research should focus on adapting the FNSS to meet the needs of new locations and to expand the scope of the activities. We discuss each of these below.

Although there are general guidelines for the use of surveillance information for program management, there is little experience to draw on in this area. Based on this it will be important to work closely with program administrators and BAPPEDA, particularly in the provinces where the NSMS and TWIS has been implemented, to develop more detailed guidelines and examples for use in other provinces. This applies to both nutrition and non-nutrition programs.

FNSS is not well developed at the district and subdistrict levels. TWIS has been recognised as a useful management approach and could be adapted for surveillance for other issues, drawing on program reports and the NSMS data.

An ongoing evaluation of TWIS, the NSMS and SUSENAS survey will be important for the future development of the FNSS. The following issues need to be addressed. There is concern that in some districts Community Health Center staff will not be able to cope with the additional workload imposed by the NSMS. This needs to be carefully evaluated and alternatives investigated.

Experience with the TWIS has shown how important it is to adapt the system to local conditions. The same is expected for the NSMS as it is introduced to new provinces. In fact we might expect that TWIS, NSMS and the SUSENAS survey will each need some adjustment in procedures and "fine-tuning" as more experience is gained in the FNSS. Finally, both the NSMS and SUSENAS surveys were developed to provide reliable and representative data. An ongoing evaluation is a means of assessing how well the surveys meet these goals, and adjusting the procedures as required.

In the long term, an additional area to be developed is the scope of the FNSS activities. At present the system focuses on PEM in preschool children. In the NSMS, a small number of questions also deal with participation in nutrition programs. Although it is important that the procedures and the questionnaires remain short and simple, the NSMS and SUSENAS surveys could include a limited number of other indicators. This could be other health or program indicators, or specific indicators for Vitamin A deficiency, goiter etc. Because of this the surveys could be a valuable means of evaluating the process and outcome of programs, as well as describing the health condition of the community.

Additional mechanisms for collecting information on a large scale could also be considered to supplement the other sources of information. Of particular interest are surveys amongst school

children. For example, dietary recalls collected from this group periodically would facilitate monitoring changes in dietary patterns such as an increase or decrease in the use of a particular staple food. Weight and height measurements in this group may also be useful for detecting changes in the growth patterns of Indonesian children over time.

7. INTEGRATION OF NUTRITION WITH NON-NUTRITION INFORMATION SOURCES

An objective of the FNSS is to integrate nutrition and non-nutrition information for use in program management and policy decisions. In this section we provide examples of uses of integrated information in the Ministry of Health (MOH), the National Family Planning Coordinating Board (BKKBN), the Central Bureau of Statistics (CBS), and discuss possible mechanisms for doing this. A more detailed development is beyond the scope of this document.

7.1 Ministry of Health

Nutrition is only one determinant of health and survival, and so is one of several considerations in deciding on policies, developing programs, and taking action to improve the health of a community. In addition, the health sector has a range of program reporting systems and routine surveillance activities that complement the nutritional information gathered by the FNSS. An immediate focus for combining these sources of information is planning and management for the expansion of the Pos Yandu.

The Pos Yandu aims to reduce infant and child mortality by providing integrated services at the village level, including: nutrition, immunization, diarrheal disease control, MCH and

family planning. Although it is planned that the services will eventually operate in all villages, the GOI does not have the resources to implement the five services simultaneously in all villages. The Pos Yandu will generally expand by adding services to existing services in the villages. Integrated information would be a useful basis for guiding this expansion so that the major needs of a village are met first; that is, priority for diarrheal disease control is given to diarrhea prone areas, nutrition programs to malnutrition prone areas, and so on.

Integrated information will also provide an input for evaluating both the implementation (process) and outcome of the Pos Yandu. With regard to a process evaluation, the NSMS will complement program data since it includes some program participation questions. These non-program data provide a reliable measure of whether the services are reaching the intended target group, and of program coverage. The NSMS will also provide a valuable input for outcome evaluations because it provides estimates of infant and child mortality rates.

Actual integration of the information sources is likely to be best accomplished by individual administrators, and through special studies. The NI teams will play a key role here by disseminating the FNSS information and maintaining up-to-date records on specific issues. They can also assist in interpretation of the FNSS data, but it is beyond the scope of

their work to undertake detailed analyses and data integration.

