CENTRAL JAVA ENTERPRISE DEVELOPMENT PROJECT (DESIGN)

FINAL REPORT

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Preface

This Final Report is submitted to the United States Agency for International Development/Jakarta (USAID) in fulfillment of Contract No. AID-497-0331-C-00-2060 between USAID and Development Alternatives, Inc. (DAI) which was signed on 30 May 1982 and amended on 25 July 1983.

This Final Report builds upon the information and analysis presented in the design team's Interim Report dated 31 March 1983 and is the culmination of more than 15 months of field research and design work in Central Java. The report is organized in such a way as to be easily understood and adapted to the framework of a USAID Project Paper.

A great many people have been involved in this effort as long term and short term consultants, subcontractors and providers of guidance and information to the design team. The team is grateful to the Chairman of the Provincial Planning Board (BAPPEDA) and his staff who supported and participated in the effort throughout as well as to the many USAID personnel who providerd guidance and support to the team and participated in determining what form the project should take.

Very special thanks are due to all of the many entrepreneurs, government officials, PVO representatives and others who generously shared their experience and expertise with the team. Without their cooperation and assistance little could have been accomplished.

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DAI is grateful to all of the above individuals, particularly to Dr. Boomgard and Anton Soedjarwo who participated fully throughout the design process and contributed importantly to the preparation of this Final Report. Import as all of these contributions have been, DAI retains full responsibility for the contents of this Final Report and is hopeful that it will lead to the implementation of a project which will truly benefit the people and the economy of Central Java.

Gary D. Kilmer
Semarang
November 1983

I. INTRODUCTION AND OVERVIEW

The Central Java Enterprise Development Project (CJEDP) is designed to demonstrate that an AID-supported Government of Indonesia project can provide significant employment benefits working with and through the private sector. [**] One goal of the project is employment generation among the 26 million people in the province of Central Java, which has one of the highest population densities in the world. A second is learning--testing how the private sector, known to be an engine of development in Western societies, can perform this catalytic role in government-regulated, labor-surplus, agricultural-based economies.

The 9.8 million dollar, three-year project, supported by USAID grant and loan funds, will be carried out by a contract staff of expatriates and Indonesians operating under the policy guidance and auspices of the provincial government, with funding passed through the Ministry of Internal Affairs. The project will concentrate on three subsectors of the economy: agroprocessing, light manufactured exports, and engineering and metalworking. Within each subsector, specific subprojects have been identified, planned, coordinated, scheduled and costed to allow implementation to begin immediately. As the original subprojects succeed, are temporarily blocked from operating, or fail due to changing economic or policy circumstances, there is an identified system of bringing new subproject activities forward for review, policy agreement and implementation.

Whenever possible, support to Central Java's entrepeneurs will be provided through the private sector. There are positive incentives for nonprofit organizations, private companies, and joint ventures to increase private capability to produce and sell products in domestic and international markets. In an economy such as Central Java's where government plays a strong leadership role with policy extending deep into business decisionmaking through investment incentives, taxes and licensing restrictions, there must be sufficient government connection and involvement to insure that the CJEDP gains official sanction and assistance for its enterprise development initiatives.

[**] For the Central Java Enterprise Development Design Project, the Design Team produced its <u>Interim Report</u> and a volume of <u>Working Papers</u>, both dated March 31, 1983. This report builds upon but does not repeat information contained in these preliminary studies.

Three subsectors, and within them, three individual subprojects have been chosen to focus project efforts on real and pressing problems in Central Java's economy while, at the same time, testing an enterprise development model across a variety of economic conditions. Under test is an approach which integrates interventions into industry subsectors based upon comprehensive analysis of production relationships, critical linkages and economic opportunities. The analysis is demand driven, beginning with a well-defined market, extending backwards through the supply line to first-level producers.

Rather than sequentially overcoming constraints, subprojects incorporate simultaneous actions at many points in the production to market chain. These several actions are not interdependent; each is designed to have impact on its own. Taken together, however, they are mutually reinforcing, multiplying the effect of all subproject activities.

The model calls for interventions to impact on and be rendered by the private sector whenever solutions have not been reserved for government. For example, at the same time the project is supporting technology improvements in the smallest iron-casting foundry (the supply side), it will also be amassing evidence to affect national policy on machinery imports (the demand side). The coordinated interventions will be managed from outside a government line agency, but within the framework and purview of government policy review, providing an operational base which can affect public decisions in support of private sector development.

Subprojects span a wide range of industry circumstances and opportunities. The shrimp production and marketing subproject begins with a well defined export market, and moves backwards to problems of supply. The light manufacturing export subproject begins with a knowledge that other countries have built export markets from raw materials and labor bases similar and, in some case, inferior to those in Central Java. There is, however, a major challenge in shaping domestic production to meet the stringent demands of international competition. The metal industry development subproject is designed to build increased domestic capacity to produce machines, equipment and parts presently imported, particularly in the agroprocessing industry.

