# THE
# MODEL BANJAR
# PROJECT

## Health, Education and Economic Conditions in Eastern Bali, 1979

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by

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for

Foster Parents Plan International, Inc.

# PREFACE

The Model Banjar Project represents an effort by Foster Parents Plan International, Inc. to improve and evaluate its child, family, and community development planning and programming. The project is to be conducted over a five-year period in eastern Bali, Indonesia. This report documents the first phase of the Model Banjar Project. During this period a wide range of survey and in-depth interview data was collected to assess the physical quality of life in selected villages which had requested Plan assistance. The physical quality of life was measured in terms of a variety of public health, education, and economic variables relevant in the context of life in rural Bali. Additional information was collected for use in local community needs analysis and program planning. The purpose of this report is to present the findings and recommendations resulting from this initial stage of the Model Banjar Project.

With the publication of this report, for perhaps the first time, a wide range of socio-economic conditions have been statistically documented in a variety of communities on the island of Bali. This information should be useful to Plan, the Indonesian government, and other independent community development organizations not only in assessing rural living conditions, but also as a basis for understanding socio-economic change over the coming decades.

Due to the large scale of the survey (1216 families

with over 100 variables), and the need for a prompt reporting of the results, not all of the findings of the study could be presented here. Community physical quality of life indices were analyzed with bivariate (using socio-economic type of community as the independent variable) and index construction techniques. Time did not allow for more complex modes of analysis of the statistical data. Valuable insights arose from the in-depth interviews conducted during Phase I, and these were used as a partial basis for the programming suggestions presented in Chapter III, but again time constraints did not permit the inclusion of all of this data in the present report. Thus, this document is in essence a reference text concerning health, education, and economic conditions in eastern Bali in 1979 and a manual for community development programming.

Phase I of the Model Banjar Project was conducted by Mark Poffenberger and Ida Bagus Purnama Wijana, both of whom worked together as research associates. While Mark Poffenberger was responsible for the analysis of the survey data and the author of this report, Mr. Wijana participated fully in every other phase of the research project. His knowledge of rural Bali, organizational ability, and endless energy were crucial to the success of this study. Further, his capacity to analyze and interpret both survey and in-depth information was essential to this presentation. At the same time, the specific conclusions presented here are the sole responsibility of the author and do not

necessarily represent the opinions of Mr. Wijana or any other of the staff of Foster Parents Plan International, Inc.

The idea of a Model Banjar Project was created by Lloyd J. Feinberg while director of the Plan Bali program from 1977 to 1979. Without his dedication to the project, both in acquiring official support from the Government of Indonesia and in seeking funding, it is certain that the project could never have begun operations. We are very grateful to Plan's Anthony English for his encouragement and advice. Thanks are also due to Bernard Salvo and Louis Kunn of the Office of Voluntary and Humanitarian Programs at the United States Agency for International Development in Jakarta for their assistance and interest in the project and in helping to secure PVO Grant No. 78-9 from USAID Jakarta to assist in funding Phase I of the Model Banjar Project.

To all the staff of Plan Bali for their help and assistance, and particularly to Mr. Sujana who handled our accounting, and to Mrs. Martina and Mrs. Maukar we give our thanks. Mr. Walejono, head of the Directorate of Child and Family Welfare in the Department of Social Affairs in Jakarta, as well as Mr. Putra, chief of the Department of Social Affairs for the province of Bali, and Mr. Rai, head of the Karangasem Department of Social Affairs, were supportive of the project from the start and deserve many thanks for their assistance. We also wish to thank the staff of the Governor's Office, and particularly Mrs. Tista, for their support and interest in this project.

On the other side of the world the staff of Foster Parents Plan International, Inc. and particularly George W. Ross, International Executive Director, Glenn E. Rogers, International Director of Field Services, and John G. Anderson, International Assistant Director of Field Services deserve a hearty thanks for supporting and having faith in the Bali staff and the research consultant while performing this long-term research and development effort. Thanks are also due to the Center for South and Southeast Asia Studies of the University of California at Berkeley for providing the author with access to institutional facilities. The Center for Survey Research at the University of California at Berkeley, and particularly Frank Many and Wayne St. John, contributed immensely to the rapid and careful analysis of the survey results.

Returning to the villages of eastern Bali, we wish to thank the twenty-one teachers and village leaders who acted as our interviewers and who became our close friends. The assistance of David Stuart-Fox and Made Kuduk in introducing us to the village of Budakeling and providing advice and counsel, was greatly appreciated. Finally, to the people of Karangasem regency, who have graciously allowed the interviewers into their homes and answered questions for thousands of hours, we offer our sincerest gratitude. Both the coordinators of the study and the interviewers were constantly impressed by the endless hospitality which even those who had least would never fail to extend. These

people and their villages we will never forget, and it is to them that we dedicate this study. We only hope we can begin to repay them for their kindness with better, more effective programs.

To avoid confusion over the proper names of the many communities studied, in this report all banjar names have been replaced with roman letters. It should be noted that at the time interviews were taking place the Rupiah (Rp.) was valued at 625 to the U.S. dollar, while the least expensive rice was selling in eastern Bali markets for Rp. 140 per kilogram (see Appendix I).

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# CHAPTER I

## THE MODEL BANJAR PROJECT

### Part 1. Introduction

With over forty-one years of operations as a major international child, family, and community development organization, Foster Parents Plan International has had more experience than most other independent aid organizations. Yet even the most successful programs can benefit from studying family and community conditions and needs. Recognizing the value of evaluation and research, Plan's Bali program sought outside funding to collect information regarding localized needs and to use the findings of the study to develop a series of innovative development programs which would be implemented and evaluated over a three to five year period.

The Department of Social Affairs (*Departemen Sosial*) of the Government of Indonesia, with whom Plan works closely, was highly supportive of the proposed study from the outset. It was certainly one of the first times an independent welfare agency had taken the initiative to evaluate its efforts for its government sponsor. A community development research and evaluation specialist from outside the Plan organization was contracted to design and supervise the study and its analysis.

It was hoped that as a result of the five year Model Banjar Project (the project was named after the highly

cohesive, traditional Balinese community or "hamlet," the *banjar*, which usually consists of from 30 to 300 families) a series of family and community development programs would evolve which could be implemented in areas with similar conditions throughout Bali. The objectives of such programs would be to boost infant and child health conditions, educational opportunities, and family income levels and thus to generally improve the quality of life for residents in project areas. However, if government planners were to be convinced of the efficacy of these model programs, a complete documentation of the impact of Plan's efforts would be essential. Before going on to discuss the research project itself, it is useful to briefly review the history of Plan operations in Bali to help contextualize the manner in which the study initially arose and the motives behind it.

Plan began operating in Bali in 1972. Since that time activities have expanded rapidly, especially over the past two years, with Plan now serving some 45,000 people in over 150 villages. With more than 150 staff members in Bali, Plan offers a wide range of programs including:

a. Social Services: family guidance, community organization, social and cultural activities.

b. Health: curative and preventive programs and services focusing on environmental sanitation, health care, health education and housing improvements.

c. Economic Development: development of skills and employment opportunities, animal husbandry, fisheries and other agricultural projects, 'goal

oriented' savings program, credit union assistance program and marketing improvement program.

d. Education: skills development, assistance to formal and non-formal educational institutions and programs. [1]

While the above list of programs is impressive and many of the projects are highly successful, certain questions have been raised: Can Plan continue to offer such a wide range of programs effectively? Would it be better to specialize in providing certain kinds of services and helping the government take over in other areas? To what extent, considering the economic growth resulting from tourism and national economic expansion, do the Balinese require continued Plan assistance?

Currently, approximately 60% of all Plan program funds in Bali are given in the form of cash to the families of "foster" children, while the remaining 40% of the programming budget is used for the types of family and community development programs described above. Since such a large portion of funds are distributed through the monthly financial assistance program, its effectiveness is of considerable importance to the success of Plan operations. The monthly financial assistance is essentially a form of aid whose objective is to help sub-standard income families provide adequate food, clothes and schooling to their children. The supplementary programs are oriented towards developing income-producing potential, educational opportunities, and improving health conditions. Certainly, one question of

importance concerns the extent to which direct family assistance is still required in Bali, or whether a greater emphasis should be placed on community level programming. It has been hoped through all phases of the Model Banjar Project that a better understanding of the types of programs most useful to client families should arise. Another key aspect of the Project has been the opportunity to study and evaluate the effectiveness of both traditional and new approaches of Plan family and community assistance in the Model Banjar areas.

Research Design:

The concept of a Model Banjar Program evolved from a series of seminars held in 1977 between Plan Bali staff and government development workers.[2] The Project's conceptualization called for selecting promising banjars with strong community organization and good leadership. While such banjar would receive the same amount of financial assistance as other communities in which Plan works, based on the number of families enrolled for Plan assistance, communities selected for the Model Banjar Program would also receive special attention in terms of staff quality, base-line data gathering, evaluation, supervision, and ongoing monitoring of all development projects. It was hoped that by giving such attention to the designing and implementation of community development strategies, the chance of their long term success could be greatly enhanced. Through the

careful monitoring of all problems and subsequent adaptations during the implementation of community programs, Plan personnel would be better prepared to initiate or improve similar programs in other, non-Project areas. It was also felt that the Model Banjar areas could be used as training sites where less experienced staff could observe the workings of successful, well-run programs.

It was decided that the Model Banjar Project would be conducted over a five-year period and be divided into three phases:

> Phase I (January 1979-December 1979): During this period the baseline information would be collected to establish pre-program conditions and localized needs in both program and non-program communities.
>
> Phase II (January 1980-December 1983): During the second phase of the program, Foster Parents Plan's standard Family Development Program (FDP) would be initiated along with a series of Community Development Programs (CDP) designed to increase local income, boost employment, raise health conditions, increase school enrollment, and generally improve the physical quality of life. Throughout this period a Foster Parents Plan research and evaluation officer would monitor the progress and needs of communities involved in the Model Banjar program to better insure their effectiveness.
>
> Phase III (January 1984-December 1984): The final phase of the Model Banjar Project would involve the collection of data concerning the same physical quality of life indices used in the Phase I survey four years before. Supplementary information dealing with hamlet members' attitudes and suggestions regarding the community development strategies would also be analyzed at this time. A final report would be drafted discussing the impact of the Model Banjar Program. The report would also outline community and family development strategies found to be successful in meeting their stated objectives with recommendations for their implementation and modification.

The present report will be concerned with the first phase

of the Model Banjar Project. The objectives of Phase I can be stated as follows:

1. To develop a research design for the Model Banjar Project including the selection of appropriate communities, the development of a methodology for studying the banjar, and the implementation of programs.

2. To provide baseline data to evaluate socio-economic change over the three-year implementation period. (Baseline data will consist of a series of physical quality of life indicators reflecting family and community health, education, and economic conditions.)

3. To evaluate needs and conditions of families and communities selected for the Model Banjar Project.

4. To make specific programmatic recommendations, based on the analysis of community and family needs, regarding the nature and implementation of development programs.

5. To train personnel in methods to identify community needs and design village level development programs, and to develop relations with community leaders through whom future programs will be implemented.

To collect the information required to achieve the above objectives a series of studies were planned (displayed in Chart 1 on the following page). Plan staff were to be given training in research techniques through participation in the studies. Each of the research approaches used in Phase I will be discussed in Part 2, along with the types of information they were designed to collect. This discussion will be preceded by a presentation of the criteria for selection of Model Banjar communities and their socio-economic and ecological characteristics.

In Chapter II of this report the finding of the studies will be introduced. First, the general context in

## Chart 1

## Research Design for Phase I

| Type of Information to be Collected | Data Collection Mechanism | Sample Size or Source | Time Period | Staff |
|---|---|---|---|---|
| BASELINE - Health, Education, and Economic Data; Quality of Life Indices | Survey - short interviews of 1-2 hours | 1216 families representing 50% of the population of 19 sample hamlets (*banjar*) | 4-5 months* | Field-workers |
| BASELINE - Child Health and Nutrition Data | Weighing, measuring, and brief medical exam at local primary schools | 426 primary school students from 3 village schools in sample area | 2-3 weeks* | Nurse Health Team |
| IN-DEPTH Information on Family and Community Needs and Aspirations | Detailed interviews of 2 to 4 hours each | 29 families (2% of the population of the 19 sample hamlets) | 2 months* | Research Coordinators |
| BACKGROUND Data on Sample Hamlets | Interviews with community leaders, observations, and use of published statistics and village monographies | Multi-source | 4-6 weeks | Research Consultant, Associate, and Assistants |

* Asterisked time periods ran simultaneously.

which eastern Bali families live and work will be presented. followed by a discussion of specific economic, health and education conditions and problems. The findings from the physical quality of life, base-line conditions survey will be used to give a skeletal picture of conditions in the Model Banjar communities while data from the in-depth case studies will provide detail and specific examples of the current situation of families, the kinds of needs they have and problems they face.

Chapter III will begin with a discussion of the strengths and weaknesses of the communities studied in terms of their abilities to implement community development strategies. This will be followed by a series of specific project designs for the improvement of health, education, and village economic conditions. These will be described under the following categories: agriculture in irrigated areas, agriculture in dryland areas, animal husbandry, fishing, small industry, skilled trades, public health, and education projects.

## Part 2. The Area and Method of Study

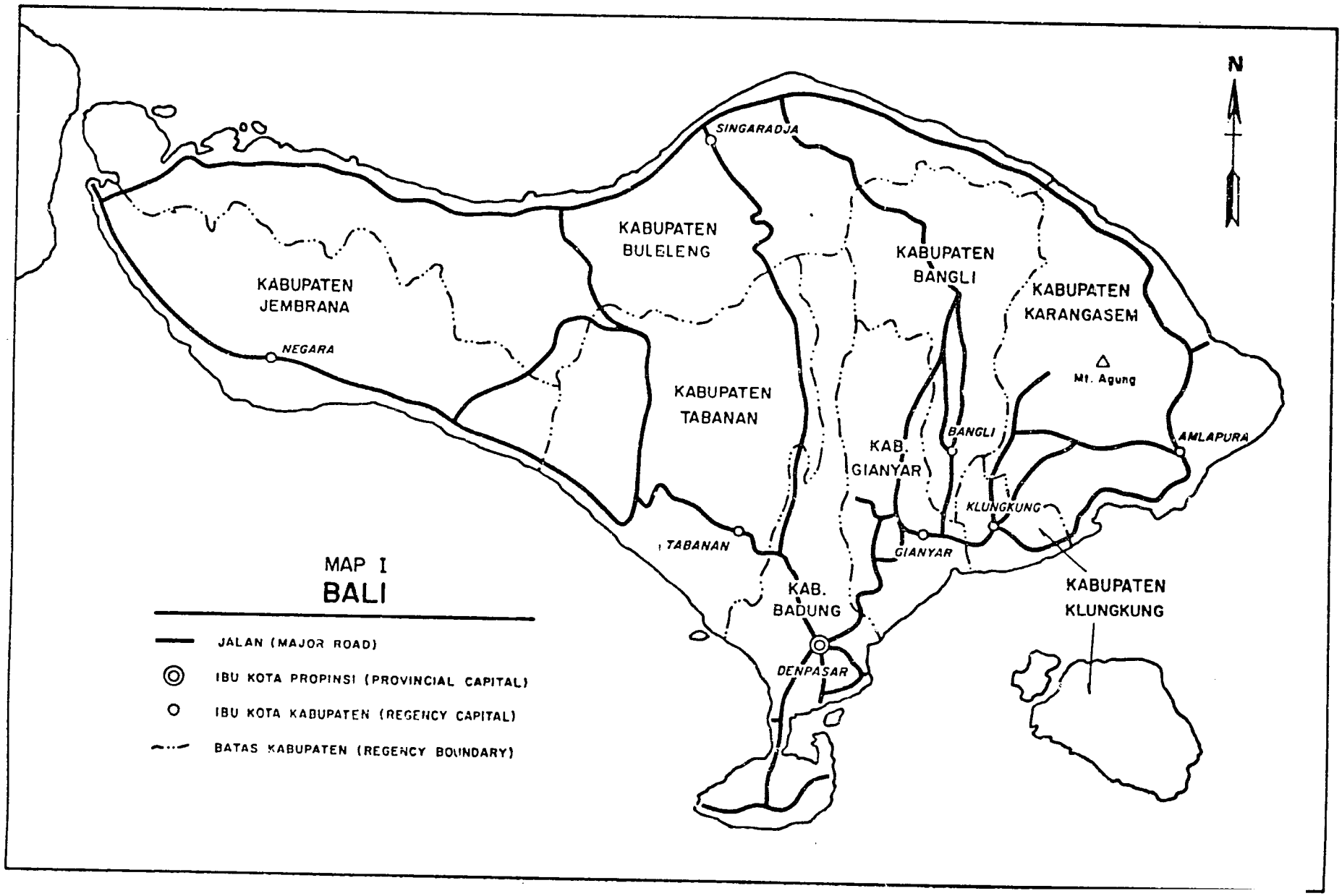
### The Area:

Bali is a fertile island of over two and one half million people, lying just east of Java (see Map 1 on the following page). For over one hundred and fifty years it has fascinated visitors from the West. Hanna gives a powerful reason for the culture's attractiveness when he states:

> The island of Bali is celebrated for the peculiar splendor of its Balinese-Hindu culture, a highly developed and artistically embellished system of life and worship....The island itself is a Pacific enclave of such pristine natural beauty as to be suggestive, as Pandit Nehru poetically put it, of "the world's last morning." [3]

The island is blessed with rich, volcanic soils and enough rainfall to keep much of the farmland irrigated throughout the year. Balinese society is endowed with an amazing network of highly stabile social organizations that regulate much of the island's social, religious, economic, and agricultural activities. Yet in spite of these advantages, the Balinese are currently confronted by some very serious problems.

The steady growth of the island's population has put increasing pressure on natural resources and the ability of the farmland to support Bali's inhabitants. In spite of an effective family planning program, it is estimated that the population will grow to 4 million over the next twenty years. This is in contrast to the one million population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KABUPATEN BULELENG
KABUPATEN JEMBRANA
NEGARA
KABUPATEN TABANAN
KABUPATEN BANGLI
KABUPATEN KARANGASEM
Mt. Agung
BANGLI
AMLAPURA
KAB. GIANYAR
KLUNGKUNG
GIANYAR
TABANAN
KAB. BADUNG
DENPASAR
KABUPATEN KLUNGKUNG
MAP I
BALI
JALAN (MAJOR ROAD)
IBU KOTA PROPINSI (PROVINCIAL CAPITAL)
IBU KOTA KABUPATEN (REGENCY CAPITAL)
BATAS KABUPATEN (REGENCY BOUNDARY)

which one scholar feels optimum for the island's ecology. Population growth has resulted in the average Balinese family's farmland holding of 1 hectare in 1900 shrinking to perhaps .3 hectare today.[4] While the quarter of a million tourists who visit Bali each year provide new economic opportunities for some of Bali's people, almost all of the tourist activity is concentrated in the south-central area and does little to benefit the inhabitants outside that region.

Certainly, one of the most economically depressed areas of Bali is the eastern regency of Karangasem (in Balinese, "Sour Land"). With a population of approximately 300,000 people, Karangasem has less irrigated land, and more dry and rocky seacoast and mountain area, than virtually any other area in Bali. In 1963, 10,000-foot Mount Agung erupted, devastating villages and farmland and eventually resulting in widespread famine. Approximately 7,000 hectares of *sawah* (irrigated riceland) and 70,000 hectares of dry lands were covered by rocks and lava as a result of the eruption, and most of this land was in Karangasem. While much headway has been made over the past 15 years in recovering from the eruption, the people of Karangasem continue to face severe economic, health, and education problems. For these reasons Foster Parents Plan began operations in the area in 1973.

To help in strengthening development efforts and to aid in future evaluation of Plan efforts, the Model Banjar

Project selected 19 hamlets (hereafter simply "banjar") in eastern Karangasem for study. In the following pages the communities and their characteristics will be discussed, along with the reasons for and method of their selection.

The two main strategies used in selecting areas to be included in the Model Banjar Project were:

a. To find areas which could accurately represent the major socio-economic and ecological patterns present in the Karangasem and Bangli areas where Plan currently operates.

b. To find areas where Plan had not yet begun operations, but had intentions to offer services in the near future.

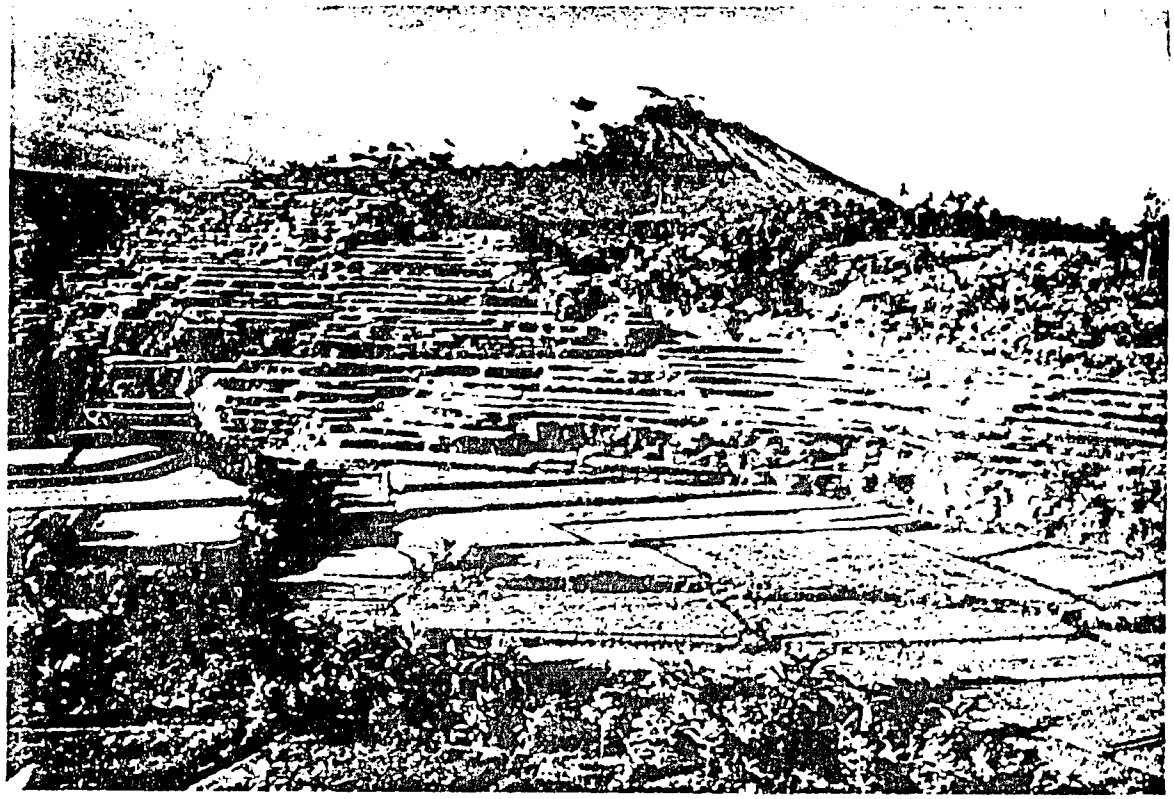
It was hypothesized that needs for family and community assistance programming would vary according to the nature of the area's socio-economic orientation. For example, the kinds of economic programs appropriate for a fishing village would be quite different than those helpful to a community of blacksmiths, and the public health requirements of a remote mountain village would differ from those of a township. Information regarding specific conditions and needs and their variation from community to community would allow program planners to "fine tune" their programs and better insure their success.

In terms of the research design it was also important to select communities where Plan intended to initiate operations as well as other villages which were similar in their socio-economic make-up, but where no programs were going to be initiated in the near future. Through such a

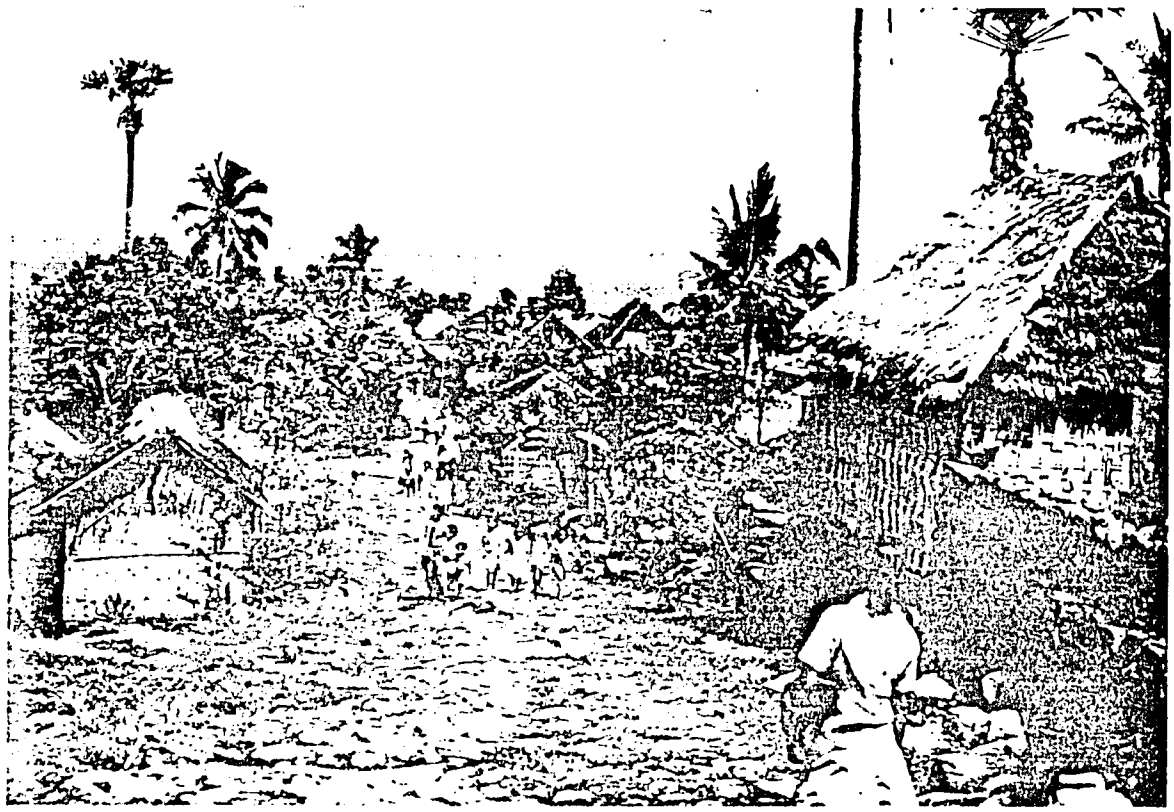
selection future Plan staff w uld be able to monitor the impact of their programs against the initial background data presented in this study for both the treatment and non-treatment communities.

In order to select banjar reflecting the major socio-economic and ecological systems present in the Karangasem area under study, we divided the communities into four categories. Type One banjar are located in the administrative center of the sub-district (*perbekelan*).[5] Such communities have immediate access to government health, education and economic facilities, as well as to the motorable roads, which are usually paved and which link the sub-district to outside trading centers. Compared to the outlying areas of the sub-district, inhabitants of Type One banjar are to a much greater extent involved in non-agricultural occupations such as wholesale and retail marketing, civil service, various crafts and trades, and construction labor.

The second type of banjar are located in the outlying, mountainous areas of the sub-district. These mostly dry-land farm families live in scattered settlements two to ten kilometers walk from the nearest road. While families in Type Two communities often own comparably large amounts of farmland, the land is so rocky and dry and the yields so low that they remain one of the most economically depressed groups in the area. Their distance from the administrative center requires long walks to avail themselves of



1. Terraced rice fields of eastern Bali with Mount Agung in the background.



2. The village of Seraya along the dry, rocky eastern Bali coastline.

government health and educational services, as well as to find drinking water.

Type Three communities are found at lower elevations along Bali's coastal plain. The economy of families living in such areas is centered around wet rice agriculture. Most families either own a small plot of riceland (*sawah*) or are tenant farmers for one of the local landowners. Type Three banjar are usually not far from the sub-district headquarters and a motorable road.

The fourth type of banjar are located in dry, rocky areas along Bali's southeast coast. While families of Type Four communities face similar problems to the inhabitants of the mountainous Type Two areas, they are able to derive an important additional income from fishing activities, as well as from dryland agriculture.

To aid in understanding a chart on the following page illustrates the type and breakdown of communities selected for the study (see Chart 2).

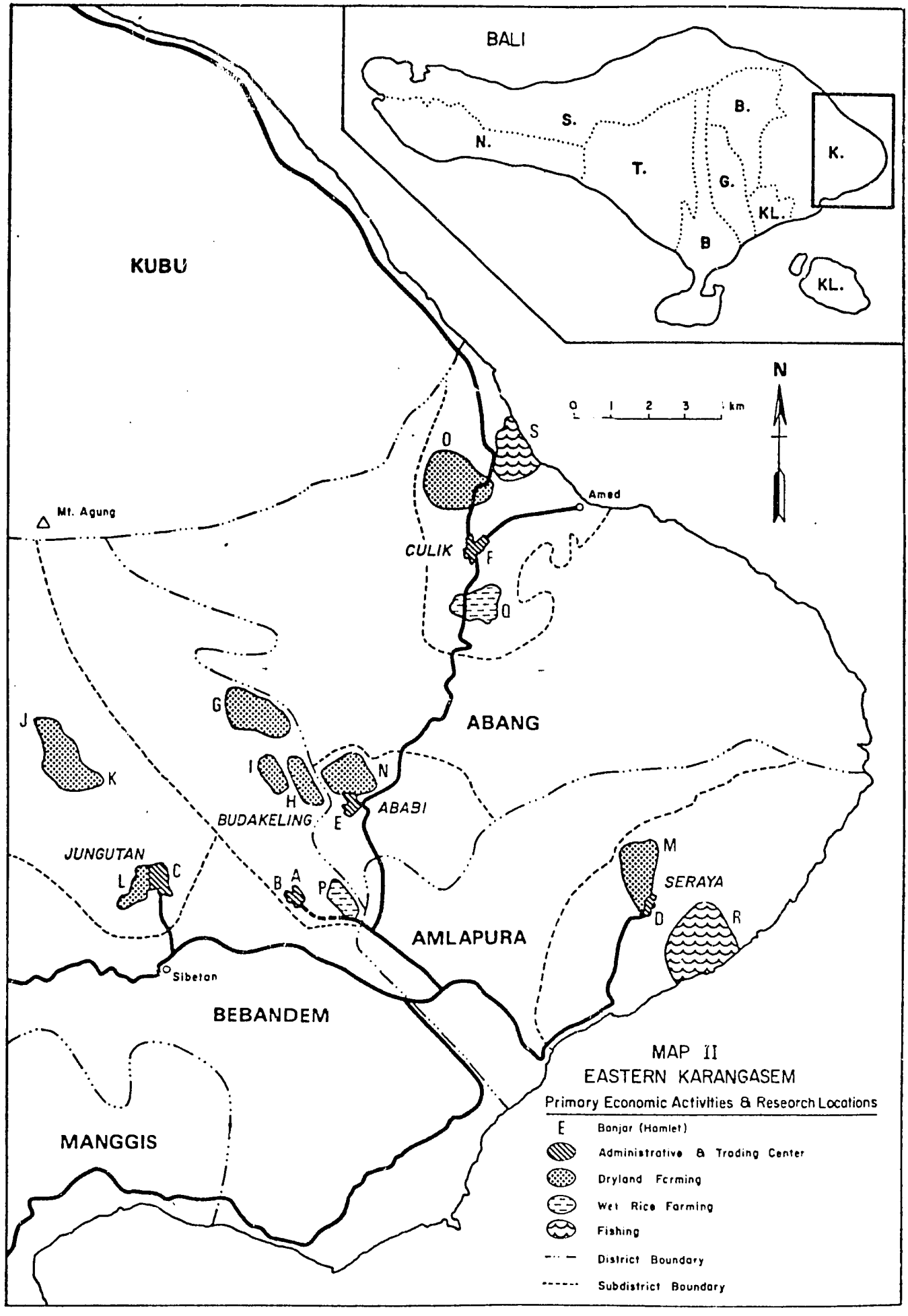
Chart 2

Number of Communities Selected for the Model Banjar Project By Socio-Economic and Ecological Type and Plan Input Status

| COMMUNITY TYPE<br>Socio-Economic & Ecological Type* | Plan Input | | Total |
|---|---|---|---|
| | Treatment | Non-Treatment | |
| TYPE ONE (Central-Township) | 5 | 1 | 6 |
| TYPE TWO (Mountain-Dryland Farming) | 8 | 1 | 9 |
| TYPE THREE (Lowland-Wet Rice Farming) | 2 | 0 | 2 |
| TYPE FOUR (Coastal-Fishing/Dryland Farming) | 2 | 0 | 2 |
| TOTAL | 17 | 2 | 19 |

* The areas discussed above are presented on a map of eastern Karangasem regency on the following page (see Map 2).

It is hoped that by studying the variation between communities in the Karangasem area, not only will planners be better able to design programs which more closely deal with localized needs, but that a better understanding will arise regarding where the most critical needs exist. In the past, both Plan and other independent aid organizations, as well as the Indonesian government, have given much of their assistance to Type One communities. With the results of this report planners should now be able to base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ABABI
JUNGUTAN
SERAYA
AMLAPURA
Sibetan
BEBANDEM
MANGGIS
MAP II
EASTERN KARANGASEM
Primary Economic Activities & Research Locations
Banjar (Hamlet)
Administrative & Trading Center
Dryland Farming
Wet Rice Farming
Fishing
District Boundary
Subdistrict Boundary

decisions as to where assistance should go on the basis of greatest need as well as other factors.

Methodology:

In order to achieve the proposed objectives, the Model Banjar Project required a large body of diverse types of information. Data had to be gathered which could statistically represent conditions reflecting the physical quality of life in Plan operations areas and how these conditions were changing over time. To achieve this end a large scale survey was required. The Project also needed insights into the specific kinds of problems faced by families and communities in East Bali. This kind of understanding could only be obtained through lengthy, in-depth interviews with a small proportion of the families studies. Understanding the health problems of school age children, and how community leaders perceived the needs of their banjar, required still different approaches. The methodologies used in gathering the various types of information differed, and therefore will be discussed individually in this section.

a) The Baseline Survey

For the baseline survey 1216 families were interviewed. These families represent from 50% to 75% of all families in each of the 19 banjar studied (a total of 2430 families: see Appendix II). The research design had initially called for a complete census of all families in the banjar to be

studied. Fortunately this proved to be unnecessary, as a family census had just been completed a few weeks before our study and the results were made available to us. From this government census we were able to select our sample families by numbering each family and taking the first numbers from a table of random numbers until we had enough families to statistically represent each community.

Thus, while the banjar to be studied were selected in a stratified manner to reflect the range of socio-economic and ecological patterns present in the East Bali area, the families were selected as a random sample in order to statistically represent all families in those communities. (A more comprehensive description of the sampling techniques used and other aspects of the methodology is given in Appendix III.)

The questionnaire used for the baseline survey (see Appendix IV) was designed to collect a wide range of factual and attitudinal data from family members. The first section of the interview schedule involved background questions regarding names, ages, sex, and occupations of family members (this information was copied from census forms, but had to be carefully checked by the interviewers). Next, the questionnaire required information regarding school attendance by primary school age (7-13 years) and secondary school age (14-18 years) children, and if the children did not attend school the reason why. Finally, questions were asked regarding who in the family were

literate in Roman and/or Balinese script.

The next series of questions included items concerning illnesses of pre-school children (aged 0-6 years) and whether they had been vaccinated for smallpox, tuberculosis, or cholera-typhoid. Other public health items included questions regarding the source of the family's drinking water and its distance during the dry season from the home, the place the family defecated, and whether the family boiled its drinking water. A series of questions regarding family nutrition were included.

The third section of the questionnaire was devoted to the family's economic status, its income and expenditures. This section included items regarding livestock and consumer durables owned by the family, farmland owned or tenant farmed by the family, agricultural production, income from trade, labor, handicrafts, shopkeeping, skilled labor, and civil service jobs. The families were also asked to estimate their expenditures for health costs, daily household needs, ritual and religious expenses, and school fees and clothing.

Part four of the questionnaire dealt with fertility, infant mortality and contraceptive use. Part five included questions regarding how the family perceived its own and community needs, while questions in part six were oriented towards assessing the family's housing conditions.

Interviewers were selected from the communities studied. It was felt that such individuals would have a

greater understanding of the families they were interviewing and a better rapport with the respondents. Almost all of the twenty-one interviewers who participated in the survey were either local primary school teachers or banjar headmen who were well respected by their fellow banjar members. An additional reason for the selection of village leaders as interviewers was to involve them in the Model Banjar Project from the outset and to encourage their interest and support in later phases. For training purposes the interviewers were divided into five groups based on the sub-districts in which they lived. The coordinators continually tried to foster a mutual-help relationship with the interviewers, with the interviewers taking responsibility for helping to accurately convey the conditions and needs of the communities in which they lived. Many of the interviewers came to see their task as a social service they were providing for their banjar, rather than as a job they were performing for pay.

The interviewers were instructed to administer the questionnaire to the "primary couple" in each family (e.g. a married couple between the ages of 15 to 44 years of age), if there was one, and if the family did not possess such a couple to a single individual or an older married couple. We also asked the interviewers to question the husband and wife together. This proved to be very important, as the wife was frequently the only family member who could accurately respond to questions regarding family

income from trade and household expenditures.

Throughout the five-month data collection period the research coordinators visited each of the interviewers every 7 to 10 days not only to check on the quality of their work, but to demonstrate our continued concern and interest in the project. At each such session all of the interview schedules completed by the interviewer would be reviewed by the coordinators and any problems were discussed together with the fieldworker. Frequently, we would ask the interviewer to return to the respondent's home to clarify an issue or to obtain additional information. While this process was very time-consuming, it contributed a great deal to maintaining the quality of the information being collected.

With most of the interviews completed, the process of preparing the data for computer analysis began. This involved training two individuals to pre-code and later to transfer the coded information to coding sheets. During this process the research coordinators had to constantly cross-check the work of the coders to insure that a high degree of accuracy was maintained.

Once the data had been entered onto coding sheets and checked, it was taken to Berkeley where a private key punching service prepared the computer cards for analysis. The analysis was performed by the Survey Research Center of the University of California at Berkeley under the supervision of the research coordinator. In this initial

reporting of the results of the survey, due to time limitations, the results will be presented only in the form of percentage distributions, means, and compilations of variables forming the physical quality of life indices. It is hoped that in the future a more sophisticated analysis of the survey results will be possible.

b) The In-Depth Interviews

The purpose of the in-depth interviews was twofold. First, the interviews were used to gain a better understanding of local economic patterns, educational and health problems and needs. Second, the in-depth interviews were used as a cross-check on the validity of interviews conducted during the baseline survey.

The questionnaire (see Appendix V) included items which probed into such issues as why an infant in the family had died, why a school age child in the family had never entered school or had dropped out, and to what extent reading materials were available to the family. The in-depth questionnaire also asked for a detailed accounting of all work performed by family members and the income accruing from such activities, as well as an itemization of all household and school expenditures. Other questions dealt with land ownership and agricultural activities, including the extent to which the family was involved in mutual-aid relationships with other families in the community. It was hoped this particular item could give some indication

of the extent of community cohesiveness and the well-being of traditional organizations. It was hypothesized that communities highly reliant on mutual-aid exchanges would be more likely to be successful in organizing and implementing development strategies.

In order to check on the reliability of the baseline survey, all items on the survey questionnaire were included in the in-depth interview form. A little over two percent of the families (i.e. 29 families) studied in the baseline survey were reinterviewed by the research coordinators; these 29 cases made up the in-depth interview sample. Generally, one to two families were selected on a random basis from each of the 19 banjar studied. The in-depth interviews usually took from two to four hours to complete. In all cases both husband and wife were interviewed.