7.2 National Family Planning Coordinating Board

BKKBN provides a good example of the potential for integrating information across sectors. The links with the DOCN are already close. A national policy objective is to promote the "small, happy, healthy and prosperous family". Both prudent family planning practices and an adequate nutritional status for the family are key outcomes for this policy, and, at the program level, family planning and nutrition activities are integrated in the KB-Gizi and Pos Yandu programs.

The close cooperation with the MOH is illustrated by the fact that BKKBN routinely analyses the information provided by the village level child weighing program (SKDN). These information, along with BKKBN reports, are used to assess how well the objectives of the programs are being met. Implementation of the NSMS will provide complementary data to address key issues: where are the services most needed; are the services actually reaching their intended population; and, is the program outcome as expected. These have already been briefly discussed in the context of the Pos Yandu.

An important feature of the NSMS is that it is representative of the population served by a health center,

regardless of whether or not they participate in programs, use the health center or any other facilities. Thus the NSMS can obtain a direct measure of program participation, without having to make assumptions about population size or any other parameter. At present, the survey questionnaire asks whether the sample child participated in the weighing program, and other programs, during the last month. With this information it is straightforward to estimate the participation rate for the weighing program for each health center area (or aggregated to a higher level). By comparing the participation rates with the rates of malnutrition, one can also see whether the program is being utilized in the areas that need it most.

The NSMS data summarized by Health Center area will be available at all levels, subdistrict, district, province, and nationally.

The NSMS and SUSENAS survey information will also be suitable for special studies within the area of interest of BKKBN, including an evaluation of the nutritional aspects of the integrated programs, and of the success of the "small, happy, healthy and prosperous family" policy. BKKBN has already been involved in discussions regarding participation in the FNPA consortium to undertake some of the special policy studies discussed during the October 1986 workshop at Cipanas.

BKKBN is also a valuable source of information for special studies. Recently BKKBN has supported or collaborated in several large studies which, amongst other things, have assessed nutritional status. There has already been much discussion of the potential uses of these data for policy analysis studies.

7.3 Central Bureau of Statistics

CBS is a primary source of data for a broad range of research activities. Relative to food and nutrition, the SUSENAS surveys have provided, for a number of years, food consumption and health care usage indicators, as well as a range of socioeconomic and demographic data. Beginning in 1986 the nutritional assessment component was added. It has been planned to add it again in 1987, 1988, and each second or third year after that. Family planning acceptance indicators will also be added in the near future. The SUSENAS is therefore a valuable database and source of summary information for a range of policy and planning studies. Many of the policy studies planned for the next two years will use the SUSENAS data.

The FNSS committees and FNPA consortium should continue to work closely with CBS to ensure that the SUSENAS data collected and analyses conducted are useful for policy formulation. C B S also conducts a range of other surveys including the census and inter-censual surveys. The results of some of these may also be

useful for individual analyses.

There are three main mechanisms for using the SUSENAS and other data.

Firstly, one could use the tabulated results published by CBS after each survey. An example is the recent publication with tables giving the prevalences of malnutrition, based on the nutritional assessment component in the 1986 SUSENAS. The results are given for different levels of malnutrition, by age group, and for rural and urban populations within each province. Depending on the purposes of the study this may be sufficient. It could be analyzed with other data representative of the same groups. CBS also publishes annually a document providing "welfare indicators". This includes indicators on food, nutrition, and family planning.

More detailed analyses are possible with these data since one can use the observations for individual households in the sample. This second option would have to wait until the data tapes are formally released to be used by the research community. The 1986 SUSENAS data is unlikely to be released until late 1987.

The third option is to collaborate directly with CBS with the analysis of the data. This would involve developing a formal proposal with a unit of CBS to undertake the work. There is an

established procedure within CBS for doing this. CBS staff have the advantage of being able to work with the data before it is released.