There is mutual reinforcement among the three subprojects. Building a modern shrimp production capacity, for example, will require machinery to aerate shrimp ponds, as well as feed mills for mixing expensive ingredients according to precise specifications. Neither need is presently served by the domestic metal industry. One light manufactured export item to be promoted will be ornamental brass products. This activity will benefit from technical advances to be facilitated in casting foundries by the metal industry development subproject. Each subproject thus will profit from the knowledge gained, the products improved, and the markets opened by the other two subprojects.

While major efforts are concentrated in the three subprojects, a small core staff will insure that the development model is effectively tested, provide overall management guidance and document the lessons learned, insure coordination among activities, and raise policy and macroeconomic issues to the appropriate levels for policy resolution. Working under the direction of the Governor of Central Java, with policy guidance from the BAPPEDA, this unit will have direct contracts with both USAID and the Government of Indonesia.

Dollar and rupiah funding will be integrated to support both the core staff and the operating budgets for the subprojects. Adequate provision has been made for dollar purchases of technical assistance and commodities to complement local currency operating funds.

While the initial activities of the project are well defined, the future of the core staff has been left deliberately open. Based upon the findings of scheduled project evaluations, USAID and the GOI will decide whether project activities should be fully transferred to the private sector--a basic principal of the project, more formally placed within one or more of the government's operating agencies, or eliminated due to success (or clear failure) in achieving its goals of demonstrating how employment can be positively affected by public sector support to enterprise development in a complex economic environment

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II. BACKGROUND AND PROJECT RATIONALE

The design of the Central Java Enterprise Development Project (CJEDP) began with a search for a means by which public funds could be used to increase productive employment through assistance to the private sector. This chapter summarizes the evidence and reasoning leading to the project which is described in the following chapters.

The discussion is divided into four parts. Section A reviews the recent economic history of Central Java and concludes that there is considerable opportunity for productive employment generation in the province. Section B examines the environment for enterprise development, including the structure of the manufacturing sector, enterprise development policies, and support services. Against this background, Section C discusses the role of the CJEDP in promoting employment generation by working directly with the private sector. Section D explains the focus of the project's activities in three particular industry subsectors to achieve maximum effectiveness.

A. THE EMPLOYMENT PROBLEM IN CENTRAL JAVA

The problem of generating adequate productive employment opportunities for a rapidly growing population is the most serious economic challenge facing Indonesia at present and for the decade to come. A brief review of the recent macroeconomic history of Central Java will serve to illustrate the significance of this "employment problem".

The decade of the seventies was a period of rapid economic growth for both Indonesia and Central Java. When compared to the extreme economic instability during the early 1960s, the record of this period is impressive. Much of the available evidence, however, indicates that the impressive growth in production was not matched with equally impressive gains in employment. This problem is now becoming even more significant in the face of global economic instability and weakening international oil markets, problems that are combining to slow Indonesia's overall economic growth rate.

Structure and Growth of Production in the 1970s

Both the national and provincial economies were characterized by sustained and healthy rates of growth in production during the seventies. National Gross Domestic Product (GDP) grew at a real average annual rate of 7.9 percent between 1971 and 1980. During the same period, Central Java's Gross Regional

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Domestic Product (GRDP) increased at a slightly slower rate of 5.9 percent. These figures mask the fact that Central Java's growth lagged well behind national growth in the 1971 to 1975 period but rebounded to a rate slightly ahead of the national average after 1975.

Structurally, growth in the Central Java economy was led by the tertiary sector (trade and services, including public administration and defense) which grew at an average of 11.0 percent per year throughout the seventies. Public administration and defense was the largest single contributor to this sector's (and aggregate GRDP's) increase, although transportation and communications and banking and finance also grew very rapidly.

The rate of growth in primary (agriculture and extractive) and secondary (manufacturing, utilities, transportation and communications) sector activities, both of which were negative during the first half of the decade, accelerated considerably after 1975. Agriculture achieved a positive growth rate of 6.0 percent between 1975 and 1980 and manufacturing accelerated from -6.9 percent before 1975 to an average rate of 9.5 percent in the post-1975 period.

These differential growth rates indicate that the relative shares of the primary and secondary sec[illegible] in Central Java's GRDP declined between 1971 and 1980. T[illegible] ontrasts with the pattern of national growth which was le[illegible] the secondary sector with a much smaller increase in the share of GDP claimed by the tertiary sector. This illustrates the spatially unequal pattern of industrial development in Indonesia during the 1970s.