The in-depth interviews proved to be very valuable in allowing the research coordinators to come closer to the subjects they were studying. The results from the in-depth interviews and the village leaders interviews (to be discussed in the following section) were crucial to the formation of an understanding of banjar needs, which in turn led to the development of the programmatic recommendations discussed in Chapter III of this report.

c) The Village Leaders Interviews:

The objective of the interviews with village leaders was to gain a better understanding of their views of

community problems and the kinds of development programs they felt would be most useful. Fifteen leaders were interviewed for that purpose during the closing period of the baseline survey. The leaders interviewed included school teachers, banjar headmen (*Kelian*), sub-district officials, respected farmers and para-medics. The questions included items concerning the types of crops local farmers would like to grow and the kinds of livestock they would like to raise. Also included were questions regarding the kinds of skills community members might like to develop, cooperatives appropriate to the community, and activities women might like to organize. The leaders were also asked to identify the most pressing problems their families and communities faced (see Appendix VI - Village Leaders Interview Schedule).

The interviews of village leaders were conducted by the research coordinators and once again proved very useful in increasing our understanding of local needs. Further, through lengthy informal discussions with the leaders regarding future programs for the area the groundwork for further cooperation between the leaders and Plan personnel was well established. These contacts should prove to be very useful in the future.

d) School Age Children's Health and Nutrition Survey

In order to assess the extent to which children in the eastern Bali area suffered from malnutrition and health

problems, a survey of 426 elementary school (*sekolah dasar*) children in three schools was conducted. The schools were selected to reflect conditions of children in three of the four major types of areas studied: a dryland farming, mountain community; a coastal, fishing community; and an administrative center.

In each school studied, all children present on the day of the survey were examined by the health team, which included two registered nurses and the research coordinator. Each child was weighed and measured on a clinical scale. A measurement of the upper arm circumference was also taken to measure body fat and assess the extent of undernourishment. Each child was then examined for skin infections, cough, signs of roundworm (ascaris) infestation, diarrhea, and swollen glands. The children were also checked for scars from smallpox and tuberculosis vaccinations.

After the examinations had been completed, each child was given a bag of dry milk powder, a dose of roundworm medicine, and a piece of candy. The teachers from the schools assisted with the examinations and were grateful for the interest taken in their students. They repeatedly expressed their interest in working with Plan in the future on any programs to be administered through the primary schools.

e) Archival and Background Research

The research coordinators were able to collect a

considerable amount of background information on the Model Banjar communities from provincial and local government departments. This data included information on agricultural productivity and problems in the area, as well as past experiences of government extension workers with agricultural, animal husbandry, and cottage industry development programs. In helping to avoid problems encountered by earlier efforts and to improve on past successes, this information should be particularly useful.

Other information gathered from outside sources concerned regional health problems, data on the progress of family planning efforts in the communities studied, as well as economic material and brief histories of each Model Banjar. This information will be used both to fill in gaps in our own knowledge, and to check the extent to which the externally-obtained information agrees with our own, thus forming another indicator of reliability.

In Chapter II we will look at the results of the five data collection strategies presented above.

Notes to Chapter I:

[1]A more complete discussion of the programs and services of Foster Parents Plan International, Inc. can be found in the following publication:

Foster Parents Plan International, Inc., Plan: Programs and Services Annual Report, 1978 (Warwick, R.I., 1978).

[2]Government development workers who attended these early seminars included staff from the *kabupaten* (regency) level Ministry of Animal Husbandry, Agriculture, Public Works, Information, Community Development, and Social Affairs. The results of this seminar and the early plans for the Model Banjar Project are discussed in detail in:

Lloyd J. Feinberg memo to E. Glenn Rogers, "Re: Plan Bali's Proposal for a Model Banjar Program" (memo #165: October 21, 1977).

[3]Willard A. Hanna, Bali Profile (New York: American University Field Staff Reports, 1976).

[4]Ibid, p. 97.

[5]In Indonesia today the country is divided into the following administrative units, starting with the largest they are as follows:

| Indonesian | English | Usual Population Range |
|---|---|---|
| *Propinsi* | Province | 2 to 30 million |
| *Kabupaten* | Regency | 100,000 to 500,000 |
| *Kecamaten* | District | 20,000 to 100,000 |
| *Perbekelan (Desa)* | Sub-District (Village) | 5,000 to 20,000 |
| *Banjar* (for Bali only) | Hamlet | 150 to 1,500 |

# CHAPTER II

## THE RESEARCH FINDINGS

### Part 1. Background

Before going on to discuss the specific findings of the study, it is useful to review some of the broader patterns of socio-economic change taking place in eastern Bali. By studying historical records it is clear that the Karangasem area has experienced a high population density, relative to the support capacity of thi less fertile eastern part of Bali, for over a hundred years. The resultant pressure on the people of the area, its economy and ecology, has been relieved only through such harsh Malthusian checks as the late 19th century wars with Lombok, out-migration, and the eruption of Mount Agung in 1963.

Until the past few decades the economy of eastern Bali has been based solidly on subsistence agriculture. While small-scale local trade has existed for centuries, in the past cash was a very scarce commodity and consequently most exchanges were conducted in kind. In brief, population growth has gradually caused family farmland holdings to shrink, forcing family members to seek income from other sources. In recent times, the growing availability of and demand for consumer goods and services, as well as cash, has created jobs for village families through the expansion of marketing, construction, and other spheres. At the same time this tendency is making village families increasingly

dependent on cash to acquire newly available consumer goods and a new range of consumer services.

In the past, most village families were almost totally dependent on agriculture, and were fairly well-off by comparison to most peasant societies. There appears to have been little trade outside of a radius of a few square kilometers, and what trade there was appears to have been based largely on bartering and copper coins. Traditionally land was ultimately controlled by the communities and the courts, though most village families probably had rights to as much land as they could farm, which frequently resulted in surplus harvests. Still, traditional Balinese society does not appear to have encouraged village families to acquire great wealth. While it was considered fitting that the courts exist in splendor, the *banjar* (neighborhood community organization) seems to have stressed economic equilibrium among its members. Even today, families relatively "better-off" are watched carefully in their behavior and openness towards poorer community members, and are under greater pressure to grant requests for good and services to other clan and banjar members if asked. Further, any village family which pulls ahead economically may be expected to perform relatively larger ceremonies, and in doing so to feed more "guests" (clan and community members) during the ceremony, in effect a form of redistribution of largess. (The importance of the ritual sphere in Balinese economy will be discussed more fully later in this report.)

Before heavy monetization of the economy, people with extra resources may have had less opportunity to use their capital. Since trade existed on only a small scale and for locally produced items, gold and land seem to have been the only major outlets for surplus resources. The Balinese villagers appeared to have worked their highly productive fields and used their surplus to supply themselves with the resources and leisure time necessary to develop an incredible tradition of plastic and performing arts and religious ritual.

How has this picture of traditional village economy been affected by changes and pressure originating both inside and outside the village economic system throughout the twentieth century?

Since the Dutch colonial government took control of south Bali in the beginning of the 20th century, through Indonesia's independence in 1945 until the present time, there has been a continued effort to develop the transportation-communications infrastructure of the island. It is now possible for villagers in the remote areas of east Bali to reach the capital of Denpasar in a day. This has consequently led, particularly in the past 15 years, to a remarkable growth in trade. Through infrastructural developments village Bali has increasingly been tied to the national economy, which in turn has resulted in a great flow of consumer goods into village markets, which have expanded to meet current needs. The availability of

manufactured cigarettes, flashlights, plastic buckets, umbrellas and thermos bottles, to name a few, has grown with an ever increasing demand for such goods. The process of monetization which has continued with the growth of the marketing system has also been spurred by cash needs for education, transportation, government fees, and so on. At the same time, while Balinese families find themselves increasingly dependent on cash, vast sums of capital have entered the island economy, especially in the past ten years. There have been three primary sources for this capital: a) billions of rupiah from Jakarta allocated to the development of Bali's provincial, regency, and district level bureaucracy; b) millions of dollars from international agencies in the form of grants and loans, to be used for capital-intensive infrastructural development projects; c) moneys invested in the rapidly growing tourist industry (originating from foreign and Jakarta-based Indonesian corporations, as well as government development grants).

Thus, during the 20th century we see Balinese village economy moving from an inward looking, rice surplus agricultural system towards a more outward looking, cash-centered system with many more national/international ties. Still, the Balinese peasant family has little immediate access to this newly arisen macro-economic, capital intensive world. This is particularly true of the people of eastern Bali, who are far removed from the center of this new, national economic activity. Yet national socio-

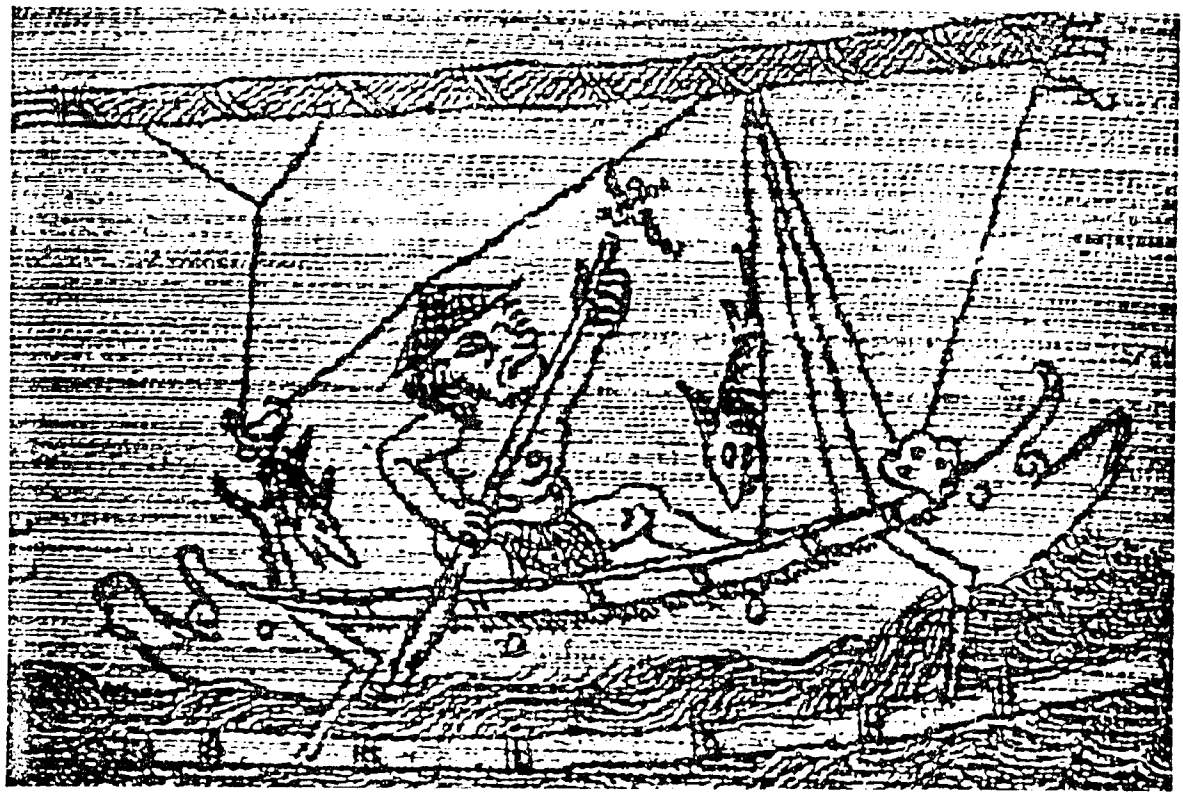
economic changes are having their impact even in the most remote villages. In the next few pages some of these changes will be discussed along with their implications for development strategies in the Model Banjar.

As the people of eastern Bali shift increasingly to cash crops and cash-paying jobs they are confronted by the problem of how to manage this new form of income effectively. While cash is becoming more important in the lives of villagers, some families have some difficulties using it to meet primary needs or saving it. This problem is compounded by the fact that while traditional Balinese methods of saving and utilizing economic resources were frequently based on communal organization (such as the banjar, clan, irrigation association, or temple), cash usually comes to and is held by a single individual. The increasing reliance on cash as a basis for exchange seems to weaken the traditional pattern of mutual-aid organizations in a wide range of activities including farming, construction labor, food processing, and others. While this has increased the income of some families, it may have put additional pressure on the poorest members in each community.

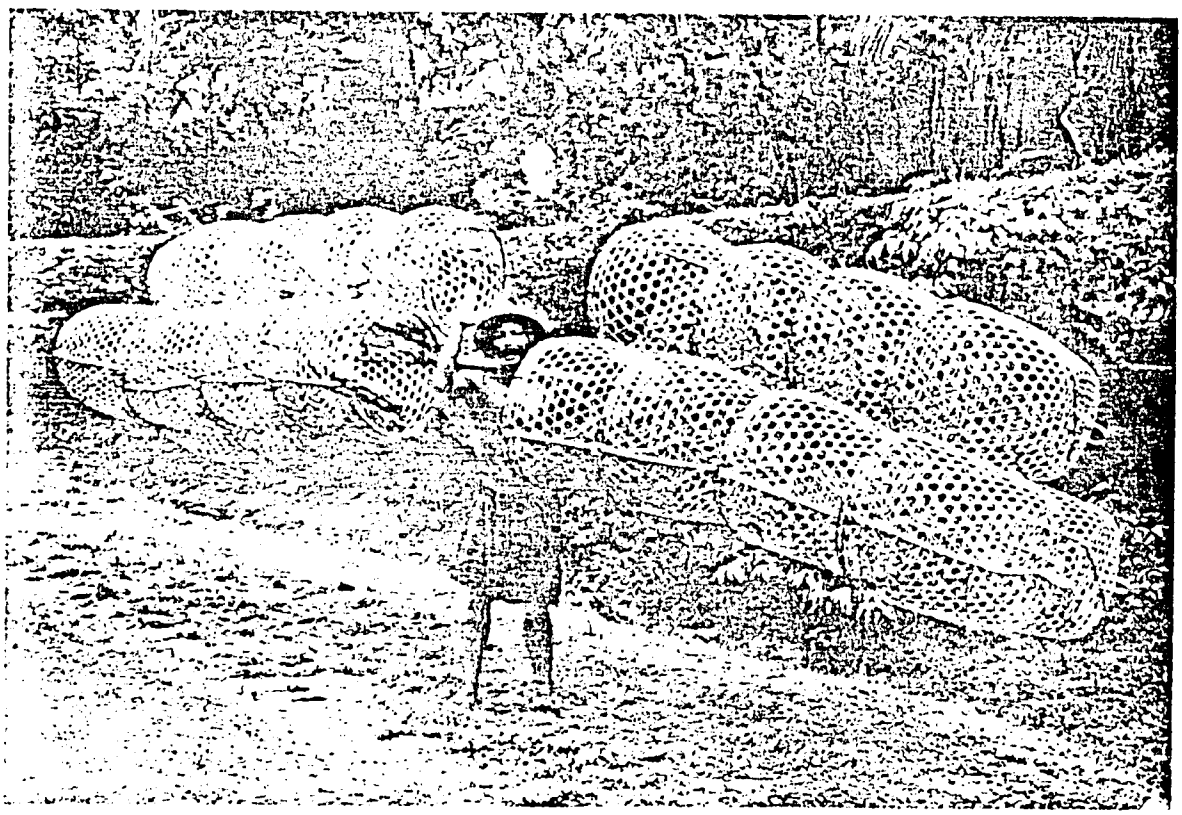
One outcome of the growth of the cash economy and more generally of the employment opportunities arising through the increasihg presence of the national economy in the eastern Bali area has been the rise of a new class of people within or near the Model Banjar. This new group

consists of civil servants (teachers, nurses, low-level administrators and extension workers) as well as larger, private entrepreneurs (contractors, wholesalers, and shop-keepers). The cash income of most of the members of this group is well above that of their average neighbor and has resulted in a large and growing economic gap between members of a community. While traditionally there was a considerable difference of wealth between the court and the village, within the village itself it was unusual to find an extremely large discrepancy in the resources possessed by any one family. As was mentioned earlier in this chapter, there was even a sense within the culture that to gain great possessions at the expense of others in the village was ignoble; an unevenness in wealth between families was sometimes minimized by the greater elaborateness of rituals put on by such families. In communities where the modern, national economy with its new set of values has had more influence, these traditional beliefs are sometimes losing importance with the newly emerging middle class.

In one community the results of the meeting of the traditional and modern economic systems and beliefs has been causing considerable change. In 1978 during the preparations for a major island-wide temple ceremony, in order to ensure an appropriate atmosphere of sanctity, many of the families in the community were required to cremate deceased relatives who were buried in the local



3. A fisherman at sea as depicted in a 19th century palmleaf manuscript.



4. A man carries fighting cock baskets to sell at the local market.

cemetery. To meet the considerable costs of the ceremonies a number of families either sold or mortgaged their farmland. While in earlier times it is likely that such families might have had to mortgage or sell their land, it would have been sold to relatives and neighbors; however, this time a local contractor (a member of the new class described above) was able to buy or take the mortgage on much of the land transferred during this period. He was able to take control of so much land because he had so much more wealth than the other families in the village, and because he did not feel it necessary to put on a proportionately large ceremony for his family. This man now controls significant amounts of land in the community.

It is impossible and probably undesirable for Balinese villagers to return to a traditional economic system at this time. They must learn to operate successfully in the modern economy in order to survive. Yet they must make this transition with two disadvantages already established. For one, they frequently lack the experience and contacts required to deal with the new economy. In fact, the kinds of beliefs and economic behavior patterns instilled by the culture traditionally are sometimes diametrically opposed to the types of responses required to succeed in competitive new enterprises. Second, many of the villagers of eastern Bali have little resources or capital with which to operate in the emerging economic system.

The extent to which this new economy has penetrated a village seems to be related to the distance of a village from a motorable road. As soon as a new road is completed the area becomes much more available to a range of entrepreneurs. Land values frequently rise quickly, and a sharp speculator from outside the village may begin buying land from community members at prices below the new value. While outsiders may realize that such land is well suited for a valuable cash crop, for example citrus or coffee, the local people may lack the capital or knowledge to participate in such development.

Throughout the world one of the major problems faced by community development efforts is a deep seated conservatism on the part of the villager based on a proven need to distrust outsiders and change in general. This is certainly not the case in Bali. As a group, the Balinese are highly innovative; witness the widespread and rapid adoption of high yielding rice varieties and contraceptives, to name just two innovations successfully introduced over the past ten years. However, sometimes innovativeness alone is not enough. In one village in Karangasem a group of fruit farmers wanted to share some of the profit available through marketing the fruit (*salak*) in urban areas some distance from their village. In order to do this they had to compete with a local entrepreneur who, since a paved road had been built into their village, bought virtually the entire crop which he hauled away in a

fleet of trucks which he personally owned. After a few years the cooperative effort of the villagers was bankrupt, and the entrepreneur maintained his complete control of the operation.

What can be done to help the majority of the people of eastern Bali participate successfully in the modern Indonesian economy? What can be done to improve their health and educational conditions? Will such improvement only come with a general change in economic conditions? To what extent are the patterns and problems discussed in the preceding pages present in Model Banjar areas? What are the implications of such problems for Plan, in its attempts to improve the physical quality of life for client families on the island of Bali? In the following pages a careful review of the Model Banjar Project's research findings should help to illuminate the answers to these questions.

## Part 2. Health and Nutrition

In analyzing the physical quality of life in the eastern Bali area it is appropriate to first consider health and nutritional conditions. Good health and proper nutrition are important in improving other aspects of family and community life. In communities with a high incidence of illness and poor nutrition, children will frequently do less well in school, people suffer from debilitating chronic diseases, and fertility may be higher in response to higher levels of infant deaths. It is clear that there are relationships between these problems and they combine to form a self-perpetuating circle of physical, mental and economic poverty which is difficult to break. One method of weakening the linkages in this circle is to improve health and nutrition conditions. In the following pages the kind of child health and nutrition, and public health problems faced by the people of eastern Bali will be examined. Later in the report strategies to help alleviate some of the localized health problems will be discussed.

### Health Problems:

A series of studies conducted for the Model Banjar Project all indicated that the major health problems faced in the region surveyed included, among others, diarrhea and intestinal parasites, upper respiratory tract infections and pneumonia, and nutritional deficiencies. In attempting

to identify specific health problems among school age children in the eastern Bali area a team of nurses examined 426 students aged 7 to 16 years of age. The nurse team found that a total of 51% of the students had skin infections and/or discoloration. Since all the schools studied were in dry areas, these skin problems reflect insufficient bathing, dirty clothes and unhygienic living conditions (see Table 2:1). Forty-seven percent of the children had moderate to severe roundworm (ascaris) infestations as diagnosed by a distended abdomen, while 35% of the pupils had swollen lymph glands indicative of bacterial infections, probably located in the upper respiratory tract. The nurses detected few cases of diarrhea and cough, probably due to the difficulties in diagnosing the problems.

The nurse team concluded that nearly all of the children they examined showed some signs of anemia. This is likely due to a combination of intestinal parasites and nutritional deficiencies. In the school in Seraya 20% of the students were diagnosed as having eye problems, probably due to a lack of vitamin A. Such conditions can lead to blindness if the deficiency continues.

In another area of eastern Bali a separate study[1] of children 6 months to 5 years of age found through examining stool samples that virtually 100% of the children had severe whip-worm and roundworm infestations. The same study also encountered a very high incidence of upper respiratory infections, and in one day examiners found five pneumonia

Table 2:1

Evidence of Illness in School Children (7-13 Years Old)
by Type of Symptom and School

| School | Type of Symptom | | | | | | N |
|---|---|---|---|---|---|---|---|
| | Skin Infection % | Cough % | Round-worms % | Fever % | Diarrhea % | Swollen neck Glands % | |
| S.D. Umanyar | 63 | 0 | 68 | 0 | 0 | 52 | (121) |
| S.D. Merita | 55 | 9 | 31 | 0 | 1 | 44 | (118) |
| S.D. Pauman | 40 | 21 | 43 | 6 | 2 | 19 | (187) |
| Total % | 51 | 12 | 47 | 3 | 1 | 35 | (426) |

cases out of some 20 children examined. It seems quite certain from the evidence given here that intestinal and respiratory problems explain much of the illness and death that occurs among the children of the eastern Bali area.

In order to determine the degree to which parents in the area were aware of such health problems, the parents were asked whether they believed that one or more of their children currently had one or more common health problems. It was determined that 3% of the parents thought one of their children might be currently ill with diarrhea, 12% with fever, 13% with cough, 20% with worms, and 9% with skin infections (see Table 2:2). In the case of worms and skin infections particularly, it is clear that most of the parents surveyed were not aware of the extent to which their own children suffered from these health problems. It is interesting, however, that after a de-worming clinic was held at a school in one banjar, and the parents witnessed the degree to which the children in the area had worms, 77% of the parents in that banjar believed their children had parasites as opposed to a mean of 20% of parents in other banjar.

These findings point to two needs: one, to improve public health conditions to reduce intestinal problems, including the protection of the community water supply from fecal contamination, and second to improve nutrition, housing, and clothing to reduce respiratory and skin ailments. However, without a greater awareness on the part

Table 2:2

Parents' Perception of Illness in Preschool Children by Type of Symptom and Banjar

| Banjar | Type of Symptom | | | | | Number of Cases |
|---|---|---|---|---|---|---|
| | Diarrhea % | Fever % | Cough % | Worms % | Skin Infection % | |
| Administrative Centers | | | | | | |
| A | 8 | 22 | 35 | 53 | 10 | (49) |
| B | 4 | 13 | 8 | 8 | 4 | (24) |
| C | 0 | 24 | 10 | 5 | 14 | (21) |
| D | 4 | 4 | 8 | 8 | 27 | (26) |
| E | 0 | 12 | 12 | 18 | 3 | (33) |
| F | 0 | 2 | 0 | 6 | 0 | (49) |
| Dryland Farming | | | | | | |
| G | 0 | 5 | 0 | 5 | 10 | (21) |
| H | 0 | 15 | 8 | 77 | 15 | (13) |
| I | 0 | 22 | 11 | 6 | 0 | (18) |
| J | 0 | 7 | 2 | 0 | 5 | (42) |
| K | 4 | 4 | 9 | 19 | 13 | (78) |
| L | - | - | - | - | - | |
| M | 6 | 8 | 5 | 3 | 0 | (63) |
| N | 4 | 39 | 54 | 29 | 14 | (28) |
| O | 1 | 9 | 1 | 33 | 5 | (79) |
| Wet Rice Farming | | | | | | |
| P | 0 | 13 | 10 | 26 | 19 | (31) |
| Q | 7 | 13 | 24 | 13 | 7 | (46) |
| Fishing | | | | | | |
| R | 2 | 5 | 27 | 18 | 18 | (44) |
| S | 4 | 8 | 16 | 24 | 12 | (25) |
| Total % | 3 | 12 | 13 | 20 | 9 | (690) |

of the community concerning the needs for such action, it will be difficult to improve on general health conditions. It is essential that parents and all banjar members be better educated concerning local health problems and how they can work with outside health personnel to eliminate them.

Inoculations:

Vaccination campaigns were first started in northern Bali in the latter part of the 19th century by the Dutch colonial administration. Since independence, government health teams have been involved in vaccinating, initially for smallpox and most recently for tuberculosis (TBC) and cholera/typhoid (Chotypa). Due to an obviously effective smallpox vaccination campaign, that disease has not been present in Bali for a number of years. As we can see in Table 2:3, the nurse team found smallpox inoculation scars on 96% of the school age children they examined. The team found almost as many children had received the tuberculosis inoculations (93%). Unfortunately, they were unable to check for the incidence of the cholera/typhoid shot as it leaves virtually no scar.

Parents in the communities surveyed seemed quite aware of whether their children had received inoculations or not. Fifty-seven percent of the parents said that at least one of their children (age 0 to 6 years old) had had a smallpox shot, 32% the tuberculosis inoculations and

Table 2:3

Proportion of School Children (7-13 Years Old) Inoculated Against Smallpox and TBC by School

| School | Inoculation | | (N) |
|---|---|---|---|
| | Smallpox % | T B C % | |
| S.D. Umanyar | 91 | 91 | (121) |
| S.D. Merita | 95 | 87 | (118) |
| S.D. Seraya | 100 | 99 | (187) |
| Total | 96 | 93 | (426) |

26% the cholera/typhoid shot (see Table 2:4).

Currently, by the time children in the eastern Bali area have entered primary school they have usually been vaccinated for both smallpox and tuberculosis. However, a considerably smaller proportion of those children have been inoculated against cholera/typhoid. Because the cholera/typhoid shot provides full protection for no more than 6 months, many of those who have had the shot have little more protection than those without it. Yet since cholera and typhoid are two common diseases occurring in the area, it seems that a more intensive inoculation campaign would be in order.[2]

Drinking Water:

An important factor affecting the health of members of any community is the quality and availability of water. Eastern Bali is one of the most arid parts of the island. The villagers who live in dryland areas spend considerable time and effort each day carrying water to their homes.

Among the families studied nearly 50% carried their water from springs (see Table 2:5). While spring water originating from rocky hillsides was probably safe from most contaminants in earlier times, recent increases in the population density throughout the area allow for an increased chance of fecal contamination in many spring-fed water sources. The next major source of drinking water (for 24% of the families) was rain catchment,

Table 2:4

Parents' Recollection of Inoculations Administered to Their Preschool Children by Banjar (with Perceived Vaccination Index)

| Banjar | Type of Inoculation | | | | | | Perceived Vaccination Index* |
|---|---|---|---|---|---|---|---|
| | Smallpox | | T B C | | Cho/Typa | | |
| | % | (N) | % | (N) | % | (N) | |
| Administrative Centers | | | | | | | 1.65 |
| A | 75 | (51) | 55 | (51) | 35 | (48) | 1.45 |
| B | 52 | (25) | 16 | (25) | 12 | (25) | 1.70 |
| C | 40 | (20) | 0 | (20) | 0 | (18) | 1.95 |
| D | 64 | (25) | 67 | (24) | 58 | (24) | 1.39 |
| E | 55 | (33) | 0 | (33) | 0 | (33) | 1.82 |
| F | 37 | (49) | 37 | (49) | 37 | (48) | 1.63 |
| Dry Land Farming | | | | | | | 1.74 |
| G | 57 | (21) | 10 | (20) | 15 | (20) | 1.72 |
| H | 57 | (14) | 21 | (14) | 0 | (14) | 1.72 |
| I | 6 | (18) | 0 | (18) | 0 | (18) | 1.98 |
| J | 2 | (45) | 0 | (45) | 0 | (45) | 1.99 |
| K | 12 | (17) | 6 | (17) | 0 | (17) | 1.94 |
| L | 82 | (77) | 43 | (72) | 39 | (72) | 1.55 |
| M | 83 | (60) | 63 | (46) | 0 | (42) | 1.76 |
| N | 29 | (28) | 25 | (28) | 15 | (27) | 1.76 |
| O | 76 | (79) | 76 | (79) | 76 | (79) | 1.24 |
| Wet Rice Farming | | | | | | | 1.74 |
| P | 59 | (32) | 12 | (32) | 0 | (31) | 1.74 |
| Q | 57 | (46) | 9 | (45) | 11 | (45) | 1.74 |
| Fishing | | | | | | | 1.67 |
| R | 77 | (43) | 0 | (45) | 51 | (41) | 1.65 |
| S | 26 | (23) | 48 | (23) | 14 | (22) | 1.69 |
| Total | 57 | | 32 | | 26 | | 1.65 |
| N | | (706) | | (686) | | (669) | |

* Range of Perceived Vaccination Index is 1.0 (a child has received all three inoculations) to 2.0 (a child has not received any inoculations).

Table 2:5

Source of Family's Drinking Water by Banjar

| Banjar | Source of Drinking Water: Well | Spring | Rain Catchment | River | Irrigation Channel | Pipe | (N) |
|---|---|---|---|---|---|---|---|
| Administrative Center | 24 | 38 | 10 | 27 | 0 | 1 | (374) |
| A | 0 | 12 | 0 | 88 | 0 | 0 | (74) |
| B | 0 | 19 | 2 | 79 | 0 | 0 | (43) |
| C | 5 | 95 | 0 | 0 | 0 | 0 | (42) |
| D | 17 | 0 | 80 | 0 | 2 | 0 | (46) |
| E | 1 | 99 | 0 | 0 | 0 | 0 | (81) |
| F | 90 | 6 | 1 | 0 | 0 | 3 | (88) |
| Dryland Farming | 6 | 64 | 28 | 0 | 2 | 0 | (594) |
| G | 0 | 93 | 7 | 0 | 0 | 0 | (29) |
| H | 0 | 100 | 0 | 0 | 0 | 0 | (30) |
| I | 0 | 61 | 0 | 0 | 39 | 0 | (28) |
| J | 0 | 100 | 0 | 0 | 0 | 0 | (78) |
| K | 0 | 78 | 22 | 0 | 0 | 0 | (27) |
| L | 1 | 97 | 1 | 0 | 1 | 0 | (152) |
| M | 0 | 0 | 100 | 0 | 0 | 0 | (92) |
| N | 0 | 100 | 0 | 0 | 0 | 0 | (53) |
| O | 34 | 1 | 65 | 0 | 0 | 0 | (105) |
| Wet Rice Farming | 1 | 74 | 1 | 24 | 0 | 0 | (117) |
| P | 2 | 76 | 0 | 22 | 0 | 0 | (45) |
| Q | 0 | 74 | 1 | 25 | 0 | 0 | (72) |
| Fishing | 35 | 0 | 65 | 0 | 0 | 0 | (125) |
| R | 12 | 0 | 88 | 0 | 0 | 0 | (92) |
| S | 100 | 0 | 0 | 0 | 0 | 0 | (33) |
| Total % | 14 | 50 | 24 | 11 | 1 | 0 | |
| N | (173) | (606) | (288) | (127) | (13) | (3) | (1210) |

followed by well water (14%) and river water (10%). Families relying on rain catchment and river water for drinking do so because of a severe lack of better water sources. River water is particularly dangerous in an area where 8% of the sample reported the most common location of defecation was the river.

Only 19% of the families interviewed regularly boil their drinking water. Other families, either because they feel that the water is already clean or because they can not afford the valuable fuel required, only occasionally boil water or do not boil it at all (see Table 2:6). Certainly water contamination is a severe problem in the eastern Bali area as witnessed by the regular incidence of cholera and gastro-intestinal illness.

While many areas of Bali have an abundance of water resources, the eastern end of Bali is dry in many places. In this study we found that during the dry season 22% of the families had to carry their water 3 kilometers or more, frequently uphill (see Table 2:7). The difficulty in obtaining water is particularly critical for inhabitants of villages on the sides of Mount Agung and along the Seraya coast. Each year many of the families studied spent hundreds of hours carrying water to their homes. The adults lose time they could use working productively, while children are sometimes kept out of school to do this tedious chore. Another problem arising from the shortage of water is an increased incidence of skin disease, for

Table 2:6

Method Family Uses to Prepare Drinking Water by Banjar

| Banjar | Method of Preparation | | | | (N) |
|---|---|---|---|---|---|
| | No Preparation % | Sometimes Boil % | Always Boil % | Filter % | |
| Administrative Center | 58 | 16 | 25 | 1 | (377) |
| A | 21 | 24 | 52 | 3 | (75) |
| B | 7 | 35 | 58 | 0 | (43) |
| C | 24 | 38 | 38 | 0 | (42) |
| D | 57 | 17 | 24 | 2 | (46) |
| E | 94 | 2 | 4 | 0 | (82) |
| F | 98 | 2 | 0 | 0 | (89) |
| Dryland Farming | 48 | 32 | 20 | 0 | (591) |
| G | 100 | 0 | 0 | 0 | (29) |
| H | 0 | 100 | 0 | 0 | (30) |
| I | 24 | 14 | 62 | 0 | (29) |
| J | 9 | 59 | 32 | 0 | (78) |
| K | 8 | 33 | 59 | 0 | (27) |
| L | 21 | 41 | 38 | 0 | (150) |
| M | 54 | 41 | 4 | 0 | (90) |
| N | 91 | 9 | 0 | 0 | (53) |
| O | 100 | 0 | 0 | 0 | (105) |
| Wet Rice Farming | 76 | 15 | 9 | 0 | (117) |
| P | 64 | 27 | 9 | 0 | (45) |
| Q | 85 | 7 | 8 | 0 | (72) |
| Fishing | 58 | 35 | 5 | 2 | (124) |
| R | 51 | 40 | 7 | 2 | (92) |
| S | 78 | 22 | 0 | 0 | (32) |
| Total % | 55 | 26 | 19 | 0 | 100% |
| N | (660) | (314) | (230) | (5) | (1209) |

Table 2:7

Distance from House to Source of Family's Drinking Water During the Dry Season by Banjar

| Banjar | Distance to Source | | | | | | N |
|---|---|---|---|---|---|---|---|
| | In or Near House % | 100m-½Km % | ½Km-1Km % | 1+Km-3Km % | 3+Km-5Km % | 6+ Km % | |
| Administrative Center | 23 | 47 | 27 | 3 | 0 | 0 | (376) |
| A | 33 | 37 | 30 | 0 | 0 | 0 | (75) |
| B | 54 | 46 | 0 | 0 | 0 | 0 | (43) |
| C | 2 | 29 | 55 | 14 | 0 | 0 | (42) |
| D | 4 | 22 | 59 | 13 | 2 | 0 | (46) |
| E | 6 | 48 | 46 | 0 | 0 | 0 | (82) |
| F | 34 | 63 | 3 | 0 | 0 | 0 | (88) |
| Dryland Farming | 2 | 10 | 28 | 30 | 28 | 2 | (594) |
| G | 0 | 0 | 0 | 0 | 100 | 0 | (29) |
| H | 0 | 3 | 17 | 76 | 4 | 0 | (29) |
| I | 32 | 7 | 29 | 21 | 11 | 0 | (28) |
| J | 0 | 3 | 0 | 14 | 81 | 2 | (78) |
| K | 0 | 15 | 11 | 7 | 30 | 37 | (27) |
| L | 4 | 20 | 49 | 20 | 7 | 0 | (152) |
| M | 1 | 14 | 25 | 49 | 11 | 0 | (93) |
| N | 0 | 13 | 51 | 36 | 0 | 0 | (53) |
| O | 0 | 3 | 13 | 40 | 44 | 0 | (105) |
| Wet Rice Farming | 10 | 80 | 10 | 0 | 0 | 0 | (117) |
| P | 20 | 71 | 9 | 0 | 0 | 0 | (45) |
| Q | 4 | 85 | 11 | 0 | 0 | 0 | (72) |
| Fishing | 1 | 3 | 23 | 1 | 9 | 63 | (121) |
| R | 0 | 0 | 0 | 1 | 13 | 86 | (88) |
| S | 3 | 12 | 85 | 0 | 0 | 0 | (33) |
| Total % | 10 | 27 | 26 | 16 | 15 | 7 | (1208) |

without easily available water it is difficult to bath and wash clothes as frequently as is necessary to maintain hygienic conditions. This is one of the reasons the school health survey found such a high proportion of primary school children (i.e. 51%) with such skin ailments as fungus infections, scabies, and other sores.

Site of Defecation:

The survey determined that only 15% of the families used toilets (WC), while the majority used the pig pen behind the house (59%), the drainage ditch (15%), the river (8%), or the garden (3%). While many families do not use WC's either because they cannot afford to install one or because they do not understand the health advantages of using toilets, it appears that many are reluctant to adopt toilets for other reasons. These include the problems arising from use of WC's when water is not generally available, or a desire to use the nightsoil for more productive purposes (e.g. fertilizer or for pig food).

We can see from Table 2:8 that in more centralized areas a greater proportion of the families use WC's. This reflects their generally higher education and income, the availability of water, and the greater effectiveness of government public health programs. In the more remote areas it is likely that a general use of WC's will not occur until such conditions are right. To prevent fecal contamination of water resources, it might be more

Table 2:8

Place of Defecation for Family by Banjar

| Banjar | Place of Defecation | | | | | | Number of Families |
|---|---|---|---|---|---|---|---|
| | Drainage Ditch % | River % | Behind House % | Out House (WC) % | Garden % | Other % | |
| Administrative Center | 31 | 14 | 29 | 21 | 3 | 2 | (374) |
| A | 69 | 5 | 12 | 11 | 3 | 0 | (75) |
| B | 63 | 30 | 0 | 0 | 7 | 0 | (43) |
| C | 38 | 29 | 24 | 7 | 2 | 0 | (42) |
| D | 0 | 0 | 80 | 13 | 7 | 0 | (45) |
| E | 21 | 21 | 15 | 42 | 1 | 0 | (81) |
| F | 0 | 6 | 48 | 33 | 3 | 10 | (88) |
| Dryland Farming | 1 | 4 | 93 | 1 | 1 | 0 | (593) |
| G | 0 | 0 | 93 | 7 | 0 | 0 | (29) |
| H | 0 | 3 | 97 | 0 | 0 | 0 | (30) |
| I | 0 | 0 | 100 | 0 | 0 | 0 | (27) |
| J | 0 | 1 | 99 | 0 | 0 | 0 | (78) |
| K | 0 | 0 | 100 | 0 | 0 | 0 | (27) |
| L | 3 | 15 | 78 | 4 | 4 | 0 | (152) |
| M | 0 | 1 | 97 | 0 | 2 | 0 | (93) |
| N | 0 | 0 | 98 | 0 | 2 | 0 | (52) |
| O | 0 | 0 | 100 | 0 | 0 | 0 | (105) |
| Wet Rice Farming | 58 | 21 | 6 | 11 | 4 | 0 | (116) |
| P | 69 | 9 | 7 | 15 | 0 | 0 | (45) |
| Q | 51 | 28 | 6 | 8 | 7 | 0 | (71) |
| Fishing | 0 | 0 | 100 | 0 | 0 | 0 | (125) |
| R | 0 | 0 | 100 | 0 | 0 | 0 | (92) |
| S | 0 | 0 | 100 | 0 | 0 | 0 | (33) |
| Total % | 15.1 | 8.3 | 59.1 | 14.9 | 1.8 | .7 | 100 |
| Frequency | (183) | (100) | (714) | (180) | (22) | (9) | (1208) |

effective to concentrate on protecting the water supply by establishing piped drinking-water systems, rather than to attempt to control site of defecation through programs advocating the installation of toilets. This seems reasonable when one considers that a closed water supply system (e.g. piped or closed well) can protect the quality of water for an entire village, while even one individual can pollute the same village's water by defecating in an open water system (e.g. stream).

Nutrition:

The staple food of 62% of the families studied was a mixture of rice and cassava[3] (see Table 2:9). Only in the administrative center-type banjar was unmixed rice eaten widely. In the Seraya area corn formed the staple food of the majority of the inhabitants, while on the slopes of Mt. Agung far from the wet rice lands we find villagers eating mostly cassava without rice.