V. CONCLUSIONS AND RECOMMENDATIONS

1. CONCLUSIONS

We began by noting that the Indonesian surveillance efforts are unique in the comprehensive approach that has been taken. Indonesia is a pioneer in this regard, because much of the FNSS has been developed without being able to draw on the experience of other countries. One must not lose sight of this. In addition, whatever shortcomings are suggested must be viewed in light of the system being developed in stages, and of the significant accomplishments to date. This review comes during the expansion of TWIS to new areas, during the transition to implementation of FNSS activities for national planning and policy formulation, and during the development of surveillance within the provinces. USAID has provided continued funding and other support for these activities since their inception in 1978. This support has been critical for the general development of the FNSS.

TWIS is now operational in 28 districts prone to food consumption crises, and evaluations of the Central Lombok TWIS suggest that the system has contributed to preventing crises since it has been operational. This experience has also

demonstrated the value of combining information from a variety of sources for addressing food and nutrition concerns in the districts, and reportedly provides a good model for other areas of administration.

Surveillance is sufficiently established at the national level to undertake analyses and projects concerning a range of food and nutrition issues. Some of these are relevant to the policy and planning needs of individual Ministries (particularly Health and Agriculture), while many meet needs across Ministries and sectors. Thus the principles and practice of surveillance are becoming well established at this level. At present, the main limitation for undertaking many of these studies is the limited institutional capabilities for the specialized analysis or studies needed.

Surveillance activities to support provincial and district level planning and program management are operational in three provinces. But these are new to the provinces and so it is too soon to expect concrete examples of their role in the adminstration. In addition, the application of nutritional surveillance to program planning and management is not well developed. This methodology and the capability for provinces to undertake relevant research will need to be addressed during the next stqge of development of the FNSS. Despite this, there appears to be a high level of interest and support within the

provinces.

Special studies and pilot projects have played a major part in the development of the FNSS so far. With implementation of the FNSS activities the relative contribution of such studies will become much less. However, the actual amount of research needed might increase with the scale of implementation. We have emphasized the importance of evaluating the FNSS activities in each new province where they are implemented. Indonesia is extremely diverse in the needs and priorities of different provinces and the infrastructure and staff capabilities available to support the FNSS. The FNSS needs to be flexible enough to adapt to these.

The Ministry of Health initiated the FNSS activities and has provided the major support for its development, with significant support from other groups. Recently the focus of the FNSS activities has broadened to include more non-nutrition activities, and there is considerable interest in agencies and institutions whose primary interests are population, agriculture, agro-economic research, social research, demography, and public health. Although the relative role of the MOH will lessen as this develops, the MOH will continue to be the principle user of FNSS information, and to provide the main support.

We conclude that a good foundation has been laid for the

implementation and expansion of the FNSS, but that studies to further develop the FNSS are essential. Much of the focus to date has been on technical issues and methodology. This was appropriate and will continue to be important. However, the main focus has shifted to information use and decision making relevant to food and nutritional problems. This is new ground with little experience to draw on, particularly at the provincial and district levels.

2. RECOMMENDATIONS FOR FUTURE DEVELOPMENT OF THE FNSS

In Section IV, we discussed the current status of the FNSS and identified areas that need to be strengthened during its future development. They are summarized below under the two heading: developing institutional capabilities; and, special studies. Work is already underway in many of these areas. Specific recommendations are made, identifying areas for USAID that would clearly benefit from continued technical and other assistance. In these recommendations we have focussed on activities that support and complement those currently planned by the GOI.

Developing institutional capabilities:

The main institutional limitations are the lack of experienced or trained staff for the Nutrition Information teams,

for undertaking policy analyses at the national level, and for undertaking special studies and research at the provincial level.

Recommendation: Support appropriate advanced training for selected staff from i) the institutions involved in the national food and nutrition policy studies, and from ii) provincial universities that will be conducting operational and other research associated with the FNSS.

Recommendation: Provide specialized technical assistance for specific projects coordinated through the FNSS, both at the national and provincial levels. This would include both short and long term assistance, depending on the project, and provide the opportunity for local counterparts to gain experience and build the capability for undertaking similar work independently in the future. A model for this is currently being developed with the studies being undertaken through the FNPA consortium.

Recommendation: Support the establishment of specialized teams within provincial universities to undertake studies for the FNSS; that is, provincial counterparts of the national level Food and Nutrition Policy Analysis consortium, coordinated through the provincial FNSS committees. This could be achieved through some combination of: long term support for a specialized unit, training for key staff, and/or support of specific research projects. The resources already available and the needs of each

province are likely to vary.