The Labor Force and Employment in Central Java

During the 1971 to 1980 period, the total population of Central Java grew at an average annual rate of 1.67 percent while the working-age population (those ten years [illegible]d and over) was growing at 2.27 percent per year. The total number of economically active persons increased by 1.9 million during the period, an average of 212,000 persons per year. The number classified as "working" increased by slightly less, averaging 211,000 per year.

The most significant sectoral shifts in the demand for labor during the 1970s were the decline in the proportion of the workforce in agriculture and the increasing importance of the trade and service activities. The share of the working population in manufacturing exhibited only a modest increase. There is little direct evidence available to assist in analyzing important issues related to the quality of employment or its productivity. There are, however, several indirect indicators which can be examined.

Census data on "employment status"--that is whether the respondent was self-employed, an employer, an employee, or an unpaid family worker--indicate that the proportion of "entrepre-

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neurs" (self-employed and employers) in the total workforce increased from 38.3 percent in 1971 to 48.5 percent in 1980. This increase came at the expense of about equal proportions of employees and unpaid family workers, implying that the ratio of "employees" to "employers", or average firm size, has decreased. This finding suggests that much of the growth in the working population has not necessarily been in high productivity employment but rather in less productive self-employment.

This hypothesis is further supported by other indirect evidence. Research on real wage trends indicates that, on average, there has been little change in earnings since 1970. Among skilled industrial workers, however, wages and productivity have risen. This implies some decline in other sectors. Other evidence indicating increases in marginal employment includes low aggregate levels of average labor productivity in the economy, and unreasonably high employment elasticities in certain sectors.

Open unemployment does not appear to be the major problem in the Indonesian economy at the present time. In the rural economy, based on the household as an income earning and sharing unit, the concept of open unemployment has little relevance. In urban areas, where the concept should have greater applicability, open unemployment has little direct association with poverty. The open unemployment that does exist is apparently concentrated among the educated young who are waiting for better jobs than those readily available and who are being supported by their relatively well-off families in the meantime.

The vast majority of the population cannot afford the luxury of unemployment and must enter the workforce in any way possible in order to earn a living, no matter how small. In both urban and rural areas then, the issue of importance is underemployment not unemployment.

Hence, while the macro-level data suggest that the demand for labor has been keeping pace with the growth of the working-age population, it is more likely that the condition of poverty necessitates that those of working age enter the labor force as "entrepreneurs" in an attempt to secure at least a marginal share of the available income.

The Prospects for the Eighties

The relatively high GRDP growth rates of the seventies were insufficient to absorb the rapidly growing supply of labor in productive activities. This had the consequence not of increasing levels of open unemployment but of apparently increasing marginal, low-productivity employment.

The size of the working-age population will continue to grow, adding increasingly large numbers of potential workers to the labor force each year through at least the end of the century. Under reasonable assumptions concerning the ability of the

economy to productively employ these new entrants, overall economic growth must reach approximately 7.8 percent per year, with the industrial sector growing by no less than 11.4 percent per year, if the employment situation is to improve.

It is of considerable importance, therefore, that the decade of the eighties be one of sustained economic growth in Central Java. This must go hand in hand, however, with conscious efforts to direct that growth in ways that maintain a high employment content. Given the declining capacity of the agricultural sector to absorb labor and the questionable welfare implications of continued rapid absorption in the tertiary sector, the burdens placed on the industrial sector in the decade to come are great. Every effort must be made to promote a pattern of growth which has a high capacity for generating productive employment.

A major concern is that a significant portion of Indonesia's economic growth in the seventies was a direct result of the boom in oil revenues and the relatively large government development budget which this allowed. Oil revenues in the second half of the seventies accounted for 70 percent of the government's total revenue, oil exports generated two-thirds of the country's foreign exchange and the oil bonanza measurably improved Indonesia's ability to borrow abroad.

It is against this background that the Governor of Bank Indonesia reported the 1982 figures on the trade position of the nation. According to his report, gross income from petroleum and LNG exports declined by nearly 16 percent between December 1981 and December 1982. When this is combined with a ten percent decline in the value of non-oil and gas exports, overall export earnings are down 15 percent since the end of 1981. At the same time foreign exchange spending increased nine percent and reserves of foreign exchange were cut in half. These declines will be compounded by reductions in oil prices and allocations in 1983.

This weakening international position of the Indonesian economy reinforces the importance of promoting domestic industrial activity with all available means. If the development progress of the 1970s is to be sustained in the face of difficult and increasing constraints, private sector economic activity will have to assume a leadership position. In the context of both promoting growth in production and in productive employment therefore, the Central Java Enterprise Development Project offers an important opportunity to test mechanisms for public sector support to private sector development.