While the type of staple food reflects the cultural ecology of the area (and particularly the kind of crops grown), it also reflects the economic and nutritional status of the families. Generally, only a few well-to-do villagers can afford an all-rice staple diet. Consequently, the fact that rice was consumed in large quantities only in the more centralized villages is an indication of their greater wealth in comparison to the outlying fishing and dryland communities. It is also important to

Table 2:9

Type of Staple Food Family Consumed Last Week by Banjar

| Banjar | Type of Staple | | | | | | Number of Families |
|---|---|---|---|---|---|---|---|
| | Rice % | Rice/ Cassava % | Rice/ Corn % | Cassava % | Corn % | Other % | |
| Administrative Center | 29 | 60 | 2 | 3 | 5 | 1 | (372) |
| A | 37 | 63 | 0 | 0 | 0 | 0 | (75) |
| B | 49 | 51 | 0 | 0 | 0 | 0 | (43) |
| C | 7 | 93 | 0 | 0 | 0 | 0 | (42) |
| D | 7 | 10 | 12 | 21 | 43 | 7 | (42) |
| E | 44 | 53 | 0 | 3 | 0 | 0 | (81) |
| F | 20 | 78 | 2 | 0 | 0 | 0 | (89) |
| Dryland Farming | 3 | 68 | 2 | 15 | 12 | 0 | (594) |
| G | 0 | 83 | 0 | 17 | 0 | 0 | (29) |
| H | 0 | 97 | 3 | 0 | 0 | 0 | (30) |
| I | 0 | 100 | 0 | 0 | 0 | 0 | (29) |
| J | 0 | 29 | 0 | 71 | 0 | 0 | (77) |
| K | 0 | 26 | 0 | 74 | 0 | 0 | (27) |
| L | 0 | 97 | 0 | 3 | 0 | 0 | (152) |
| M | 0 | 3 | 11 | 1 | 83 | 2 | (92) |
| N | 6 | 94 | 0 | 0 | 0 | 0 | (53) |
| O | 12 | 87 | 1 | 0 | 0 | 0 | (105) |
| Wet Rice Farming | 6 | 91 | 2 | 1 | 0 | 0 | (117) |
| P | 2 | 96 | 0 | 2 | 0 | 0 | (45) |
| Q | 8 | 89 | 3 | 0 | 0 | 0 | (72) |
| Fishing | 2 | 16 | 16 | 6 | 56 | 4 | (123) |
| R | 1 | 2 | 7 | 8 | 77 | 5 | (90) |
| S | 3 | 55 | 42 | 0 | 0 | 0 | (33) |
| Total % | 11.1 | 62.4 | 3.3 | 8.8 | 13.5 | .8 | 100 |
| Frequency | (134) | (753) | (40) | (106) | (163) | (10) | (1206) |

note that in the wet rice growing villages, only 6% of the families could afford to eat rice alone as their staple. This reflects the fact that virtually all wet rice farmers had very small holdings or else were tenant farmers receiving only one third of their harvests. It appears that only the wealthier traders, craftsmen, and civil servants consumed rice as their single major staple food.

The pattern described above becomes clearer when we examine the amount of other staples mixed with one part of rice. In the more centralized villages, those who do mix cassava and corn with their rice use only one-half or less part of other staple to one part of rice, while in the outlying villages it is common to use two parts or more (see Table 2:10).

Virtually all of the families sampled eat a main meal with a staple food at least two to three times a day (see Table 2:11). Almost all families also have greens with their meals. Since the greens can be gathered in the forests and near the rivers, families enjoy this source of food, rich in vitamin B, at almost no cost. Unfortunately, other key foods such as meat, soy bean cake (*tempe*), bean curd (*tahu*), and fruit are consumed much less frequently. Overall, it was found that 51% of the families did not eat animal protein foods on a regular basis, 61% did not consume vegetable protein sources regularly, and 86% of the families ate fruit only occasionally. Again, we find a tendency for families in the centralized villages to have

Table 2:10

Proportion of Non-Rice Staple Consumed by Family per Part of Rice by Banjar

| Banjar | Proportion of Other Staple Food Mixed with One Part of Rice | | | | N |
|---|---|---|---|---|---|
| | Less than ½ % | ½ to 1 % | 1+ to 3 % | More than 3 % | |
| Administrative Center | 49 | 16 | 17 | 18 | (238) |
| A | 34 | 7 | 4 | 55 | (47) |
| B | 68 | 9 | 14 | 9 | (22) |
| C | 63 | 0 | 13 | 24 | (38) |
| D | 92 | 7 | 0 | 0 | (14) |
| E | 89 | 0 | 2 | 9 | (46) |
| F | 11 | 47 | 41 | 1 | (71) |
| Dryland Farming | 8 | 26 | 37 | 29 | (406) |
| G | 4 | 4 | 25 | 67 | (24) |
| H | 3 | 7 | 70 | 20 | (30) |
| I | 7 | 86 | 4 | 3 | (28) |
| J | 0 | 18 | 9 | 73 | (22) |
| L | 14 | 4 | 32 | 50 | (147) |
| M | 0 | 31 | 46 | 23 | (13) |
| N | 6 | 66 | 20 | 8 | (50) |
| O | 3 | 33 | 61 | 3 | (92) |
| Wet Rice Farming | 7 | 27 | 54 | 12 | (110) |
| P | 9 | 18 | 55 | 18 | (44) |
| Q | 6 | 33 | 53 | 8 | (66) |
| Fishing | 3 | 11 | 34 | 53 | (38) |
| R | 0 | 44 | 0 | 56 | ( 9) |
| S | 3 | 0 | 45 | 52 | (29) |
| Total % | 20.6 | 22.2 | 32.7 | 24.7 | |
| Frequency | (157) | (177) | (261) | (197) | (792) |

Table 2:11

Daily Food Consumption of Family by Type of Food, Daily Frequency, and Banjar (with Nutrition Index)

| Banjar | Type & Daily Frequency of Food Consumed | | | | | | | | | | | | | | | Nutrition Index Score* | (N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Staple | | | Animal Protein | | | Vegetable Protein | | | Fruit | | | Greens | | | | |
| | 0 % | 1 % | 2+ % | 0 % | 1 % | 2+ % | 0 % | 1 % | 2+ % | 0 % | 1 % | 2+ % | 0 % | 1 % | 2+ % | | |
| Administrative Centers | | | | | | | | | | | | | | | | 1.27 | (377) |
| A | 0 | 0 | 100 | 35 | 35 | 30 | 41 | 37 | 22 | 77 | 17 | 6 | 0 | 0 | 100 | 1.26 | (75) |
| B | 0 | 0 | 100 | 14 | 51 | 35 | 14 | 81 | 5 | 54 | 44 | 2 | 0 | 0 | 100 | 1.33 | (43) |
| C | 0 | 0 | 100 | 5 | 90 | 5 | 7 | 71 | 22 | 45 | 48 | 7 | 2 | 0 | 98 | 1.36 | (42) |
| D | 4 | 4 | 92 | 76 | 2 | 22 | 94 | 0 | 6 | 89 | 0 | 11 | 7 | 7 | 86 | .96 | (46) |
| E | 0 | 0 | 100 | 33 | 12 | 55 | 26 | 13 | 61 | 87 | 6 | 7 | 2 | 1 | 97 | 1.37 | (82) |
| F | 0 | 0 | 100 | 1 | 3 | 96 | 88 | 2 | 10 | 98 | 2 | 0 | 0 | 0 | 100 | 1.35 | (89) |
| Dryland Farming | | | | | | | | | | | | | | | | .99 | (594) |
| G | 0 | 0 | 100 | 100 | 0 | 0 | 100 | 0 | 0 | 97 | 3 | 0 | 0 | 0 | 100 | .81 | (29) |
| H | 0 | 3 | 97 | - | - | - | 3 | 63 | 34 | 40 | 46 | 14 | 3 | 0 | 97 | 1.18 | (30) |
| I | 3 | 0 | 97 | 100 | 0 | 0 | 97 | 0 | 3 | 100 | 0 | 0 | 3 | 0 | 97 | .81 | (29) |
| J | 0 | 0 | 100 | - | - | - | 82 | 10 | 8 | 56 | 29 | 15 | 9 | 19 | 72 | .93 | (77) |
| K | - | - | - | 74 | 26 | 0 | 78 | 22 | 0 | 93 | 4 | 3 | 7 | 4 | 89 | .92 | (26) |
| L | 0 | 1 | 99 | 39 | 39 | 22 | 20 | 70 | 10 | 91 | 7 | 2 | 1 | 0 | 99 | 1.18 | (152) |
| M | 0 | 0 | 100 | 91 | 8 | 1 | 68 | 32 | 0 | 100 | 0 | 0 | 0 | 0 | 100 | .93 | (93) |
| N | 2 | 0 | 98 | 83 | 0 | 17 | 22 | 0 | 78 | 94 | 0 | 6 | 0 | 0 | 100 | 1.19 | (53) |
| O | 0 | 0 | 100 | 95 | 4 | 1 | 98 | 1 | 1 | 100 | 0 | 0 | 1 | 4 | 95 | .92 | (105) |
| Wet Rice Farming | | | | | | | | | | | | | | | | 1.11 | (117) |
| P | 2 | 0 | 98 | 76 | 24 | 0 | 58 | 42 | 0 | 98 | 0 | 2 | 2 | 2 | 96 | .92 | (45) |
| Q | 0 | 0 | 100 | 58 | 3 | 39 | 82 | 0 | 18 | 95 | 3 | 2 | 0 | 0 | 100 | 1.31 | (72) |
| Fishing | | | | | | | | | | | | | | | | 1.02 | (124) |
| R | 0 | 0 | 100 | 61 | 5 | 34 | 99 | 0 | 1 | 91 | 4 | 5 | 0 | 0 | 100 | 1.15 | (92) |
| S | 0 | 0 | 100 | 58 | 21 | 21 | 100 | 0 | 0 | 94 | 6 | 0 | 15 | 30 | 55 | .89 | (33) |
| Total % | 0 | 0 | 100 | 51 | 19 | 30 | 61 | 24 | 15 | 86 | 10 | 4 | 2 | 3 | 95 | 1.17 | (1213) |
| Frequency | (5) | (4) | (1205) | (623) | (229) | (261) | (742) | (295) | (177) | (1048) | (115) | (51) | (25) | (35) | (1155) | | |

* The Nutrition Index Score is determined by adding the values of the food groups above and dividing by five:

$$\left(\frac{\text{Staple} + \text{Animal Protein} + \text{Vegetable Protein} + \text{Fruit} + \text{Greens}}{5}\right)$$

greater access to such foods and greater resources to buy them; consequently, their diets tended to include all of the above foods more frequently than families residing in the more remote areas. In terms of scores on the study's Nutrition Index centralized banjar scored 1.27, dryland banjar .99, wet rice banjar scored 1.11, while the fishing banjar scored 1.02.

If we consider that a diet including two staple meals a day with animal protein consumed once, vegetable protein consumed once, fruit consumed once, and greens eaten twice in a day, the Nutrition Index score would be 1.40. It is clear then that a more balanced diet including all essential food groups is not currently being consumed even by the wealthier, better educated villagers in the more centralized banjar.

To better understand what the diets of eastern Bali families consist of, it is useful to look at examples of what women from various economic backgrounds buy or use in their preparation of daily meals. In Table 2:12 a breakdown of foodstuffs consumed daily and their costs are given for five different families interviewed in depth. It appears that the poorer families (with a per capita income of less than Rp. 24,000) consumed between 1/5 to 1/4 kilogram of staple per person, while the upper income families (with a per capita income above Rp. 24,000) consumed from 1/4 to 1/3 kg. per person (these figures vary depending on the age of the children in the families

Table 2:12

Daily Expenditures for Food and Fuel for Five Sample Families by Type, Cost, and Quantity Consumed

| Items Consumed | Family 1 (024) | | Family 2 (012) | | Family 3 (003) | | Family 4 (016) | | Family 5 (004) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Rp. | Quantity | Rp. | Quantity | Rp. | Quantity | Rp. | Quantity | Rp. | Quantity |
| Rice | 100 | ½ Kg. | 450 | 3 Kg. | 38 | ¼ Kg. | - | | 38 | ¼ Kg. |
| Dried Cassava | 30 | ½ Kg. | - | | 30 | ½ Kg. | 50 | 1 Kg. | 50 | 1 Kg. |
| Dried Fish | - | | 50 | 1/5 Kg. | 25 | 1/10 Kg. | - | | Caught by family | 1 fish (8-12") |
| Spices | 25 | | 100 | | 17 | | 25 | | 25 | |
| Greens | Given | | 50 | | Collect | | 12 | | - | |
| Fruit | - | | 25 | 3 medium bananas | - | | - | | - | |
| Salt & Matches | - | | - | | 8 | | 5 | | - | |
| Coffee | 20 | 10 grams | 70 | 35 grams | 12 | 6.5 grams | 35 | 19 grams | 35 | 19 grams |
| Sugar | 10 | 35 grams | 30 | 105 grams | 5 | 17.5 grams | 15 | 53 grams | 15 | 53 grams |
| Sweets | 10 | | 100 | | - | | - | | - | |
| Meat (Beef) | 50 | 1/10 Kg. | - | | - | | - | | - | |
| Firewood | 25 | | 300 | 1 bundle | Collect | | Collect | | Collect | |
| Kerosene | 15 | 3/5 litre | 50 | 2 litres | 8 | 1/3 litre | 8 | 1/3 litre | 25 | 1 litre |
| Tobacco | 60 | | 50 | | 8 | | 17 | | 75 | |
| Coconut Oil | 25 | 1/10 litre | 100 | 1/3 litre | - | | - | | 25 | 1/10 litre |
| Total Cost | 370 | | 1375 | | 141 | | 167 | | 288 | |
| Cost Per Person | 93 | | 138 | | 47 | | 33 | | 41 | |
| Family PCI | 36,200 | | 54,500 | | 18,000 | | 11,000 | | 23,400 | |
| Educ. F.H. | None | | 50 Graduate | | None | | None | | S.D. Graduate | |
| Number of Family Members | 4 | | 10 | | 3 | | 5 | | 7 | |

studied). Three of the five families supplemented their diet with dried fish (*pindang* and *gerang*), the cheapest source of animal protein. One of the wealthier families bought a small amount of beef. All the families bought or collected greens; however, only the wealthiest family spent a small part of its daily food budget on fruit. It is interesting that all of the families, even the poorest ones, devoted a considerable proportion (the wealthier families 17% and the poorer families 33%) of their daily food budget to coffee and sugar, and to tobacco.

In summarizing, we found that the per capita expenditure for food and fuel ran from Rp. 33 for the poorest families to Rp. 138 for the wealthiest. However, it is important to note that the wealthier families used their extra money to purchase such items as coconut oil and sweets, and spent little extra on such important food sources as fish, meat, vegetable protein foods, and fruit. This indicates that the imbalanced diet of many families is a result of not only insufficient money and poor distribution of certain foods (e.g. fish, meat, soy foods, and fruit), but of a lack of education regarding the types of food that together form a balanced diet.

To understand the effect of the diet described above on the overall nutritional condition of children in eastern Bali, data was collected regarding the height, weight, and upper arm circumference of the 426 primary school children discussed earlier. This data tells us the

extent to which children in the area surveyed are underweight for their height in comparison to other Indonesian children, and whether they may suffer from protein calorie malnutrition (PCM) when compared to international standards for children of their age group.

As is shown in Table 2:13, it was found that approximately 91% of the students were of normal weight for their height (i.e. 90% to 100% of the standard weight for Indonesian children of their height). Another 9% of the children were mildly or moderately underweight in relation to their height, while only one girl was severely underweight. However, when we examine how the school children compared to international standards for overall calorie protein malnutrition, another picture emerges. Among all children, it was found that only 64% showed no sign of malnutrition (indicated by a score of 85% of the standard measurement or more by age) (see Table 2:14). Another 26% of the children were mildly undernourished (80% - 85% of the international standard), while 10% were moderately malnourished (below 80% of standard).

When we compare the upper arm circumference of the children by age with the international standard, we find that only 4% of the youngest children studied (aged 7 years) were below the standard. However, our findings indicated that the proportion of children below the norm increases with age until 57% of all children 13 years old or more are below the standard.

Table 2:13

Comparison of Mean Height and Weight for Primary School Children in Eastern Bali Against the Indonesian Standards by Sex

| Extent of Underweight to Height* | Children | | | | | |
|---|---|---|---|---|---|---|
| | Male | | Female | | Total | |
| | % | (N) | % | (N) | % | (N) |
| Normal 90th% & Above | 93 | (144) | 89 | (245) | 91.3 | (389) |
| Mild to Moderate 70th - 89th% | 7 | (20) | 10 | (16) | 8.5 | (36) |
| Severe below 70th% | - | | 1 | (1) | .2 | (1) |
| | 100% | (164) | 100% | (262) | 100% | (426) |

*Standards used for determining subnormal weight to height are based on Indonesian standards presented in a paper by Jon Rohde (1971) entitled "Manual for the Standardization and Evaluation of Data for the Assessment of the Nutritional Health of a Community Using Fieldsurvey Techniques in Rural Areas"; Ministry of Health: Jakarta.

Table 2:14

Extent of Calorie Protein Malnutrition as Determined by Comparison of Mean Upper Arm Circumference of Primary School Children in Eastern Bali Against the International Standards by Age

| Extent of Calorie Protein Malnutrition* | Age (in Years) | | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | 7 | 8 | 9 | 10 | 11 | 12 | 13 or More | | |
| | % | % | % | % | % | % | % | | N |
| None | 96 | 78 | 74 | 51 | 59 | 66 | 43 | 64 | (274) |
| Mild | - | 15 | 22 | 40 | 36 | 20 | 31 | 26 | (108) |
| Moderate | 4 | 7 | 4 | 9 | 5 | 13 | 26 | 10 | (44) |
| Total (N) | (22) | (58) | (72) | (43) | (81) | (88) | (62) | 100 | (426) |

*Standards for determining calorie protein malnutrition are based on International standards (with percentile guidelines for Indonesian children provided) presented in a paper by Jon Rohde (1971) entitled "Manual for the Standardization and Evaluation of Data for the Assessment of the Nutritional Health of a Community Using Fieldsurvey Techniques in Rural Areas"; Ministry of Health: Jakarta.

When looking at the measurements presented above, it should be remembered that nutritionists are still debating the ability of anthropometric techniques to ascertain nutritional well-being by comparing results from one area against a standard for another area. Still, based on the statistical findings presented here and information regarding family diets collected during in-depth interviews, it seems likely that there is some undernourishment particularly among children from very low-income families. Whether this undernourishment results from a diet currently deficient in protein, calories, and/or vitamins is difficult to say. Undernourishment could also be due to a lack of certain foods at an earlier age, which has since been corrected, or to widespread intestinal parasite infestations. In Chapter III ways of improving the nutritional levels of school children will be discussed.

Part 3. Education

Few people would question the assumption that education is going to be a key factor in the long term development of the eastern Bali region. More specifically, skills in reading and math, an understanding of health and hygiene, and a knowledge of organization and government will help the children of Bali to lead a better life in their own villages and will contribute to their increasing ability to participate in modern Indonesian society.

To what extent are eastern Balinese children currently acquiring the skills described above? In attempting to answer this question the study conducted a number of inquiries. It was found that among all the banjar an average of 57% of all primary school age children (7 to 13 years) were currently attending school (see Table 2:15). Even in the most progressive banjar, located near schools, 25% of the children were not attending primary school. In the most remote areas as many as 85 to 90% of the school age children were out of school. What explains this relatively low rate of attendance?

In some villages along the rocky Seraya coastline and in villages north of Culik the answer is simple: Outside of the administrative centers, there is not enough school space or teachers for the number of primary school age children who desire to go to school. Often the waiting period is several years or more. However, with the exception of such areas, in most of the communities space is not

Table 2:15

Proportion of Primary and Secondary School Age Children Currently Attending School by Banjar

| Banjar | % Children (aged 7-13) Enrolled in Primary School | | % Children (aged 14-18) Enrolled in Primary or Secondary School | |
|---|---|---|---|---|
| | % | (N) | % | (N) |
| Administrative Centers | 60 | (359) | 34 | (217) |
| A | 74 | (81) | 31 | (35) |
| B | 76 | (38) | 41 | (27) |
| C | 56 | (41) | 32 | (28) |
| D | 56 | (50) | 20 | (25) |
| E | 56 | (71) | 49 | (61) |
| F | 44 | (78) | 17 | (41) |
| Dryland Farming | 52 | (476) | 20 | (261) |
| G | 55 | (20) | 21 | (19) |
| H | 54 | (37) | 13 | (16) |
| I | 75 | (24) | 46 | (13) |
| J | 43 | (68) | 20 | (20) |
| K | - | - | 9 | (11) |
| L | 46 | (119) | 22 | (54) |
| M | 56 | (85) | 17 | (58) |
| N | 50 | (46) | 16 | (37) |
| O | 57 | (77) | 21 | (33) |
| Wet Rice Farming | 48 | (109) | 14 | (58) |
| P | 41 | (51) | 9 | (23) |
| Q | 53 | (58) | 17 | (35) |
| Fishing | 30 | (122) | 16 | (45) |
| R | 34 | (97) | 17 | (30) |
| S | 16 | (25) | 13 | (15) |
| Total % | 51.6 | (1066) | 24.1 | (581) |

the primary problem. Over the past decade both the Indonesian government as well as the individual banjar have worked to provide most of the needs for school buildings and teachers. The lack of attendance results from social and economic needs and beliefs.

When we asked the parents of children who were not attending school why they were not in school, 37% of the sample replied because they could not afford it. However, 28% of the parents responded that their children had no desire to go to school (see Table 2:16). From our discussions with parents we came to feel that some parents saw no real advantage in sending their children to school. When the children were in school they could not help their parents. Because of the large number of pupils in each class and a shortage of teaching materials, some teachers stated that many children learned little in school. Some parents seemed to feel the same way. Even if their children did learn how to read, there was rarely anything to read in their homes. Ultimately, there seemed to be a general feeling among a number of parents that education simply did not lead anywhere. A primary school graduation certificate offered virtually no hope of any job. A young person would have to study at least through high school to be eligible for a white-collar position and such a long period devoted to education would cost a great deal of money for a village parent, especially when the child goes beyond the primary school level. However, even at the

Table 2:16

Reasons Parents Give for the Non-Attendance of Their Primary School Age Children

| Reason | % | (N) |
|---|---|---|
| Poor Health | 8 | (12) |
| Too Far | 3 | (5) |
| No Money | 37 | (56) |
| Work at Home | 2 | (3) |
| Failed Tests | 2 | (2) |
| Graduated | 7 | (10) |
| No Vacancy | 13 | (20) |
| Child Lacks Desire | 28 | (43) |
| Total | 100 | (151) |

primary level the cost of sending one or more children to school can be a burden, especially for low income families. In Table 2:17 examples of the type of expenditures and their costs are given for five sample families. The poorer families spend from 200 to 400 rupiah per month for each elementary level child, while wealthier parents may spend up to 1200 rupiah a month. While a major cost is the school uniform, the pocket money required by children who are attending school often amounts to 50% or more of all money spent on education.[4]

Costs for schooling at the middle and high school level rise dramatically. Usually, the major expense for upper level education involves transportation and/or boarding costs at the school which is usually located in a district or regency headquarters at considerable distance from the village. As we can see in Table 2:15, only 24% of the children in the 14 to 18 years age group were attending school at the time of the interviews. Further, many of the children in this group were still studying in primary school and not likely to continue their educations after graduating from the local *sekolah dasar* (elementary school). In Chapter III strategies for strengthening formal education in the Model Banjar areas will be discussed.

Literacy:

To determine the extent of literacy in the areas studied, all family heads were asked which family members

Table 2:17

Monthly School Related Expenses for Five Sample Families by Item, Amount Spent, and Grade Level of Student

| Type of Expense | Monthly Expenditure in Rupiah | | | | |
|---|---|---|---|---|---|
| | Family 1 5th Class Age 12 | Family 2 1st Class Age 9 | Family 3 2nd Class Age 10 | Family 4 1st Class Age 10 | Family 5 3rd Class Age 11 |
| School Clothes | Rp. 250 | Rp. 92 | Rp. 117 | Rp. 133 | Rp. 150 |
| School Supplies | Rp. 85 | Rp. 100 | Rp. 35 | Rp. 30 | Rp. 30 |
| Class Savings | Rp. 250 | Rp. 250 | 0 | Rp. 20 | Rp. 10 |
| Pocket Money | Rp. 625 | Rp. 250 | Rp. 50 | Rp. 375 | Rp. 200 |
| Total Cost | Rp. 1210 | Rp. 692 | Rp. 202 | Rp. 558 | Rp. 390 |
| Family PCI | Rp. 54,500 | Rp. 21,000 | Rp. 17,300 | Rp. 36,200 | Rp. 11,000 |
| Number of Children in School | 2 | 1 | 1 | 1 | 1 |

could read Indonesian (in Roman script) and who could read Balinese script. It was determined that, of the population aged 7 years and above, 42% could read Indonesian and 30% could read Balinese (see Table 2:18). In some banjar the proportion of people able to read Roman script dropped as low as 23%, while in one banjar that had a number of teachers and civil servants among its members, 77% of those 7 years and above had some degree of literacy.

When we conducted in-depth interviews we asked those families with members who were literate how often and what they read. It quickly became apparent that very few of the families had any reading materials at all. Most of the literate persons interviewed read no more than once a month, and then frequently read only the label on a cigarette package or a family planning poster. In summarizing, it is reasonable to assume that of those individuals claiming some degree of literacy perhaps no more than 10% are functionally literate and read on a regular basis.

It was found that the most regular, organized reading activities were the traditional Balinese *sekaa papaosan* (reading groups). In such groups, (usually older) men and women would read classical literature in Balinese script and discuss its meaning. This traditional orientation towards reading as an oral-cum-written experience which is shared by a group could well be used as a model for new groups reading other types of literature in Roman script.

Table 2:18

Percentage of Population (Aged 7 Years and Above) Literate in Roman and Balinese Script by Banjar

| Banjar | Literate in Roman | | Literate in Balinese | |
|---|---|---|---|---|
| | % | Total (N) | % | Total (N) |
| Administrative Centers | 52 | (1382) | 40 | (1382) |
| A | 66 | (265) | 50 | (265) |
| B | 77 | (167) | 59 | (167) |
| C | 51 | (164) | 51 | (164) |
| D | 43 | (160) | 32 | (160) |
| E | 57 | (318) | 41 | (318) |
| F | 28 | (308) | 17 | (308) |
| Dryland Farming | 38 | (1932) | 29 | (1932) |
| G | 44 | (97) | 28 | (97) |
| H | 56 | (87) | 46 | (87) |
| I | 50 | (109) | 17 | (109) |
| J | 35 | (242) | 17 | (242) |
| K | 37 | (436) | 20 | (436) |
| L | 23 | (88) | 23 | (88) |
| M | 36 | (319) | 37 | (319) |
| N | 43 | (191) | 41 | (191) |
| O | 34 | (363) | 34 | (363) |
| Wet Rice Farming | 39 | (461) | 32 | (176) |
| P | 40 | (176) | 32 | (176) |
| Q | 38 | (285) | - | - |
| Fishing | 28 | (413) | 21 | (413) |
| R | 30 | (318) | 19 | (318) |
| S | 23 | (95) | 23 | (95) |
| Total % | 41.8 | (4188) | 31.7 | (3903) |

Part 4. Housing

A clean, well ventilated house with sufficient space for the number of individuals residing in it is important to the health of the family, both physically and mentally. Cramped and crowded conditions make it difficult for children to study and hamper and economic activities of their parents. When cooking has to be performed within the living quarters, respiratory and eye problems can result. To better understand the extent to which the families of eastern Bali had sufficient housing facilities, the interviewers noted the condition of the roof, floor, kitchen, and lighting and ventilation in the walls of the primary structures.

According to the survey, when roof conditions were evaluated on a three point scale from old (1 point) to new (3 points), the mean score was 1.27. Floors made of dirt were scored as 1, while floors of tile or cement were scored as 3, with the mean score 1.32. Kitchens were scored from 0 (for no kitchen) to 3 (for a new kitchen), with a mean score of .73. Finally, for each old traditional-style building in the family courtyard 1 point was given. Two points were given for each new traditional structure or old modern structure, and four points for each new modern structure (with brick walls). The mean score for condition and number of structures was 2.06 (see Table 2:19).

When the individual scores are combined to form a

Table 2:19

Condition of Family Housing (Floor, Roof, Kitchen, and Structure) and Mean Housing Index Score by Banjar

| Banjar | Mean Family Housing Score | | | | Mean Housing Index Score |
|---|---|---|---|---|---|
| | Roof* | Floor** | Kitchen*** | Structure**** | |
| Administrative Centers | | | | | 1.52 |
| A | 1.47 | 1.68 | .68 | 2.87 | 1.68 |
| B | 1.65 | 1.65 | .95 | 3.12 | 1.84 |
| C | 1.24 | 1.59 | .55 | 2.29 | 1.42 |
| D | 1.33 | 1.22 | 1.00 | 2.30 | 1.46 |
| E | 1.27 | 1.63 | .99 | 1.78 | 1.39 |
| F | 1.40 | 1.34 | .97 | 1.65 | 1.34 |
| Dryland Farming | | | | | 1.20 |
| G | 1.21 | 1.14 | .62 | 1.38 | 1.09 |
| H | - | - | - | - | - |
| I | 1.17 | 1.48 | .65 | 2.34 | 1.41 |
| J | 1.42 | 1.26 | 0 | 1.99 | 1.17 |
| K | 1.04 | 1.31 | .19 | 1.56 | 1.03 |
| L | 1.17 | 1.21 | .14 | 1.80 | 1.08 |
| M | 1.25 | 1.15 | .99 | 2.63 | 1.51 |
| N | 1.02 | 1.26 | .81 | 1.64 | 1.18 |
| O | 1.10 | 1.12 | .98 | 1.42 | 1.16 |
| Wet Rice Farming | | | | | 1.20 |
| P | 1.24 | 1.22 | .69 | 1.58 | 1.18 |
| Q | 1.30 | 1.64 | .89 | 1.86 | 1.21 |
| Fishing | | | | | 1.38 |
| R | 1.24 | 1.02 | 1.01 | 2.53 | 1.45 |
| S | 1.21 | 1.24 | .70 | 1.91 | 1.30 |
| Total % Frequency | 1.27 (1207) | 1.32 (1205) | .73 (1212) | 2.06 (1216) | 1.35 |

*Roof
Worn=1
Acceptable=2
New=3

**Floor
Dirt=1
Tile or Cement=3

***Kitchen
None=0
Old=1
Acceptable=2
New=3

****Structure
Old Traditional=1
New Traditional=2
Old Modern=2
New Modern=4

gross housing index, a mean score of 1.38 is obtained. To what extent does this mean score reflect a deficiency of housing in the region? If we propose that a family of five requires a minimum of one solid structure in good condition with proper ventilation and lighting, a cement or tile floor, a roof in good (non-leaking) condition, and a separate kitchen, a minimum score of 2.0 results. In light of this figure, housing conditions in the area studied are clearly in need of improvement. Even in the banjar with the highest proportion of educated, higher income families the mean housing index score was 1.84. The mean housing index was calculated by adding the family housing scores for roof, floor, kitchen, and structural conditions and then dividing the total by four.

The in-depth interviews indicated that most families are very aware of their needs for improved housing facilities. The major problems faced in trying to alleviate housing deficiencies involve the already expensive and rising cost of building materials. A program to assist families in bettering their living conditions will be discussed later in the text.

Part 5. Fertility, Infant Mortality, and Contraceptive Use

In analyzing fertility levels among married couples in their reproductive years (where the wife is between the ages of 15 to 44 years) it was found that a great deal of variation exists among the 19 banjar studied. In some banjar the crude birth rate ranged from 13 to 23 births per thousand population, in other communities rates of 29 to 42 were encountered, while in some other areas the birth rate ran from 44 to as high as 69 births per thousand population (see Table 2:20). For all the communities the CBR was 39.8 per thousand population, a figure somewhat higher than the birth rate for Bali as a whole.

What explains this variation in fertility between communities? Many factors must be taken into account when looking at the figures presented above. Important variables may include the level of infant mortality in the community, the extent of contraceptive use, and how effective community leaders and family planning workers have been in encouraging banjar members to adopt contraceptives.

In examining the proportion of married couples (15-44 years of age) currently using contraceptives we find again a great deal of difference between banjar. In most of the centralized banjar, and banjar near to such administrative centers, from 50 to 56 percent of the eligible couples are currently using a contraceptive method. However, in the more remote areas on the slopes of Mount Agung, along the Seraya Coast, and in the area north of Culik the

Table 2:20

Proportion of Married Women, 15 to 44 Years of Age, Having a Live Birth in the Past Year and Crude Birth Rate by Banjar

| Banjar | Married Women Having a Live Birth in the Past Year % | (N) | Crude Birth Rate (Per 1000 Population) | Total (N) |
|---|---|---|---|---|
| Administrative Centers | 29.2 | (216) | 34.0 | (1970) |
| A | 32 | (54) | 42 | (402) |
| B | 15 | (20) | 13 | (230) |
| C | 33 | (24) | 41 | (221) |
| D | 39 | (28) | 45 | (242) |
| E | 18 | (35) | 21 | (439) |
| F | 32 | (57) | 41 | (436) |
| Dryland Farming | 28.2 | (386) | 40.3 | (2927) |
| G | 19 | (21) | 29 | (140) |
| H | 15 | (20) | 23 | (130) |
| I | 15 | (20) | 20 | (152) |
| J | 20 | (50) | 29 | (345) |
| K | 30 | (20) | 44 | (137) |
| L | 21 | (88) | 31 | (647) |
| M | 26 | (66) | 33 | (516) |
| N | 48 | (29) | 54 | (298) |
| O | 50 | (72) | 69 | (562) |
| Wet Rice Farming | 35.4 | (79) | 42.5 | (659) |
| P | 28 | (36) | 40 | (247) |
| Q | 42 | (43) | 44 | (412) |
| Fishing | 45.6 | (68) | 53.8 | (595) |
| R | 41 | (52) | 53 | (432) |
| S | 50 | (16) | 55 | (163) |
| Total | 31.1 | (749) | 39.8 | (6151) |

proportion drops to 11 to 30% of the eligible couples (see Table 2:21). As one would expect, the banjar with the lowest contraceptive use rates (i.e. 11%, 11%, 12%, and 16%) also have the highest crude birth rates (i.e. 69, 44, 55, and 53 per thousand, respectively). Our research indicated that in these communities the local leaders were less actively supportive of the family planning effort. Further, these banjar tended to be located further from roads and the sub-district centers in which the family planning field workers were located and consequently were visited irregularly.

Where contraceptive use rates were high we find a much lower crude birth rate. For example, in the communities with the five highest contraceptive use rates (i.e. 60%, 56%, 51%, 45%, and 45% of the eligible couples) the corresponding crude birth tended to be much lower (23, 31, 42, 13, and 29 per thousand population). Certainly the communities with the lower fertility levels will be in an advantageous position in improving the quality of life for the children they do have.

For the area studied it was found that the infant mortality rate was approximately 124 per thousand births during the first year of life (see Table 2:22). When we compare this figure with estimates for Java (130 to 144 deaths per 1000 births[6]) and India (125 per 1000 births) we find the IMR for the region covered by our survey only slightly lower. However, when one considers that the

Table 2:21

Proportion of Married Couples (with Wife Aged 15 to 44 Years) Currently Using a Contraceptive Method by Banjar

| Banjar | Proportion of Couples Currently Using a Contraceptive Method % | (N) |
|---|---|---|
| Administrative Centers | 44.2 | (154) |
| A | 51 | (53) |
| B | 45 | (20) |
| C | 30 | (23) |
| D | 44 | (25) |
| E | 42 | (33) |
| F | - | - |
| Dryland Farming | 36.7 | (376) |
| G | 45 | (20) |
| H | 60 | (20) |
| I | 42 | (19) |
| J | 40 | (50) |
| K | 11 | (18) |
| L | 56 | (89) |
| M | 26 | (62) |
| N | 46 | (28) |
| O | 11 | (70) |
| Wet Rice Farming | 36.7 | (79) |
| P | 42 | (36) |
| Q | 33 | (43) |
| Fishing | 18.5 | (54) |
| R | 16 | (51) |
| S | 67 | (3) |
| Total % | 37 | (663) |

Table 2:22

Proportion of Families with an Infant Death (Child Not Older Than One Year) in the Past Year and Infant Mortality Rate by Banjar

| Banjar | Proportion of Families with an Infant Death in the Past Year % | (N) | Infant Mortality Rate (Per 1000 Births) | Total (N) |
|---|---|---|---|---|
| Administrative Centers | | | 104 | (67) |
| A | 0 | (75) | 0 | (17) |
| B | 0 | (43) | 0 | (3) |
| C | 2.4 | (42) | 111 | (9) |
| D | 0 | (30) | 0 | (11) |
| E | 1.3 | (79) | 111 | (9) |
| F | 6.5 | (77) | 278 | (18) |
| Dryland Farming | | | 119 | (118) |
| G | 3.4 | (29) | 250 | (4) |
| H | 3.4 | (29) | 333 | (3) |
| I | 0 | (29) | 0 | (3) |
| J | 1.3 | (77) | 100 | (10) |
| K | 7.4 | (27) | 333 | (6) |
| L | 1.6 | (129) | 50 | (20) |
| M | 0 | (92) | 0 | (17) |
| N | 3.9 | (51) | 125 | (16) |
| O | 5.9 | (101) | 154 | (39) |
| Wet Rice Farming | | | 143 | (28) |
| P | 0 | (45) | 0 | (10) |
| Q | 6.7 | (60) | 222 | (18) |
| Fishing | | | 125 | (32) |
| R | 2.3 | (87) | 87 | (23) |
| S | 6.5 | (31) | 222 | (9) |
| Total % | 2.6 | (1133) | 124 | (245) |

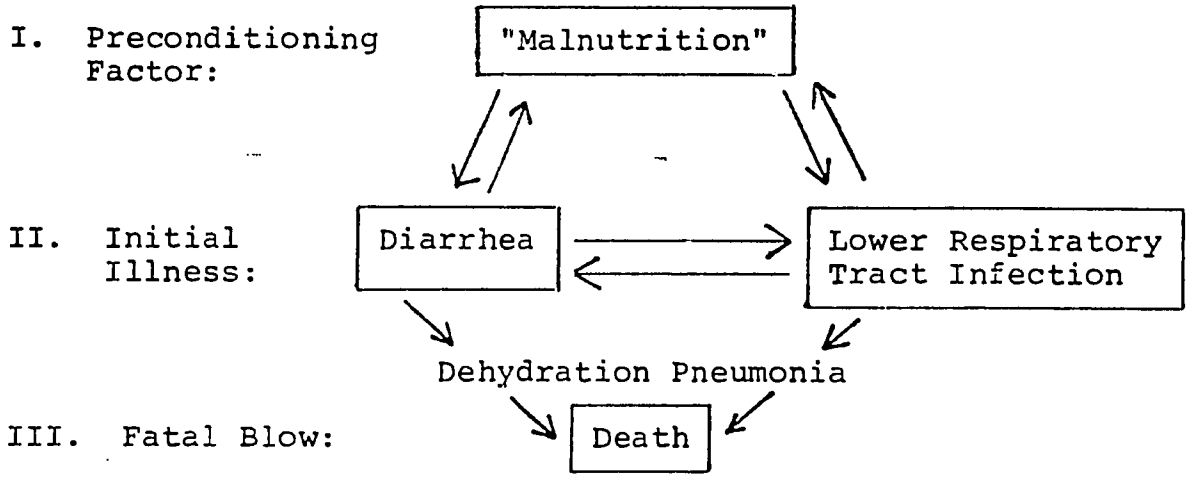
infant mortality rate in Sri Lanka is 45/1000, in Malaysia 75/1000, and in the Philippines 74/1000, we can see that the IMR in the eastern Bali area is still quite high. When we analyze the IMR by banjar a great deal of variation is evident. In part these differences only represent the small sample size from each banjar; however, they probably also reflect variation in preventive and curative health conditions. For example, in four of the nineteen banjar studied over 20% of all live births during the previous year died during the year leading up to the survey. These banjar (F, O, Q, R, and S) are all in Culik sub-district. This area had a higher incidence of cholera when compared to other regions, suggesting fecal contamination of the water supply. Infant mortality in this region may also reflect its greater distance from the regency hospital in Amlapura, the only place in the regency where an infant with severe dehydration (from diarrhea and vomiting) can be given an intravenous transfusion.