Special studies:

The main areas to be investigated include: surveillance for program management; further development of surveillance for non-nutrition programs; FNSS activities at the district and subdistrict levels; and an ongoing evaluation of the implementation of TWIS, the NSMS and the SUSENAS survey.

Recommendation: Undertake short term studies in West Sumatra, South Sulawesi and Central Java to develop mechanisms for meeting information needs relevant to the FNSS (nutrition, health, agriculture, and other areas). There is little experience on which to draw in this area. The studies would involve working with the provincial government to develop protocols to meet routine information needs, and identifying issues requiring specialized analysis and other research. The resources needed for undertaking this research should be described and local resources evaluated. General guidelines for mechanisms to meet information needs within provinces should be developed, based on the experience of these three provinces.

Recommendation: Undertake to support some of the provincial research projects identified in the short term studies above. Based on experience at the national level, the projects will

likely focus on health and agriculture, and involve some collaborative research.

Recommendation: Undertake a longer term evaluation of the use of information for program management. The main foci for this would be the Pos Yandu and UPGK. Considerable changes have been instituted since the reporting procedures were developed for the components of these integrated programs. In addition, the FNSS will provide surveillance data suitable for assessing some aspects of the operation and outcome of these programs (through the NSMS and TWIS). The program management and reporting procedures should be reevaluated in light of these changes, particularly management at the district level. Outcomes of this evaluation could be changes to the NSMS, to provide other health or program indicators, and the development of more frequent surveillance indicators for use at the district level.

Recommendation: Undertake research to adapt the TWIS management approach at the district level, to move from the short term intervention strategy now used, to include longer term measures. This overlaps considerably with the broader objectives of the other FNSS activities and would provide a model for developing surveillance for other food and nutrition issues in non-TWIS districts.

Recommendation: Undertake an operational evaluation of the NSMS

surveys in the three provinces where it has been implemented, and during the next phase of expansion. The specific objective would be to develop procedures for identifying special needs and constraints in new provinces and so streamline the expansion of the NSMS. Experience with the TWIS has shown how important it is to adapt the system to local conditions. The same is expected for the NSMS and one can anticipate that the NSMS will need some adjustment in the protocol as it is introduced into new areas. The evaluation proposed is similar to the DSP-II project for TWIS, and separate from the ongoing evaluation of TWIS, the NSMS and SUSENAS surveys to be implemented by the GOI.

Recommendation: Undertake to support studies currently planned for national planning and policy purposes. Although twenty three studies were designated as high priority during the Cipanas workshop in 1986, only part of these are currently being carried out. USAID could foster the expansion of surveillance at the national level through support of selected areas of research.

VI. REFERENCES

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APPENDICES

APPENDIX A:

DESCRIPTION OF THE FNSS PILOT PROJECTS

1. OVERVIEW

A series of studies has been carried out since 1978 to develop and test the methodologies for the different components of the FNSS. We describe below the main projects and their outcomes. All of these activities were supported by USAID (Jakarta). Development of the TWIS involved two phases of studies (1979-83). We do not distinguish between the individual studies, but rather give an overview of the activities. Since 1984, four main studies have been conducted. These addressed issues in the expansion of TWIS to new areas, and developed methods for providing information relevant to nutrition program planning and management, and policy analysis. We describe each of these projects.

The original TWIS project was led by CRDN in Bogor with support from IPB. The four later studies were led by the Directorate of Nutrition MOH. These last four came under the USAID Development Studies Projects (DSP-I, DSP-II).

2. DEVELOPMENT OF THE TIMELY WARNING AND INTERVENTION SYSTEM

Introduction

Research and development work for TWIS began at CRDN in 1979. The project was limited in scope and scale and had the specific objective of linking information about an impending food consumption crisis with action to prevent the malnutrition that generally accompanied such crises.

After about 6 months of preliminary investigation, field work was commenced: firstly in the district of Central Lombok (West Nusa Tenggara, 1980), and later in Boyolali (Central Java, 1981), and Karangaren (Bali, 1981). However, based on experiences in Lombok and Boyolali, it was decided to focus all efforts on the Central Lombok system to ensure that it was well tested and that a good model was developed before implementing systems in more areas.