B. THE ENVIRONMENT FOR ENTERPRISE DEVELOPMENT IN CENTRAL JAVA

In this section three aspects of the enterprise development environment will be reviewed: an overview of the structure of manufacturing in Central Java, selected aspects of the government policy environment, and existing enterprise support services.

Structure of the Manufacturing Sector

The most notable chacteristic of the economy of Central Java is its size and complexity. There are nearly 27 million people living in an area of just under 35 thousand square kilometers (the approximate size of the combined areas of Connecticut and Massachusettes but with three times as many inhabitants).

Manufacturing firms in Indonesia are divided by the Central Bureau of Statistics into four catagories by the size of their workforce: household (1 to 4 workers), small (5 to 19 workers), medium (20 to 99 workers) and large (100 or more workers).

By far the largest number of "firms" are in the household industry category (see Table II-1). Household industries are not legally licensed and many do not operate on a full time basis. They are often only one of a number of income generating activities undertaken by household members and are a reflection of complex urban and rural household labor allocation strategies.

The greatest concentration of household industry activities (an estimated 70.8 percent in 1974/75) were working in three industries: bamboo, rattan and willow products; traditional sugar production (palm sugar); and batik manufacturing. Other activities included food processing (tahu, tempe, krupuk, etc.), roof tile manufacturing, rope and twine manufacturing and brick making. These enterprises are distributed rather evenly throughout the province and produce primarily for a local market.

Table II-1

Distribution of Manufacturing Enterprises in Central Java by Scale

	No. Workers	No. Units
Household Enterprises [1]	1,592,373	520,892
Small Scale Enterprises [2]	138.300	20,407
Medium and Large Scale Enterprises [3]	185,400	1,711

Notes:

1 Biro Pusat Statistik, 1974/75 Sensus Industri
2 Biro Pusat Statistic, 1979 Statistik Industri Kecil
3 Biro Pusat Statistic, 1980 Sensus Industri

Small scale firms are found in nearly every industry. The largest portion, however, appear to be clustered in a few major industrial activities. Five industries (wooden furniture, batik, weaving mills, tahu/tempe (soya curd and crackers) and krupuk/emping (shrimp and cassava crackers) accounted for 54 percent of total employment and 43 percent of the total number of small firms in 1979.

Small scale industries tend to be somewhat more geographically concentrated than their household enterprise counterparts and participate in somewhat longer and more sophisticated marketing channels. Among the notable geographic concentrations of small industries are woodworking in Jepara, batik in Solo and Pekalongan and tobacco curing and processing in Boyolali and Klaten.

Medium and large scale industries are heavily concentrated in only two broad industrial categories, food (beverages and tobacco), and textiles (wearing apparel and leather) which together accounted for 84 percent of the total number of medium and large scale firms and 83.4 percent of total employment in these firms in 1980. There is also some geographical specialization with these larger firms. Cigarette production is concentrated in Kudus, Banyumas and Purworejo and the textile industry is centered in the Pekalongan, Kudus and Semarang areas.

Although medium and large scale firms accounted for only 9 percent of total industrial employment in 1980, they accounted for 88.4 percent of total value added. The value added by medium and large scale firms increased by an average rate of 8.8 percent per annum from 1974/75 to 1980 while employment in these firms was only growing at an annual rate of 4.5 percent. This suggests increasing worker productivity.

High rates of increase for both labor and value added were also reported for the household and small scale industries during the same period. These data are much less consistent and reliable, however, and other indications are that while a great deal of underemployed labor was absorbed, particularly by the household enterprises, the value added per worker probably did not rise significantly and may have actually fallen.

The Policy Environment

The policies of the Government of Indonesia regarding the development of private sector enterprise have changed over time as have the relative priorities assigned to the goals of equity, financial stability and economic growth. Most recently, emphasis has been placed on the development of small-scale enterprises owned by indigenous (pribumi) Indonesians.

A number of government programs and regulations have been developed to address this objective -- especially in the areas of subsidized credit, technical assistance and training, government

procurement policies and preferred licensing and credit arrangements for small-scale producers. These and other policy issues are examined in some depth in the CJEDP Interim Report and related Working Papers.

In general, it appears that the most significant problems for private entrepreneurs in Central Java are less a result of the intent or structure of government policy than they are a result of the uncertainties often created by the ways in which that policy is implemented. This uncertainty, and the resulting reliance on bureaucratic interpretation of government policy and regulations, is felt throughout the government structure and influences the application of government regulations in the areas of licensing, foreign investment, the acquisition of capital, the control of trade, taxation, labor relations and others.