In the sub-district of Budakeling (and particularly in Banjar A, B, G, H, I and P which are closer to the road and hospital, and possess a greater proportion of better educated people) we find only two infant deaths for each 40 births (IMR = 50), as opposed to the Culik area with 17 infant deaths for each 84 live births (IMR = 202). In the other sub-districts studied the infant mortality rate was as follows: Seraya 36/1000 births, Ababi 120/1000, and Jungutan 115/1000 births.

When we asked parents of deceased children why the children had died, we found that 31% had died of vomiting, 17% from diarrhea, 13% from fever, 3% from pneumonia, and another 31% from undetermined causes. These findings are very similar to what Rohde, Hull, and Hendrata stated to be the pattern of infant mortality in Java. A schematic depiction of the relationship between infant mortality and illness is presented in Chart 3.

Chart 3

Causal Complex Underlying Infant and Child Deaths*




*Source of Chart: Rohde, Hull, and Hendrata; "Who Dies of What and Why", Prisma: Indonesian Journal of Social and Economic Affairs. No. 9, March 1978, p. 36.

As depicted above, infant and child mortality results from the interaction of the initially low nutritional level of children, followed by the contracting of such prevalent illnesses as diarrhea and lower respiratory tract infections;

over a period of time one or both of these illnesses create a weakened condition, dehydration and sometimes death. Clearly, the pattern of the poor nutritional state of the pregnant mother and consequently her infant, and the prevalence of a range of illnesses leading to death, cannot be solved by simply cleaning up the water supply or providing better prenatal services or more health services. A joint effort must be made to solve all of these problems if the cycle of malnutrition, sickness and death is to be broken. Later in this text some approaches for dealing with these problems will be discussed. Still, as Rohde et al. (1978:3) state: "a successful family planning program itself will predictably lead to lower mortality, simply by reducing the number of infants exposed to the high infant death rates. Thus fertility control and mortality control are mutually reinforcing programs." We find this relationship strongly apparent in the areas studied. For example, Budakeling sub-district with an infant mortality rate of 50/1000 births has 46% of its eligible couples currently using a contraceptive method, while in the Culik sub-district with an infant mortality rate of 202/1000 births, only 18% of the married couples are current users.

## Part 6. Family Economy: Assets (Land, Consumer Durables, and Livestock)

### Consumer Durables:

To understand the extent to which families in the region studied are participating in the growing Indonesian consumer economy, all families interviewed were asked which of a list of ten commonly available consumer items they possessed. The list included such inexpensive, highly functional items as oil lamps, plastic buckets, and flashlights, as well as more expensive luxury goods like wrist watches, pressure lamps, and radios or tape recorders.

As shown in Table 2:23, the families located in or near the sub-district administrative centers usually possessed more consumer items. The mean cash value of consumer goods owned by families in the administrative centers was Rp. 18,900, while dryland area families owned Rp. 12,500, wetland families owned Rp. 11,900, and the families in fishing areas owned Rp. 6,200 worth of consumer durables. The implications of the variation above can be seen in ownership of such items as plastic buckets and kerosene stoves. For example, in Banjar A, B, D, E, and R from 83 to 93% of the families own plastic buckets, while in the more remote banjar (such as M, O, R, and S) only 12 to 28% own that item. In some of the most "urban" communities (e.g. Banjar A and B) from 44 to 51% of the families own kerosene stoves, while in most of the other banjar less than 10% of the families use kerosene for cooking.

Table 2:23

Proportion of Families Owning Consumer Durables
by Item and Banjar (with Consumer Index Score)

| Banjar | Type of Consumer Goods: Bicycle % | Pressure Lamp % | Oil Lamp % | Plastic Bucket % | Closet % | Flash-light % | Table & Chairs % | Radio or Tape % | Kerosene Stove % | Wrist Watch % | Consumer Index Score* (in 1000's of Rupiah) | (N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Administrative Centers | | | | | | | | | | | 18.9 | (378) |
| A | 20 | 37 | 97 | 83 | 45 | 83 | 41 | 36 | 44 | 43 | 25.8 | 75 |
| B | 9 | 19 | 100 | 86 | 65 | 77 | 26 | 37 | 51 | 42 | 25.6 | 43 |
| C | 2 | 7 | 95 | 91 | 19 | 79 | 12 | 12 | 7 | 38 | 11.8 | 42 |
| D | 9 | 15 | 91 | 32 | 21 | 60 | 11 | 13 | 11 | 23 | 12.4 | 47 |
| E | 10 | 21 | 98 | 90 | 33 | 90 | 23 | 18 | 22 | 37 | 19.0 | 82 |
| F | 16 | 34 | 99 | 93 | 39 | 69 | 12 | 18 | 18 | 40 | 18.9 | 89 |
| Dryland Farming | | | | | | | | | | | 12.5 | (596) |
| G | 0 | 14 | 100 | 34 | 7 | 93 | 3 | 10 | 3 | 38 | 11.5 | 29 |
| H | 0 | 7 | 100 | 67 | 13 | 73 | 23 | 7 | 3 | 23 | 8.1 | 30 |
| I | 0 | 17 | 97 | 72 | 34 | 83 | 14 | 31 | 3 | 48 | 15.2 | 29 |
| J | 3 | 26 | 100 | 63 | 70 | 85 | 8 | 18 | 1 | 47 | 17.1 | 79 |
| K | 0 | 18 | 96 | 30 | 30 | 89 | 15 | 22 | 0 | 56 | 15.2 | 152 |
| L | 3 | 10 | 93 | 74 | 16 | 67 | 7 | 10 | 3 | 35 | 9.5 | 27 |
| M | 2 | 20 | 99 | 24 | 15 | 63 | 14 | 20 | 10 | 20 | 10.1 | 93 |
| N | 2 | 11 | 100 | 87 | 11 | 89 | 24 | 17 | 13 | 41 | 14.0 | 53 |
| O | 9 | 17 | 98 | 16 | 10 | 60 | 7 | 16 | 2 | 32 | 11.8 | 105 |
| Wet Rice Farming | | | | | | | | | | | 11.9 | (117) |
| P | 2 | 16 | 98 | 56 | 11 | 71 | 0 | 4 | 7 | 22 | 7.3 | 45 |
| Q | 14 | 25 | 100 | 51 | 33 | 99 | 17 | 26 | 6 | 26 | 16.5 | 72 |
| Fishing | | | | | | | | | | | 6.2 | (125) |
| R | 0 | 16 | 77 | 28 | 26 | 69 | 8 | 11 | 3 | 27 | 8.2 | 92 |
| S | 0 | 15 | 91 | 12 | 9 | 39 | 9 | 6 | 0 | 6 | 4.3 | 33 |
| Total % Frequency | 6 | 19 | 96 | 58 | 27 | 74 | 14 | 18 | 11 | 34 | 13.9 | 1216 |

* Consumer Index Score is the mean total cash value of the 10 commonly-owned consumer items listed above.

Generally, it was found that the people of the areas studied have few consumer goods and little invested in such items, with the average family's consumer durables valued at Rp. 13,000 ($22.24). Very few of the families had such expensive goods as sewing machines (3%), motorbikes (1.7%), and four-wheeled vehicles (.5%).

Livestock:

Livestock plays a central role in the economies of almost all of the families studied. Traditionally, livestock has been the primary method through which a family can invest either cash or labor as a form of savings. Whether the livestock are ducks, chickens, pigs, goats, pond fish, or cattle, the principle is the same: a family must invest time in herding them to feeding areas, collecting feed, and frequently money to buy supplementary feed. During interviews villagers sometimes told us that if they did not have a pig or cow to absorb the Rp. 25-50 ($.04-.08) they spent each day on the animal's food, that money would be spent on coffee, cigarettes or some other recurring expense. Further, in areas where there is a shortage of work opportunities, care of livestock helps to provide additional jobs.

Families generally keep their livestock until a need for cash arises. It was common for families to sell a cow when they were improving their home and needed money for materials, when a child needed money for his secondary

school tuition, when a health problem arose, or when a rite-of-passage ceremony was required. At such times the respondents tried to keep the avenue of livestock investment open by selling a mature cow and buying a calf, while using the balance to pay for the immediate need.

Most families had invested between Rp. 100,000 and 200,000 in livestock with the mean family investment at Rp. 121,000 (see Table 2:24). Families in villages along the Seraya coast (an area known for the good quality of its cattle) and on the slopes of Mount Agung (an area with a good supply of fodder) generally had a greater investment in livestock, and particularly cattle, than other villages studies. In most regions the main constraint on expanding livestock holdings involves the supply of feed and water. The Indonesian government, as well as Plan, have encouraged the planting of high nutrient, fast growing shrubs and grass for fodder. In Chapter III additional methods of helping families to expand their livestock holdings will be discussed.

In eastern Bali, just as there are tenant farmers who till other families' lands, there are also poorer families who take care of other peoples' cattle and pigs. Under such arrangements (in Balinese called *ngadas*), a "share herder" may take another man's calf, raise it for several years during which time he is responsible for providing all feed, even if he has to buy it. When he sells it he must give the owner the value of the calf when he started

Table 2:24

Mean Score on Family Livestock Index by Banjar

| Banjar | Mean Score on Family Livestock Index (in 1000's of Rp.) | N |
|---|---|---|
| Administrative Center | 111 | (378) |
| A | 120 | (75) |
| B | 68 | (43) |
| C | 85 | (42) |
| D | 107 | (47) |
| E | 91 | (82) |
| F | 158 | (89) |
| Dryland Farming | 130 | (596) |
| G | 109 | (29) |
| H | 68 | (30) |
| I | 132 | (29) |
| J | 158 | (78) |
| K | 91 | (27) |
| L | 113 | (152) |
| M | 213 | (93) |
| N | 106 | (53) |
| O | 134 | (105) |
| Wet Rice Farming | 88 | (117) |
| P | 56 | (45) |
| Q | 108 | (72) |
| Fishing | 140 | (125) |
| R | 152 | (92) |
| S | 107 | (33) |
| Total Mean | 121 | |
| Frequency | | (1216) |

raising it, plus half the cow's appreciation in value since that time. Similar arrangements are used when women care for other women's pigs. Obviously, the "share herder" does rather poorly, usually earning less than half what he would have made had he had the required capital to buy the calf or piglet in the first place.

The extent of "share herding" in part reflects the proportion of families in the community who do not have the relatively small amount of capital (Rp. 5000 = U.S. $8 for a piglet, or Rp. 30,000 = U.S. $48 for a calf) required to make a basic growth investment. We found that in the more centralized, better-off banjar (Banjar A-F) an average of 31% of the families studied were engaged in "share herding" cattle. However, in some of the poorer, more remote villages (Banjar H, O, R, S) an average of 77% of the families were involved in such arrangements (see Table 2:25). It appears that a higher percentage of families could afford to raise their own pigs, as opposed to cattle, due to the lower amount of capital required to buy the piglet initially. Consequently, if the proportion of rural families owning their own livestock is to be increased, strategies to provide capital to banjar members to purchase young livestock need to be developed.

Farmland Holdings:

With over 85% of the families studied deriving some income from agriculture, ownership of or access to farmland

Table 2:25
Livestock Ownership Status by Banjar

| Banjar | Livestock Ownership Status | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Cattle | | | | | Pigs | | | | |
| | None % | Owns % | Other* Owns % | Owns* & Other % | (N) | None % | Owns % | Other* Owns % | Owns* & Other % | (N) |
| Administrative Centers | 40 | 26 | 22 | 12 | (378) | 15 | 56 | 19 | 10 | (378) |
| A | 62 | 17 | 20 | 1 | (75) | 24 | 57 | 15 | 4 | (75) |
| B | 65 | 19 | 14 | 2 | (43) | 23 | 49 | 19 | 9 | (43) |
| C | 31 | 40 | 29 | 0 | (42) | 12 | 55 | 29 | 5 | (42) |
| D | 28 | 34 | 17 | 21 | (47) | 11 | 53 | 23 | 13 | (47) |
| E | 24 | 23 | 27 | 26 | (82) | 7 | 65 | 13 | 15 | (82) |
| F | 33 | 20 | 27 | 20 | (89) | 11 | 56 | 15 | 18 | (89) |
| Dryland Farming | 11 | 33 | 32 | 24 | (596) | 19 | 58 | 18 | 5 | (596) |
| G | 14 | 21 | 34 | 31 | (29) | 14 | 55 | 28 | 3 | (29) |
| H | 7 | 3 | 70 | 20 | (30) | 20 | 73 | 7 | 0 | (30) |
| I | 0 | 51 | 21 | 28 | (29) | 10 | 48 | 28 | 14 | (29) |
| J | 5 | 37 | 21 | 37 | (78) | 45 | 46 | 3 | 6 | (78) |
| K | 15 | 44 | 11 | 30 | (27) | 41 | 52 | 7 | 0 | (27) |
| L | 23 | 34 | 31 | 12 | (152) | 20 | 64 | 13 | 3 | (152) |
| M | 13 | 45 | 18 | 24 | (93) | 6 | 81 | 8 | 5 | (93) |
| N | 11 | 35 | 45 | 9 | (53) | 9 | 53 | 25 | 13 | (53) |
| O | 9 | 22 | 41 | 28 | (105) | 10 | 42 | 45 | 3 | (105) |
| Wet Rice Farming | 17 | 45 | 29 | 9 | (117) | 10 | 74 | 15 | 1 | (117) |
| P | 29 | 31 | 36 | 4 | (45) | 13 | 60 | 25 | 2 | (45) |
| Q | 6 | 58 | 22 | 14 | (72) | 7 | 88 | 4 | 1 | (72) |
| Fishing | 9 | 22 | 32 | 37 | (125) | 9 | 46 | 27 | 18 | (125) |
| R | 6 | 20 | 30 | 44 | (92) | 7 | 65 | 14 | 14 | (92) |
| S | 12 | 24 | 33 | 30 | (33) | 12 | 27 | 40 | 21 | (33) |
| Total % | 21 | 31 | 28 | 20 | (1216) | 15 | 59 | 18 | 8 | (1216) |

* Other Owns = family tends livestock owned by another

Owns and Other = family owns some livestock and also tends livestock owned by another

is central to the family economies of most people in eastern Bali. Because of the high population density on the island most land holdings are small. Some farmers cannot produce enough food on their own land and must work as tenant farmers to supplement their family's income, while still other families own no land at all and derive all of their income from tenant farming. Even possessing tenant farming rights is a privilege of considerable value and in some of the villages studied families actually lend the landowner money (in Balinese called *Malaisin*) to ensure their continued use of the land.

Among the 19 banjar sampled 40% of the families owned some farmland, either wet rice land (*sawah*) and/or dry land (*tegal*), while 14% both owned land and had tenant farming rights to land, and another 34% of the families had tenant farming rights only. An additional 12% of the families owned no land and had no land use rights. Such families were usually involved in non-agricultural work (see Table 2:26).

In some banjar (D, E, H, L, and P) over 50% of the families owned no farmland at all and supported themselves primarily through tenant farming. Tenant farmers generally receive 50% of the harvest after enough produce to cover the cost of seed, fertilizer, and other expenses has been removed. Consequently, the income of tenant farming families is well below that of families who own some land or who are involved in other occupations. A second reason

Table 2:26

Family Land Tenure Status and Mean Amount of Land Controlled by Type of Land and Banjar

| Banjar | Farmland Owned | | | Owned and Use Rights | | | Use Rights Only | | | No Land | (N) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | S* | T@ | % | S | T | % | S | T | % | % | |
| Administrative Centers | | | 33 | | | 7 | | | 36 | 24 | (370) |
| A | .30 | .26 | 22 | .58 | 0 | 3 | .32 | .13 | 31 | 44 | (71) |
| B | .23 | .36 | 36 | .66 | .23 | 12 | .24 | .14 | 31 | 21 | (42) |
| C | .65 | .28 | 42 | .13 | .16 | 10 | .19 | .15 | 40 | 8 | (40) |
| D | .01 | .76 | 30 | 0 | .94 | 4 | .22 | .82 | 57 | 9 | (46) |
| E | .30 | .48 | 26 | .30 | .53 | 12 | .20 | .25 | 50 | 12 | (82) |
| F | .10 | 1.02 | 44 | .14 | .34 | 4 | .02 | .35 | 18 | 34 | (89) |
| Dryland Farming | | | 46 | | | 15 | | | 32 | 7 | (588) |
| G | 0 | .86 | 45 | 0 | 1.36 | 31 | 0 | .73 | 21 | 3 | (29) |
| H | .03 | .40 | 33 | 0 | - | 0 | .06 | .44 | 57 | 10 | (30) |
| I | .08 | 1.17 | 52 | 0 | .63 | 7 | .06 | .46 | 41 | 0 | (29) |
| J | .02 | 1.65 | 85 | 0 | .98 | 13 | 0 | .53 | 2 | 0 | (78) |
| K | .04 | 1.50 | 52 | 0 | .94 | 15 | 0 | .40 | 26 | 7 | (27) |
| L | .14 | .73 | 25 | .11 | .71 | 7 | .07 | .42 | 59 | 9 | (148) |
| M | .07 | .69 | 38 | .11 | .57 | 36 | .13 | .30 | 17 | 9 | (92) |
| N | .01 | .84 | 40 | .15 | .62 | 10 | .05 | .71 | 40 | 10 | (52) |
| O | 0 | 2.65 | 55 | 0 | 2.64 | 17 | 0 | 1.71 | 22 | 6 | (103) |
| Wet Rice Farming | | | 23 | | | 23 | | | 48 | 6 | (116) |
| P | .28 | .04 | 11 | .39 | .05 | 7 | .32 | .04 | 68 | 14 | (44) |
| Q | .39 | .30 | 31 | .18 | .20 | 33 | .56 | .62 | 35 | 1 | (72) |
| Fishing | | | 55 | | | 15 | | | 23 | 7 | (125) |
| R | .03 | 1.06 | 62 | .04 | .66 | 8 | .01 | .76 | 26 | 4 | (92) |
| S | .02 | 1.12 | 33 | 0 | .75 | 37 | 0 | .76 | 18 | 12 | (33) |
| Total % | .13 | 1.11 | 40 | .13 | .80 | 14 | .15 | .49 | 34 | 12 | (1199) |

S* = Irrigated Rice Land (*Sawah*)

T@ = Unirrigated Land (*Tegal*)

for the lower income of tenant farmers is that they have less land to work than those who own land. The average amount of dryland held by those who own land is 1.11 hectare, while tenant farming families held an average of .49 hectare of dryland. Finally, we found from the in-depth interviews that if a land-owning family let its land out to a tenant farmer it was generally the least fertile portion which was tenanted, while owners tilled the more fertile hectarage themselves. Thus, tenant farmers often work the least productive land in the area.

The proportion of tenant farmers to land holders was highest in the areas near wet rice land (Banjar A, B, C, D, E, L, P, and Q). As is well-known, Balinese irrigated *sawah* is among the most productive non-mechanized agricultural systems known to man, and even small holdings make a desirable livelihood when compared to dry land. While the productiveness of wet rice land varies considerably depending on its fertility and the reliability of the water supply, the quality of dry land varies even more. Along the Seraya coast and in the banjar north of Culik, land is so poor that even if a family owned two hectare or more, their income might be less than a wet rice land tenant farmer earned from .3 hectare or *sawah* (the average holding). However, the type of crop grown was also important in determining agricultural income. In the Jungutan area, for example, some farmers are starting to grow the *salak* fruit on their dryland. When the plants do well and are at the

height of their production a farmer can make more from a hectare of dryland than he could if he had been growing rice on the same amount of irrigated land. It is important for any agricultural assistance programs to consider the land tenureship status in an area, the type and quality of land in the area, and finally the type of crops grown and the potential income from such crops.

When we examine the extent to which families have mortgaged their farmland (see Table 2:27), we find that for all banjar only 10% of the families currently have mortgaged land, with the mean amount of land mortgaged among this group being .71 hectare. Banjar with more than 15% of the families having mortgaged some or all of their land tend to be located in dryland areas where many families have fairly large holdings of less fertile farmland. Our in-depth studies showed that frequently when a family mortgages their land they will continue to work that land as tenant farmers.

In Table 2:27 we find that only 8% of the families in the banjar studied own land that is worked by tenant farmers. The fact that 48% of the families are tenant farmers on at least some of the land they work can be explained by two considerations. First, the families who have tenant farmers may have more than one tenant farming family working for them, and second, there are very likely large landowners living outside the banjar studied (possibly in local towns) who employ tenant farmers in the

Table 2:27

Proportion of Families Who Have Tenant Farmers or Who Have Mortgaged Their Land and Mean Amount of Land Involved by Banjar

| Banjar | LAND TYPE | | | | | |
|---|---|---|---|---|---|---|
| | % of Families with Mortgaged Land | Mean Amount of Land Mortgaged (in Hectares) | (N) | % of Families with Tenant Farmers | Mean Amount of Land Tenant Farmed (in Hectares) | (N) |
| Administrative Centers | | | (370) | | | (370) |
| A | 7 | .25 | (71) | 13 | .55 | (71) |
| B | 14 | .15 | (42) | 26 | .65 | (42) |
| C | 7 | .09 | (40) | 0 | 0 | (40) |
| D | 15 | .21 | (46) | 6 | .45 | (46) |
| E | 5 | .15 | (82) | 10 | .90 | (82) |
| F | 10 | .45 | (89) | 8 | 1.50 | (89) |
| Dryland Farming | | | (588) | | | (588) |
| G | 17 | .69 | (29) | 7 | 1.25 | (29) |
| H | 10 | .27 | (30) | 3 | .10 | (30) |
| I | 3 | .40 | (29) | 7 | .60 | (29) |
| J | 23 | .54 | (78) | 10 | .47 | (78) |
| K | 4 | .08 | (27) | 7 | .50 | (27) |
| L | 5 | .18 | (148) | 1 | 2.50 | (148) |
| M | 1 | .50 | (92) | 8 | .89 | (92) |
| N | 0 | - | (52) | 4 | .70 | (52) |
| O | 21 | 2.23 | (103) | 6 | 1.61 | (103) |
| Wet Rice Farming | | | (116) | | | (116) |
| P | 7 | .13 | (44) | 2 | .13 | (44) |
| Q | 8 | .11 | (72) | 10 | 1.60 | (72) |
| Fishing | | | (125) | | | (125) |
| R | 7 | .39 | (92) | 21 | .76 | (92) |
| S | 48 | .68 | (33) | 12 | .78 | (33) |
| Total % | 10 | .71 | (1199) | 8 | .89 | (1199) |

banjar sampled.

It seems likely that the latter explanation holds true for the greater part of the difference apparent in Tables 2:26 and 2:27, as few of the 1216 families studied had holdings large enough to support more than one or two tenant farming families. Our in-depth studies did frequently point to landlords with considerable holdings living in neighboring towns. In spite of Indonesian government land reform laws limiting land holdings to 8 hectare per family member (a huge amount of land in most areas), some regional politicians and large-scale businessmen held hundreds of hectares and employed as many tenant farmers.

The situation described above creates immense problems in planning agricultural development strategies if such programs are oriented towards helping tenant farmers (frequently the group most in need of assistance). For example, if the program desires to give hybrid seed to a tenant farmer, the landowner will receive half the benefit from such an effort. Further, if the landowner has twenty tenant farmers, he will receive twenty times the benefit that any one of his tenant farmers will receive.

## Part 7. Family Economy: Income

### Income:

One of the objectives of this survey was to acquire reliable estimates of family income. This data will be used as part of a baseline from which the success of strategies designed to increase the income of Plan families can be evaluated. Such information is also useful in determining the economic condition in which families live throughout the areas studied, and the extent to which they are in need of Plan assistance.

To better insure the reliability of the income data, the husband and wife in each family surveyed were questioned as to whether they had earned money or other goods during the past year from all common sources of income in the area studied. This method not only increased the validity of the total family income data, but also allowed the researchers to better understand present sources and distribution of income in each community. These findings also helped to indicate economic activities already established which showed potential for further expansion. In the following pages these findings will be presented.

Among the 1216 families interviewed the mean yearly per capita income was Rp. 28,600 (US$ 45.76). This means that the average family of five members in the eastern Bali area studied has a mean monthly income of Rp. 11,917 (US$ 19.05). This figure is only slightly above

the maximum income level acceptable for candidacy for Plan assistance (yearly per capita income of Rp. 24,000 (US$ 38.40) or a monthly income for a family of five set at Rp. 10,000 (US$ 16.25)).

When we look at the actual distribution of income levels among the families surveyed, we find 8% earning less than Rp. 6000 per capita annually (US$ 9.60), while 22% made between Rp. 6000-12,000 (US$ 9.60-19.20). Another 30% made between Rp. 13,000-24,000 (US$ 20.80 to 41.60), with 33% making Rp. 25,000-69,000 (US$ 40.00-110.40), and finally 7% earning over Rp. 70,000 (US$ 112.00) per capita per annum. Thus we find overall a few very poor families and a few quite wealthy families, with the majority earning from Rp 6000 to Rp. 69,000 per capita (see Table 2:28).

The variation in yearly per capita income among banjar is considerable. In the three banjar with the highest per capita income (Banjar A, B, and F), all of which were located in sub-district centers, we find the PCI at Rp. 38,300, Rp. 40,800, and Rp. 55,700, respectively. The lowest PCI levels were found in dryland banjar (Banjar K, M, and O) with income averages of Rp. 9,800, Rp. 21,800, and Rp. 16,600, respectively. One of the wet rice banjar with a large number of tenant farmers (Banjar P) also rated low in terms of PCI (Rp. 14,800), as did the fishing banjar (S and R) with PCI of Rp. 23,900 and Rp. 28,100.

Some banjar seemed to consist of mostly very poor

Table 2:28
Mean Annual Per Capita Income and Distribution by Banjar

| Banjar | Annual Per Capita Income* in Thousands of Rupiah | | | | | | | % Eligible for Plan Assistance** |
|---|---|---|---|---|---|---|---|---|
| | Less Than 6 % | 6-12 % | 13-24 % | 25-69 % | 70+ % | (N) | Mean PCI | |
| Administrative Centers | 6 | 13 | 27 | 39 | 15 | (378) | 38.1 | 46 |
| A | 0 | 12 | 36 | 35 | 17 | (75) | 38.3 | 48 |
| B | 2 | 25 | 26 | 26 | 21 | (43) | 40.8 | 53 |
| C | 5 | 14 | 50 | 24 | 7 | (42) | 26.5 | 69 |
| D | 36 | 23 | 17 | 15 | 9 | (47) | 22.1 | 76 |
| E | 5 | 14 | 27 | 44 | 10 | (82) | 32.5 | 46 |
| F | 0 | 0 | 13 | 63 | 24 | (89) | 55.7 | 13 |
| Dryland Farming | 6 | 27 | 32 | 31 | 4 | (596) | 24.1 | 65 |
| G | 0 | 10 | 21 | 62 | 7 | (29) | 34.4 | 31 |
| H | 3 | 23 | 40 | 27 | 7 | (30) | 26.5 | 66 |
| I | 0 | 24 | 41 | 31 | 4 | (29) | 26.4 | 65 |
| J | 3 | 18 | 28 | 47 | 4 | (78) | 30.0 | 49 |
| K | 48 | 30 | 18 | 4 | 0 | (27) | 9.8 | 96 |
| L | 8 | 26 | 35 | 28 | 3 | (152) | 23.3 | 69 |
| M | 5 | 31 | 37 | 23 | 4 | (93) | 21.8 | 73 |
| N | 4 | 11 | 19 | 58 | 8 | (53) | 35.7 | 34 |
| O | 7 | 44 | 32 | 16 | 1 | (105) | 16.6 | 83 |
| Wet Rice Farming | 7 | 26 | 39 | 26 | 2 | (117) | 22.8 | 72 |
| P | 13 | 31 | 40 | 16 | 0 | (45) | 14.8 | 84 |
| Q | 3 | 23 | 39 | 32 | 3 | (72) | 27.8 | 65 |
| Fishing | 14 | 21 | 26 | 32 | 7 | (125) | 27.0 | 61 |
| R | 16 | 18 | 24 | 33 | 9 | (92) | 28.1 | 58 |
| S | 6 | 27 | 30 | 34 | 3 | (33) | 23.9 | 63 |
| Total % | 8 | 22 | 30 | 33 | 7 | (1216) | 28.6 | 60 |

* PCI was figured by combining all income sources except loans.

** Currently Plan assists Balinese families with a PCI under RP. 24,000 per year.

families (Banjar O and P), or quite well-off families (Banjar A, G, and F), while other banjar seemed to have a much broader range of wealthy and poor (Banjar B, D, J, and R).

Why are some banjar so much better off economically than others? Why are the income levels in some banjar so homogeneous, while in others a great deal of variation is apparent? To better answer these questions let us examine the primary sources of income in the banjar surveyed.

Agriculture, Livestock, and Fishing:

Agriculture and livestock were the major sources of income in all of the banjar studied, except for the gold-smithing and blacksmithing activities of Banjar A, and the distilled liquor income in Banjar O. Over all banjar, 56% of the families received some cash income from agriculture, while 87% derived some income in either cash or kind (see Table 2:29). In many banjar the role of subsistence agriculture (in which 31% of all families were involved), where the family would use all of its agricultural produce for home consumption, was very important. For example, in the banjar in the Seraya area (Banjar D, M, and R) while 93%, 91%, and 95% of the families derived support from agricultural produce, only 12%, 48%, and 19% actually sold any of their harvest for cash. Consequently, we found that many families can produce only enough food for their own consumption. In fact, during the in-depth

Table 2:29

Proportion of Families with Income from Agriculture and Animal Husbandry, and Mean Yearly Family Income by Source and Banjar

| Banjar | Source of Income | | | | | | Total (N) |
|---|---|---|---|---|---|---|---|
| | *Cash Agriculture | | *All Agriculture | | Livestock & Fishing | | |
| | % | Rp. (in 1000's) | % | Rp. (in 1000's) | % | Rp. (in 1000's) | |
| **Administrative Centers** | | | | | | | |
| A | 54 | 30 | 58 | 54 | 56 | 30 | (75) |
| B | 74 | 40 | 76 | 58 | 30 | 30 | (43) |
| C | 69 | 28 | 90 | 42 | 21 | 18 | (42) |
| D | 12 | 47 | 93 | 21 | 89 | 35 | (47) |
| E | 50 | 19 | 87 | 57 | 67 | 30 | (82) |
| F | 52 | 34 | 66 | 43 | 64 | 48 | (89) |
| **Dryland Farming** | | | | | | | |
| G | 89 | 23 | 96 | 49 | 55 | 25 | (29) |
| H | 70 | 9 | 90 | 26 | 96 | 24 | (30) |
| I | 86 | 32 | 96 | 48 | 68 | 37 | (29) |
| J | 57 | 6 | 100 | 40 | 98 | 55 | (78) |
| K | 14 | 6 | 92 | 23 | 3 | 45 | (27) |
| L | 78 | 21 | 89 | 30 | 80 | 19 | (152) |
| M | 48 | 23 | 91 | 26 | 95 | 50 | (93) |
| N | 88 | 26 | 92 | 48 | 77 | 43 | (53) |
| O | 30 | 26 | 90 | 15 | 67 | 34 | (105) |
| **Wet Rice Farming** | | | | | | | |
| P | 77 | 14 | 84 | 30 | 64 | 22 | (45) |
| Q | 91 | 31 | 95 | 49 | 90 | 58 | (72) |
| **Fishing** | | | | | | | |
| R | 19 | 14 | 95 | 21 | 92 | 92 | (92) |
| S | 9 | 15 | 84 | 14 | 93 | 78 | (33) |
| Total | 56 | 24 | 87 | 35 | 74 | 44 | |
| Frequency | | | | | | | (1216) |

* "Cash Agriculture" includes all produce sold for cash; "All Agriculture" includes both "Cash Agriculture" and the value of all produce not sold (i.e. consumed by the family).

interviews some families told us that frequently their cassava, corn, or rice produce would run out before the new harvest and they would be forced to buy their staple food from the local market or borrow food from neighbors or relatives.

The average cash income from agriculture for all families who had income from that source was Rp. 24,000 (US$ 38.40), while mean value of all agricultural produce for families with some farming activity was Rp. 35,000 (US$ 56.00). Income from livestock and fishing was somewhat higher than that derived from agricultural sources, with the mean amount at Rp. 44,000 (US$ 70.40) for those families who had livestock sales last year (74% of the sample). In Banjar R and S where over 90% of the families survived primarily from income from ocean fishing, the mean yearly income from that source was Rp. 92,000 and Rp. 78,000, respectively.

Income from Menial Labor, Skilled Labor, and White Collar Jobs:

Only 13% of the sample families derived income from agricultural labor. In Banjar E where 43% of the families help in peanut harvesting, and in Banjar R where 40% have members going to North Bali to work in the corn harvests, a significant amount of income derived from agricultural labor (see Table 2:30). The mean income from agricultural labor for families deriving some income from this source is Rp. 21,000 per year (US$ 33.60), which is the smallest

Table 2:30

Proportion of Families with Income from Unskilled, Skilled, and White-Collar Work, and Mean Yearly Family Income by Source and Banjar

| Banjar | Source of Income: Agri. Labor % | Agri. Labor Rp. (in 1000's) | Construction Labor % | Construction Labor Rp. (in 1000's) | Skilled Labor % | Skilled Labor Rp. (in 1000's) | White Collar % | White Collar Rp. (in 1000's) | (N) |
|---|---|---|---|---|---|---|---|---|---|
| Administrative Centers | | | | | | | | | |
| A | 12 | 28 | 8 | 54 | 52 | 136 | 9 | 290 | (75) |
| B | 0 | - | 0 | - | 32 | 25 | 30 | 409 | (43) |
| C | 7 | 11 | 42 | 68 | 30 | 55 | 7 | 173 | (42) |
| D | 2 | 5 | 0 | - | 4 | 33 | 12 | 345 | (47) |
| E | 10 | 29 | 10 | 102 | 21 | 157 | 7 | 318 | (82) |
| F | 43 | 33 | 19 | 36 | 20 | 177 | 1 | 150 | (89) |
| Dryland Farming | | | | | | | | | |
| G | 3 | 90 | 6 | 90 | 6 | 63 | 3 | 120 | (29) |
| H | 10 | 8 | 23 | 73 | 10 | 50 | 3 | 120 | (30) |
| I | 3 | 36 | 24 | 55 | 3 | 42 | 3 | 120 | (29) |
| J | 15 | 30 | 0 | - | 0 | - | 1 | 120 | (78) |
| K | 7 | 7 | 14 | 36 | 14 | 17 | 4 | 4 | (27) |
| L | 5 | 10 | 25 | 42 | 9 | 79 | 2 | 88 | (152) |
| M | 12 | 4 | 3 | 52 | 7 | 112 | 4 | 359 | (93) |
| N | 4 | 17 | 28 | 98 | 22 | 137 | 6 | 343 | (53) |
| O | 2 | 6 | 1 | 72 | 2 | 216 | 2 | 129 | (105) |
| Wet Rice Farming | | | | | | | | | |
| P | 15 | 31 | 13 | 59 | 6 | 47 | 0 | - | (45) |
| Q | 22 | 26 | 0 | - | 8 | 71 | 1 | 120 | (72) |
| Fishing | | | | | | | | | |
| R | 40 | 7 | 0 | - | 4 | 19 | 4 | 89 | (92) |
| S | 6 | 17 | 0 | - | 0 | - | 3 | 120 | (33) |
| Total | 13 | 21 | 11 | 59 | 13 | 108 | 5 | 237 | (1216) |

amount of income derived from any of the twelve sources studied.

Construction labor, in comparison to agricultural labor, is a much more profitable occupation with the mean yearly income for those families involved in such activities being Rp. 59,000 per year (US$ 94.40). For the entire sample 11% of the families had members working as construction laborers. In Banjar A, H, I, and L between 23 and 42% of the families had some income from construction work, although frequently such work would be on a part-time basis. Often construction laborers were related to skilled workers (*tukang*) such as bricklayers and carpenters, who would call them when they required assistants. Construction laborers who were hired to work on a road project or a house construction job usually earned from Rp. 300 to 400 per day (US$ .48-64). However, a second kind of construction-related labor involved families who dug sand out of river beds and carried it to construction sites. Such workers, frequently women, usually worked three to four hours a day at such tasks and earned from Rp. 3000 to 5000 per month (US$ 4.80-8.00).

Skilled labor was considerably more profitable than either construction or agricultural labor, with the mean income for those with such skills being Rp. 108,000 per year (US$ 172.80). Unfortunately, only 13% of the families sampled had a member with the kind of training required to work at skilled jobs. Examples of the kinds of skilled

laborers in the area include blacksmiths (with the income range for active blacksmiths between Rp. 5,000 and 16,000 per month), goldsmiths (with a monthly income of from Rp. 6,000 to 25,000), tailors (monthly income from Rp. 5,000 to 15,000), and full-time carpenters and bricklayers (making from Rp. 10,000 to 20,000 a month). Further, families who were involved in skilled trades frequently had more than one family member working at such jobs and consequently in a few cases the family had an overall monthly income of up to Rp. 50,000 (US$ 80.00).

Families with income from skilled trades were almost exclusively residing in banjar located in or near administrative centers (i.e. Banjar A, B, C, E, F, and N). In one such community as many as 52% of the families gained support from various trades, while in many of the more remote areas less than 10% of the families had the skills, tools, or market demand to be engaged in these more lucrative occupations.

Even more profitable than skilled trades in our sample were jobs in the Indonesian civil service. The mean income from white collar jobs for those fortunate enough to be working in that sector was Rp. 237,000 per year (US$ 379.20). Only 4.9% of the families had such jobs (60 out of 1216 families sampled), yet in one banjar (Banjar B) approximately 30% of the families had members working as school teachers, paramedics, and low level administrators. In more remote villages where families did not have the

education or opportunities to gain such employment, frequently the only person in the banjar with a civil service income was the banjar headman (*kelian dinas*) who received a government honorarium of Rp. 120,000 per year (US$ 192.00).

In Table 2:30, whose findings are presented above, the sources of income are mostly utilized by men. Now let us look at Table 2:31, which presents sources of income which are exploited primarily by women.

Handicrafts, Marketing, and Shopkeeping:

The women of each banjar tended to specialize in a particular type of handicraft activity. While the mean income from handicrafts is relatively low (Rp. 27,000 per year), it is important, particularly for low-income families, as it provides support to supplement shortfalls in income from such other activities as agriculture and livestock raising. In Banjar B loom weaving was the primary handicraft, while in Banjar D mat weaving was common; in Banjar O and S alcohol distillation was the important handicraft, and in Banjar L coconut oil pressing was the number one handicraft activity. The monthly income from handicrafts varied considerably among families, as this activity was done on an irregular and periodical basis. Consequently, some families earned only a few hundred rupiah per month from such work, while others up to Rp. 4000 to 5000 monthly (US$ 6.40-8.00). Currently, in the area

Table 2:31

Proportion of Families with Income from Handicrafts and Shopkeeping, and Mean Yearly Family Income by Source and Banjar

| Banjar | Source of Income: Handicrafts % | Handicrafts Rp. (in 1000's) | Marketing % | Marketing Rp. (in 1000's) | Shopkeeping % | Shopkeeping Rp. (in 1000's) | (N) |
|---|---|---|---|---|---|---|---|
| Administrative Center | | | | | | | |
| A | 9 | 36 | 30 | 47 | 9 | 131 | (75) |
| B | 23 | 23 | 39 | 31 | 2 | 180 | (43) |
| C | 0 | - | 42 | 27 | 9 | 96 | (42) |
| D | 14 | 7 | 19 | 24 | 2 | 116 | (47) |
| E | 12 | 21 | 69 | 19 | 7 | 70 | (82) |
| F | 25 | 36 | 66 | 140 | 20 | 113 | (89) |
| Dryland Farming | | | | | | | |
| G | 3 | 72 | 82 | 50 | 3 | 30 | (29) |
| H | 0 | - | 43 | 59 | 0 | - | (30) |
| I | 0 | - | 20 | 92 | 0 | - | (29) |
| J | 3 | 32 | 97 | 14 | 0 | - | (78) |
| K | 11 | 19 | 88 | 11 | 0 | - | (27) |
| L | 5 | 23 | 84 | 19 | 4 | 60 | (152) |
| M | 19 | 4 | 40 | 28 | 2 | 48 | (93) |
| N | 2 | 72 | 26 | 81 | 6 | 79 | (53) |
| O | 87 | 35 | 16 | 30 | 4 | 82 | (105) |
| Wet Rice Farming | | | | | | | |
| P | 15 | 7 | 48 | 41 | 2 | 48 | (45) |
| Q | 3 | 36 | 23 | 92 | 4 | 114 | (72) |
| Fishing | | | | | | | |
| R | 10 | 12 | 21 | 8 | 1 | 540 | (92) |
| S | 30 | 21 | 36 | 22 | 3 | 6 | (33) |
| Total % | 17 | 27 | 49 | 40 | 4.9 | 102 | (1216) |

studied, if one considers sources of income on an income-per-hour-worked basis, handicrafts undoubtably rank among the least lucrative. However, they seem to offer some of the greatest potential for creating employment and income. Our interviewd indicated that by boosting efficiency with which raw materials are procured, handicrafts are produced, and improving marketing strategies, the income and attractiveness of handicrafts as an employment opportunity might be raised considerably in a number of communities. In Chapter III programs oriented towards achieving such objectives will be discussed in detail.