The work was directed by CRDN but involved extensive collaboration with other groups including DOCN, IPB, Cornell University, the University of Mataram, and government officials in Lombok (Health, Agriculture, Public Welfare and Bureau of Logistics).

The project had several phases: the initial description of

recent food crises in Indonesia, and how they were usually dealt with; the detailed work of designing the system for Central Lombok; and, setting up the administrative structure. These are discussed, along with some comments on the first year of operation.

Initial assessment.

The preliminary investigations by the TWIS team into the development of recent food crises helped to define the focus, and level of organization that would be most effective for the TWIS. The crises followed a general pattern. The BULOG food security system seemed to be effective in maintaining the availability and stabilizing the price of rice in local markets. However, the crises tended to occur when crops failed, leaving those segments of the population relying on agricultural employment with insufficient income to buy the rice. Local officials were often able to predict these crises, but the information was usually not available to the administrators responsible for taking action. In addition, many of the decisions about interventions could have been made at the local level if provision for funding was made in the yearly planning process. Although the government intervened to help those in need during the crises, the interventions were usually too late or not adequate to prevent the crises. This general pattern was consistent with the situation in Central Lombok.

This assessment suggested that TWIS could improve on existing methods of relieving the food crises if it met four requirements:

i. Prevention - aim at starting the interventions early enough to prevent the crises;

ii. Accurate assessment - inaccurate information in the past had made the government unwilling to act until the problem was indisputable;

iii. Systematic coverage - provide information for all of the district with sufficient detail to be able to detect problems in subvillages, and target interventions appropriately;

iv. Simplicity - the TWIS had to be simple enough for district staff to carry out all of the tasks with a minimum of outside assistance.

Designing and implementing the TWIS.

The work on designing a TWIS for Central Lombok began in 1980. The first approach was to investigate the conditions leading up to the food crises experienced in the last five years (reports from the section of Public Welfare showed that large numbers of people were starving during several months in three of the previous four years). This consisted of interviews, recall surveys and checking local data. The investigation showed that information relevant to the causes, location and timing of the

crises could be quantified and tabulated in a systematic way.

Because the agriculture sector was the major source of employment in the district, the yearly agriculture cycle had a great influence on the cycle of employment, and thus income. An employment/agricultural calendar was prepared. This was used to identify factors responsible for the large drops in income of the poor, and provided information for interventions.

The TWIS was designed to depend on the systematic reviewing of information that could predict food crises. Indicators were developed based principally on data routinely collected by various departments. These were tested against the information available for the district over the previous five years. Cutoff points were determined for each indicator to distinguish areas likely to have a food crisis from those that were not. Examples of these indicators are given below. In addition, an indicator of the current levels of food consumption amongst the poor was developed to be able to assess the effectiveness of the early interventions and to supplement them as needed. This was a simple report of the types of staple foods eaten in the previous week by the ten poorest households in each subvillage.

These indicators were to be reviewed in a series of meetings at various times of the year. Additional information could be collected as needed and decisions made about interventions. An

example of the schedule of meetings and types of interventions follows. Note that the rice harvest usually ends in May in Central Lombok, with food crises occurring during the period October to February.

* November-January - monitor rice area destroyed; decide about rice replanting, and damage control;

* March - continue monitoring rice area destroyed; analyze rice areas planted for decisions to change plantings to non-rice staple food crops; plan public works for later in the year; * June - analyze data on areas of rice destroyed during March-May; start early public works projects in problem areas; adjust timing and location of other projects to offset potential crises;

* July - analyze information on rice area harvested and production February-June; modify previous decisions about public works projects;

* August to February - monitor food consumption levels monthly; select workers from problem areas for the public works projects; begin credit programs and distribute rice if needed.