A major reason for this problem is that the government issues very general policy directives at the national level. These are then clarified and interpreted by a large number of departments and officers at lower levels, giving officials not intended to be policy makers significant discretionary latitude over the regulatory process. This leads to concern among entrepreneurs as to how government policy and regulations will be applied and encourages the use of "informal payments" to facilitate favorable interpretations and procedural assistance.

There are other policy interpretations which encourage the formation of cooperatives, restrict selected areas of economic activity to pribumi entrepeneurs, set prices of inputs or outputs, establish government-owned companies which compete in the private sector, and allocate government-controlled contracts. Each of the policies was originally set to address a national or local priority. They sometime restrict economic activity which would take place spontaneously in the absence of restraints.

Existing Enterprise Development Services

There are many enterprise development services available to selected entrepreneurs in Central Java. These may be catagorized under four headings: technical assistance, training, marketing, and credit. Among providers of these services are: the Departments of Industries, Trade, Cooperatives and Labor, a number of universities and technical institutes, banks, and a variety of private voluntary organizations (PVOs).

General problems that cut across the overall enterprise development effort included:

- the lack of coordination among the various service providers which leads to service duplication and an inefficient use of human and financial resources;

- the lack of qualified personnel to plan and effectively carry out these programs;

- top down planning which often leads to the provision of inappropriate services;
- apparent difficulties in delivering needed services to the private sector;
- gaps in the types of services available;
- the lack of sufficient funds to carry out projects as planned; and
- lack of incentives or linkages to foster direct firm-to-firm support.

One overarching problem which characterizes enterprise support services in Central Java is the limited scope and perspective of each effort. "Single factor" solutions to complex enterprise development problems abound. No single agency has a charter, or has seized the opportunity, to coordinate or organize a comprehensive attack on the multidimensional constraints which currently impede the enterprise development process.

A second and more fundamental problem is the inadequacy of the public sector to provide services which are on time, cost effective, and sufficient to support private sector initiatives. This is not a unique situation in Central Java. Rarely can a government's administrative structure, in any country, effectively respond to the needs of private sector entrepeneurs. Under any of a number of equity considerations, there is full scope for government services in Central Java which promote enterprise development. The services which are now available are not sufficient, however, and the government providers are not appropriate vehicles, for a project which must provide dynamic leadership to individual firms and rapidly increase productive employment opportunities.

The particular government service organizations and those Private Voluntary Organizations which interact with, and can contribute to, private sector development in the three subsectors selected are identified and discussed within the context of each subproject described in the following chapters.

C. THE ROLE OF THE CJEDP

Given the nature of the environment for enterprise development in Central Java, the range of services currently being provided by existing public sector agencies, and the purvasive involvement of the government in policies which directly affect the private sector, the role of the CJEDP should be to test the efficacy of a public-to-private-through-private sector model of employment generation. This should be done with sufficient con-

centration that the problems hindering the development of private firms, beginning with the market, and extending backwards through several stages of supply, can be adequately addressed.

If restriction to a few subsectors, to allow concentration of resources, is one parameter of the CJEDP, a second calls upon the private sector, whenever possible, to deliver the services required to assist other entrepeneurs. It is firm-to-firm linkages cemented by mutual advantage which have been successful in other environments, which should be tested in Central Java.

A third parameter calls for the delivery of a full range of needed services to the few subsectors selected, to include technical, organizational, managerial, policy, brokerage, marketing, research, extension, and assistance in accessing credit. The project will thus act to simulate an open market economy, where factor costs, demand and supply, incentive and return operate to guide business decisions. Insofar as possible, the project will balance, redress, and reduce restrictions and uncertainty to help foster the economic growth which is a necessary concommitant to increased off-farm employment.

D. THE FOCUS OF THE CJEDP

Given the size and complexity of the Central Java economy and the vast assortment of potential opportunities for promoting employment generation through private sector enterprise development, a limited pilot project intervention such as the CJEDP must have a clear focus for its activities.

The early stages of research for the project design identified six subsectors for more detailed investigation, based upon straightforward criteria of importance to the economy of Central Java, opportunity for expansion, and potential employment benefits. More detailed field work has generated three subsector analyses and the identification of subprojects within each subsector. The criteria used to narrow the focus and to design subprojects were:

- relative importance to the provincial economy in production, productivity and total employment;
- potential for increasing direct employment opportunities;
- potential for using/developing forward and backward linkages to having a positive indirect (secondary) employment effect;
- potential for increasing exports or import substitution commodities;
- potential for linking small-scale producers with larger scale firms in subcontracting relationships;

- a set of problems which have a solution within the resources and scope of the CJEDP.