Marketing is another source of income which a large number of women attempt to exploit. In our survey, 49% of all families sampled has one or more female members engaged in trading activities (see Table 2:31). For the families involved in marketing the average income per year was Rp. 40,000 (US$ 64.00), somewhat more than the income families derived from all agricultural sources (Rp. 35,000/year). Marketing, like handicrafts, is another way in which women add to the family income. However, such activities should not be viewed as small income supplements, since frequently money earned by the female household members was greater than that earned by the men. Furthermore, marketing has long been dominated by women in Bali, and is a traditional stronghold of women's social and economic relationships.

While men are primarily responsible for such activities as farming, fishing, and various types of skilled and

unskilled labor, it is the women who usually manage the family's budget. They are the ones who decide what and how much the family can afford to buy at the market. In the village markets studied it was a rare occasion when a male merchant was encountered; the village marketplace, where most rural trade takes place, is the domain of woman merchants.

Our in-depth interviews indicated that opportunities for trade and small-scale investment were frequently being sought out by many of the women surveyed. A number of women reported that one of their most critical needs was to maintain a certain amount of operating capital in order to remain active in local trade. In some banjar women may be primarily involved in selling their family's agricultural produce (Banjar J and K), fishing catch (Banjar R and S), or the firewood their families collect (Banjar G and L). However, in some banjar they seek out agricultural produce from other areas and resell it in local markets (Banjar H, I, and P), while in still other banjar women prepare sweets, snack food, pig fodder, and other prepared goods for sale.

Sometimes a family's income involves several stages in the production and marketing of one type of goods. Coconut oil production, for example, combines agriculture, food processing, and marketing; the same with distilled liquor. The raw materials after being produced by the men (and sometimes women) are processed and marketed by the women.

It seems that the more stages of the production process that the family handles itself, the greater their income from that activity. Because of this tendency, efforts to increase family income should concentrate on integrating agriculture, food and material goods processing, and marketing. Some examples of how such activities can be integrated will be presented in Chapter III.

Women who are successful traders (*dagang*) sometimes are able to secure enough capital to open a small coffee stall (*warung*) or a basic needs shop (*toko*). Only 4.9% of the families studies (60 out of 1216 families) had income from shopkeeping, but of those who were involved in this more sophisticated trade, the mean yearly income was Rp. 102,000 (US$ 163.20). The local *warung* (both coffee shops and rice stalls) generally made approximately Rp. 15,000 net profit per month, though some of the larger *toko* might make Rp. 50,000 or more in a good month. The remote banjar usually had no more than one *warung* and no *toko*. Banjar located along roads and near local markets might have from three to six *warung* and several *toko*. Since the sales in such larger-scale retail activities are almost always to local people, shopkeeping will grow only as income from outside sources increase, and local people have more money to spend.

It is important to note (cf. Tables 2:30 and 2:31) that among <u>all</u> sources of income, shopkeeping, white collar employment, and skilled trades are almost exclusively

located in the centralized banjar, and that these three income sources are the largest mean income yielders of the 12 sources studied.

Gifts and Loans:

Gifts and loans were found to be important sources of income for a number of families studied, particularly among the lowest income groups (see Table 2:32). Gifts of rice and cash were often made by successful sons and daughters to parents and poorer siblings. In other cases poorer tenant farmers may receive gifts from their priest's (*pedanda's*) or landlord's family, in return for which they will offer their labor when required. In Banjar C, D, L, and M, where Plan had begun giving cash assistance (Rp. 3000/month) to low income families 4 months prior to the beginning of interviewing, we can see that the proportion of families receiving gifts is somewhat higher than in most other banjar. It is interesting, though, that the mean amount of cash received yearly from gifts is lower in the Plan-assisted banjar than the mean for all banjar. Apparently the poorest families in the villages studies already have some access to relief-related gifts (when harvests fail, or when food runs out before a harvest) from wealthier neighbors and relatives. This indicates that for most families, other means of providing economic assistance should be stressed.

While loans appear to play a central role for families

Table 2:32

Proportion of Families Receiving Gifts and Loans and Mean Amount Received Annually by Banjar

| Banjar | Source of Income: Gifts % | Gifts Rp. (in 1000's) | Loans % | Loans Rp. (in 1000's) | (N) |
|---|---|---|---|---|---|
| Administrative Center | | | | | |
| A | 14 | 30 | 4 | 39 | (75) |
| B | 23 | 20 | 6 | 14 | (43) |
| C | 2 | 40 | 0 | - | (42) |
| D | 38 | 11 | 6 | 32 | (47) |
| E | 4 | 49 | 2 | 70 | (82) |
| F | 11 | 65 | 1 | 23 | (89) |
| Dryland Farming | | | | | |
| G | 24 | 81 | 1 | 100 | (29) |
| H | 6 | 28 | 0 | - | (30) |
| I | 37 | 45 | 0 | - | (29) |
| J | 0 | - | 16 | 10 | (78) |
| K | 7 | 21 | 14 | 11 | (27) |
| L | 38 | 15 | 28 | 14 | (152) |
| M | 29 | 13 | 0 | - | (93) |
| N | 6 | 23 | 0 | - | (53) |
| O | 3 | 44 | 58 | 37 | (105) |
| Wet Rice Farming | | | | | |
| P | 15 | 19 | 64 | 10 | (45) |
| Q | 3 | 23 | 1 | 30 | (72) |
| Fishing | | | | | |
| R | 2 | 4 | 50 | 23 | (92) |
| S | 0 | - | 69 | 60 | (33) |
| Total % | 14 | 25 | 19 | 27 | (1216) |

in some banjar, cash borrowing was virtually nonexistent in others. In most banjar where many of the families had loans outstanding (Banjar O, R, and S) the families had borrowed because they needed capital, specifically, to acquire the materials and supplies required for the manufacture of distilled liquor or for fishing. Families in these banjar also had the income-producing potential required to borrow, and usually borrowed from moneylenders in neighboring communities. In Banjar L and P borrowing was heavier than in other banjar because the proportion of tenant farmers in these banjar was higher and many families tended to be much poorer than in other communities (see Table 2:32). Excluding the seven poorest communities, only 1.75% of the families in the remaining banjar reported debts outstanding.

Summary:

Returning to the questions raised at the beginning of this chapter, certain banjar seem to have an economic advantage because of their access to higher-paying economic activities. Such jobs originate from the government (in the form of civil service employment) and from the private sector (construction companies and other business enterprises which hire skilled labor from the area). Sub-district (*perbekelan*) headquarters create the kinds of lucrative income opportunities described above. People who live in banjar far from such centers simply do not have the

opportunities that families living in centralized banjar have. However, such other factors as whether there has been a tradition of encouraging children to complete their formal education and seek civil service employment, or whether the banjar was traditionally a center for some skilled trade passed on within families, such as goldsmithing, blacksmithing, carpentry, or pottery, also determines a community's income-producing potential. At the same time we find that some administrative centers (Banjar B, C, D, and E) as well as the banjar located nearby (Banjar L, M, N, and Q) have a wide range of income groups, while more remote banjar do not. This may indicate that the poorest families from more remote areas have moved into the administrative centers and surrounding areas in order to take advantage of the greater job opportunities.

However, regardless of where a banjar is located, the expansion of old and the creation of new and better income-producing opportunities seems to be the primary economic need. During discussions with village leaders we asked what proportion of the banjar members they considered to be extremely poor and in need of relief assistance. Rarely did we find a banjar where the local people themselves considered more than 5 to 15% of their neighbors to be having extreme difficulties getting enough to eat. At the same time, the majority of people in most of the banjar studied had some difficulties meeting the larger health, education, and socio-ritual expenses. Further, these people

only occasionally could afford even minor improvements on their homes, and few could afford to improve their diets on a regular day-to-day basis. To meet such expenses, and to generally improve the quality of life of the inhabitants of the eastern Bali area, attempts must be made to assist the people to develop and improve their sources of income.

## Part 8. Family Economy: Expenditures

### Expenditures:

To better understand the cost of level of living in the area studied, we asked each of the families how much they spent on health, socio-religious activities, food and other daily needs (educational costs were estimated according to the class level and number of children in school). For the entire sample, we found that of the average family's expenditures, 67% went towards food and other daily needs, 27% for socio-religious activities (including materials and food for rite-of-passage ceremonies)[6], 4% for health costs, and 2% for education-related expenses (see Table 2:33).

The mean monthly expenditure for all families was Rp. 16,200 (US$ 25.92), with the range of expenditures among banjar varying from Rp. 8200 per month (in Banjar R) to a high of Rp. 23,500 (in Banjar E) (see Table 2:34). However, when mean family expenditure (Rp. 16,220/month) is compared with mean family income (Rp. 10,980/month), we find that the average family budget does not balance. It is likely that three factors contribute to this difference. First, some families probably tended to under-report their total yearly income. This is particularly likely in the case of low-income families who get very small amounts of income in cash and kind from a wide variety of sources. Second, many families estimated their daily expenditures based on what

Table 2:33

Mean Family Monthly Expenditure by Banjar and Type of Expense

| Banjar | Type of Expense (in 1000's of Rupiah) | | | | Total Monthly Expenditure |
|---|---|---|---|---|---|
| | Health | Education | Socio-Religious Activities | Food & Other Daily Needs | |
| Administrative Centers | | | | 14.0 | 19.4 |
| A | .8 | .6 | 5.0 | 15.1 | 21.5 |
| B | .9 | .9 | 3.6 | 14.3 | 19.7 |
| C | .6 | .4 | 1.9 | 12.3 | 15.2 |
| D | .8 | .3 | 2.4 | 14.5 | 18.1 |
| E | .9 | .5 | 8.8 | 13.3 | 23.5 |
| F | .7 | .3 | 3.3 | 14.3 | 18.6 |
| Dryland Farming | | | | 11.9 | 16.5 |
| G | 1.4 | .2 | 4.2 | 10.8 | 16.6 |
| H | .9 | .3 | 2.3 | 10.6 | 14.1 |
| I | .5 | .4 | 8.6 | 11.6 | 21.1 |
| J | .4 | .2 | 3.8 | 10.0 | 14.4 |
| K | .9 | - | 5.1 | 10.0 | 16.0 |
| L | .6 | .3 | 2.7 | 9.0 | 12.6 |
| M | .5 | .4 | 2.8 | 10.7 | 14.4 |
| N | .7 | .3 | 6.9 | 13.2 | 21.1 |
| O | .6 | .3 | 7.4 | 9.2 | 17.5 |
| Wet Rice Farming | | | | 8.9 | 13.6 |
| P | .2 | .2 | 2.7 | 10.2 | 13.3 |
| Q | .7 | .3 | 5.3 | 7.5 | 13.8 |
| Fishing | | | | 7.8 | 12.0 |
| R | .8 | .2 | 3.3 | 4.9 | 8.2 |
| S | 1.0 | .1 | 4.0 | 10.7 | 15.8 |
| Total Mean | .67 | .35 | 4.4 | 10.8 | 16.22 |
| Frequency | (1216) | (1216) | (1216) | (1216) | (1216) |
| % of Total Family Expenditures | 4% | 2% | 27% | 67% | 100% |

Table 2:34

Mean Family Monthly Income and Expenditure by Banjar

| Banjar | Mean Family Monthly Income (in 1000's of Rupiah) | Mean Family Monthly Expenditure (in 1000's of Rupiah) |
|---|---|---|
| Administrative Center | 14.6 | 19.4 |
| A | 15.7 | 21.5 |
| B | 18.2 | 19.7 |
| C | 10.3 | 15.2 |
| D | 9.0 | 18.0 |
| E | 13.8 | 23.5 |
| F | 20.8 | 18.6 |
| Dryland Farming | 10.0 | 16.5 |
| G | 11.9 | 16.6 |
| H | 8.5 | 14.1 |
| I | 10.7 | 21.1 |
| J | 9.6 | 14.4 |
| K | - | - |
| L | 7.4 | 12.6 |
| M | 9.6 | 14.4 |
| N | 15.4 | 21.1 |
| O | 7.1 | 17.5 |
| Wet Rice Farming | 9.3 | 13.6 |
| P | 6.7 | 13.3 |
| Q | 11.8 | 13.8 |
| Fishing | 9.3 | 12.0 |
| R | 9.9 | 8.2 |
| S | 8.6 | 15.8 |
| Total | 10.98 | 16.22 |

they bought on a daily basis during periods of relative economic well-being. Many families in eastern Bali enjoy such foods as rice, dried fish, coffee, sweets, and coconut oil only when they can afford them and drop them from their diets (returning primarily to cassava and greens) during times of unemployment or before harvests. Finally, a third reason for the imbalance in expenditures and income relates to the large proportion of income expended on socio-religious activities. Resources to finance ritual needs seem to originate within a related but somewhat separate economic system.

For example, if a family must perform a wedding or tooth-filing ceremony, it will receive contributions of food and sometimes cash from friends and relatives. Additional resources may be culled from saving groups which the family belongs to which are used only for the purpose of financing ritual activities (see paper by Poffenberger and Zurbuchen for a more complete discussion of the functioning of "ritual economy" in the Balinese village).[7] Consequently, money and resources used to finance socio-religious needs generally do not come directly from the family's food and daily needs budget.

If we look at column one in Table 2:35 we see the mean family income in proportion to the mean cost of food and basic needs by banjar. For all banjar we find that income balances almost perfectly with family expenditures for food and daily needs (1.05). Among the various banjar, income

Table 2:35

Income in Proportion to Food and Basic Needs and Total Family Expenditures by Banjar

| Banjar | Income in Proportion to: | |
|---|---|---|
| | Food & Basic Need Expenditures* | Total Family Expenditures** |
| Administrative Center | 1.04 | .75 |
| A | 1.04 | .73 |
| B | 1.27 | .92 |
| C | .84 | .68 |
| D | .62 | .50 |
| E | 1.04 | .59 |
| F | 1.45 | 1.12 |
| Dryland Farming | .84 | .61 |
| G | 1.10 | .72 |
| H | .80 | .60 |
| I | .92 | .51 |
| J | .96 | .67 |
| K | - | - |
| L | .82 | .59 |
| M | .90 | .67 |
| N | 1.17 | .73 |
| O | .77 | .41 |
| Wet Rice Farming | 1.04 | .68 |
| P | .66 | .50 |
| Q | 1.57 | .86 |
| Fishing | 1.19 | .78 |
| R | 2.02 | 1.21 |
| S | .80 | .54 |
| Total | 1.02 | .68 |

* = $\frac{\text{Income}}{\text{Food \& Basic Costs}}$

** = $\frac{\text{Income}}{\text{Total Expenditures}}$

seems more than sufficient for most daily needs in most of the centralized banjar. In Banjar C, D, H, I, J, M, O, P, Q, and S income is below the amount required to meet basic needs, suggesting that such banjar have a shortage of opportunities to earn enough income to meet their most crucial needs. This is particularly true in Banjar D, H, O, and P where income falls behind money required by from 20 to 38%. It should be noted that in Banjar R there is a considerable "surplus" income vis-a-vis daily needs because the banjar has a steady source of cash from its fishing activities. Residents also have little opportunity to buy goods, since the banjar is located at a considerable distance from any trading center.

In concluding Chapter II, let us examine how the families studied perceived their own needs and the needs of their communities.

## Part 9. Community and Family Needs as Perceived by Family Members

Family Needs:

To better understand the needs of village families we asked them the following question: "If you had an additional Rp. 3000 this month, how would you use it?" Of the sample families 70% stated that they would spend it on recurring expenses such as food and clothes. Another 13% said they would invest it in buying tools or as trading capital, while 10% claimed they would spend it repairing their house or for the education of their children (see Table 2:36). The findings from this question support the theory that most banjar families are still primarily concerned with meeting their basic needs (e.g. food, clothing, and housing). These responses also indicate the Rp. 3000 (US$ 5.00) may be an insufficient sum for investment purposes and would tend to be used mostly to meet daily expenses.

For the families of that area of eastern Bali which was studied, the most frequently cited family needs were for food and clothes (38%) and for housing (37%) (see Table 2:37). Twelve percent of the families mentioned tools as their primary need, while such other needs as health, education, buying livestock, acquiring trading capital, paying debts, and conducting necessary rituals were cited as a primary need. These findings indicate that food and shelter remain the primary problems faced by

Table 2:36

"If Your Family Made an Additional Rp. 3000
This Month, How Would You Use It?" by Banjar

| Banjar | "How Would You Use An Additional Rp. 3000?" | | | | | | | | | (N) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Save It % | Food & Clothes % | Buy Tools % | Trading Capital % | Health Needs % | Educa-tion % | Ritual Needs % | Repair House % | Pay Debts % | |
| Administrative Centers | | | | | | | | | | |
| A | 0 | 43 | 26 | 13 | 2 | 4 | 0 | 13 | 0 | (75) |
| B | 0 | 79 | 9 | 7 | 0 | 0 | 0 | 0 | 5 | (43) |
| C | 0 | 52 | 17 | 12 | 0 | 12 | 0 | 7 | 0 | (42) |
| D | 4 | 57 | 2 | 2 | 0 | 26 | 0 | 9 | 0 | (46) |
| E | 0 | 94 | 1 | 4 | 0 | 0 | 0 | 1 | 0 | (81) |
| F | 11 | 33 | 5 | 39 | 2 | 2 | 0 | 1 | 7 | (89) |
| Dryland Farming | | | | | | | | | | |
| G | 3 | 52 | 31 | 0 | 0 | 4 | 3 | 7 | 0 | (29) |
| H | 0 | 86 | 10 | 0 | 0 | 0 | 0 | 4 | 0 | (29) |
| I | 0 | 3 | 17 | 0 | 14 | 0 | 0 | 66 | 0 | (29) |
| J | 0 | 60 | 3 | 22 | 0 | 1 | 9 | 5 | 0 | (78) |
| K | 0 | 33 | 0 | 0 | 0 | 0 | 15 | 11 | 41 | (27) |
| L | 0 | 85 | 2 | 1 | 1 | 2 | 6 | 2 | 1 | (151) |
| M | 0 | 85 | 7 | 7 | 0 | 0 | 0 | 1 | 0 | (88) |
| N | 0 | 98 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | (53) |
| O | 0 | 99 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | (105) |
| Wet Rice Farming | | | | | | | | | | |
| P | 0 | 82 | 4 | 5 | 0 | 0 | 0 | 0 | 9 | (45) |
| Q | 0 | 88 | 0 | 8 | 0 | 0 | 0 | 3 | 1 | (72) |
| Fishing | | | | | | | | | | |
| R | 0 | 99 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | (91) |
| S | 0 | 97 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | (33) |
| Total % | 1 | 70 | 7 | 6 | 1 | 3 | 2 | 7 | 3 | (1206) |

Table 2:37

Family's Greatest Need by Type of Need and Banjar

| Banjar | "What is Your Family's Greatest Need?" | | | | | | | | | (N) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Food & Clothes % | Tools % | Pay Debts % | Health Costs % | Education Costs % | Improve House % | Buy Live-Stock % | Trading Capital % | Ritual Costs % | |
| Administrative Centers | | | | | | | | | | |
| A | 35 | 7 | 1 | 1 | 5 | 50 | 1 | 0 | 0 | (75) |
| B | 2 | 7 | 22 | 0 | 12 | 45 | 2 | 10 | 0 | (42) |
| C | 6 | 3 | 0 | 0 | 3 | 77 | 3 | 0 | 8 | (35) |
| D | 26 | 11 | 6 | 0 | 0 | 46 | 11 | 0 | 0 | (46) |
| E | 9 | 0 | 0 | 1 | 16 | 64 | 0 | 0 | 10 | (80) |
| F | 37 | 12 | 2 | 2 | 2 | 12 | 1 | 4 | 28 | (86) |
| Dryland Farming | | | | | | | | | | |
| G | 17 | 31 | 0 | 3 | 0 | 41 | 7 | 0 | 0 | (29) |
| H | 7 | 23 | 3 | 0 | 3 | 64 | 0 | 0 | 0 | (30) |
| I | 0 | 52 | 0 | 14 | 7 | 14 | 3 | 3 | 7 | (29) |
| J | 71 | 1 | 0 | 0 | 0 | 21 | 0 | 0 | 7 | (77) |
| K | 19 | 0 | 0 | 0 | 7 | 74 | 0 | 0 | 0 | (27) |
| L | 4 | 1 | 1 | 1 | 2 | 84 | 3 | 1 | 3 | (149) |
| M | 92 | 2 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | (91) |
| N | 94 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 0 | (53) |
| O | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | (105) |
| Wet Rice Farming | | | | | | | | | | |
| P | 11 | 4 | 16 | 0 | 4 | 56 | 0 | 9 | 0 | (45) |
| Q | 42 | 0 | 0 | 3 | 1 | 48 | 0 | 0 | 6 | (71) |
| Fishing | | | | | | | | | | |
| R | 1 | 95 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | (92) |
| S | 73 | 0 | 0 | 0 | 3 | 15 | 0 | 0 | 9 | (33) |
| Total % | 38 | 12 | 2 | 1 | 3 | 37 | 1 | 1 | 5 | (1195) |

the people studied. When we asked families what their second and third greatest needs were, most of those who said food and clothing the first time responded with housing as their second greatest need, and vice versa. Other responses included health costs, tools, and ritual activities.

The types of responses given least frequently were those oriented towards increasing income earning potential (e.g. acquiring trading capital and buying livestock). Thus, in the minds of many villagers needs were preceived in terms of meeting day-to-day expenses and improving their housing, rather than from the standpoint of how they could solve their economic problems on a long term basis. In part the tendency to view needs on the basis of short-term strategies, rather than how to find a long-term solution, comes from the context of a limited economy (or a "shared poverty" economic environment) where economic growth is difficult at best, and where one family's gain means another family's loss. To assist families in solving their economic problems government and non-government community development workers must not only help to provide new employment opportunities, but must also work with families and communities to help orient them toward evaluation of their needs in terms of long-term solutions and strategies. In Chapter III such strategies will be discussed in greater detail, with examples of how such programs could be run.

Community Needs:

When we asked the families what they perceived to be the biggest need within their banjar, the most common responses were repairing the community meeting hall (60%), performing religious ritual (13%), and repairing community temples (11%) (see Table 2:38). It is not surprising that the families responded in this manner. To Balinese villagers the community has traditionally been the banjar (or *desa adat* = village), and its main functions have been to regulate community activities through meetings at the local meeting hall (*balé banjar*). A primary community activity is the performance of ceremonies at the local temples to protect the banjar from malevolent forces.

Only recently have such activities as road maintenance, water supply, school construction, health services, toilets and bath houses, and market facilities started to become, at least in some areas, issues for the concern of the banjar. Only in the most progressive banjar studied (e.g. Banjar A and B) were these needs frequently mentioned as primary needs in the community.

As was discussed earlier in this report, the banjar communal organizations are a very positive force for any community development activities attempted on the island of Bali.

The traditional community requires that banjar members contribute their labor for group projects. While many such activities have a ritual focus such as cremations, weddings,

Table 2:38

Community's Greatest Need as Perceived by Community Members by Type of Need and Banjar

| Banjar | "What is Your Community's Greatest Need?" | | | | | | | | | (N) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Road Improve-ment | Water Supply | School Con-struction | Health Service | Community Meeting Hall | Ritual | Toilets & Bath House | Repair Temple | Improve Market | |
| | % | % | % | % | % | % | % | % | % | |
| Administrative Centers | | | | | | | | | | |
| A | 2 | 0 | 24 | 0 | 41 | 4 | 27 | 0 | 2 | (66) |
| B | 13 | 22 | 3 | 3 | 21 | 27 | 0 | 8 | 3 | (37) |
| C | 0 | 0 | 0 | 0 | 78 | 0 | 10 | 10 | 2 | (40) |
| D | 0 | 0 | 0 | 0 | 82 | 9 | 9 | 0 | 0 | (34) |
| E | 79 | 4 | 0 | 0 | 12 | 1 | 1 | 3 | 0 | (78) |
| F | 0 | 0 | 0 | 3 | 9 | 13 | 0 | 69 | 6 | (32) |
| Dryland Farming | | | | | | | | | | |
| G | 0 | 0 | 0 | 0 | 82 | 11 | 0 | 7 | 0 | (28) |
| H | 0 | 0 | 0 | 17 | 70 | 13 | 0 | 0 | 0 | (30) |
| I | 0 | 0 | 0 | 0 | 89 | 11 | 0 | 0 | 0 | (28) |
| J | 0 | 0 | 0 | 0 | 2 | 86 | 0 | 8 | 4 | (77) |
| K | 0 | 0 | 0 | 0 | 74 | 4 | 0 | 22 | 0 | (27) |
| L | 0 | 0 | 1 | 0 | 79 | 4 | 0 | 15 | 1 | (148) |
| M | 1 | 0 | 0 | 0 | 99 | 0 | 0 | 0 | 0 | (91) |
| N | 49 | 6 | 0 | 0 | 43 | 0 | 2 | 0 | 0 | (51) |
| O | 0 | 0 | 1 | 0 | 79 | 20 | 0 | 0 | 0 | (103) |
| Wet Rice Farming | | | | | | | | | | |
| P | 0 | 0 | 0 | 0 | 98 | 0 | 2 | 0 | 0 | (44) |
| Q | 0 | 0 | 0 | 0 | 79 | 21 | 0 | 0 | 0 | (70) |
| Fishing | | | | | | | | | | |
| R | 0 | 0 | 0 | 1 | 99 | 0 | 0 | 0 | 0 | (92) |
| S | 0 | 0 | 0 | 0 | 9 | 19 | 0 | 72 | 0 | (32) |
| Total % | 8 | 2 | 1 | 1 | 60 | 13 | 3 | 11 | 1 | (1108) |

and temple anniversaries, other community work projects have clear economic ends. These activities may include the harvesting of rice, the cleaning of irrigation canals, or the repairing of a road. The survey found that during the week prior to interviewing, the average family contributed 1.6 person days to mutual-aid activities (see Table 2:39). In some communities busy preparing for a temple festival the number of days contributed per family in one week rose to 4.1, while in another community where community cohesiveness has been shattered by a long term factional dispute the number of days given to community projects was a low .5 per family each week. The ability most Balinese communities have to organize their members for cooperative action is invaluable for community development purposes; if it is to endure, however, this potential should not be abused by enlisting banjar work groups for non-essential projects.

Banjar in most areas tend to be cohesive units where group support for community efforts can be achieved if a project has merits and is presented in the right way. While many villagers perceive the functions of their banjar in a traditional light, community organizers can help to show them new ways in which the banjar can broaden its function and still benefit all community members.

Before going on to Chapter III with its recommendations for community action programs, we have prepared a summary of the physical quality of life conditions in the nineteen banjar surveyed by presenting a profile for each banjar.

Table 2:39

Total Number of Days Family Members Worked Without Pay on Mutual-Aid Activities in the Past Week by Banjar

| Banjar | Number of Days | | | | Mean Number of Days | (N) |
|---|---|---|---|---|---|---|
| | None % | 1 to 2 % | 3 to 4 % | 5 or More % | | |
| Administrative Centers | | | | | 1.5 | (378) |
| A | 9 | 47 | 32 | 12 | 2.8 | (75) |
| B | 30 | 33 | 30 | 7 | 2.0 | (43) |
| C | 55 | 43 | 2 | 0 | .8 | (42) |
| D | 26 | 49 | 21 | 4 | 1.8 | (47) |
| E | 76 | 11 | 8 | 5 | .8 | (82) |
| F | 86 | 9 | 2 | 3 | .5 | (89) |
| Dryland Farming | | | | | 2.4 | (596) |
| G | 52 | 41 | 7 | 0 | .8 | (29) |
| H | 13 | 27 | 50 | 10 | 2.7 | (30) |
| I | 7 | 0 | 55 | 38 | 4.1 | (29) |
| J | 19 | 23 | 44 | 14 | 2.7 | (78) |
| K | 8 | 48 | 22 | 22 | 2.7 | (27) |
| L | 35 | 38 | 22 | 5 | 1.6 | (152) |
| M | 24 | 59 | 14 | 3 | 1.6 | (93) |
| N | 23 | 15 | 17 | 45 | 4.0 | (53) |
| O | 32 | 48 | 20 | 0 | 1.2 | (105) |
| Wet Rice Farming | | | | | 1.1 | (117) |
| P | 51 | 40 | 7 | 2 | 1.0 | (45) |
| Q | 18 | 81 | 1 | 0 | 1.1 | (72) |
| Fishing | | | | | .9 | (125) |
| R | 38 | 62 | 0 | 0 | .8 | (92) |
| S | 42 | 55 | 3 | 0 | 1.1 | (33) |
| Total | | | | | 1.6 | (1216) |

Part 10. Banjar Profiles

Banjar A, located in a sub-district center, is a fairly prosperous community of goldsmiths, blacksmiths, and farmers. With one of the first schools ever built in the area (established in 1925), the 147 families in the community are more aware of the potential for physical quality of life improvement than people in more remote banjar. The general standard of living in Banjar A is already somewhat higher than the surrounding area with over half of the people eating a more nutritious, primarily rice diet. School attendance, literacy, housing conditions and per capita income, were also well above that of other banjar.

Banjar B is a community of 94 families, many of which are high caste, located next to Banjar A. With its tradition of education and proximity to the regency headquarters 5 km. away, a number of the families have at least one member with a good income as a civil servant. At the same time there are perhaps 25 families who work as retainers and tenant farmers for the high caste and well-off families, and whose income is quite low. Generally, public health conditions are better in Banjar B than in the more distant communities.

Banjar C is located at the center of Jungutan sub-district. With a population of 82 families, this banjar is not as wealthy as such other centralized banjar (like A, B, E, and F); however, some of the families own wet rice land and others have lucrative civil service jobs. Again,

schooling and public health conditions are better, and access to a paved road brings families in this banjar closer to marketing centers and construction-related jobs. In Banjar C, as in other centrally located banjar, we find the community split between relatively well-off families and the poorer families.

Banjar D, with 83 families, is situated in the administrative center of Seraya sub-district. This area is one of the most arid, rocky regions on the entire island of Bali and was only recently linked to the regency town 15 km. away by a paved road. With few cash-producing activities, the area remains one of the poorest in the area. Inhabitants of Banjar D, with the exception of a few school teachers and low level administrators, are primarily supported by subsistence agriculture, many on a tenant farming basis. The annual per capita income of Rp. 22,100 is one of the lowest of the 19 banjar studied. The recent construction of a piped drinking water system will greatly improve the quality of life for local residents, but much remains to be done in terms of building up the local economy.

Banjar E is in an administrative center, located along one of the major paved roads in the eastern Bali region. With a population of 183 families, it is an old village and a traditional cultural center in the area. Nutritional levels, education, and public health conditions in the banjar are for the most part considerably above those in

surrounding areas. With 69% of the families engaged in marketing activities, as well as in construction and skilled trades, 54% of the families were above the low income line (as defined by Plan at Rp. 24,000 per capita per year), which is considerably more than in many surrounding banjar. Still, a sizeable proportion of the population are engaged as low income tenant farmers (50% of all families). Thus, as in some of the other centralized banjar (B, C, and D), the split between the wealthier families and the poorest is more extreme than in more remote communities.

Banjar F, with 198 families, is located along a major paved road, in a trading and administrative center. With the highest per capita income (Rp. 55,700 per year) of all banjar studied, almost all of the families are above the Plan low income line (only 13% had a PCI of less than Rp. 24,000 per year). While many Banjar F families had income from agriculture and livestock, few were tenant farmers (only 18%). A number of families also gained a good income from marketing (66%) with the mean income from this source being Rp. 140,000 per year, far more than the mean in other banjar. Opportunities for construction work and shopkeeping are also present in this marketing center. Yet, in spite of its economic superiority, Banjar F suffers from divisive disputes among community members, and a low level of public health (perhaps due to a frequently contaminated water supply) which is reflected in an infant

mortality rate of 280 per 1000 live births. Further, literacy levels and the proportion of school age children currently in school are well below that of the centralized banjar, and even of the more remote banjar.

Banjar G is located near the base of Mount Agung, far from a motorable road or administrative center. The nearest health clinic is over 5 km. away and the nearest school is at least 2 km. away for most families. The 52 families that live in this community are mostly subsistence farmers working the poor, rocky soil, and supplement their income with the sale of firewood collected from the nearby slopes of Mount Agung. The firewood is carried to the local market every three days and sold by the banjar women. Most families earn about Rp. 300 each market day from this source. However, as the mountainside is denuded of wood this job will become less and less profitable. The nutritional level of the community is the lowest of any of the banjar studied with the staple food consisting almost solely of cassava. The nearest water source is 4 to 5 km. away and consequently there seems to be a greater incidence of skin sores, intestinal ailments and other health problems also resulting in an infant mortality rate of 250 per 1000 births.

Banjar H is located near Banjar G, but somewhat closer to schools, a water source, and trading centers. While the majority of the banjar families work as tenant farmers (57%), some families earn money as construction laborers on

road building projects, and as traders in fruit and other agricultural produce purchased in the surrounding area and sold at a local market 4 km. away. Public health conditions in the area are low in terms of housing, nutrition, and water supply, and as in most remote communities knowledge of hygiene is also poor resulting in an infant mortality rate of 330 per 1000 births.

Banjar I, located beside Banjar H, is somewhat better off. A number of the families have a tradition of finding jobs in the civil service and over the years have become relatively wealthy in comparison to their neighbors. Housing, literacy, and school attendance (75% of school age children) were well above most other communities, while infant mortality was low. Still, we find about 60% of the families in the low income group (with 40% engaged as tenant farmers), reflecting a split between low and higher income groups.

Banjar J was one of the most remote communities studied. With a population of 167 families, situated high up the slopes of Mount Agung, much of the community's farmland was damaged by the eruption of the volcano in 1963. Since that time approximately half the families in the community have migrated to other areas of Indonesia under the government's transmigration scheme. Many of those who left were the poorest landless families, and as a result the overall standard of living has improved. Currently, 85% of the families own their own land with the mean

ownership at 1.65 hectare, which is more land than is owned in most of the other communities studied. On this land most families grow cassava, which they consume themselves and dry for selling at the nearest local market 5 km. away. During the dry season water has to be carried uphill from a spring 6 or more km. away, and this, combined with poor nutrition and distant health services, leads to a local infant mortality rate of 100/1000 births. School attendance rates and literacy levels in the community are relatively low.

Banjar K is located next to Banjar J and suffers from similar problems. However, in Banjar K much of the land is owned by a single successful individual, with 25% of the families engaged as tenant farmers. Because of the community's distance from roads and marketing centers, there is little opportunity to obtain income from sources other than agriculture, livestock, and the marketing of surplus produce. Consequently, per capita income is very low (Rp. 9,800 per year).

Banjar L is located near an administrative center and in an area with wet rice land and a growing fruit orchard industry. With over 310 families, Banjar L was the largest community studied with a mixed group of landowning families (25%) and tenant farmers (65%), while the remaining landless banjar members worked in a range of other jobs. Generally, however, there was little access to non-agricultural jobs, with the overall per capita income at a

low Rp. 23,300 per year. Literacy levels and school attendance were also quite low. However, drinking water was not a problem and public health conditions seemed generally better than in many other communities studied.

Banjar M, located near Banjar D close to the administrative center of Seraya, was divided economically between poor families living on the fringe of the banjar (2 to 3 km. from the center) on the slopes of Mount Seraya, and those somewhat wealthier families in the village itself. Overall the community had a very low per capita income (Rp. 21,800 per annum) in relation to other banjar surveyed. With a few exceptions the community had little access to any income excepting that from agriculture, livestock, and marketing. Housing, school attendance, and infant mortality levels did not indicate the severity of conditions found in other banjar, though literacy levels were low (36%).

Banjar N, not far from the sub-district center where Banjar E is located, is set amongst terraced dryland fields. The community is fairly well-off compared to many, with an annual per capita income of Rp. 35,700. The banjar's greater opportunity to gain both skilled and unskilled construction work is a primary source of cash, as is earning from agriculture and livestock. While levels of literacy, nutrition, housing, and school attendance are not high, they are better than in some communities and tend to fall around the mean for all banjar studied.

An old, traditional community with conservative but strong leadership, Banjar O consists of 212 families, the majority of whom own reasonably large tracts (mean of 2.65 hectare) of very poor, rocky soil, capable of growing small amounts of corn and *lontar* palm. With a mean yearly income from agriculture of only Rp. 15,000, the families of this community long ago began distilling palm wine into liquor to help support themselves. Our study estimated that 87% of all banjar families earn a mean yearly income of Rp. 35,000 from distilling *arak*. Drinking water is a problem in this dryland area, while other such physical quality of life indicators as nutrition, literacy, school attendance and housing fall near the mean for all banjar studied.

Banjar P, with 63 families, was one of the two wet rice farming communities surveyed. It was also the village with the second lowest annual per capita income (Rp. 14,800). One reason for the poverty of banjar members results from the fact that only 18% of the families own any land at all, while the rest depend on tenant farming small plots of rice land for their subsistence. The only supplement to family income comes from the snall-scale marketing in which banjar women are actively involved. All physical quality of life indicators were well below the mean, the only exception being drinking water, which was available near the banjar.

Banjar Q, the second of the two wet rice farming communities, was considerably better off than its counterpart Banjar P. With 137 families, 64% owned some farmland

with a mean of .28 hectare of ricelands and .25 hectare of fertile drylands. The cash income from agriculture and livestock in Banjar Q was over twice that for Banjar P. Other indices of living conditions, including literacy, school attendance, and nutrition, were around the mean. However, infant mortality was high (220 per 1000 births), probably due to a more contaminated source of drinking water. This seems particularly likely in light of the fact that Banjar Q is near Banjar F, which seems to suffer from a similar problem.

Banjar R is a remote fishing village of 162 families located along the Seraya coast about 3 kilometers from the nearest road over very rough terrain. Since 1963 when (as a result of the eruption of Mount Agung) sand was washed up onto the rocky beach, it has become possible to beach fishing boats (*jukung*) and consequently to fish. Nearly 50% of all banjar families now earn a mean income of Rp. 64,000 a year from this activity alone. Other income is from largely subsistence agriculture. Many of the families who do not participate in fishing go to north Bali each year to work as laborers during the corn harvest. For one month's work they can earn 30 to 50 kilograms of corn to help the family survive through the year. Livestock is the only other major source of income in the area, but periodic shortages of water in this very arid region force the families to sell their cattle and consequently few have been able to build up herds of more than one or two

cows and a few goats. While nutrition, housing, and infant mortality are near the mean for all banjar, a visit to the locality quickly illustrates the low physical quality of life in the area. School attendance is very low simply because the school is 3 km. away and has only enough space for 10 to 20% of the school age children; consequently, literacy in the area is also quite low.