The design of the TWIS was carried out with the close involvement of the district government. When implemented, the TWIS unit was located in the district government's section of Public Welfare. In this location it was directly responsible to the Head of the district, and thus not closely identified with any single department (which might inhibit the participation of other departments). The departments of Health and Agriculture

provided the major support for the TWIS. No new staff were hired for the district TWIS unit. Tasks were reallocated in the section of Public Welfare to cover the TWIS responsibilities. In practice not all of the assignments were new because it overlapped with their previous responsibilities, but the collection of data was more systematic and more field checks of reports were required. Data flow was through the normal administrative channels, with the data compiled and analyzed on simple forms by the staff of the TWIS unit. The data and reports were reviewed at the regular meetings, attended by the head of the district, staff from the TWIS unit and representatives from the departments of Health and Agriculture.

Experience in the first year of operation was very favorable. Despite a poor harvest, food consumption levels in Central Lombok did not fall to dangerous levels. It is likely that the early agriculture interventions, income generating activities, and well targeted food credits all contributed to this.

Accomplishments of the TWIS project.

The most immediate accomplishment of the project was to develop a system in which interventions are triggered by certain kinds of information to overcome a nutritional problem. The system is controlled by local officials who can respond quickly

to problems, and who can adjust the system to account for changes in local conditions. This was the main objective. But the setting-up of TWIS in Central Lombok, and experience in the first few years of operation has brought about other changes, which in themselves are also important.

Officials in Central Lombok now use the TWIS information to make decision about wider development issues, not just the targeted interventions. This fits in with the broader concept of nutritional surveillance that has subsequently been developed at the provincial and national levels.

The TWIS has shown that coordination of activities between several departments is possible. The head of the district government now uses the TWIS as a model for the coordination and management of various activities.

The success of the TWIS in Central Lombok was also important in providing a strong impetus for the further development of nutritional surveillance in Indonesia. Based on this experience, plans were made for the expansion of TWIS to new areas, and to broaden the scope of the surveillance activities, resulting in the development of the FNSS.

3. DEVELOPMENT OF METHODS FOR INTRODUCING TWIS TO NEW AREAS

Introduction

During the early expansion of TWIS to new districts several problems were encountered. The main areas of concern were: methods of selecting districts for development of TWIS; identifying appropriate indicators; and, the level of coordination and support for the TWIS. A project was begun under DSP-II to address these issues and to streamline the expansion of the TWIS activities.

Some of the districts selected for TWIS were not suitable for TWIS development, or no longer suitable because the information used to select districts during the early expansion was incorrect or out of date. One objective of the project was to develop and test a provincial level feasibility study for identifying suitable areas prior to initiating TWIS activities.

During implementation in new areas, the methods developed in Lombok and Boyolali to identify indicators for the TWIS were not always applicable. On this basis, an objective of the project was to revise the procedures and manuals developed for provincial and district staff to be used during the implementation of TWIS.

The project also aimed to develop and test a system for

formation and training of provincial TWIS teams. The provincial teams are responsible for design, implementation, and monitoring/evaluation procedures. Procedures for undertaking these were reviewed.

At the time of writing, a final report was not available for the project. However, an interim report includes a description of the following activities and results for the project. Two major activities were undertaken: revision and development of the TWIS procedures; and, a feasibility study for identifying areas suitable for TWIS.

A team was established by the Directorate of Nutrition to implement the work. The Team included members from the Directorate of Nutrition, IPB and CRDN.

The Project:

A. Revision and development of TWIS procedures

During late 1985 procedures for implementing TWIS were reviewed and a series of new manuals produced. These included:
a) a short document to explain TWIS, its objectives, ant the responsibilities of the various administrative levels in its management and development. This is intended for introducing the system to local government officials;

b) a protocol for the provincial feasibility study and plan of its implementation in three provinces;

c) a manual for developing the district TWIS. This is a technical guideline for the provincial TWIS team on formulation of TWIS, including selection of local TWIS indicators;

d) a manual for development of TWIS implementation guidelines for use by the provincial team;

e) a short guideline for supervisory procedures for operational TWIS.

B. Feasibility study for identification of districts for TWIS

Provincial teams were established in Central Java and South Lampung. Staff from local universities in these provinces were included in these teams and played an important role in the subsequent activities. A TWIS provincial workshop was held in the two provinces and training of provincial TWIS teams undertaken.

At the time of writing, few details are available concerning the subsequent work in these provinces. Projected work included: further development of the district selection procedures; training of local TWIS teams; implementation of the TWIS formulation procedures, under supervision of the national TWIS team; and, implementation of TWIS in the selected areas following the revised procedures.