The end result of the application of these criteria has been the identification of three subsectors in which there appear to be high pay-off opportunities for CJEDP subproject intervention. These are: (1) agroprocessing industries subsector, with Shrimp Production and Marketing as the subproject; (2) Light Manufacturing Export subsector, with Light Manufacturing Promotion (export services, ornamental brass, readymade garments and rattan/wicker) as the subproject; and (3) Engineering and Metalworking subsector, with Metal Industry Development (agroprocessing machinery and equipment, and component part manufacturing) as the subproject. More detailed explanation of each subproject is contained in the following chapters.

III. PROJECT DESCRIPTION

The Central Java Enterprise Development Project resembles a becak (a three-wheeled Indonesian pedicab) and driver, with its three semi-independent subprojects linked and directed by a centralized management structure supported by a core team of development professionals. The vast majority of all project activity will take place within specifically identified and designed subprojects in the three industrial subsectors (specified in Chapter II).

One primary thrust of the project will be to insure that necessary practical steps are taken so that individual subprojects are carried out effectively and their objectives achieved. On another level, however, the effort will be to develop and test means of making the overall project function in such a way as to make the "whole" of its subproject activities greater than the sum of their parts and prove the value of the enterprise development model being tested. The central elements of this model include the following:

- The grouping of several distinct subproject activities under one umbrella for purposes of finance, management and the provision of technical assistance;
- The provision of intensive assistance to private sector enterprises concentrated within a defined subsector and basing this assistance of a comprehensive understanding of the potential and constraints of individual industrial subsectors;
- The initiation of multiple interventions within an industrial subsector recognizing interrelationships between activities and participants in the production and marketing chain;
- The provision of enterprise development assistance primarily through private sector service providers but making use of government funds as required to stimulate and support private sector activities and encouraging the commercialization of those activities which need not be based on long term government subsidies;
- The carrying out of research and analysis related to specific constraints to private sector development coupled with attempts to influence policy makers who might be able to adjust policies which can be demonstrated to be counterproductive to the enterprise development process.

Considered individually, none of these elements is particularly novel. Each has been tried with varying effect in different situations. It is in their combination that they find their uniqueness and it is in the success of the project implementors in combining and integrating them effectively that the hope of the CJEDP lies.

The three specific subprojects which have been developed as the starting point for CJEDP activities are described in detail in Chapters IV, V and VI of this report. This chapter is used to explain how the subprojects fit into the overall project concept and contribute to the understanding of how to support private sector development in a mixed economy.

After a brief discussion of the project's objectives, projected outputs and required inputs, the concluding section returns to the model being tested and the interrelationships between project activities and project goals.

Project Objectives

The CJEDP has two major objectives. First is to generate increasing non-farm employment opportunities and increase the output and income of Central Java's workforce. Second is to test a model of private sector enterprise development that is based on coordinated multi-factor interventions into defined industrial subsectors working primarily through private sector service providers.

Project Outputs

The operating hypothesis of the project is that specific subsectors of economic activity can be identified in which carefully planned and targeted interventions will achieve the objectives discussed above. Three particular subsectors have been chosen as the focus of subproject efforts which, at once address real areas of need in the Central Java economy and retain the opportunity to test project strategies across a variety of economic, structural, and policy conditions. It is with the three subprojects described in the following chapters, one from each of the principal subsectors, that the CJEDP will begin, building on the work of the design phase. Activities will include:

- o management of the identified subprojects to address opportunities and problems of private sector entrepreneurs, making the best use possible of existing resources and institutional capabilities;
- o subcontracting with and providing technical and managerial assistance to existing public and private sector organizations that have an identified role in the targeted subsectors;

- coordinating project activities with appropriate local institutions and transferring knowledge and lessons learned to them;

- analysis of the impact of particular government policies and macroeconomic factors affecting the development of enterprise in the targeted subsectors and the submission of findings and recommendations to appropriate government decisionmakers; and,

- the on-going identification and analysis of issues, opportunities, and problems affecting enterprise development in the selected subsectors.

Project Inputs

There are two basic project inputs which are required for the accomplishment of the project objectives -- funding and technical assistance.

The overall cost of the project over its three year life is projected to be US $9.829 million, of which US $4.516 million will be required in the form of dollars and the rupiah equivalent of US $5.313 million in the form of Rupiah.

The project will be managed by a contract team of expatriate and Indonesian professionals supported by short term technical assistance personnel and locally contracted administrative and clerical staff. Funding will flow through contracts with USAID and the Ministry of Home Affairs of the the GOI.

Project Methodology

The CJEDP will take a pragmatic approach to problem solving recognizing its resource constraints and the fact that it is a pilot project. This approach is based on the results of design phase subsector analyses of high-potential target industries.

The means used to respond to needs identified by the design team in the specified subsectors will be carefully defined subprojects that address particularly promising targets of opportunity. The project is designed to show results. This requires a thorough investigation of each relevant productive system and an understanding of how it works as well as its potential and constraints before subproject activities are initiated.