Banjar S, a community of 39 families, and the second fishing village included in the study, while having the advantage of a fishing economy, has few other opportunities to acquire income. While 67% of the families own some farmland, the land, like that in neighboring Banjar O, is rocky and of low fertility. From fishing, 47% of the families gain a mean yearly income of Rp. 93,000. The other families, either because they do not have the capital to buy a *jukung*, or a young man to use it, must subsist without fishing income. Like Banjar O, some families do gain a little income by distilling *arak*, while amounts of money are made from agricultural labor, marketing, and livestock. With a low per capita income of Rp. 23,900 per year, and with an overwhelming 48% of the families having mortgaged some or all of their land, it is quite apparent that in spite of its fishing, the families of Banjar S are having severe economic problems. This community also had the lowest literacy rate (23%) and school attendance rate (16%) of any of the communities studied. Nutritional

levels were well below the mean, and infant mortality was a high 220 deaths per 1000 births during the first year of life.

Notes to Chapter II:

[1]Barry Cerf's study of health and nutritional conditions of pre-school age children in the Muncan area of eastern Bali was conducted between 1978 and 1979. The stool sample analysis showed a presence of from 30,000 to 50,000 worm eggs per gram of stool in virtually all children over six months old.

[2]Cholera is endemic in the eastern Karangasem area, particularly during the dry season. During the months of May and June 1979 the regency hospital in Amlapura was attempting to care for 150 cholera cases from over a dozen villages in the area studied.

[3]Cassava is a plant which is widely cultivated in Bali and which forms the primary staple in many villagers' diets. The root or tuber is either boiled, or chopped and dried before cooking. The cassava plant most commonly used is the non-toxic sweet cassava. Other tubers frequently consumed in rural areas of Bali include tapioca (*ubi pohon*), taro (*keladi*), and potatoes (*ubi kentang*).

[4]Balinese, when leaving the house, like to have at least a small amount of money with which to purchase food or coffee. At an early age children also begin to desire to control small amounts of change for sweets and food. Consequently, most parents feel obligated to supply their children with from Rp. 5 to 25 (US$ .01 to .05) each day, particularly if the child is going to school.

[5]Jon E. Rohde, Terence H. Hull and Lukas Hendrata, "Who Dies of What and Why," Prisma, March 1979, p. 27.

[6]Expenditures for ritual activities in 1978-1979 were undoubtedly above normal due to cremations and other socio-religious requirements arising on the occasion of a centenary temple festival (*Eka Dasa Rudra*) at one of the island's key temples (*Besakih*).

[7]Mark Poffenberger and Mary S. Zurbuchen, "The Economics of Village Bali: Three Perspectives," in Economic Development and Cultural Change, the University of Chicago (forthcoming, 1980).

# CHAPTER III

## PROGRAM RECOMMENDATIONS

### Part 1. Introduction

In the beginning of Chapter II we discussed briefly how the Balinese villager is gradually being drawn into the modern national economy and Indonesian nation. How the Balinese adapt to current socio-economic and demographic changes will have considerable influence on the physical quality of life in their communities for some time to come. The right kind of government and non-government assistance during this period of change could help more families, particularly low-income groups, by increasing income, health, and education levels, as well as through preserving traditional organizations even as new socio-economic patterns emerge. However, if assistance of this nature is not forthcoming, current changes could result in a decline in family health, income and nutrition (to name just a few of the variables comprising the physical quality of life of the community). Further, the gap between the wealthier and poorer people on the island will increase. It is clear, then, that assistance is important during this period of change. Currently both government and non-government agencies are conducting a range of assistance programs --- but how effective are they? In Chapter III we will present a series of proposed community action strategies for the far eastern Bali region. We cannot

guarantee that such programs will eliminate the problems confronting the villagers; yet, because they were designed to meet conditions and needs identified through intensive research, the programs may be effective in the areas for which they were designed.

Most Balinese villages do have resources of their own which can help their members adjust to changes affecting them socially and economically. These resources include:

a: strong traditional organizations (*sekaa, banjar, dadia* [1]) capable of coordinating health, education, and economic programs

b: a traditional openness to innovations, rather than a resistance to change

c: individuals capable of providing leadership in the community

d: some resources (usually rather limited) in the form of cash, land, livestock, or skilled manpower.

At the same time, the same villagers lack other important resources which inhibit their ability to make the adaptations required in improving some of the factors contributing to the quality of life. These include:

a: experience dealing with modern economic and government systems

b: contacts within those systems

c: a knowledge of how modern businesses operate, of hygiene, and of modern agriculture.

The government of Indonesia has a large development bureaucracy, including manpower at the local level where most assistance programs must be implemented. In the areas surveyed it was found that most of the sub-districts

(*perbekelan*, with populations averaging around 15000 people) had the following government workers:

- 1 agricultural extension worker (*Penyuluh Pertanian Lapangan*)
- 1 animal husbandry extension worker (*Penyuluh Perhewanan Lapangan*)
- 1 orcharding extension worker (*Penyuluh Perkebunan Lapangan*)
- 1 health post with a nurse-midwife (*bidan*) or paramedic (*mantri*)
- 5-10 primary schools with 3 to 7 teachers each (*guru sekolah dasar*) or a total of between 30 to 60 teachers; in each school 1 teacher has been trained in the school health program (*Usaha Kesehatan Sekolah*)

Many sub-districts also had volunteer workers (*TKS = Tenaga Kerja Sukarela*) who worked with the sub-district chief (*perbekel*), with the local social development organization (*Lembaga Sosial Daerah = LSD*), and with the local women's organization (*PKK = Pendidikan Kesejahteraan Keluarga*), on both health projects and economic development efforts. Periodically, some *perbekelan* were also visited by students who came to get field experience and help in development projects under the *Kuliah Kerja Nyata* (*KKN*) program. The above list, though not exhaustive, gives a clear indication of the numbers of personnel already working at the local level. It appears that there is already considerable manpower employed in the area. The central question may be how to increase the efficiency of these workers and their ability to assist communities interested in implementing health, education, and economic enrichment programs.

In discussions with local-level government workers we found that they tended to be quite young, and many of them were quite enthusiastic about their jobs. At the same time, because of their youth and lack of experience, extension and development workers frequently did not know how to approach the villagers. This in part may be a function of their education in an urban environment, which does not adequately prepare them to work with rural people in rural conditions. Another problem we encountered was that the local level workers were rarely in touch with their supervisors and had little access to resources (both cash and materials) required to implement programs.

School teachers represented the largest group of literate, educated people in the communities studied. Many of the teachers we talked to expressed considerable interest in assisting in the implementation of development programs both inside and outside the school. As respected members of the community with an in-depth knowledge of the conditions and problems of people in the banjar, teachers could be of great help to Balinese villagers in their efforts to deal with economic change and improve health and living conditions.

Local level medical practitioners such as the nurse-midwives (*bidan*), paramedics (*mantri*), nurses (*perawat*), as well as traditional Balinese doctors (*balian*) currently are largely concerned with curative services. If this group could become more involved in educating banjar

members regarding local public health problems and how they might be eliminated it would add both experience and momentum to raising health levels in the area.

In attempting to help banjar integrate themselves with the emerging national economy, experience concerning the institution and management of new economic activities is essential. Unfortunately, in the areas studied most families and groups of families had little knowledge of how they might be able to increase their income. However, in other parts of Bali, particularly in the south-central region, many entrepreneurs have been very successful developing profitable enterprises in the area of agriculture, fishing, livestock, handicrafts, marketing, and skilled trades. For the most part such individuals have not been asked to assist in localized income boosting programs. This group of individuals could be the key to more successful economic assistance strategies, for it is they who best know how to devise enterprises capable of succeeding in the competitive world of private business.

There are a great deal of human resources both in the banjar and on the island of Bali who are in a position to help implement the kinds of programs which could help to improve public health, educational, and economic conditions. Currently these resources are not being used to their full potential. There is a clear need for someone to assist villagers in assessing their problems and resources, and helping them to organize the kinds of trained people

required to solve local problems. A coordinator of this type could help a community to maximize the benefits of the resources already available in the area. Plan may be in a position to help the government develop such a role at the sub-district level in the Model Banjar areas. If such a program proved to be successful it could be expanded to other areas in Bali. The role of a development coordinator would come about in coordination with the Governor's Office, *KESRA* (*Kesejahteraan Rakyat* = Organization for People's Welfare), *BAPPEDA* (*Badan Perencanaan Pembangunan Daerah* = Regional Planning Board), *Departemen Sosial* (Department of Social Affairs), *Departemen Pertanian* (Department of Agriculture), *Departemen Peternakan* (Department of Animal Husbandry), *Departemen Perkebunan* (Department of Horticulture), *Departemen Pendidikan dan Kebudayan* (Department of Education and Culture), *Departemen Dalam Negeri* (Interior Department), and the *Dinas Pengajaran* (Office of Education).

Candidates for training as sub-district level development coordinators should ideally possess the following characteristics:

a: An ability to think in analytic terms and a knowledge of needs assessment techniques.

b: An open social outlook and manner (e.g. *orang yang terbuka*) which respects individuals from villages and appreciates rural life styles.

c: An understanding of public health principles, business management, and current government development programs.

d: Contacts among people working locally in the public and private sphere.

e: A pattern of behavior which is simple (*polos*) in both dress and social interaction.

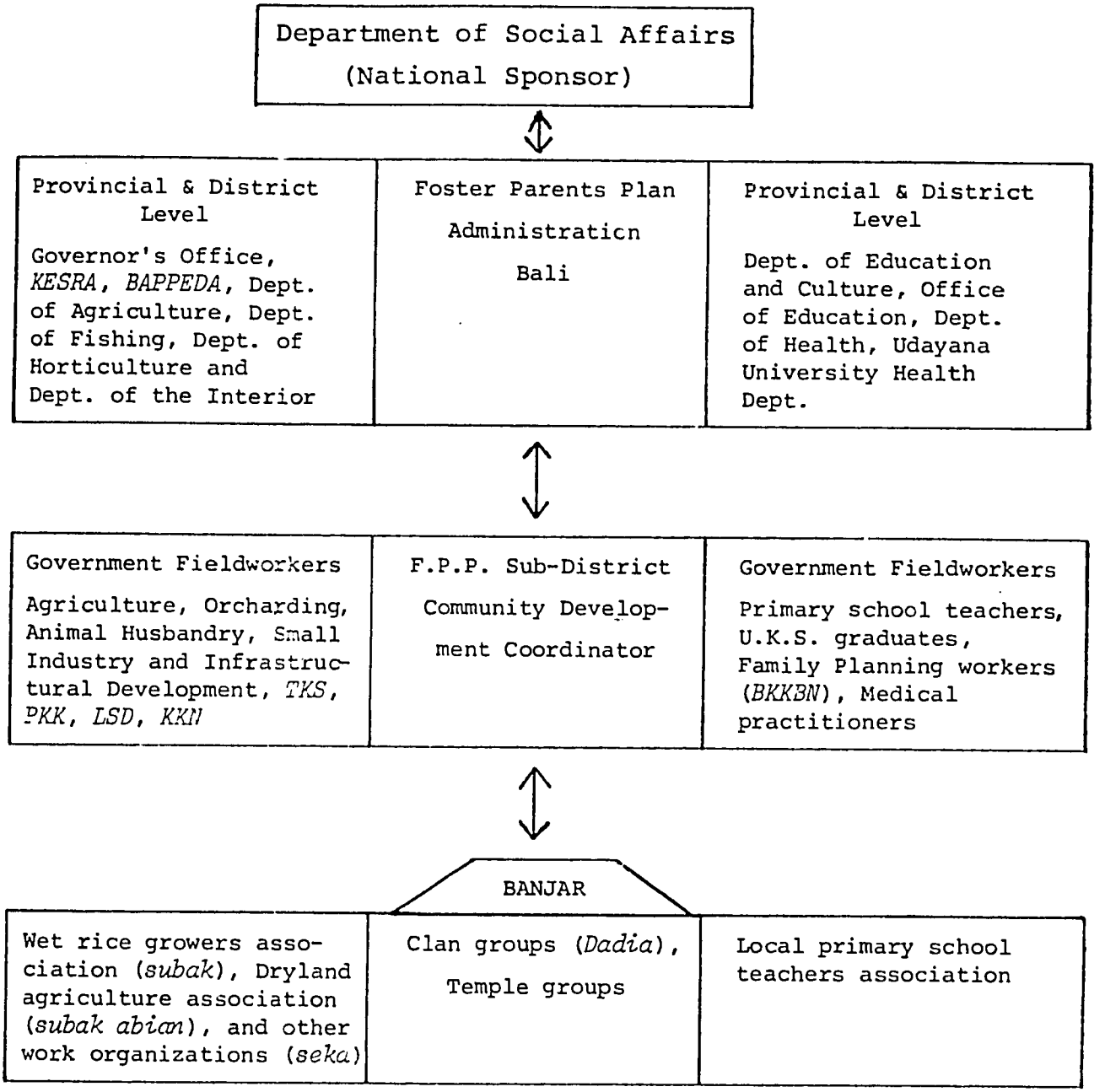
f: Friendliness and sincerity in interactions with both villagers and government workers.

g: A willingness to be hard-working and responsible to the villagers with whom one works.

h: (in eastern Bali) A knowledge of "high Balinese" (honorific style) language required for addressing public gatherings.

The senior level staff for Plan operations in Bali could assist in the development of health, education, and economic programs with representatives from relevant Indonesian government agencies at the national, provincial, and district levels, while the Plan coordinators could work with the change agents described above at the sub-district level, in implementing and adapting such programs to meet local conditions and needs. Such an organization might be depicted as shown in the chart on the following page.

Chart 4: Model Banjar Project
Organizational Flow Chart




The above discussion gives an overview of the resources and needs of the communities studied from an organizational perspective and presents an outline of how Plan Bali might

work effectively with the Indonesian government in meeting those administrative needs. To better illuminate the kinds of programmatic needs identified for the Model Banjar areas, in the rest of Chapter III examples of the type of agricultural, animal husbandry, small industry, health, and education strategies Plan might implement in cooperation with the government will be reviewed.

## Part 2. Agriculture in Irrigated (*Sawah*) Areas

Context:

In the history of pre-mechanized agriculture few societies have ever achieved the high levels of productivity characterized by wet rice farming in Bali. With traditional technology the Balinese peasant could produce twice as much rice on his land as his neighbor Javanese farmer, whose techniques are by no means unsophisticated. How have the Balinese done it? It appears that four factors are central to their traditional success as rice farmers. These include the fertility of the volcanic soil, a highly complex technology and corresponding knowledge which allows them to make maximal use of environmental systems and resources, an organizational system (*subak*) capable of coordinating use of manpower and resources, and genetic strains of rice selected over thousands of years for their disease resistance, productivity, and beauty.

However, by the mid-twentieth century, and as a consequence of continuing population growth, Balinese farmers were having difficulties meeting an ever growing demand for rice. The government's construction of large dams increased water supplies and the amount of *sawah* hectarage available; however, relentless population increases quickly compensated for these gains. In the early 1970's the government began to intensify its program to raise agricultural production (*BIMAS/INMAS*). The program

was based on peasant adoption of a whole system of wet rice agriculture, including new hybrid seeds, petrochemical fertilizers, insecticides and pesticides, tractors and rice mills. To make the new technology, which required considerable capital investment, available to farmers, the government extended credit to peasant farmers on a generous basis. Credit was supplied through either the *Koperasi Usaha Desa* (*KUD* = Village Activities Cooperative) or the *Badan Urusan Usaha Desa* (*BUUD* = Committee for the Administration of Village Activities). Usually either one or the other of these government programs has an office at the sub-district level. These organizations are primarily responsible for providing credit for and organizing the distribution of the seed, fertilizers, and pesticides required for hybrid rice cultivation. They also run rice mills in most of the areas studied in the Model Banjar survey.

In Banjar C where both the new hybrid rice is grown along with the traditional rice, we found that the yield per hectare for new rice was 2050 kgs. per harvest. From traditional strains an average yield of 1400 kgs. of clean rice (*beras*) was achieved. Similar yields for traditional rice were also found in Banjar A, B, P, and Q. While the increase in yield is clearly considerable, the additional costs for petroleum based inputs (i.e. fertilizer and pesticides) tend to offset it. Equally important are the long-term costs, whose extent is as yet unknown, of

altering the traditional cultural ecology of the wet rice system.[2]

How can Plan best assist low-income wet rice farmers in areas in which it currently operates? In the past Plan has worked successfully with the wet rice growers' organizations (*subak*) in granting aid for materials and skilled labor in the repair, improvement and cleaning of dams and water canals. The improvement and maintenance of irrigation systems is important to the productivity of new rice and traditional rice growers alike and is a program Plan should continue to support in rice growing areas in which they operate.

In the following pages other strategies to assist low income wet rice farmers will be discussed.

## New Cash Crops: Project A'

While the Indonesian government has been investing much time and capital in the "new rice" program, in the eastern Bali area it has not yet developed any significant programs to help farmers produce other cash crops. One such crop, very successfully grown by wet rice farmers in the south Bali area, is the papaya. Both the indigenous Balinese papaya varieties, as well as such hybrids as "papaya Thailand" should produce well under conditions in the eastern Bali area. Papaya has been grown in eastern Bali for centuries, usually only on poorer land in house-yards. If farmers are to grow papaya on a large scale for

cash, they will require a system of marketing capable of transporting the ripe fruit quickly and safely to the major markets in southern Bali. However, such requirements should provide excellent work opportunities for the wives of papaya farmers who in banjar such as P and Q are already involved actively in the agricultural produce trade. The greater abundance of fruit in the community should also help improve diets currently low on fruit.

Objectives:

To increase the cash income of wet rice farmers.

To diversify the source of income for farmers in wet rice areas.

To create additional marketing jobs for women in wet rice areas.

To increase the intake of fruit (high in vitamin C) for individuals living in wet rice farming areas.

Method of Implementation:

Initially, Plan should discuss the possibilities of assisting the Department of Agriculture (*Dinas Pertanian*) in establishing papaya growing programs in certain areas of eastern Bali. A Plan coordinator should then discuss possibilities for a papaya program with the district and sub-district level agricultural extension workers (*penyuluh pertanian lapangan*) and when a specific strategy is designed, present it to local *subak* at their regular meeting to assess their interest in attempting to grow papaya, at first on a limited basis. Plan could assist in providing some

financial assistance to families who miss a rice harvest while waiting for the trees to begin bearing fruit. Plan could further assist *subak* attempting to begin growing papaya by arranging for farmers from other areas who have had considerable experience growing the crop to come as advisers to the *subak* while they are experimenting with the new crop.

Pond Fisheries: Project B'

One of the greatest resources of wet rice farming areas is their water. Currently wet rice fields in a few areas of eastern Bali (including Banjar A and B) are being used to breed such pond fish as carp (*karper*) and gurami. These fish can be sold profitably to restaurants in southern Bali for Rp. 600 (US$ 1) for a gurami of hand size. Because of the fertility of the soil and wealth of organic material in the water, farmers who have experimented with pond fishing on a limited basis claim the fish grow quickly with little additional feeding. Because it is possible to grow hundreds of fish on a quite small parcel of land, the cash income from pond fisheries can be considerably greater than that from growing wet rice. Farmers claim the greatest problems in growing fish in their fields involves acquiring fish fry, guarding them from thieves, and getting them to market in southern Bali. Plan, working together with the Department of Fisheries and local *subak*, should be able to assist farmers in dealing with such problems.

Objectives:

To increase the cash income of wet rice farmers.

To diversify the source of income for farmers in wet rice growing areas.

To create additional marketing jobs for women in wet rice areas.

To increase the protein in diets of people living in wet rice areas.

Method of Implementation:

Plan should work with the Department of Fisheries at the regency level to develop a system capable of supplying interested *subak* with fish fry and helping them to develop a marketing network. The Plan coordinator, together with the local level fisheries fieldworker, should meet with *subak* to explain how they could be involved in a pond fisheries project. As in the case of the papaya project, a farmer from another area who has had experience and been successful in working with pond fish should be contracted to work with the *subak* during the implementation of trial ponds in the *subak's* watercourse.

## Part 3. Agriculture in Dryland (*Tegal*) Areas

Context:

The productivity of most dryland farms in the banjar studied was low both in terms of cash and caloric output. The primary dryland crops grown in the area included corn, cassava, coconuts, legumes, tapioca, and a number of other tubers. Of these crops only legumes and coconuts have a relatively good cash value on local markets. However, because yields tend to be very low, few farmers earn more than Rp. 35,000 (US$ 56.00) per hectare of dryland each year.

Corn production was particularly low, in spite of the vast areas of land used primarily for that crop. In one banjar (O) the average yield was only 1280 ears per hectare. In other banjar the entire economy is focused around the growing of the cassava plant. In one such banjar cassava production averaged 2.8 tons per hectare per year. With the planting of hybrid cassava (such as Portorico, Southern Queen, Kawa Goye-1, or Taiwan - 45), production levels could be boosted from five to ten times that of current levels. Further, traditional cassava varieties need to be analyzed in terms of their nutrients (and arsenic levels), as some tubers are a much better food source than others. The switching from one tuber crop to another would probably involve some difficulties, but could result in considerable benefits for communities whose

economies revolve around that single crop.

Currently, there appear to be few ongoing programs designed to improve the productivity (both in terms of yield, cash, and nutritional value) of small dryland farmers. In the following pages examples of such programs will be presented.

High Yielding Corn Crops: Project C'

Corn is an important primary or secondary crop in most of the model banjar studied. Unfortunately, the average yield from the traditional strains of corn grown in the area is very low. Corn is a good source of calories and of protein, but only if mixed with lime to unlock the amino acid tryptophan. Considering that rice (the locally preferred staple) is in short supply in the eastern Bali area, from a nutritional standpoint corn would be a much better staple than cassava, which is currently the primary food.

The high-yielding corn varieties can produce up to 5000 kilograms of dried corn kernels per hectare if the land is fertile and the right techniques applied. Such yields are five to ten times greater than those of local farmers growing traditional strains. However, to grow the hybrids local farmers will have to have the benefits of the new crop demonstrated to them. A network to supply both seed, fertilizers and fungicides will have to function reliably. Further, it should be recognized that in some areas the

hybrid strains will not be appropriate. This may result from very infertile soils or logistical problems which make the supply of seed, fertilizer and other inputs difficult and irregular.

Objectives:

a: To raise the productivity of small farmers and tenant farmers.

b: To improve the diet of families in the eastern Bali area.

Method of Implementation:

Plan could assist the Department of Agriculture and the local agricultural field worker and the farming cooperatives (*BUUD* and *KUD*) to start demonstration plots. Students and teachers at Udayana University's faculty of agriculture could help choose appropriate corn strains and locations where such trials could be made. In areas where the corn did well, a network to supply the required farming inputs could be developed. Such strains as Bogor Composite 2 (which has already been tested in Bali by an UNUD team), AH 5, AH 8, AH 10, Kretek, Kidang, and Ganjah Kertas might be suitable to some eastern Bali communities.

It is essential that the Plan coordinator ensure that the local agricultural associations (*subak* and *subak abian*) are involved from the outset in such a project, with local farmers (or tenant farmers) helping in the running of demonstration plots. In the past there has sometimes been a tendency for trial crops to be grown within the confines

of the local agricultural station where local farmers have little ability to observe and participate in the experiment. Farmers in Banjar A and other areas who grow hybrid corn should be helped (both with transportation and an honorarium) to visit areas interested in trying the new corn to relate their own experiences.

Tree Crops: Project D'

In recent years some farmers in eastern Bali have begun to experiment by growing such tree crops as citrus, *salak*, cloves, coffee, vanilla, and guava for cash. Two notable successes have included the *salak* groves in the Sibetan area and the citrus groves of the arid Kubu district. However, in other areas (including Banjar C, D, H, J, K, M, and R) farmers are planting tree crops both on their own or with the assistance of government projects, but are generally doing poorly (characterized by a high loss of trees planted and generally low production). These farmers frequently do not know which crops will grow best and in which places, how to prevent fungus infestations, or how to prune and cultivate the tree crops on an intensive basis. With technical assistance and better information regarding growing techniques, tree-crop cultivators might receive the full benefit of this activity.

Objectives:

a: To increase the cash income of dryland farm families.

b: To develop new marketing opportunities for local women.

c: To supplement food sources in the area.

Method of Implementation:

Plan could provide a considerable service to local farmers by arranging for farmers from other areas of Bali with experience growing various tree crops to visit sites where new crops are being tried. Such experienced farmers could meet with the local extension worker for orchard crops (*penyuluh perkebunan lapangan*) and the dryland farmers association (*subak abian*) to discuss local crop problems and potential. The consultant could examine growing conditions in different areas and visit individual farms, following up on their progress periodically. Individuals selected to work as consultants should have had a number of years experience successfully growing the crop required, preferably in different types of areas. Farmers in the Tabanan regency and the upland areas of Buleleng regency have been particularly successful with coffee growing, while the Pupuan area is known for its excellent clove production. In that area the *subak abian* assist farmers by lending them capital and helping them acquire seedlings, fungicides, and fertilizer. Similar models could be adopted in eastern Bali.

Plan could also arrange for successful citrus farmers from Kubu district to visit farmers in Seraya who have been having difficulties getting their citrus orchards going.

Plan could also help the Department of Horticulture (*Departemen Perkebunan*) arrange a program to assist interested *subak abian* in establishing credit and a materials distribution system for member farmers.

## Part 4. Animal Husbandry

Context:

As pointed out in Chapter II, in the areas studied livestock was a primary reserve for family savings. The keeping of farm animals also created jobs for family members who otherwise would have had less productive tasks to occupy themselves. As we mentioned, while livestock raising was found to be an important source of income, poorer families who could not afford to buy their own animals, but rather raised their neighbors' cows and pigs (i.e. became "share herders"), received a much smaller return for their labors.

In the area of livestock raising Plan could assist local families and the government's Department of Animal Husbandry (*Departemen Perhewanan*) in a number of ways. First, Plan could assist in increasing both in quantity and quality local livestock holdings. Second, it could help poorer families own more of their own farm animals. Other constraints inhibiting the growth of local livestock holdings include shortages of water and fodder, and disease. Plan, by helping to alleviate these barriers, could contribute much in preparing the ground for the expansion of animal husbandry activities in the eastern Bali area.

In the following pages specific ways of implementing the kinds of programs discussed above will be reviewed.

Cattle Ownership Expansion: Project E'

Cattle play a major role in both the economy and the cultural ecology of most Balinese villages. Aside from being a means of saving resources and providing work, cattle are used to plow the land and supply the fertilizer essential for good agricultural yields. Plan, by helping families to own cattle or expand their cattle holdings, will increase opportunities for work and family income, as well as the fertility of local farmlands. Additional fertilizer is particularly important for families attempting to grow such new fruit crops as citrus, cloves, and coffee. Thus, cattle expansion programs should be considered in relationship to other agriculture projects being initiated in the area.

Objectives:

a: To increase cattle ownership among low income families, and thereby to raise their income and their resource reserve.

b: To create more work opportunities for low income families and to raise the productiveness of animal husbandry activities of low income groups.

c: To improve local growing conditions both for new and traditional crops.

Method of Implementation:

The Plan coordinator would work with the local animal husbandry extension worker for the sub-district (*penyuluh perhewanan lapangan*) and with local village leaders to identify groups or organizations through which cattle could

be distributed. In some cases the *dadia* (clan), and in others the banjar, *subak*, or youth association (*sekaa teruna-teruni*) might be most appropriate networks for the project. The coordinator and government field worker would then meet with the group's leaders and members to discuss how the program would be run.

The program would provide one heifer for each third family. The families receiving animals would be chosen by the group on a random basis (lottery system). Each family receiving a calf would have to agree to provide two other families in the group with calves when born in an order determined by the lottery. Once all families in the group had received an animal the original family would be free to keep the subsequent calves (and cow) or to sell them. The program would use Balinese cows (*sapi Bali*).

Any cattle expansion project should not be initiated until it has been determined that there is sufficient fodder available in the area for the increased herd. Generally, all livestock projects should be implemented in conjunction with a livestock fodder program (see Project G').

A program similar to the cattle project could be initiated by Plan to assist village women (who traditionally are responsible for pig raising) to gain greater income from their piggeries. Such efforts could be run through local women-traders associations (*sekaa dagang*), or other women's groups (such as the *PKK*). Either Balinese pigs or the offspring of traditional pigs crossed with the "saddleback"

variety could be used in such a program, depending on what the community group desired to raise. The new hybrid pigs grow faster and have a higher lean meat content, but require a more specialized diet and may be less resistant to local diseases.

Poultry Vaccination: Project F'

A greater proportion of the families studied raised chickens than any other form of livestock. Chickens are used by villagers for both ritual needs and as a source of ready cash. Unfortunately, for some time the chickens owned by village families throughout Bali have been threatened by Newcastle disease (in Balinese, *gerubug ayam*). This disease in a period of a few days can kill 60 to 90% of the chickens in a village. Fortunately, an effective vaccine is available and is currently being distributed by the Department of Animal Husbandry. While the vaccine is given out free of charge or at a very small cost, most chickens are not innoculated regularly (to be effective the vaccine must be given every six months) due to a poor distribution system. Plan could contribute to the success of the government's vaccination campaign in the manner discussed below.

Objectives:

a: To increase the income of poorer families engaged in poultry raising by reducing the incidence of poultry death from Newcastle Disease.

Method of Implementation:

The Plan Coordinator would visit, together with the local animal husbandry extension worker, all Model Banjar and help them select three vaccinators from the community. These people could be trained in the simple techniques of chicken vaccination and would be responsible for collecting the vaccine at the local animal husbandry department office twice a year on a date fixed by the banjar members at their monthly meeting. On that day banjar members could bring their chickens to a predetermined place (usually the banjar meeting hall) to have their chickens inoculated, for a contribution of Rp. 5 per chicken. This contribution would be given to the chicken vaccinators to reimburse them for their time and the cost of their transportation in picking up the vaccine. The vaccinations should be conducted in the evening and night (after the chickens have come home to roost). Such a localized poultry vaccination effort could also be organized through clan groups (*dadia*) or the youth association (*sekaa teruna-teruni*). Local students, either mature elementary school students or secondary school students, could be involved in the program as vaccinators and publicizers of such a campaign.

Fodder Expansion: Project G'

Increasing the availability of fodder is essential if cattle and pig holdings in eastern Bali are to be expanded. In-depth interviews indicated that a primary reason that

local families own no more than one or two cows and several pigs is the shortage of fodder. If herd sizes are increased under current conditions the resulting pressure will accelerate the loss of ground cover in many areas. The Indonesian government has started to respond to this problem by encouraging the planting of high yielding fodder shrubs and grasses (these include *gamal*, *lantoro*, and *kaliandra*). As a side benefit some fodder plants help to improve soil conditions. Fodder programs would be particularly beneficial in areas with large expanses of marginal farmland which produce very low yields when other crops are planted (such areas include Banjar D, G, J, K, M, O, R, and S).

In addition to fodder growth programs, the government has started a program to demonstrate how farmers can collect grass growing during the rainy season and turn it into more nutritional silage to be used during the dry season when fodder is in short supply.

Objectives:

a: To increase the quality and quantity of the fodder supply, particularly in the dry season.

Method of Implementation:

Plan could work with the Departments of Agriculture and Animal Husbandry to begin or expand fodder planting and silage projects in the Model Banjar areas. However, for such a program to be successful it is essential that before local programs are started the full support and interest of

banjar families is established.

The fodder program might best be administered in coordination with the local dryland farmers association (*subak abian*) or with whatever groups are being used for the livestock expansion efforts (Project E'). The Plan coordinator could assist the agricultural extension worker in arranging meetings with groups interested in expanding their cattle holdings or for the demonstration of silage processing methods.

Part 5. Fishing

Context:

In the fishing communities studied the majority (52%) of the families derived at least some income from this source. Most men fish from small one-man sail boats (*jukung*) trolling two lines, one over each outrigger. The boats are grouped into fishing organizations (*sekaa nelayan*). They sail together in groups for safety, going out usually from 2 to 4 miles from shore for anywhere from 6 to 10 hours. The catch is highly variable depending on the season. During the height of the fishing season in October and November, if the *sekaa* finds a large school each boat can catch a hundred fish or more. However, during the rainy season (January and February) it is often difficult to fish at all, and during other times of the year a man may only catch a few fish each trip if he catches any at all. Of the 72 fishing families surveyed their mean yearly net income from fishing was Rp. 73,000 (US$ 115.20). However, some fishermen do not own their boats and must give one-half their catch to the boat owners.

Sometimes the fish are bought while the fishermen are still at sea by traders in boats; more frequently the fish are carried by local village women (*buruh awan*) to a pick-up station where wholesale traders collect the fish. These wholesale traders take the fish to regional trading centers and after selling the fish return several days later

to give the local women a share of the profits.

While it is difficult to suggest technological changes that would improve fishing production while maintaining job opportunities, there are ways that Plan can assist the local fishing banjar and the government's Department of Fishing (*Departemen Perikanan*). The government is currently completing the construction of a fish marketing facility at Amed. Plan could help Model Banjar to participate in this new facility. Plan could also help fishermen who do not own their own boats to buy them. Projects could be started that would allow the local fishermen to process their own fish by smoking them and thereby to raise their income from fishing-related activities. In the following pages such programs will be discussed in detail.

Fish Marketing Assistance: Project H'

Plan could provide credit and organizational help to groups of local women (*buruh awan*) who currently carry the mackeral catch for larger traders. These women could take over the responsibility for getting the catch to the regional markets and thereby keep a greater percentage of the income from fishing within the village.

Objectives:

a: To better develop local fish marketing organization and to increase local income from fish sales.

Method of Implementation:

The Plan coordinator would work with the local women

to develop marketing contacts at provincial centers and a means of transporting the fish to those markets. The organization of mackeral marketers (*sekaa buruh awan*) would select leaders and decide on a rate of payment for the fish which would allow the organization to maintain some income to offset expenses. Plan could provide initial capital required for storage facilities and transportation. Eventually the *sekaa* would be able to lend oney to member traders for other activities.

Fish Processing: Project I'

The processing of a foodstuff generally considerably increases its cash value in comparison to the worth of the same unprocessed food. For example, while one kilo of raw mackeral may bring approximately Rp. 300, the same amount of fish after being smoked is worth Rp. 1000. The hotels and restaurants of southern Bali increasingly demand smoked fish, and if fishing villages in the east could prepare their catch for this market their income from fish could be boosted considerably.

The Department of Fishing is aware of this need and is currently being assisted by the German Agency for Technical Cooperation to develop such in industry in the Kusamba area of eastern Bali. Plan could assist the fishing department in establishing similar programs in Model Banjar fishing communities (Banjar R and S) and other fishing villages where Plan operates. Such a program could be run in the following manner:

Objectives:

a: To raise income from fishing activities.

b: To create additional employment in the fishing sector.

Method of Implementation:

Once the groundwork for such a program had been established with the Department of Fishing, the Plan coordinator would meet with the leaders of the local fishing community to discuss which organization might be most appropriate to run such a program. In most cases a women's group, such as the *sekaa buruh awan* or the *PKK*, might be most useful since the actual smoking operation will probably be performed by women. While the process itself is not a complex one, it does require that a continuous supply of coconut husks (for fuel) from the surrounding areas be established.

Plan could assist in developing the organizational capacity of the community to produce and market their fish. Local women could be trained at the pilot project site in Kusamba. Plan could also help by providing the materials initially required to begin operations. Local fishermen would be encouraged to go after the fish (e.g. *ikan tongkol*) best suited for smoking by the higher profits resulting from that catch.

Fishing Equipment: Project J'

In the case of fishing equipment costs can be considerable. Plan could provide a great service to local fishing

organizations by helping them to establish credit unions and equipment stores to supply members with needed materials. Plan could also enable fishermen from low income families who do not own their own boats to gain possession of them through credit union loans or outright grants.

While outboard engines do little to increase fishing yields and lead fishermen to be reliant on outside energy sources, they do provide a margin of safety for the fishing fleet. Plan could provide each fishing organization with an outboard engine to be used for rescue operations and as a boat to scout out schools of fish. Eventually, basic sonar fish finding equipment might be procured for the organization.

Objectives:

a: To increase fishing yields by insuring the supply of basic fishing equipment at low prices.

b: To increase the safety of local fishermen while at sea.

Method of Implementation:

All fishing equipment projects would be carried out in conjunction with the Department of Fishing. Plan coordinators would work through the local fishing organizations (*sekaa nelayan*, or *mancing*) to establish credit unions. Plan would assist low-income fishermen to gain ownership of a fishing boat.

## Part 6. Small Industry

Context:

Considering the limitations on the land of eastern Bali, both in terms of small holdings and increasing population pressure, small industries represent one of the greatest potential sources of increased income and job opportunities. In southern Bali many villages have developed small industries producing a range of handicraft items which are sold to the hundreds of thousands of tourists who visit Bali each year and to foreign exporters. These handicraft items include paintings, carvings, clothes, toys, baskets, and a range of other goods.

In eastern Bali, while virtually no industries have yet been developed to cater to the growing tourist market, many villages do have handicraft or cottage industry traditions. Such activities include textile weaving, mat weaving, honey production, carving and liquor distilling, to name only some. Unfortunately, many of these activities are not run as efficiently as they could be and consequently they operate at a very low volume and the earnings per hour worked are extremely low.

In the following chapter example projects will be presented to demonstrate how Plan could assist local banjar to develop new cottage industries and make traditional ones run more efficiently.

Large Loom Weaving: Project K'

Bali is famous for the variety and quality of its traditional *ikat* (literally, "tie", where the pattern is tie-dyed into the threads before weaving) textiles, as well as a variety of other handloomed products. To produce different types of textiles different looms are used. In the eastern part of the island small looms are frequently used to produce *songket* and other types of woven goods. Unfortunately, because of the long hours required to make a *songket* and the lack of a good market for them, weavers can earn little at this job and there is little potential to expand the industry.

In southern Bali, particularly in the town of Gianyar, a large, thriving weaving industry exists. Weavers use a large loom to produce *kain ndek* (cloth that both men and women wear to cover the lower body). In Gianyar along hundreds of women are employed tying threads, as thread dyers, and as weavers. These workers make many times what the women of eastern Bali make, because their looms are more efficient, and because of the large demand among Indonesians and foreigners for their textile.

While the *songket* represents an important weaving tradition that should be preserved, many of the weavers of eastern Bali could transfer to larger looms. How such a program could be started and the role Plan might play will now be discussed.

Objectives:

a: To increase the earnings of local weavers.

b: To assist in the expansion of the weaving industry in eastern Bali.

Method of Implementation:

In any area where a large loom weaving project is being initiated a weavers' cooperative should be formed. The Plan coordinator would first meet with all local weavers and prospective weavers at a meeting called by the banjar headman. Plan would offer to supply the large loom equipment and technical and marketing information if the local weavers were interested in participating in the program. The weavers could then form a cooperative with the members selecting their leaders.

Plan would contract several weavers experienced in the use of the large loom from the southern Bali area to visit the new cooperatives and help the weavers adjust to the new larger looms. Later Plan would assist the cooperative in developing marketing outlets for their woven goods. Source outlets might include stores in the southern Bali area in order to better capture the tourist market.

*Arak* Producers' Cooperative: Project L'

For decades the families of Banjar O and S have been producing *arak* (distilled liquor) from *tuwak* (palm wine) made from the *lontar* palms which are abundant in this arid region of eastern Bali. Almost 80% of the village families

have stills in their kitchens from which they can produce an estimated hundred litres of *arak* a year per family. Most families produce the *arak*, in part, to establish credit with the ten women who lend rice, cassava, and dried fish, and who buy the *arak* in return. After considering the cost of firewood, the average family produces about Rp. 40,000 (US$ 64.00) worth of *arak* each year. The women who buy the *arak* sell it in villages throughout the district.

Initial study shows that *arak* production could be boosted considerably. Further, like the rice wine (*brem bali*) which has already found a good market among foreign visitors, *arak* could sell well and at a good price if bottled properly for marketing to tourists. With some assistance from Plan, Banjar O and S could turn a traditional solid, low-efficiency cottage industry into a much higher-yielding enterprise tied into the larger economy.

Objectives:

a: To increase the communities' ability to produce *arak*.

b: To capture a larger, provincial market, and to generally increase the income of local families.