4. THE CASE STUDY OF THE INCLUSION OF NUTRITIONAL STATUS IN SUSENAS.

Introduction

This study was conducted jointly by the Directorate of Nutrition of the MOH and the Central Bureau of Statistics. The project was carried out under DSP-I. It tested the feasibility of including a new nutritional assessment module in the National Socioeconomic Survey (SUSENAS). The module was to use anthropometric measures (weight, height, and/or arm circumference) in a sample of preschool children to assess the nutritional status of the children in the sampled area. Preschool children were chosen because they were the age group most at risk of protein-energy malnutrition (PEM) and most affected by it.

SUSENAS is conducted yearly, and has several different modules. The output of the anthropometric module would be periodic estimates of the prevalence of PEM in each of the 27 provinces, and an extensive database including nutritional status measures and the range of socioeconomic data routinely collected. These were seen as a valuable resource for analyses to address issues important for national and provincial decision making relevant to a range of sectors that have a nutritional impact. The anthropometric module was implemented in the 1986 SUSENAS.

The case study

The study was conducted in 1985 in two regencies of Central Java. It integrated the nutrition module with the regular modules, as would be the case with the 1986 SUSENAS. The study was expected to provide some input for improving the actual integration.

Specific objectives:

1) to evaluate organizational aspects and the supervision system for the module;
2) to choose the most representative and reliable anthropometric index of preschooler nutritional status;
3) to observe factors affecting the nutritional status of preschoolers;
4) to study feeding practices for the preschooler group.

Organization of the case study

The organization of the case study was similar to that of the SUSENAS except that each enumerator was accompanied by a health official, so that the measuring skills of the two groups could be compared. A technical team assumed the tasks of supervision. Members of the team included staff from the Center for Research and Development in Nutrition (CRDN), Bogor, and CBS

staff.

Two regencies of Central Java, Cilacap and Banjarnegara, were chosen as the enumeration areas. In each regency four study areas were chosen: one urban and one rural classified as nutritionally vulnerable; and one urban and one rural classified as not being nutritionally vulnerable. Three census blocks were chosen in each of these, giving a total of 24 blocks. A systematic sample of households was taken in each, giving a total of 199 households with at least one child under five years of age.

Two types of data were collected: household characteristics, and characteristics of the children under five years.

A random sample of 21 of these children was selected to compare the measurement results of the CBS enumerator with the health nurse enumerator. They were compared with a measure taken on the same children by a staff member of CRDN.

Main Conclusions and Recommendations

The investigators concluded that the general organization and supervision used by CBS for SUSENAS every year would also be appropriate for the anthropometric module. In addition, the

anthropometric measurements taken by the CBS enumerators were considered to be accurate and satisfactory. Therefore, they recommended that the enumerators for collecting the anthropometric data be selected from CBS staff and regional statistical officers.

The weight-for-age of the children was considered to be the most reliable and representative index of preschooler nutritional status. However, it was suggested that height, arm circumference and other anthropometric measures (in addition tc weight) be gradually included in the module to supplement the information given by this index. This was suggested both for preschool children and for other age groups.

The investigators also reported on feeding practices and other factors that could potentially affect children's nutritional status in the study area. They recommended that data on quantity and quality of foods consumed, income, kind of activities, and other socioeconomic variables need to be considered in the data collection and analysis, along with the anthropometric data.

5. DEVELOPMENT OF THE NUTRITIONAL STATUS MONITORING SYSTEM: PILOT STUDY REPORT

Introduction

The project was conducted by the Nutrition Directorate of the MOH, and the Academy of Nutrition (Jakarta), with technical assistance from Cornell University. It was funded under DSP-I. A monitoring system was proposed in which Community Health Center staff measure the nutritional status of a representative sample of the preschool children in the area served by the Health Center. This would be done approximately every two years, and permit comparisons between areas as well as being able to monitor changes over time. The project was carried out to assess the feasibility and to develop the methodology for collection, tabulation, and analysis of the data.