Subproject Selection and Development

The subprojects selected for initial implementation are shrimp production and marketing (agroprocessing subsector), export services (light manufactured export subsector), and a comprehensive effort to link production with potential demand

(metals and engineering subsector). These subprojects represent promising initial interventions both to produce impact and to test the project model.

A specific set of criteria was used to assess the initial subprojects and a similar yardstick will be used to measure the potential of future subproject possibilities. These criteria include (1) potential direct impact; (2) subproject feasibility; and, (3) subproject context. Elements in these criteria include:

1. Potential Direct Benefit

   - o productive employment generation;
     - direct employment effects
     - indirect/linkage effects
   - o positive return on invested capital;
   - o creation of incentives for private sector entry;
   - o export generation (or import substitution);
   - o favorable influence on the business climate;
   - o institution-building in support organizations.

2. Subproject Feasibility

   - o availability of CJEDP funding and technical assistance resources;
   - o availability of appropriate outside resources;
   - o existence of receptive target firms or groups of firms;
   - o consistency with available technology and skills;
   - o complementarity with other CJEDP experience and programs.

3. Subproject Context

   - o consistency with private sector incentive structure;
   - o potential linkage with other government and PVO activities;
   - o consistency with CJEDP mandate;
   - o consistency with USAID priorities;
   - o consistency with GOI priorities.

Integrating Subproject Activities

The CJEDP is designed to play its role in a dynamic economic environment in which market and supply relationships may change during the life of the project. It is an economy in which some decisions are left to the discretion of the entrepreneur and some are not, with a good deal of uncertainty and change between the two categories.

The three subprojects chosen to be the focus of early CJEDP development were selected on the basis of the criteria presented above and they are indeed likely candidates for development. Three other subprojects might have worked just as effectively, however, and it is not in the selection of the subprojects that the CJEDP finds its uniqueness, but rather in the the approach which the project takes to the development of these subprojects.

The CJEDP approach calls for an analysis of the subsector to determine the interrelationships, constraints and opportunities it contains. In particular, the analysis examines potential linkages between, in the case of the shrimp industry for example, the market and processors, processors and suppliers, suppliers and hatcheries. In another subsector it is between designers/ fabricators and casters, fabricators and machinists, machinists and casters. Each forward or backward linkage provides an opportunity for mutual benefit from cooperation among private entrepreneurs -- cooperation which would arise naturally in an open economy, but which for historical and policy reasons is rarely seen in Central Java.

The analysis also identifies institutions which can help overcome the sluggishness of private sector expansion and modernization, the difficulties of obtaining credit in a funds-surplus banking system, the lack of technical or market orientation in many producers, the failure of management and firm organization to keep pace with demands for higher quality, more consistent output. In the right circumstances, the potential providers of such services are also within the private sector.

The resulting subproject interventions are then directed at increasing private capacity using commercially-viable arrangements for the delivery of assistance which are often seen as the province of agencies of government. It is, in fact, government providing the source of funding and the policy support, but with the actual assistance being delivered by private sector entities. This is, of course, outside of the normal operating mode of traditional public sector development projects.

The subprojects prove the promise of the project, but they themselves are not the project, nor are they the most important core element. It is the approach which operates through an integrated and mutually supportive group of subprojects which is critical to the CJEDP if better methods of utilizing public funds in support of development objectives are to be found.

Without solid subprojects carefully planned and ready for implementation, however, there can be no project. In themselves they are not sufficient to guarantee the success of the project.

IV. SHRIMP PRODUCTION AND MARKETING SUBPROJECT

Background

The export of frozen shrimp is Central Java's most important foreign exchange earning activity [1]. In each year since 1976 shrimp exports have accounted for over 20 percent of the value of Central Java's known exports (see table IV-1). Except for 1980, the first year of Indonesia's ban on trawling, shrimp exports have consistently been Central Java's number one export commodity.

In spite of weak international markets for most commodities during 1982, frozen shrimp exports totaled over twenty six million dollars, a record high, representing nearly 30 percent of the total value of the province's exports [2]. Approximately 85 percent of the value of shrimp exports represents net foreign exchange earnings [3].