Method of Implementation:

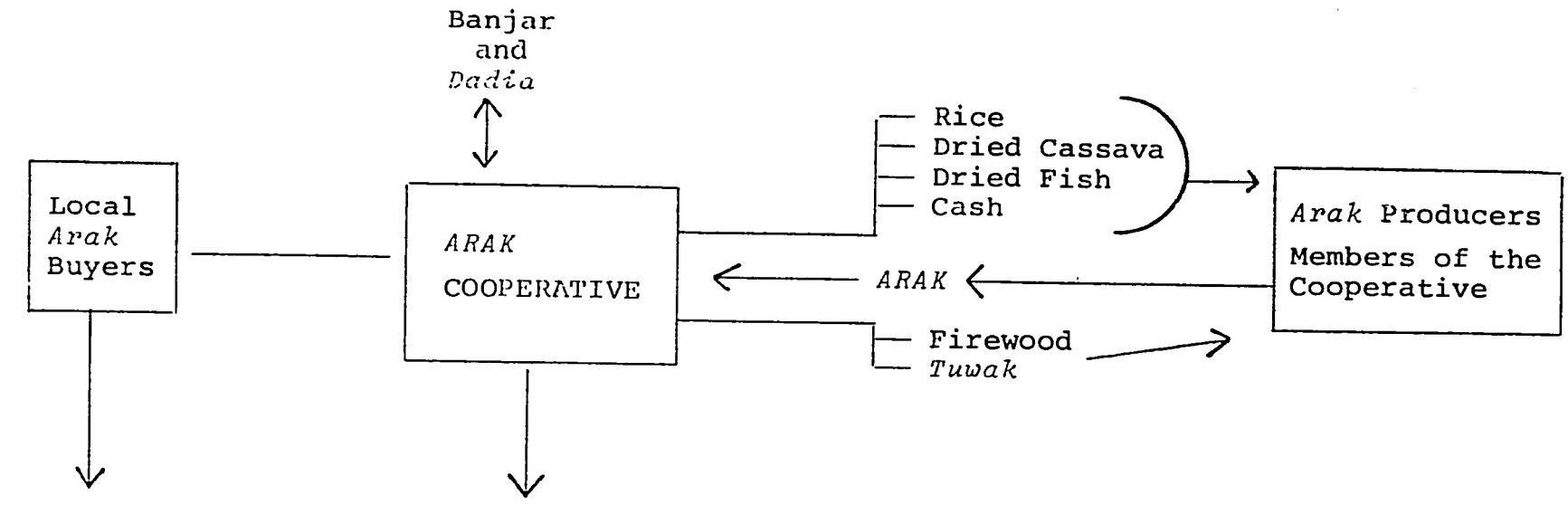
A Plan coordinator would first meet with banjar and *dadia* leaders to discuss their objectives and ideas about an *arak* producers' cooperative. Once an agreement had

been reached as to the make-up of the cooperative and its leadership, Plan would assist with the materials required for an *arak* bottling building with running water. The cooperative would be responsible for bottling the *arak* and getting it to provincial level markets. The traditional local buyers could continue to buy from the cooperative to sell in local markets and in surrounding villages. Plan would assist the cooperative while it was setting up its bottling and marketing systems by contracting a local *brem*-bottling expert from southern Bali to advise the cooperative.

Aside from bottling and marketing *arak* for local families, the cooperative could provide credit to member families for the purchase of *arak*-making materials, rice, cassava and fish. The cooperative would also buy firewood (and possibly *tuwak*) on a wholesale basis and then sell them at cost price to member families to lower production costs. The functions and organization of the *arak* cooperative are diagrammatically depicted on the following chart.

Chart 5:

*Arak* Producers' Cooperative: Organizational Chart




Local Market
(small scale,
short term)

1. *Pasar* (market)
2. *Warung*
   (coffee-stall)

Provincial Market
(large scale, long
term)

1. Hotels
2. Restaurants
3. Shops

Organizational Requirements

1. Cooperative office - License
2. Trade office - Trademark
3. Health office - Health Certificate

Technical Requirements

1. Sanitary bottling procedures
2. Trademark design
3. Advertising and marketing strategy

Handicraft Making: Project M'

The Balinese have a reputation throughout the world for their sense of aesthetics and their skilled hands. In some areas of Bali much of the income supporting entire communities comes from carving masks and statues, or weaving hats and baskets which are sold primarily to tourists, or exported in quantity to the U.S.A., Japan and Europe. These activities have grown rapidly in southern Bali over the past two decades as the number of foreign visitors has increased. In eastern Bali, however, the tourist-oriented handicraft industry has not yet developed. Plan could assist interested banjar in developing traditional handicrafts for this new market.

Objectives:

To increase employment opportunities and raise the income of families in banjar of eastern Bali.

Method of Implementation:

The Plan coordinator could work either with banjar or *dadia* organizations to select a handicraft appropriate for the community. The selection should be based upon traditional skills possessed by group members, the availability of required materials (e.g. wood, *lontar* leaves, bamboo, etc.), and the demand for the item among foreigners in markets in southern Bali. Traditional crafts should be encouraged. Once a type of handicraft has been selected, Plan could arrange for an artisan skilled in the manufactur-

ing of that item to visit the group and train them or update their skills. The consultant (probably from one of the artisan centers in southern Bali) would help the group identify popular designs, and if required, sources of supply for necessary materials. Plan could provide tools and the capital required to get the cottage industry running during the initial production period. In some cases local group members could first reside and study in one of the artisan communities of southern Bali. Plan would assist the group in finding a marketing network for their handicrafts.

One banjar in the area studied had already begun a tourist oriented handicraft business. They made small replicas of the double outrigger sailboats (*jukung*) used by the fishermen of the area. This activity proved to be quite successful, providing the families involved not only with a fair income, but also with marketing jobs in southern Bali.

## Part 7. Skilled Trades

Context:

Earlier in this report we discussed how some banjar have historically been involved in a skilled trade. In one case banjar members work as blacksmiths serving the surrounding area, while another community or clan may have had a traditional relationship with the regional court, serving as goldsmiths. Communities involved in such activities have the advantage of not being solely dependent on agriculture and livestock for their income. Further, while the income from agriculture for farm families is constrained by population growth, the demand for skilled trades may grow. In the area of eastern Bali studied, income from most skilled occupations is good in comparison to that earned by many small farmers and tenant farmers. For example, while skilled workers averaged Rp. 108,000 per year, unskilled construction workers made Rp. 59,000, and agricultural laborers made only Rp. 24,000. Further, as in the case of the goldsmith banjar, as children became older (12 years or more) they study and join the adults in goldsmithing, contributing significantly to the family income.

The major deterrents to the expansion of opportunities for work in skilled trades include inadequate levels of training in the trade, a lack of tools, and in some areas a shortage of jobs or a lack of contacts and knowledge of how

to find work. While no local-economy development program can deal with all the above problems, it can help in some areas.

For certain trades, particularly those related to construction (where workers are required to go to a special work site), it is best to start programs in banjar near building areas (crossroads, trading or administrative centers). Banjar with a background in a skilled trade are more likely to succeed in expanding their activities than communities with no experience. New trades (or small industries) should not be introduced or encouraged in areas where those learning would be forced to compete with more experienced neighboring communities, particularly if the demand for such skills is limited. A clear market for new trade skills should be identified before time and resources are invested in developing local skills and organization.

Silversmiths' Cooperatives: Project N'

Banjar A has traditionally been a center of goldsmithing in the eastern Bali area. Today 52% of the families (all of whom are members of the same clan) living in the community earn the majority of their livelihood from smithing. As the price of gold has risen over the past few years, neighboring villagers have not been able to afford to have gold jewelry made as often and the demand for goldsmiths has declined.

At the same time, in southern Bali many traditional

goldsmithing communities have begun making silver jewelry designed for the tourist market. Because of the much greater market and better profits involved, such communities have done very well through the transition to a different metal and different styles.

The clan members of Banjar A have discussed the possibility of forming a cooperative to make silver jewelry, but are uncertain about popular styles, methods of marketing, and lack the capital for initial silver purchases and for additional tools. Plan could assist this group by providing technical training and start-up capital.

Objectives:

a: To assist a community in the transition from a skilled trade designed for a traditional market to a more profitable variant of the same trade geared for an emerging market.

b: To expand job opportunities in a skilled trade and to raise its profitability.

Method of Implementation:

The Plan coordinator should work with the goldsmith clan who would elect a steering committee for the silversmithing project. Clan members interested in participating in the project and studying silversmithing techniques and designs should be identified. The Plan coordinator could then arrange with a successful silversmith from the southern Bali area to come to Banjar A (or for members from the clan to go to southern Bali) and teach the local smiths about this new variant of a traditional craft. Plan would

also assist the clan in developing a system of marketing silver jewelry. A cooperative shop could be opened in the banjar itself where tourists are beginning to visit, or in the southern Bali area.

Construction Trades Enrichment: Project O'

A number of the banjar studied (C, D, H, L, M, and N) had members active in construction work. In-depth interviews with construction workers indicated that many of them worked as construction laborers because they lacked the skills and/or tools needed to work at better-paying skilled trades (e.g. bricklayer, carpenter). Others found they could not compete with skilled construction workers from southern Bali because they did not have enough knowledge of building techniques.

Objectives:

a: To expand opportunities in construction related trades through vocational training programs.

b: To provide capital for purchasing trade-related tools and equipment.

Method of Implementation:

Plan would work with *BAPPEDA* (*Badan Perencanaan Pembangunan Daerah* = Regional Planning Board) to develop a construction trades vocational training program. At the same time the Plan coordinators would work with banjar with some experience and interest in improving their technical skills. The tradesmen in each banjar (or several banjar)

might be encouraged to form a cooperative to provide credit to members who required tools. Eventually the cooperative could begin bidding for construction jobs against local private contractors.

## Part 8. Public Health

Context:

The evidence presented earlier in this report illuminated the high infant mortality and generally poor health conditions in the area of eastern Bali studied. Frequently-contaminated water supplies combined with often inadequately ventilated and lighted housing contribute to endemic intestinal and respiratory problems. This condition seems complicated by a general lack of awareness among the families studied concerning the source of their health problems and how they might be reduced. The Balinese are intelligent people very capable of understanding the causes of many of their health problems. Most people already understand the need to boil their water. If properly controlled, the area has sufficient water to provide the population with uncontaminated drinking water. With the necessary resources, most families in the area studied would be eager to improve their housing.

Plan, working in cooperation with government efforts, could do a great deal to alleviate the specific conditions that contribute to the perpetuation of chronic health problems. As certain health problems are alleviated and general health conditions improve, other related problems should also diminish. For example, in some areas the incidence of high fertility and infant mortality should decline, child nutrition might improve (through the reduction of intestinal parasites), childrens' performance in

school could be enhanced, while adults' productivity might also increase.

In the following pages strategies designed to eliminate specific health-related problems will be discussed.

Community Health Education: Project P'

Today in Bali hospitals exist in the 8 regency headquarters, health centers (*PUSKESMAS*) staffed by doctors operate at the district level, and clinics staffed by nurses run at the sub-district level. At the banjar level frequently no curative health services are available, and this can be a problem for communities situated far from the sub-district center.

Preventive health measures are even less comprehensive. Currently, the only ongoing preventive health programs in the area studied were the periodic and often erratic smallpox, TBC, and cholera vaccination efforts. The government has already identified these problems and both private and public programs have been designed to help alleviate them. Unfortunately, a lack of funding and trained personnel has not allowed them to be developed and started on a large scale. Plan could assist the Department of Health in their efforts to initiate such programs in Model Banjar communities.

Objectives:

a: To increase banjar members' understanding of such health problems as fecal contamination of water,

parasites, and nutrition deficiencies and how they can be reduced.

b: To provide basic first aid within the banjar through the training of paramedics and the establishment of health posts.

c: To raise the health levels of children and adults within the community.

Method of Implementation:

Plan, working with the Department of Health, would assist banjar interested in participating in forming a banjar health committee. The committee would consist of the local *kelian* (headman), resident teachers, local health practitioners, and other local group leaders (e.g. heads from the local *PKK*, *sekaa teruna-teruni*, *dadia*, etc.). The Plan coordinator would then arrange for a Department of Health educator to meet with the health committee to explain basic public health theory and the kinds of health problems common in the area. The group could then discuss local problems (site of drinking water, defecation, chronic sicknesses) and possible solutions.

The health committee would then hold an open meeting with all banjar members to discuss what they had learned and how local health problems might be reduced. The banjar could select candidates for training as paramedics able to treat the most basic problems. The community could then establish a health post where first aid supplies could be kept and assistance administered. In one village in Bali a banjar established a cooperative health insurance program

(*dana sehat*). If a banjar was interested Plan could arrange for one of the leaders of that health cooperative to come to the banjar and explain how they organized the group. The health committee, in conjunction with the health post, could organize a vaccination campaign for pregnant women and children in the banjar.

If the banjar health committee discovered contaminated or inadequate water to be a major health problem Plan could provide assistance in the form of the next project to be discussed.

Drinking Water Systems Development: Project Q'

Two conditions which are prerequisites for good public health are uncontaminated drinking water and a sufficient supply of water nearby for bathing and washing clothes and dishes. Among the banjar studied, most lacked one or both of these conditions. As we reported earlier in this paper, some communities were located five kilometers or more away from the nearest source of drinking water during the dry season. In other communities when the drinking water was periodically contaminated isolated cholera cases would begin to appear. The government has tried to start programs to install outhouses in a number of areas, but adoption is slow and unless a large majority of the families build and use the new facilities regularly, the chance of fecal contamination remains high. It seems that a more effective approach may be to control the water itself,

rather than the feces. While the construction of piped water systems is a relatively expensive proposition, the benefits of such an effort are many and long-lasting. Further, one of the major difficulties in the adoption of outhouses in the past has been an absence of water for washing after defecating. Consequently, by providing a greater access to water, the possibility of the success of other public health programs would be enhanced. The availability of clean water within the banjar would also allow for the development of more and better food-processing cottage industries, such as bottled *arak*, smoked fish, shrimp chips and rice-flour confections.

Objectives:

a: To provide a close supply of uncontaminated drinking water to the community.

b: To provide a close supply of water sufficient for washing dishes and clothes, bathing, and other health needs.

Method of Implementation:

The Plan coordinator would work with the banjar health committee to identify the extent of the need for water and possible sites for a piped or rain catchment water system. Once a project had been proposed by the banjar the Plan coordinator would consult with the local government's water project, if such an effort exists. In assessing the technical feasibility of the project the Plan coordinator could help enlist the assistance of Public Works (*Pekerjaan*

*Umum* = *PU*) department technicians. Once appropriate plans had been developed Plan could provide the materials needed while the banjar provided the manpower and *PU* provided the technical expertise. The Plan coordinator should ensure that the banjar has permission to use the water source and that no one will object to laying pipe across the required land.

Housing Improvement: Project R'

Inadequate housing is also an area that appears to contribute to health problems in the area studied. We found that over 83% of families had only dirt floors in their homes. Dirt floors are, of course, difficult to clean, and frequently provide a habitation for parasite eggs during part of their life cycle.

It was also found that one third of the families did not have a separate kitchen. Most of the families cooked with wood and the resulting smoke in the poorly-ventilated houses frequently aggravated or contributed to the development of various respiratory problems.

Plan could assist the Department of Public Works in reducing some of these problems by supplying needy families with the materials required to construct separate cooking areas, better ventilation, and concrete or tile floors. In some cases the actual floorspace is clearly insufficient for the number of family members. In these cases an additional structure might be required.

Objectives:

a: To provide Model Banjar families with better housing by improving the ventilation, lighting, and floor surfacing in their living quarters.

b: To improve the health of Model Banjar members through housing improvement.

Method of Implementation:

Plan, in coordination with the Department of Public Works and other interested groups, would develop inexpensive means of making specific alterations on pre-existing structures designed to improve ventilation, lighting and floor surfacing. The Plan coordinator would then present the housing improvement strategies to the village leaders and the community health committee to assess local interest in such a program. If the banjar was interested a local group could be trained in techniques of home improvement by a Public Works technician. Plan would supply the group with the required materials or credit to purchase them.

A similar program could be developed which could provide designs and materials for building additional housing space.

## Part 9. Education

Context:

According to a recent government estimate 1.5 million children drop out of school in Indonesia each year. Our study showed that 43% of the primary school age (7-13 years) children in the Model Banjar communities were not currently attending school. Because of the government's intensive primary school construction program (IMPRES), most, though not all, communities now have enough vacancies for the children who desire to study at the primary level. In most areas with high non-attendance or drop-out rates the causes are related to other factors. In-depth case studies indicated that many village parents felt that education was simply not relevant to the lives and needs of their children. Some parents believed that there was little chance they would ever be able to afford to send their child to middle school (SMP), and consequently that the child's education would not help him in acquiring a skilled or civil service job. Furthermore, parents frequently felt the burden of school expenses and the loss of the child's help around the house and in farming. Even the achievement of literacy loses its value when there is nothing to read.

While the above conclusions are true enough, schools still have great potential in assisting in efforts to improve community health, education, and economic conditions. As we discussed in the introduction to this section, teachers

represent the largest group of literate, progressively-oriented individuals actually living in rural communities. The village school is an ideal place to communicate ideas and skills which are relevant to rural families. In southern Bali the government and private agencies are currently attempting to develop new educational approaches which respond more directly to the needs of rural communities. In the following pages some of these programs will be discussed in the context of how Plan might work with the government to implement them in more remote areas such as the Model Banjar sites.

Vocational Training: Project S'

A primary school and middle school in the village of Mas in southern Bali responded to a need for more relevant education in 1970 by starting a vocational training program. While keeping to the government's curriculum requirements, school leaders organized statue-carving programs after school hours. Currently, 248 students are enrolled in the carving courses. While the school does not make any profit on the childrens' carvings, the sale of some carvings is enough to cover the costs for materials and other expenses. Wood carving was selected for the Mas area because it has traditionally been an important carving center. Other areas of Bali could find different vocational specialties such as weaving, painting, theater, or smithing. Schools might also develop programs to train children in new methods of

livestock raising or agricultural techniques. Math and reading classes could involve the study of real problems arising from the marketing of students' produce.

Objectives:

To assist the Department of Education in implementing vocational training programs which will better prepare students for local economic conditions.

Method of Implementation:

Plan would first discuss with the Department of Education and Culture (*Departemen Pendidikan dan Kebudayaan*) possibilities for developing extra-curricular vocational training programs for primary and middle schools in Plan operation areas. Plan would then study the organization of the Mas program. Plan coordinators would consult with the teachers from schools in Model Banjar areas to determine the types of vocations most appropriate to the local economy. Plan could underwrite the costs of materials for vocational courses and could pay the salary of a teacher for the program from within or outside the community.

In Banjar A, local students have already formed a painting class. Assistance for painting supplies or for the provision of an experienced artist from outside the community would greatly encourage the development of this group. In other areas Plan could help a school buy a small parcel of land where a school garden could be started. Students could learn new techniques for caring for fruit crops, livestock, or hybrid corn. Under such a program there is a good chance

that much of what the children learn might be transferred to the adults in the community where the information could aid them in their agricultural and animal husbandry efforts.

School Health Education: Project T'

According to a recent study of 426 primary school students, while incidence of severe malnutrition is low, many children suffer from dietary deficiencies. The shortage of crucial vitamins and minerals in many childrens' diets results in anemia, eye disease, and general poor health. Nearly all of the school children studied had roundworms (ascaris). One public health expert feels that the eradication of this parasite alone would greatly improve the nutritional condition of many children. Many of the children also had skin infections and sores on their arms and legs.

While many of these problems will disappear only as water is more accessible for bathing, and as family economy improves, the improvement of the childrens' knowledge of health and how to maintain it should reduce the incidence of many endemic health problems.

Some years ago the Indonesian government initiated an intra-agency school health education program (*UKS = Usaha Kesehatan Sekolah*). Between 1969 and 1972 the World Health Organization assisted in the expansion of the program. The *UKS* program trains one teacher from each school in health maintenance and this teacher instructs the students from his school. Unfortunately, due to a lack of funding, the program

has not been able to supply *UKS* teachers with enough teaching materials, medicines, and in-service training and follow-up to have a major impact on student health. Plan could contribute much to the knowledge and practice of better health care among village children by working with the government *UKS* program.

Objectives:

a: To improve student understanding of nutrition, dental and physical hygiene, and health care.

b: To improve the nutritional level and health of students through the implementation of health care and nutrition programs.

c: To improve the teachers' ability to conduct health education courses by supplying them with better teaching materials and in-service training.

Method of Implementation:

Initially, Plan would identify health care teaching materials, produced in Indonesia, which could be developed into teaching units and distributed to schools in Plan operation areas. A Plan school health education specialist would go to each school to work with the *UKS* teacher. The Plan health educator would demonstrate how to use the new materials by team teaching with the *UKS* teacher the unit on health care. The students could be given roundworm treatment while being taught the source of the parasite. Tooth paste and tooth brushes could be given in connection with a lesson on dental hygiene. First aid materials could be supplied to the school together with a course in first aid care.

Balinese Language Reading Materials: Project U'

In teaching children to read, a sufficient quantity of appropriate reading materials is essential. In Balinese primary schools a shortage of both Balinese and Indonesian language reading materials exists. Some years ago the provincial education authority (*Dinas Pengajaran*), under the direction of the provincial government, began a project to compile and print school books in Balinese. The series of school books finally produced are of a fine quality and based on traditional Balinese literature. The books have been well received by teachers, but the provincial government has not yet acquired the funds to print the texts on a large scale, and consequently most schools have only one or two copies of each book in the series.

Objectives:

a: To provide any school which serves Plan client families with a complete set of the books if they request them. A set would include the following texts:

| Title | Volume | S.D. Class | Number of Copies Required Per School |
|---|---|---|---|
| *Satua Bali* | I A | 1 | 50 |
| " " | I B | 2 | 45 |
| " " | II A | 3 | 40 |
| " " | II B | 4 | 35 |
| " " | III A | 5 | 30 |
| " " | III B | 6 | 25 |
| *Gending Gending Bali* | I | 1-2 | 2 |
| " " " | II | 3-4 | 2 |
| " " " | III | 5-6 | 2 |
| Total Number of Books/School | | | 231 |

b: Increasing the students ability and desire to read Balinese and other languages.

c: Increasing the students vocabulary in Balinese.

d: Increasing the students knowledge of Balinese literature.

e: Strengthening the provincial government's regional language program.

f: Creating improved relations between Plan and the provincial government and its education branch, the *dinas pengajaran*.

Method of Implementation:

Plan should first acquire permission from the Governor's Office and the Department of Education and Culture to start the reading materials program. Plan should then meet with the head of the Team *Penyusun Buku-Buku* (Book Compilation Team) to discuss how Plan could go about ordering the texts and how much they would cost. Plan coordinators should talk with all head teachers (*kepala guru*) at all of the *Sekolah Dasar* in areas where Plan is operating. The head teachers can be asked if they require the set of texts, or part of it. If they would find the texts useful, the appropriate request form can be filled in. Once all the request forms are in the total number of texts required can be estimated and the order placed. It is advisable that Plan should have all the texts bound in plastic covers before distributing them to the schools.

This set of books could also be used by adults wishing to improve their reading abilities.

Teachers' Center: Project V'

Teachers who work in schools in remote areas (e.g. Banjar J, K, O, R, and S) frequently find they are unable to live near the school due to a lack of housing, social life, or other requirements. Consequently, these teachers often spend only a few hours a day, while teaching, with their students and then walk back to their residence, usually in the administrative center. Because of this situation, remote communities frequently do not benefit from the leadership and experience teachers can offer in village affairs. Recognizing this situation the government has planned a program to build "dormitories" for teachers in remote areas (variously termed *rumah guru* and *koperasi contoh*). Not only would such facilities allow the teachers to live in the communities in which they taught and participate more fully in banjar affairs, but such buildings could also be used as centers for other development efforts. Visiting animal husbandry or agriculture extension workers could spend more time in the area if they had such a place to stay. A reading room and health post could also be established at the centers. Sports and reading activities could be organized through the centers, as well as discussions of new agricultural or livestock raising techniques. Plan could assist the government in developing such centers.

Objectives:

To increase the impact of teachers and other government workers in remote communities by establishing centers

which would function as residences and also as bases for a variety of community-focused projects.

Method of Implementation:

Plan would assist the government in the identification of communities which could benefit by the construction of a teachers' center. Such areas would have to satisfy the following characteristics:

a: Most teachers currently live outside the community.

b: At least two to three teachers would be willing to live and work in the community if living facilities were made available.

c: These teachers would be interested in participating in after-school community activities, while living quarters would be provided rent-free.

d: Local leaders would be interested in having a teachers' center built and using the assistance of the teachers to help develop and administer certain community projects.

The Plan coordinator could help the community organize the construction of a teachers' center by providing the building materials not locally available.

Primary and Secondary School Facilities Development: Project W'

In some of the Model Banjar areas there was a shortage of vacancies for the primary school age children who desired to attend (particularly in the Seraya sub-district). In virtually all of the communities, middle schools were too far away or too crowded to be used by local children. A number of communities had attempted to develop middle schools (SMP) on their own, hoping that they would

eventually be taken over by the government. Unfortunately, at the present time the government can only offer some assistance with teachers' salaries. Middle schools, or plans for them, had already been started in all five of the sub-districts (Budakeling, Jungutan, Culik, Ababi, and Seraya) we surveyed. However, it will be difficult for them to continue or for the plans to materialize without some assistance from either public or private sources.

Middle schools are important to the development of the area because children of that age (14 to 18 years) are old enough to better learn from academic and vocational programs. There appears to be considerable support for such schools among the local community, though the resident families generally lack the financial resources to support the school and its teachers on their own. Plan could help both local communities and the Department of Education and Culture to develop middle schools in Plan operation areas by assisting in the initial construction of school facilities and the strengthening of education programs.

Objectives:

> To increase the opportunity for children in Model Banjar areas to study at the middle school level through the construction of school facilities.

Method of Implementation:

Plan would work with the local Department of Education and Culture and community middle school development committees to identify immediate needs. Such needs might include

teachers' salaries, teaching materials and classroom equipment, or construction materials. Once local education-related requirements had been established the Plan coordinator could help determine what role Plan, the local community, and the government could play in meeting those needs. Plan should not provide assistance which would make the existence of the school dependent on continued Plan aid.

On the following page a list of the Model Banjar is presented which identifies the kinds of community projects most relevant to the banjar's identified needs (see Chart 6).

# Chart 6

## Plan Programming Guide for Model Banjar Communities

| Banjar | Project Type | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A' | B' | C' | D' | E' | F' | G' | H' | I' | J' | K' | L' | M' | N' | O' | P' | Q' | R' | S' | T' | U' | V' | W' |
| **Administrative Centers** | | | | | | | | | | | | | | | | | | | | | | | |
| A | X | X | | | X | | | | | | | | X | X | | X | | | X | X | X | | X |
| B | X | X | | | X | | | | | | X | | X | | | X | | | X | X | X | | X |
| C | X | X | | X | X | X | X | | | | X | | | | X | X | X | | X | X | X | | X |
| D | | | X | X | X | X | X | | | | X | | X | | X | | | | X | X | X | | X |
| E | | | | | | | | | | | | | | | | | | | | | | | |
| F | | | | | | | | | | | | | X | | X | X | X | | X | X | X | | X |
| **Dryland Farming** | | | | | | | | | | | | | | | | | | | | | | | |
| G | | | X | X | X | X | X | | | | | | | | | X | X | X | X | X | X | | |
| H | | | X | X | X | X | X | | | | | | | | X | X | X | X | X | X | X | | |
| I | | | X | X | X | X | X | | | | | | | | | X | X | | X | X | X | | |
| J | | | | X | X | X | X | | | | | | | | | X | X | X | X | X | X | X | |
| K | | | | X | X | X | X | | | | | | | | | X | X | X | X | X | X | X | |
| L | | | | X | X | X | X | | | | | | | | X | | | X | X | X | X | | |
| M | | | X | X | X | X | X | | | | X | | X | | X | X | | X | X | X | X | | X |
| N | | | | | | | | | | | | | | | | | | | | | | | |
| O | | | X | X | X | X | X | | | | | X | | | | X | X | X | X | X | X | | |
| **Wet Rice Farming** | | | | | | | | | | | | | | | | | | | | | | | |
| P | X | X | | | X | X | X | | | | | | X | | X | X | | X | X | X | X | | |
| Q | X | | X | | X | X | X | | | | | | X | | | X | X | X | X | X | X | | |
| **Fishing** | | | | | | | | | | | | | | | | | | | | | | | |
| R | | | X | X | X | X | X | X | X | X | | | X | | | X | X | X | X | X | X | X | X |
| S | | | X | | X | X | X | X | X | X | | | | | | X | | X | X | X | X | | |

Chart: (continued)

| Project Type | |
|---|---|
| Designation | Description |
| A' | New Cash Crops |
| B' | Pond Fisheries |
| C' | High Yielding Corn Crops |
| D' | Tree Crops |
| E' | Cattle Ownership Expansion |
| F' | Poultry Vaccination |
| G' | Fodder Expansion |
| H' | Fish Marketing Assistance |
| I' | Fish Processing (Smoking) |
| J' | Fishing Equipment |
| K' | Large Loom Weaving |
| L' | *Arak* Producers' Cooperative |
| M' | Handicraft Making |
| N' | Silversmiths' Cooperative |
| O' | Construction Trades Enrichment |
| P' | Community Health Education |
| Q' | Drinking Water Systems Development |
| R' | Housing Improvement |
| S' | Vocational Training |
| T' | School Health Education |
| U' | Balinese Language Reading Materials |
| V' | Teachers' Center |
| W' | Primary and Secondary School Facilities Development |

Part 10. Summary

The communities of eastern Bali are currently experiencing important social and economic changes. These changes involve the transition of rather isolated, primarily subsistence oriented peasant villages to communities increasingly effected by and tied to a larger national economy and culture. If members of these villages are able to find ways of participating in the economic growth taking place in southern Bali it seems likely that considerable progress could be made in raising the physical quality of life for residents of the area. However, if the communities are unable to adjust to change, either from a lack of knowledge, experience, or resources, it is highly possible they will be exploited by outside elements. Plan could play an important role during this critical period of change by providing communities with material resources and skilled, effective planners who can help community members develop means of dealing with problems of poor public health, inadequate educational opportunities, and marginally productive economic activities.

Many of the kinds of programs discussed in this report are economic strategies designed to raise income by giving village families access to the larger economy. The experience of such Southeast Asian nations as Malaysia, Thailand, and the Philippines indicates that economic growth may lead to lowered infant mortality, higher literacy levels, and a range of characteristics reflecting improving

living conditions. In the areas studied it was apparent that economic assistance programs were few (particularly when compared to the number of ongoing health and education efforts), yet crucially needed.

Why is so little being done in terms of rural economic development? This is an important question which has not yet been answered. One reason for the dearth of village level economic programs may be the difficulty in implementing such assistance. Economic solutions require good planning, sufficient material support, and a high level of local cooperation and participation. Because economic programs introduce material resources into a local economic scene characterized by a scarcity of such resources the competition for them can be intense and the ability of the target group to cooperate can be weakened.

As a child, family, and community development organization, Plan's primary concern has been the physical quality of life conditions among the children of low-income families. In some countries this approach requires identifying and selecting specific families for assistance. Bali, on the other hand, has a strong network of traditional communal organizations. Such groups are ideal for the organization and administration of efforts to raise living conditions whether the strategies devised be economic, educational, health-related or a combination of all three. Such traditional organizations have survived through the centuries largely through the cooperation of their members. It is through these groups that

Plan can best contribute to the continuity of Balinese culture and the improvement of living conditions for their members.

The projects proposed in this report represent conceptual approaches which require further study. The researchers did not have the time to develop, in each case, detailed plans for project implementation with relevant local groups and government agencies. However, virtually all of the projects proposed here were either suggested by or discussed in detail with members of the banjar studied. Further, whenever possible an attempt was made to tie potential Plan assistance strategies to ongoing government efforts and their staff.

The study determined that health, education, and economic conditions were generally better in the communities located close to administrative and trading centers. To some extent this represents the more intensive efforts of government agencies in areas that present fewer logistical problems. Another important influence in more developed banjar involved the opportunities generated by new public and private economic activities. While Plan should continue to work in more centralized communities, priority should now be given to the more remote areas which have the greatest need for outside assistance.

This study identified a wealth of government and private programs, both planned and ongoing, designed to achieve objectives very similar to those of Plan. The

manpower resources of the government for community programming are extensive. In light of these considerations, Plan should continue to cooperate with the government wherever possible to enhance the achievement of mutual goals. One area in which Plan can greatly contribute to Indonesia's efforts to raise rural standards of living is in the training of community development program coordinators. The coordinator can play a crucial role in helping a community identify its needs and arranging for the government and Plan to supply the kinds of assistance required to begin to deal with local problems.

Plan must continue to develop the ability of its coordinators to work with local leaders. Coordinators must learn how to accurately assess primary needs and respond to them quickly and effectively. A means of feedback must be developed to allow Plan to better assess the progress and impact of its efforts. Such a system must be sensitive enough to identify problems that may develop during the implementation of programs and devise means of reducing obstacles inhibiting the success of joint Plan/government/community efforts. Coordinators must learn how to help community leaders think about problems and their solutions so that long-term objectives can be established and more comprehensive plans detailed. In the past Plan has worked with the Institute for Village Socio-Economic Development in Jogjakarta to train staff to function as coordinators; this program should be continued.

The findings of the Model Banjar Project have now established baseline physical quality of life conditions in 19 communities in eastern Bali. The study has also attempted to make specific suggestions concerning the kinds of development assistance that could have the greatest impact on improving the life of villagers and enhancing their ability to deal with the socio-economic changes taking place in the area. We sincerely hope that Plan will be successful in implementing our suggestions and achieving their ultimate objective of improving the welfare of Bali's children.

Notes to Chapter III:

[1]*Sekaa* might best be translated as "association". In Bali a *sekaa* can be formed for entertainment purposes (such as a kite flying group), or for economic reasons (coconut pickers' association, rice harvesters' association).

*Dadia* are lineage groups. In eastern Bali many banjar are single *dadia* communities.

[2]The impact of the introduction of hybrid rice in Indonesia is discussed in depth in a number of articles including that of Poffenberger and Zurbuchen (1980); see Notes to Chapter II.

# APPENDIX I

## CONSUMER PRICE LIST FOR SOUTHERN AND EASTERN BALI - 1979

When discussing peasant economies in transition, it is useful to think not only in monetary terms, but also to consider the local costs of basic needs. In this report income and expenditures have been valued in Indonesian currency with United States dollar equivalents given for the convenience of readers unfamiliar with the value of the Indonesian rupiah. However, to equate the buying power and economic role of rupiah and dollar simply on the basis of currency equivalents would be erroneous; a dollar's significance in the Indonesian marketplace is not the same as in the U.S. economy. We must also look at the worth of each currency in terms of the goods and services it can purchase. To better contextualize the value of village family income, a table of retail prices for basic commodities in eastern and southern Bali markets is presented below. This data can also be used to help evaluate economic change taking place between Phase I and Phase III of the Model Banjar Project by correcting the effects of inflation.

| Food Type | Unit | Rp. Cost | Food Type | Unit | Rp. Cost |
|---|---|---|---|---|---|
| Rice (Balinese) | 1 kg. | 210* | Peanuts (husked) | 1 kg. | 575* |
| Rice (New or IR) | 1 kg. | 140* | Soy Beans | 1 kg. | 225* |
| Dried Cassava | 1.5 kg. | 75* | Undried Cassava (*Ubi Rambat*) | 12 kg. | 300* |

*Prices collected at Bebandem market, eastern Bali, June 15th, 1979.

APPENDIX I: (continued)

| Food Type | Unit | Rp. Cost |
|---|---|---|
| Corn | 1 ear | 7.5* |
| Corn (kernels) | 1 kg. | 100@ |
| Red Beans | 1 kg. | 300* |
| Banana | 3 med. | 25* |
| *Salak* | 1 kg. | 350@ |
| Limes | 1 kg. | 200@ |
| Cabbage | 1 kg. | 100@ |
| Carrots | 1 kg. | 125@ |
| Green Beans | 1 kg. | 175@ |
| Small Chili (*Lombok Kecil*) | 1 kg. | 600@ |
| Onion (*Bawang Merah*) | 1 kg. | 700@ |
| Garlic (*Bawang Putih*) | 1 kg. | 2000@ |
| Chicken Eggs | 1 egg | 50* |
| Undried Tapioca (*Ubi Pohon*) | 12 kg. | 400* |
| Beef (1st class) | 1 kg. | 900* |
| Soy Bean Cake (*Tempe*) | 1 kg. | 375* |
| Coffee (1st class) | 1 kg. | 2200* |
| Salt | 1 kg. | 100* |
| Granulated Sugar | 1 kg. | 275* |
| Red Sugar (*Gula Merah*) | 1.5 kg. (1 *cakapan*) | 500* |
| Dried Fish (*Grang*) | 1 kg. | 450* |
| Coconut Oil (local) | 1 litre | 350@ |

@Prices collected at Badung market, southern Bali, March 23rd, 1979.

| Livestock and Other Goods | Unit | Rp. Cost |
|---|---|---|
| Tobacco (from Lombok) | 1 gampil | 1500* |
| Laundry Soap (Sunlight) | 1 large bar | 200* |
| Bathing Soap (Lux) | 1 large bar | 175* |
| Matches | 1 small box | 10* |
| Flashlight Battery (Eveready) | 1 battery | 110* |
| Oil Lamp | 1 | 250* |
| Plastic Bucket (Size 5) | 1 large | 750* |
| Small Kerosene Stove (ABC brand) | 1 | 2000* |
| Motorcycle (Honda CB100) | 1 | 600,000@ |
| Small Toyota Car | 1 | 8,000,000@ |

APPENDIX I: (continued)

| Livestock and Other Goods | Unit | Rp. Cost |
|---|---|---|
| Flashlight (Tiger brand) (holds 2 batteries) | 1 | 550* |
| Rubber Sandals | 1 pair | 200* |
| Gold ---------- 24 carat | 1 gram | 5,600* |
| Gold ---------- 22 carat | 1 gram | 5,000* |
| Bull (mature) | 1 | 120,000* |
| Cow (mature) | 1 | 80,000* |
| Male Calf (1 year old) | 1 | 45,000* |
| Female Calf (1 year old) | 1 | 30,000* |
| Male Pig (mature) | 1 | 30,000* |
| Female Pig (mature) | 1 | 15,000* |
| Piglet (2 months = *bibit*) | 1 | 2,500* |
| Piglet (3 to 4 months = *guling*) | 1 | 7,500* |
| Chicken (mature) | 1 | 700* |
| Duck (mature) | 1 | 700* |

# APPENDIX II

## MODEL BANJAR PROJECT RESEARCH SITES: KARANGASEM

| *KECAMATAN* (Sub-District) | *PERBEKELAN* (Village) | *BANJAR DINAS* (Hamlet) | *MACAM** (Type) | *NOMOR K.K.* (No. Families) | *NAMA PETUGAS* (Interviewer's Name) |
|---|---|---|---|---|---|
| BEBANDAM | JUNGUTAN | L | 2 | 310 | Srida<br>Wayan Sadia |
| | | C | 1 | 87 | Sudaya |
| | | J | 2 | 167 | Pica Sepek |
| | | K | 2a | 54 | I Ketut Mandera |
| | BUDAKELING | A | 1 | 147 | I Komang Suarna<br>Ida Made Jaya |
| | | B | 1 | 99 | Ida Wayan Gde |
| | | P | 3 | 63 | I Wayan Bajrah |
| | | I | 2 | 48 | I Wayan Sikih |
| | | G | 2 | 52 | I Gde Tunas |
| | | H | 2 | 42 | I Komang Sikih |
| ABANG | CULIK | O | 2 | 212 | I Gde Tulamben |
| | | S | 4 | 39 | I Gde Oka |
| | | F | 1 | 198 | Wayan Gelgel |
| | | Q | 3 | 137 | I Ketut Suamba |
| | ABABI | N | 2 | 120 | I Gde Nesa |
| | | E | 1 | 183 | Made Sudjana |
| KARANGASEM | SERAYA | M | 2 | 227 | I Komang Layang |
| | | D | 1 | 83 | I Gde Gelgel |
| | | R | 4 | 162 | I Ketut Lulut |
| (Total Number of Families) | | *JUMLAH K.K.* | | 2430 | |
| (Total Sample Population) | | *Jumlah Yang Diinterview* | | 1386 | |

Research Consultant: Mark Poffenberger, Ph.D

Research Supervisor: Ida Bagus Purnama Wijana, B.A.