The output of the system is regular estimates of the prevalence of PEM, and health program participation for each Health Center area; and for each district, infant and child mortality rates. This information is most useful for district and provincial program planning and evaluation. These include nutrition and other programs (such as health, agriculture and income-generating) which are likely to lead to better nutrition.

The Pilot Project

Specific objectives of the project included: an operational evaluation of the sampling and data collection procedures; an evaluation of the validity of the data collected; development of a protocol for sampling, data collection, and data processing that would ensure valid and representative information.

The pilot project was carried out in 96 villages: 32 in each of West Sumatra, South Sulawesi and Central Java. The three provinces were chosen to represent the ecological diversity of Indonesia. The villages were randomly selected within districts chosen on the basis of having a "good" or "poor" infrastructure.

Health Center staff randomly selected within each village 8 clusters of households (each having 7 households with children 0-5 years of age; a total of approx. 6500 children).

The main survey involved two staff from the local Health Center going to each of the selected households. A short questionnaire was administered and the children under 5 years of age measured. Data collected included: child anthropometry, household, child mortality and health program participation data. A second survey was conducted for a random subsample 3-4 months later. This was undertaken to assess seasonal influences on the information, and to be able to assess data validity. Two thirds

of the subsample were measured twice to be able to assess the validity issues.

An anthropometric survey of school children was carried out concurrently, including one school in each of the selected villages. Estimates of malnutrition amongst these children were compared with those of the preschool children in the same villages.

Main Conclusions and Recommendations

The investigators concluded that the Health Center staff implemented the survey procedures satisfactorily, but stressed the need for support and supervision from District staff, and appropriate quality control procedures to ensure representative and valid data. They recommended that the surveys should use a household sample selected by CBS in Jakarta so as to simplify the field procedures and ensure that a representative sample is used.

The weight, length and age data collected by the Health Center staff were considered to be sufficiently valid to be used in the monitoring system. Length-for-age was recommended as the best nutritional status indicator for the general purposes of the system, long-term monitoring of communities and for program planning. Alternative indicators, weight-for-age and weight-for-height, were recommended for short term monitoring

since they are more influenced by the season or other events occurring at the time of the surveys.

The investigators also recommended that only children 6-36 months of age be included in the sample. Experience in the pilot project and similar studies showed that including children below 6 months of age in the survey presented several practical problems. They were difficult to measure accurately, and local customs often restricted the participation of this age group in surveys. A different problem existed for children 36-60 months of age. They were often very under-represented in the pilot project, with the potential for seriously biasing estimated rates of malnutrition in the surveys.

6. ANALYSIS OF VILLAGE CHARACTERISTICS IN NUTRITIONAL STATUS MONITORING STUDIES

The fourth of the DSP projects was a forerunner of some of the work currently being undertaken with the food and nutrition policy analysis studies. It was conducted by the Nutrition Directorate of the MOH, and the Bogor Agricultural Institute.

The basis of the analysis was the notion that socioeconomic status, culture and environment are essential characteristics affecting nutritional conditions in a community, and the nutritional status of the children. The analysis was conducted to identify village characteristics associated with malnutrition amongst preschool children in the 96 villages surveyed for the NSMS pilot project. The NSMS data were integrated with village level information. The important village characteristics associated with malnutrition could form the basis of a simple method to determine village priority for program activities and monitoring.

The study

Study sites were the 96 villages used for the Nutritional Status Monitoring System pilot project (in West Sumatra, South Sulawesi and Central Java). Selection procedures were described in Section 5 above.

Data were collected from the "Typology and Classification of Village Development" that is maintained by the Directorate of Village Development in each province. The data collected included indicators of village level: natural potency, population density, location from center of facilities (capital), employment, education, village infrastructure, village yield, village institution, habits/customs, and community self effort. Data concerning the nutritional status of the children in the community were obtained from the NSMS team working at the Academy of Nutrition.

These data were analyzed using multiple regression. Prevalence of malnutrition in the communities was treated as the dependant variable. For the analysis, village characteristics were scored in order to obtain continuous independent variables. A stepwise forward selection procedure was used to select the models that best explained the variability in nutritional status.

The results of the analysis suggest that location is a

consistently important factor associated with malnutrition in the study villages, while education, infrastructure and population density may be important in some areas. The reader is referred to the original report for more detailed results.