APPENDIX II: (continued)

* Economic Characteristics of Hamlets

Type 1: Located in the administrative center of the *perbekelan*, with immediate access to government health, educational, and economic facilities, including a motorable, frequently paved road linking the area to district trading centers. Population predominantly merchants, white collar workers, and landless non-agricultural laborers.

Type 2: Located in outlying, mountainous areas of the *perbekelan*. Dryland farming areas, one to ten kilometers from the nearest motorable roads.

Type 3: Wet rice farming communities. Usually at lower elevations, not far from motorable roads, and educational, health and economic facilities.

Type 4: Located in dryer, rocky areas along the coast. Primarily dependent on fishing and dryland farming for subsistence.

# APPENDIX III

## MODEL BANJAR PROJECT
## FIRST AND SECOND QUARTER REPORTS
## OCTOBER 22 - APRIL 21, 1979

During the first three weeks of the first quarter a draft of the survey interview form was developed in Berkeley, California. Consultations were held with members of the School of Public Health at the University of California concerning appropriate indicators of child health and nutrition. Arrangements were also made with the U.C. Computer Center to process the survey data during the months of September and October, 1979.

Arriving in Bali in late November the initial task was to obtain the final approval for the study from the government at the provincial and regency levels. First a meeting was held with the provincial director of the Department of Social Affairs where the study design was discussed. Next a meeting with the Regent (*Bupati*) of Karangasem, the regency (*kabupaten*) in which the study was to be conducted, was scheduled. At this meeting the Foster Parents Plan director and I requested permission and a letter of authorization to include five sub-districts (*perbekelan*) in the study. The letter of authorization was then copied and sent to all district heads (*camat*) and sub-district heads (*perbekel*).

During the month of December visits were made to all

of the *camat* and *perbekelan* offices involved in the study to follow up on the Bupatis letter, as well as to explain in detail the nature of the study. During these meetings with the local administrators it was carefully stated that the project's only objective was to collect information about the community and to report on local needs. We further stressed that, while the study had no programmatic potential of its own, we hoped that the report based on the findings could be used by private aid organizations as well as government development agencies to plan better, more effective programs.

The *perbekels* were then asked when the next meeting of the hamlet headmen (*kelian banjar*) would be held so that we could inform them of our plans to study their communities and answer any questions they might have regarding the nature of the survey. However, before we could meet with the *kelian banjar* we had to make a final decision regarding which banjar to include in the survey. In order to select banjar reflecting the major socio-economic and ecological systems present in the Karangasem area under study, we divided the communities into four categories:

> Type 1 banjar were located in the administrative center of the *perbekelan*, with immediate access to governmental health, educational, and economic facilities, including a motorable road, which is usually paved, and links the sub-district headquarters to the district trading center. The population consists predominantly of traders, civil servants, skilled workers, and landless non-agricultural laborers.
>
> Type 2 banjar were located in the outlying, mountainous areas of the *perbekelan*. The mostly dryland farm

families live in scattered settlements, two to ten kilometers from the nearest road.

Type 3 banjar were located in dry, rocky areas along Bali's southeast coast. Most families are dependent on fishing and dryland farming for their subsistence.

Type 4 banjar were located at lower elevations along Bali's coastal plain. Families derive their income from farming or tenant farming small plots of fertile rice fields. The Type 4 banjar are usually not far from the *perbekelan* headquarters or from a motorable road.

We attempted to select at least one banjar from each of the above categories for the five *perbekelan* selected for study. At this point the names of local people who might be good candidates for the job of interviewing were selected. In looking for interviewers attention was placed on finding older, respected members of the community who were sufficiently literate to handle the rather long and complex questionnaire that was concurrently being developed. Local primary school teachers were frequently well suited for the job of interviewer. They were generally well respected and widely known by community members. In banjar far from local schools *kelian banjar* and their older sons, who usually had studied up to the middle school level, were chosen as interviewers.

From mid-December through mid-January I worked daily with the Balinese research associate collecting background information on the *perbekelans* under study, selecting banjar and interviewer candidates, as well as orienting my counterpart to the research design. We invested large amounts of time in establishing good relations with

community leaders and family heads. In each of the five *perbekelan* one to two hour meetings were held with all banjar headmen to explain the objectives of the study as well as to clarify why only some banjar had been selected for study. After responding to the headmen's questions we asked if we could attend the monthly banjar meetings of all the banjar involved in the study to explain to the gathered family heads why we were conducting the survey, to ask permission to begin our research in their banjar, and to tell the members who the interviewer would be. Attending meetings at the twenty banjar involved in the study was done during the last week of January and the month of February. We feel the time invested in this task paid off in a number of ways. It made the work of the interviewers easier as the banjar members had advanced notice that they would take part in the census (*nyensus*). It is likely that the respondents, having had an explanation of why the survey was being conducted (e.g. to ask directly from the people (*rakyat*) what they feel their greatest needs are), were more open and frank in their responses. Finally, it gave the research consultant (myself) and the research associate a chance to introduce themselves to the community. This gave us a formal identity in each banjar and has allowed us to conduct our own in-depth interviews in a more familiar, relaxed fashion. While the banjar were being selected and interviewer candidates sought, the draft of the questionnaire were pre-tested in non-study communities in South and East

Bali. Pre-testing indicated the need for both adding some questions and deleting others. It also indicated some problems in the questionnaire format. For example, questions regarding income from agriculture had to allow for a wide range of responses concerning type of crop and type of measurement used locally to estimate quantity of harvest. Some crops like corn and coconuts were counted by the ear or nut, while others were counted in bushels, bundles, or baskets. The yield and quality of produce varied widely. Thus in dry, rocky areas, because of the less fertile soil and scarcity of water, the size of an ear of corn was smaller and worth only Rp. 2.5, while in the more fertile areas Rp. 5 was the usual value. Units of measurement to count rice harvests also varied from area to area. While traditional strains of rice (*padi lokal*) were always gathered into bundles (variously termed *ikat*, *depuk*, *sut*, and *seping*), the bundles varied anywhere from 4-17 kgs. (of wet *padi*) in weight.

Land measurements also varied considerably. While some farmers knew the amount of land they owned or tenant-farmed in the local metric unit *ara* (equal to 1/100th of a hectare), many knew only the traditional measurement of the amount of seed required to plant a field. The amount of seed required to plant a given area, however, was relative to the type of land being planted and the crop. Consequently, information had to be gathered for each area being studied concerning local crops, land type, measurement systems and so forth.

Further, considerable flexibility had to be built into the questionnaire to allow the interviewer and research supervisors to first record the respondents' estimates of production and crop value in local terms and then to translate the amounts into their cash values based on local market values so that the data would be comparable.

Another major question which arose in preparing the questionnaire was whether it should be written in Indonesian or Balinese or both. Initially the questionnaire was prepared in both languages. It was clear from the beginning that most of the interviews would be conducted in Balinese; however, because of the dynamic nature of Balinese, which exhibits itself in a changing vocabulary depending on the social context (e.g. place, speaker, who is being spoken to, and occasion) it was impossible to find a static form for each question. As a result, if the social status of the interviewer and the respondent did not match the status level of the words used in the question, the question might appear either offensive or ludicrous. Finally, we decided to prepare the questionnaire only in Indonesian, but while training the interviewers we discussed each question and its meaning in Balinese and further suggested a standard Balinese format for asking the question while allowing the interviewer the flexibility to adapt the sentence to fit the social context.

By the beginning of February we had selected our interviewer candidates based on the suggestions of local school

headmasters, banjar headmen, and sub-district heads. We then scheduled training sessions for the interviewers, breaking them into groups based on the sub-district in which they lived and worked. The meetings had to be scheduled in the evening when the interviewers, many of whom were teachers, would be free, or on Sundays. The training sessions were generally held in the *perbekel's* office or in the interviewer's home. We conducted the training sessions in a relaxed, informal fashion, encouraging the interviewers to ask questions. Coffee, cigarettes and snacks were provided at each of the four training sessions. During the first session we would explain in some detail why we were conducting the survey, the general type of information we were going to collect, and how it would be useful in understanding community needs. We explained how they should introduce themselves when visiting a family. It was stressed that questions should be asked of all families in the same way, that we wanted the respondents' opinions and not the interviewers', that answers must be complete, and that we would have follow-up checks to make sure the interviews were properly conducted. During the rest of the first session we reviewed the questions on education, health, nutrition, fertility/mortality, and family needs. These questions were studied first as they were less complicated that those on the economic issues which were dealt with in session two.

The method for studying the questions involved reading

each question first in Indonesian then giving a Balinese translation of the question. Next the meaning of the question was discussed along with the types of answers which might arise. Finally the interviewers were taught how to fill in the response on the pre-coded spaces or in the blank spaces provided for open-ended questions.

On the second session, usually no more than a week after the first meeting had been held, we would discuss the economic section in a similar manner. Each session generally lasted 2½ to 3 hours. The meetings were not held in a classroom fashion, but as a small discussion group. We continually tried to foster a mutual-help relationship with the interviewers, with them being responsible for helping to accurately convey the conditions and needs of the communities in which they lived. Many of the interviewers came to see their task as a social service they were providing for their banjar, rather than as a job they were performing for pay. We continually expressed our thanks for their assistance and always referred to the money they received for each interview as an honorarium (*honor*), which was in no way pay which could reflect the value of their service but only a sign of our thanks. We feel that this attitude on the part of the interviewers made them more responsible in conducting their work. We also visited each of the interviewers every 7 to 10 days during the data collection period, not only to check on the quality of their work, but to demonstrate our continued concern and interest

in the project.

At the end of the second training session we gave the interviewers three questionnaires and asked them to interview other members of their family and neighbors. After 3 to 4 days we went around to each of the interviewers' homes to review the trial questionnaires and to discuss any problems they might have encountered. Sometimes the interviewer would point out something he didn't understand. Other times an incorrectly completed questionnaire identified an area unclear in the mind of the interviewer. At the end of the third session we gave the interviewer "census" forms on five families which had been selected from a sample drawn from the entire banjar population.

During the final session, which, like the third meeting was held in the interviewer's home, we reviewed the first five questionnaires filled out and drawn from the actual sample population. Generally we found that the more straightforward questions were well understood. However, the economic questions, requiring more in-depth questioning, were incompletely answered. We stressed to the interviewers the need to count all sources of family income, regardless of the smallness of the product. We then asked them to return to the families to question them in greater detail. We feel that by initially returning many of the questionnaires the interviewers better understood the sincerity of our desire to have only complete and accurate interviews.

The original research design had called for a complete

census of all families in the banjar selected for study. The census was to provide the base population from which we would draw a random sample of families. Due to the small population of each banjar a sample of 50% to 75% of the families in each community was to be selected. However, in December while meeting with one of the *camat* officials, we found that an Indonesia-wide family census was in progress. It was either partially or entirely complete in all the banjar we had planned to study. Consequently we were able to make use of this pre-existing data in most cases. In banjar where the census was incomplete our staff assisted the *perbekel* in enumerating the remaining families in the village. This mutual effort saved our staff much time and effort as well as helping the local government complete their registration. While we later found that the census, particularly in certain areas, had inaccuracies, it was accurate enough to base the sample on and all inaccuracies for sample families were corrected during the interviews.

By mid-February interviews were being conducted in two of the five *perbekelan* and by the beginning of March data was being collected in all of the nineteen sample banjar. It required a great deal of time to go to each interviewer's house and check over each questionnaire (returning as many as 50% of the questionnaires for further questions during the early phase of the survey), but the constant weekly visits kept the morale of the interviewers up while keeping us in touch with needs and problems as they arose.

While reviewing the questionnaires with the interviewers, one question that was continuously raised by the supervisors was why an apparent discrepancy existed between the estimated value of all family income and the family's estimated daily expenditures. It seemed the discrepancy was most frequent among the lowest income families. From the beginning of the study we had anticipated that mutual aid (*gotong-royong*) exchanges would be important to the family economy. Unfortunately, *gotong-royong* relationships are difficult to identify and give fixed value to, especially when using a survey research format. We tried to get some information by asking the interviewers to see what income the respondents received from "contributions" from other banjar or family members, as well as loans they might have received from various sources. We also tried to determine patterns of dependency as in the case of *jaba* (common caste) families who were retainers for large high caste families and who frequently or always ate at other persons' homes in exchange for various kinds of work and services. A myriad of patterns of lending exchanges were also uncovered. These frequently manifested themselves in a needy family "borrowing" a basket of dried cassava (*cacah*) from a neighbor. The terms of repayment varied immensely. Sometimes loans were actually out-and-out gifts, often from a wealthier, extended family member of close neighbor. Other times a trader-lender from outside the community would lend rice, cassava, or money under an agreement that

when a certain cow or pig was sold the value of the loan would be repaid plus a share of the increased value of the livestock. For example, if Rp. 2000 in rice was loaned to a family on a calf worth Rp. 20,000 and later the calf was sold for Rp. 30,000, the trader-lender would get Rp. 3000 in return. While sometimes a "loan" would be made to a poor family without expectation of actual repayment, the act of the "loan" or gift was seen by the Balinese as initiating or a continuing reaffirment of a bond of mutual cooperation. The family receiving the "loan" would be obligated to help the payee whenever ritual or non-ritual work required his/her assistance. This type of mutual-aid relation is one of the primary principles upon which village economy runs. Every family has a multitide of such relationships with other families. Yet to count through a survey methodology the impact of such mutual-aid activities on the economy of 1216 families was an impossible task. Instead we tried to count all sources of family income as accurately as possible, asking the interviewers to question not only the male family head, but his wife as well (as Balinese women play a central role in the family economy). We planned to supplement that information with fifty in-depth case studies which looked at all aspects of mutual-aid activities.

By the third week of April approximately 1000 of the 1216 families sampled had been interviewed. A pre-coder was trained and began preparing the questionnaires for coding under the close supervision of the research associate.

An Indonesian translation of the code book was made for the coder to use in classifying open-ended responses.

With the large survey for the collection of baseline education, health and nutrition, fertility and mortality, and economic data well under way we have begun to conduct the in-depth interviews. Through the in-depth interviews we hope to gain an understanding of certain phenomena identified by the large survey. Some examples of type of socio-economic phenomena identified by the survey which need further clarification include the following:

> Many children in the East Bali area never enter school or drop out after only one or two years in spite of the fact that there appears to be sufficient school space for the school age population.
>
> Women often earn more than 50% of the total family income, while men may work no more than 3 hours per day.
>
> The agricultural produce of many families is very low. The net cash value of all crops frequently is less than Rp. 20,000 per year.
>
> While families in the center of the sub-district are consistently better-off economically and have greater access to job opportunities, these areas consistently receive a disproportionately large share of both government and non-government development programs.
>
> Many families in the East Karangasem area have begun planting cash crops (particularly fruit trees) on their own initiative. Fruit crops have the potential to boost average farm family income more than any other means currently available to local families. However, the outcome of such efforts are in question due to a severe lack of technical skill in caring for these new crops.

In concluding, during the first two quarters the Model Banjar Project has collected a large quantity of base-line data which will be used to evaluate the impact of

Foster Parents Plan efforts in the area over the next five years. During the third quarter information will be collected through in-depth interviews with a sub-sample of the villagers surveyed as well as with village leaders to answer questions raised by the survey. This information will be used to make specific recommendations regarding the types of community development programs most appropriate to each of the banjar studied. It is hoped that the programs that are developed as a result of the study will not only improve the quality of life in the Model Banjar, but will serve as prototypes which might be implemented in other areas where Foster Parents Plan operates.

It should be noted that the Model Banjar Project staff also conducted a study of 426 primary school children during the months of January and February 1979. Initial results from the survey indicate that while there were virtually no cases of malnutrition in the East Karangasem schools studied, a considerable proportion of the children could be considered undernourished.

The research consultant and research associate also assisted the Foster Parents Plan director in developing a new system of community needs identification for budgeting purposes. The questionnaires designed by the Model Banjar Project team can be seen in Appendix VI.

Submitted by:

Mark Poffenberger
Research Consultant
May 8, 1979

# APPENDIX IV

## PHYSICAL QUALITY OF LIFE

## CENSUS:

## FAMILY HEALTH, EDUCATION, AND ECONOMY

## QUESTIONNAIRE

I have come today as a member of the Family Health, Education, and Economy Census. We are conducting this survey to better understand the conditions of families in this area. We hope you will be able to help us understand the needs of families in your community by giving honest and complete answers to our questions. With this information government and private organizations will be able to design more effective programs to meet the needs of your area. Anything you tell us here will be used only for the purposes of this study. Before we begin let me thank you for your cooperation.

FAMILY CENSUS

Name of Interviewer _____ Family I.D. Number 4 5 6 7 ( ) ( ) ( ) ( )

Hamlet Name _____ 2 3 ( ) ( ) Name of Respondent _____ Date: _____

Deck No. (1)

| Name of Family Members | Relation to Family Head | Year of Birth | Sex | Marital Status | Occupation | Literacy | | Educational Status | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Roman Script | Other Script | Level | Still Studying/ Stopped Studying | Reason for Discontinuing Education |
| 1. | Head | | | | | | | | | |
| 2. | | | | | | | | | | |
| 3. | | | | | | | | | | |
| 4. | | | | | | | | | | |
| 5. | | | | | | | | | | |
| 6. | | | | | | | | | | |
| 7. | | | | | | | | | | |
| 8. | | | | | | | | | | |
| 9. | | | | | | | | | | |
| 10. | | | | | | | | | | |
| 11. | | | | | | | | | | |
| 12. | | | | | | | | | | |

Number of family members 8 9 ( ) ( ) Occupation of family Head 10 ( ) Total number of children 0-6 years of age 11 ( ) Total number of children 7-13 years of age 12 ( )

Total number of children 7-13 years of age currently attending school 13 ( ) Reason for dropping out of school 14 ( ) Total number of children 14-18 years of age 15 ( )

Total number of children 14-18 years old currently attending school 16 ( ) Total number of family members literate in Roman script 17 ( ) Total number of family members literate in other script 18 ( )

## FAMILY HEALTH CONDITIONS

(Now I want to ask you a few questions about the health of the children and adults in your family.)

1. Are any of the pre-school children (age 0-6 years old) in your family currently ill with:

| | | | |
|---|---|---|---|
| a: Diarrhea | yes - 1 | no - 2 | ( ) 19 |
| b: Fever | yes - 1 | no - 2 | ( ) 20 |
| c: Cough | yes - 1 | no - 2 | ( ) 21 |
| d: Worms | yes - 1 | no - 2 | ( ) 22 |
| e: Skin infections | yes - 1 | no - 2 | ( ) 23 |

Other _____

_____

2. Have any pre-school children (age 0-6 years old) in your family had any of the following vaccinations:

| | | | | |
|---|---|---|---|---|
| a: Smallpox | yes - 1 | no - 2 | Don't know - 3 | ( ) 24 |
| b: BCG / TBC | yes - 1 | no - 2 | Don't know - 3 | ( ) 25 |
| c: Chotypa | yes - 1 | no - 2 | Don't know - 3 | ( ) 26 |

3. Where does your family get drinking water during the dry season?

| | | |
|---|---|---|
| well - 1 | spring | - 2 |
| river - 3 | irrigation canal | - 4 |
| rain - 5 | water pipes | - 6 |
| other _____ | | - 7 ( ) 27 |

4. How far from your house is the place where you get your water?

| | | | |
|---|---|---|---|
| in or near the house | - 1 | 100 meter from the house | - 2 |
| ¼ km from the house | - 3 | ½ km from the house | - 4 |
| 1 km from the house | - 5 | 2 km from the house | - 6 |
| 3-5 km from the house | - 7 | 6 km or more | - 8 |

( ) 28

5. What do you do to your water before drinking it?

| | | | |
|---|---|---|---|
| nothing | - 1 | filter the water | - 2 |
| always boil the water | - 3 | sometimes boil the water | - 4 |
| other _____ | | | - 5 |

( ) 29

6. Where does your family defecate?

| | | | | |
|---|---|---|---|---|
| irrigation canal | - 1 | river | - 2 | |
| garden | - 3 | behind the house | - 4 | |
| w.c. | - 5 | other | - 6 | ( ) 30 |

7. What was the staple food your family ate last week?

| | | | | | |
|---|---|---|---|---|---|
| rice | - 1 | rice + cassava | - 2 | rice + corn | - 3 |
| cassava | - 4 | corn | - 5 | | |
| other _____ | | | - 6 | | ( ) 31 |

8. How much other staple food do you mix with one part of rice?

¼ part other to 1 part rice - 1
½ part other to 1 part rice - 2
1 part other to 1 part rice - 3
2 parts other to 1 part rice - 4
3 parts other or more with 1 part rice - 5
other _____ - 6 ( ) 32

9. Yesterday, how many times did your family eat the following foods:

a: staple food (e.g. rice, corn) _____ times/day ( ) 33
b: meat, fish, eggs _____ times/day ( ) 34
c: beancurd, nuts or beans _____ times/day ( ) 35
d: fruit _____ times/day ( ) 36
e: vegetables _____ times/day ( ) 37

Notes _____

_____

FAMILY ECONOMIC STATUS

(Now I want to ask you a few questions about your family's income. This will enable us to see how family income is related to health and education in your area and to better understand your family's needs.)

10. How many of the following goods does your family own?

| TYPE | AMOUNT | |
|---|---|---|
| a: Bicycle | | ( ) 38 |
| b: Pressure Lamp | | ( ) 39 |
| c: Oil Lamp | | ( ) 40 |
| d: Plastic Bucket | | ( ) 41 |
| e: Cupboard | | ( ) 42 |
| f: Flashlight | | ( ) 43 |
| g: Table & Chairs (set) | | ( ) 44 |
| h: Radio or Tape Recorder | | ( ) 45 |
| i: Kerosene Stove | | ( ) 46 |
| j: Wrist Watch | | ( ) 47 |
| k: Outrigger | | ( ) 48 |
| l: Sewing Machine | | ( ) 49 |
| m: Plow | | ( ) 50 |
| n: Motorcycle or Outboard Motor | | ( ) 51 |
| o: Four-Wheeled Vehicle | | ( ) 52 |

11. How much livestock does your family own or care for?

| TYPE OF LIVESTOCK | AMOUNT | | VALUE | TOTAL |
|---|---|---|---|---|
| | Receive Full Value When Sold | Receive Half Value When Sold | | |
| a: Adult Cow | | | 60 | |
| b: Calf | | | 30 | |
| c: Adult Male Pig | | | 30 | |
| d: Adult Female Pig | | | 15 | |
| e: Piglet | | | 6 | |
| f: Goat | | | 15 | |
| g: Chicken or Duck | | | 1 | |
| h: Pond Fish (Adult) | | | 1 | |

12. Do you own any farmland or have rights to any farmland as a tenant farmer?

Yes, own farmland - 1
Yes, own farmland and have tenant farming rights to farmland - 2
Yes, have tenant farming rights to farmland - 3
No, do not own and do not have farmland use rights - 4 ( ) 57

13. How much farmland do you own or use as a tenant farmer?

| Land Type | Amount | Type of Measurement | Amount of Measurement Equivalent to Hectare | Class | Total Hectare | |
|---|---|---|---|---|---|---|
| a: Padi | | | = 1 Hectare | | | ( ) ( ) ( ) 58-60 |
| b: Dry land | | | = 1 Hectare | | | ( ) ( ) ( ) 61-63 |
| c: Other | | | | | | ( ) ( ) ( ) 64-66 |

14. If you own farmland, how much of your land is currently mortgaged, if any?

| | Hectare | |
|---|---|---|
| | | ( )( )( ) 67-69 |

15. If you own farmland, how much of your land is currently farmed by a tenant farmer?

| | Hectare | |
|---|---|---|
| | | ( )( )( ) 70-72 |

(Now I want to ask you a few questions about your family's income. This includes all the income from all the members of your family who eat in your house. I will help you count all the sources of income your family has so that we can arrive at an accurate estimate.)

16. Now I want to ask about your total agricultural production from all harvests last year.

| Type of Crop | Crop Production | | | Number of harvest last year | Cost Expended for fertilizer, seed, plowman's fee, etc. | Proportion of harvest rcvd. by you | Proportion of harvest rcvd. by you which was sold for cash | Total Net Value of Produce received by you |
|---|---|---|---|---|---|---|---|---|
| | Total | Type of | Market Price | | | | | |
| a: Rice | | | | | | | | |
| b: Corn | | | | | | | | |
| c: Coconuts | | | | | | | | |
| Others (beans, tubers, cassava, onions, fruit) | | | | | | | | |
| d: | | | | | | | | |
| e: | | | | | | | | |
| f: | | | | | | | | |

Total _____

Notes _____ Rp ( ) ( ) ( ) 73 - 75 Rp ( ) ( ) ( ).000 76 - 78

_____

_____

17. How much money did members of your family earn from the following sources last month? (2)( ) ( ) ( ) ( ) ( )( ) 1-7

| Type of Source | Net Income Past Month | Net Income Last Year | (Code in Thousands of Rupiah) |
|---|---|---|---|
| a: Trading | | | ( )( )( ) 8-10 |
| b: Agricultural Labor | | | ( )( )( ) 11-13 |
| c: Non-Agricultural Labor | | | ( )( )( ) 14-16 |
| d: Skilled Labor | | | ( )( )( ) 17-19 |
| e: Handicrafts | | | ( )( )( ) 20-22 |
| f: Shopkeeping | | | ( )( )( ) 23-25 |
| g: Other | | | ( )( )( ) 26-28 |
| h: | | | |
| | Total | | |

18. How much income did your family receive from the sale of the following livestock last year?

| Type | Production last year | | | Expenses (e.g. Fishing equipment, feed, medicine, etc.) | Proportion of Produce received by you | Proportion of Produce received by you which was sold for cash | Family's Net Profit Last Year |
|---|---|---|---|---|---|---|---|
| | Total Units | Type of Unit | Market Price | | | | |
| a:Fishing (ocean) | | | | | | | |
| b:Pond fish | | | | | | | |
| c:Cows/ water buffalo | | | | | | | |
| d:Pigs | | | | | | | |
| e:Chicken/ Ducks | | | | | | | |
| f:Eggs | | | | | | | |
| g:Other | | | | | | | |
| | | | | | Net Profit | | |
| Net value of all fish sold | | | | | Rp.( )( )( ) 000 29-31 | | Rp.( )( )( ).000 32-34 |

19. How much income did members of your family receive from all jobs with monthly salaries last month (includes civil service jobs, office work, teaching positions, etc.)?

| Occupation and level | Monthly Income | Months Worked Last Year | Yearly Income |
|---|---|---|---|
| a. | Rp. | | Rp. |
| b. | Rp. | | Rp. |

Total income per year Rp.( )( )( ).000 35-37

Notes _____

FAMILY EXPENDITURES

(Now I want to ask you a few questions concerning how much your family spends each month to meet basic needs.)

20. Was anyone sick in your family last month? If so, how much did your family spend for doctors, nurses, medicines, transportation and all other expenses incurred by the sick person/persons?

    For health expenses last month: Rp.( )( ).000
    38-39

21. How much money do you estimate was spent by your family yesterday for household expenses? This includes rice, meat, cooking oil, coffee, sugar, cigarettes, soap, kerosene, pocket money for children, etc.

    Cash for household expenses yesterday

    Rp. _____ (x 30)
    Rp.( )( ).000
    40-41

22. Last month how much did your family spend for family ritual and religious activities?

    Expenditures for religious activities last month Rp.( )( ).000
    42-43

---

Question 23 is not to be filled in by the interviewer

23. Monthly school costs: Number of children attending primary school _____

    Number of children attending middle school _____

    Total Educational Costs Rp. _____ Rp.( )( ). 00
    44-45

24. Family Expenditures + Contributions for community religious and social activities last month.

    Total community activities expenditures Rp. _____ Rp.( )( ). 00
    46-47

Notes _____

_____

_____

FAMILY FERTILITY AND MORTALITY HISTORY

(Now I want to ask you a few questions so we can better understand changes in the number of children in your family.)

25. Has your wife had a child during the past year (365 days)?

yes - 1 no - 2 ( ) 48

26. During the same period have any of your children died?

yes - 1 no - 2 ( ) 49

If no, go to 29.

27. If yes, how old was the child who died?

0- 7 months = 1 7 months - 3 years = 2
3 years - 6 years = 3 6 - 11 years = 4
11 - 15 years = 5 15 years or more = 6 ( ) 50

28. If yes, what was the cause of the child's death?

_____ ( ) 51

29. Is the age of your wife between 15 - 44 years and are you currently living together?

yes - 1 no - 2 ( ) 52

30. Do you want to have another child?

yes - 1 no - 2 ( ) 53

31. Are you or your wife currently using any method to avoid having another child?

yes - 1 no - 2 ( ) 54

If no, go to 33.

32. If yes, what method are you or your wife using?

pill - 1 condom IUD - 3
vasectomy - 4 herbal medicine - 5 massage - 6
tubectomy - 7 other - 8 ( ) 55

Note _____

PERCEPTIONS OF FAMILY AND COMMUNITY NEEDS

(Now I want to ask you about the needs of your family and community.)

33. If you earned an additional Rp. 3000 this month, how would you use it?

_____ ( ) 56

34. What are the 3 greatest needs your family has? (Rank order them according to their importance.)

Ke 1: ..... ( ) 57

Ke 2: ..... ( ) 58

Ke 3: ..... ( ) 59

35. What are the 2 greatest needs your community has? (Rank order them according to their importance.)

Ke 1: ..... ( ) 60

Ke 2: ..... ( ) 61

36. Last week, how many days did members of your family work on unpaid (mutual aid) activities?

Mutual Aid Activities: Total days for all family members last week ( ) 62

---

Fill in this section without interviewing family head

37. What is the condition of the roof of the family's living quarter?

old - 1 alright - 2 new - 3 ( ) 63

38. What material is the floor of the family's main living quarter made of?

earth - 1 cement/tile - 3 ( ) 64

39. What is the condition of the family's kitchen?

no separate kitchen - 0 old - 1
alright - 2 new - 3 ( ) 65

40. How many and what are the condition of the family's living quarters?

| Type of Quarters | Alright | W | Inadequate | W | Total |
|---|---|---|---|---|---|
| Elaborate (wall of brick, cement) | | 4 | | 2 | |
| Simple (wall of mat, rock, earth) | | 2 | | 1 | |

Total Score _____

( )( ) 66-67

APPENDIX V

CENSUS FOLLOW-UP QUESTIONNAIRE

Name of Respondent: _____ Banjar: _____

Age of Husband and Wife/Wives at marriage?

Husband _____yrs.
Wife _____yrs.
Wife _____yrs.

Total number of live births? Wife #1 _____ Wife #2 _____

Number of children currently living? Wife #1 _____

Wife #2 _____

Reason for death of child? _____

_____

_____

Number of school age children in the family (7-13 years)?

_____

Number of school age children Not currently attending?

_____

What is the reason/reasons the child has not entered school or has dropped out of school? _____

_____

_____

What jobs do your school age children have?

a: _____( hrs.) b: _____( hrs.)

c: _____( hrs.)

How many hours do they spend each day performing these jobs?

_____hrs./day

How much time do your children who attend S.D. spend studying outside of school (either at your house or at one of their friend's house)?

_____hrs./day

Are there any school books for them to study in your house?

Yes _____ No _____

Are there any school books for them to study at their friends house? Yes _____ No _____

Is there a lamp in the house your children use to study with?

Yes _____ No _____

Is there a table and chair in the house your children use for studying?

Yes _____ No _____

If there is an *Upacara Adat* (religious ceremony) in your house or village do your children attend school?

Yes _____ No _____

How many days each week does your child attend school during

the rainy season: _____ days/week

the dry season : _____ days/week

Comment _____

_____

_____

How many members of the family can read: Bahasa Bali = _____

Bahasa Indonesia = _____

How many times last month did members of your family who can read, read Balinese script (huruf Bali) or Latin script (huruf Latin)?

_____

What did they read? Where did they read it? (Note * Fill in on Census Sheet)

Other comments _____

_____

What reading materials do you have in your home? (Magazines, pamphlets, books, lontars): a) _____

b) _____ c) _____

d) _____

Do any of your family members attend lontar reading groups (*papacsan*)?

Yes _____ No _____

If yes, where do you attend and how frequently? _____

_____

What jobs do adult members of your family regularly perform (this includes all tasks including part-time, non-paying work)? How many hours do you spend each week?

a) _____ _____yrs. _____

_____

b) _____ _____yrs. _____

_____

c) _____ _____yrs. _____

_____

d) _____ _____yrs. _____

_____

e) _____ _____yrs. _____

_____

f) _____ _____yrs. _____

_____

IF YOU ARE A *BURUH* (unskilled laborer): Where do you work? How many days/month? How much are you paid? Where are the other people from who work with you? How do you hear about this work?

IF YOU ARE A *TUKANG* (skilled laborer): What is your trade? Who taught you? How much do you make each month? Who gives you work? Do you have enough work?

IF YOU ARE A CIVIL SERVANT/TEACHER: What is your job? How much do you make each month? How long have you worked there?

IF YOU ARE A *PEDAGANG* (merchant): What do you sell? Where do you get it from? How often do you go to the *pasar* and which *pasar*(*s*) do you go to? How much capital (*modal*) do you use? How much profit do you make each *pasar* day? What do you buy with your profit?

What is the name of the place from which you get your drinking water during the dry season? _____

What and how much staple food (*ajengan pokok*) does your family consume each day:

During the Dry Season _____

During the Wet Season _____

What other food or goods does your family consume on a daily basis? What is their value?

a) _____ Rp. _____ b) _____ Rp. _____

c) _____ Rp. _____ d) _____ Rp. _____

e) _____ Rp. _____ f) _____ Rp. _____

g) _____ Rp. _____ h) _____ Rp. _____

What are the costs of sending your children to school each year?

Child #1

a) _____ Rp. _____ b) _____ Rp. _____

b) _____ Rp. _____ d) _____ Rp. _____

Child #2

a) _____ Rp. _____ b) _____ Rp. _____

c) _____ Rp. _____ d) _____ Rp. _____

Child #3

a) _____ Rp. _____ b) _____ Rp. _____

c) _____ Rp. _____ d) _____ Rp. _____

Total Number in S.D. _____ Total Number in S.M.P. _____

Total Cost/Year Rp. _____

What family rite-of-passage ceremonies (*upacara manusa yadnya*) did your family perform last year? How did you manage this/these ceremony?

(How many guests did you invite-*undangan masak & undangan mentah*?; How many days did the ceremony and the preparations for the ceremony last?; How much materials and cash did you expend?; Did you sell any livestock at that time or other time last year?; Did you take out any loans at that time?; Did you mortgage any land?)

Comments:

Which temples are you and your family members of? (name and place)

a) _____ b) _____

c) _____ d) _____

e) _____ f) _____

g) _____ h) _____

How many days does your family spend every Balinese year (420 days) preparing for festivals at these temples? What offerings and materials do you give to the temple during *Dewa Yadnya* or *Bhuta Yadnya* ceremonies (e.g. *Odalan, Rainan, Mecaru, Galungan*)? How many members belong to these temples?

a) b)

c) d)

e) f)

g) h)

Is there any *paibon* in your courtyard? Yes _____ No _____

How many families live in your courtyard? _____

Comments _____

_____

What village does your wife/wives come from? _____

IF YOUR FAMILY OWNS ANY LAND, when did they get it and how? (bought it, inherited it from _____, from the *desa, pura, geria, puri*).

IF YOUR FAMILY HAS ANY TENANT FARMING RIGHTS, when did you get them and how?

Owned: *Sawah* _____ *ara* *Tegal* _____ *ara* Comments: _____

_____

_____

Rights

To: *Sawah* _____ *ara* *Tegal* _____ *ara* Comments: _____

_____

_____

Did you borrow any money or rice last year? (If so what were the terms and from whom did you borrow?)

Did you mortgage or sell any land last year? (If so whom did you mortgage or sell it, for how much money vis-a-vis land, and for how long?)

Did you mortgage or sell any livestock last year? (If so to whom and what were the terms?)

Did you receive any donations from any family or friends last year?

IF YOU ARE A FARMER:

What crops did you grow last year (*aplabuh*)? What was their yield? (Fill above in or Std. Census form)

Where did you sell the produce? Who determines what crops you grow?

Has the kinds of crops you plant changed over the past 10 years?

What kinds of crops would you like to grow?

IF YOU ARE A FISHERMAN:

How many fish do you estimate you caught last year? How does your catch vary from season to season? What techniques for fishing do you use? What is the cost of the materials (hooks, lines, nets, gasoline, etc.) that you expend each year for fishing? How do you market your catch?

What *gotong royong* help did you get in your farming activities last year? How many days did you spend helping in return?

| Type of Job | Number of prs.-days given | Meals Returned | Number of prs.-days Returned | Meals Given |
|---|---|---|---|---|
| a) | | | | |
| b) | | | | |
| c) | | | | |
| d) | | | | |
| e) | | | | |
| f) | | | | |
| g) | | | | |

What *gotong royong* help did you get for *Manusa Yadnya* ceremonies your family conducted last year, and how many person-days did your family contribute to other peoples' ceremonies?

| Type of Ceremony | Number of Person-Days Given | Returned | Meals Given | Returned |
|---|---|---|---|---|
| a) | | | | |
| b) | | | | |
| c) | | | | |
| d) | | | | |
| e) | | | | |
| f) | | | | |
| g) | | | | |

Comments:

How many days did members of your family contribute towards *Dewa* and *Bhuta Yadnya* ceremonies at your temples last year?

| Type of Ceremony | Number of Person-Days Given | Meals Returned | Value of Offerings |
|---|---|---|---|
| a) | | | |
| b) | | | |
| c) | | | |
| d) | | | |
| e) | | | |
| f) | | | |
| g) | | | |

How many days did members of your family contribute to *gotong royong* work for the banjar and what was the work (for last month only)?

a) _____ days

b) _____ days

c) _____ days

d) _____ days

e) _____ days

f) _____ days

g) _____ days

Where do you usually sell and buy your livestock?

Where do you usually sell your agricultural produce?

What are your most frequent health costs? Where do you usually go for health care? What do you estimate you spent last month, and last year on health costs?

# APPENDIX VI

## VILLAGE LEADER INTERVIEW FORM

Name of Respondent: _____ Name of Interviewer:

Position in Village: _____ _____

Name of Banjar: _____ Date of Interview:

_____

What kinds of crops would farmers in your area like to grow if they had the seeds, capital, and technical advice?

1._____ 2._____ 3._____

Comments _____

_____

What kinds of animals (or fish) would members in your banjar like to raise if they had the capital and technical advice?

1._____ 2._____ 3._____

Comments _____

_____

What kinds of skilled workers are there in your banjar?

*Tukang Kayu* (carpenter) - 1
*Tukang Mas* (goldsmith) - 2
*Tukang Mekanis* (mechanic) - 3
*Tukang Tembok* (mason) - 4
*Tukang Besi* (blacksmith) - 5
*Tukang Jahit* (tailor) - 6
*Tukang Tenun* (weaver) - 7
*Tukang Anyam* ( mat-maker) - 8
Other _____ - 9

What kind of skills would people in your banjar like to learn or expand their practice of?

1._____ 2._____ 3._____

Comments _____

_____

What kinds of cooperatives (*perkumpulan*) would you and other people in your banjar like to start? Explain?

1. _____

_____

2. _____

_____

If your wife had the capital what kind of business (*dagang, kerajinan, perusahaan*) would she like to begin or expand?

1. _____

_____

2. _____

_____

What kinds of activities would the youth (*pemuda-pemudi*) in your banjar like to start? (e.g. *sekaa kesenian atau sekaa olah-raga*) Explain?

1. _____

_____

2. _____

_____

What do you feel are your community's greatest needs at the present time?

1. _____

_____

2. _____

_____

What do you feel are your family's greatest needs at the present time?

1. _____

_____

2. _____

_____

Which 3 of the following community projects do you think would be most helpful to the members of your banjar?

1. Animal Husbandry Project ____
2. New Crops Project (*jeruk, kedele*) ____
3. Fishing Project ____
4. *Pasar* Project ____
5. Housing Improvement ____
6. W.C. Construction ____
7. Road Improvement ____
8. Credit Union ____
9. School ____
10. Health ____
11. Nutrition ____
12. Irrigation Improvement ____
13. Drinking Water ____
14. Bathhouse ____
15. Others _____

_____