In spite of this record of successful growth, there is considerable untapped potential in the shrimp industry. The international market for shrimp is strong, growing and capable of

Table IV-1

Exports of Frozen Shrimp from Central Java, 1976-1982

Year	Value of Exports, FOB ($ millions)	Volume of Exports (metric tons)	Percentage of Total C.J. Exports (%)	Rank in Total C.J. Exports
1976	14.8	3,389.7	29.4	1
1977	18.8	5,488.5	31.0	1
1978	16.7	3,478.3	20.7	1
1979	23.5	4,344.6	21.6	1
1980	20.2	3,241.0	20.1	2
1981	23.0	3,026.7	23.1	1
1982	26.7	3,204.7	29.6	1

Source: Department of Trade, Semarang

absorbing whatever Central Java can supply, but the quantity of shrimp available for export is far below what it could be. This is due, in large part, to the poor performance of the existing aquaculture production system. Processors, constrained by a shortage of shrimp, are operating far below capacity. At current production levels they have no incentive to extend their markets beyond their present buyers in Japan.

The problems and constraints facing the industry are complex, reflecting a relatively poorly developed and coordinated vertically organized, production and processing system. Before outlining the major issues which will be addressed by the CJEDP's shrimp production and marketing subproject, it will be useful to briefly describe the structure and organization of this industry.

The Structure and Organization of the Shrimp Industry

The frozen shrimp industry is a typical "agroprocessing" industry, composed of several functional stages organized in a vertical value adding process. At the top of the system are the processors. In Central Java, there are presently six processors, two in the public sector and four in the private sector [4]. Four of the processors are located in Semarang, one in Pekalongan and the other in the southern port town of Cilacap. One of the firms is a joint venture operation with a Japanese firm.

Processing is done exclusively for export with the processors serving as exporters. These firms are involved in sorting, cleaning, packing, freezing and cold storage. The first three steps are highly labor intensive while the freezing and cold storage are capital intensive. Freezing is carried out using either blast or plate freezers.

The processing firms are generally quite large, employing from 200 to 400 persons, about 90 percent of whom are women, with initial capital investment on the order of $1 million each. Daily processing capacity varies with freezing technique and freezer capacity, but ranges from four to eight metric tons per day. Actual export volume ranges from 500 to 1,500 metric tons per year. At the present time processors are operating at a maximum of 30 percent of their total capacity.

The shrimp processed for export are captured from the sea or grown in brackish water "tambak" ponds. Until recently, most of the export quality shrimp were supplied by relatively large-scale trawl fishermen. In 1978, for example, marine trawl fishing accounted for 74 percent of the shrimp produced in Indonesia [5].

Government policy to promote small-scale, pribumi fishermen resulted in a complete ban on trawling beginning in 1980 [6]. This has placed rather severe constraints on the potential supply capacity of the large-scale fishermen. Even with the recent

decision to allow trawlers to operate with a modified, more selective net in certain areas, it is unlikely that they will be able to adequately support further growth in the export industry.

Traditional, small-scale fishermen have benefited from the ban on trawling, realizing somewhat larger catches and receiving subsidized credit for upgrading their boats and equipment. These boats still, however, have a limited sailing range which results in relatively crowded fishing conditions. Their catches of high quality shrimp are limited and not likely to increase.

It is generally agreed that fishing can not realistically meet the expanding demand for shrimp in the world [7]. Maximum sustainable yields from the sea have been reached or exceeded in many parts of the world. The future will likely bring a decline in the relative importance of the fishermen as a source of supply of all sea products including shrimp. Much as hunting and food gathering were replaced by agriculture, fishing is gradually giving way to commercial aquaculture [8].

Tambak pond aquaculture has been extensively practiced in Indonesia for more than five centuries [9]. There are approximately 180,000 hectares of tambak ponds in the country, found primarily along the coastal areas of northern Java, in southern Sulawesi and in northern Sumatera. Nowhere else in the world do there exist joined pond systems which, in regard to their extent, surpass the tambak system of Indonesia [10].

Historically, the tambaks were used for growing whatever species of fish or shrimp happened to be "stocked" during tidal pond filling. Over time, production focused on the resilient and tasty milkfish, with shrimp and other fish harvested and sold as a source of finance for the daily cash needs of the ponds' caretakers.

Only recently has there been any push towards the specialized production of shrimp. In 1973, shrimp made up only 12 percent of the nation's total tambak production. By 1979 it had reached 26 percent of the total [11]. Except in certain areas, shrimp is only grown in polyculture with milkfish.

In Central Java there are 25,596 hectares of tambak ponds. According to the Provincial Fisheries Service there are 18,295 full time tambak farmers. Average tambak size is approximately 1.4 hectares with most of the variation between .5 and 2.0 hectares.

Approximately 5,100 hectares or 20 percent of the total area are used for producing shrimp, all under polyculture with milkfish [12]. With this system only one crop is produced per year.

In 1982, a total of 768 metric tons (mts) of shrimp were produced in Central Java's tamabks [13]. This reflects an average of 150 kilograms (kgs) per hectare per yearly crop.

There are approximately 3,700 people involved in tambak shrimp production on a full time basis. Half again as many people find temporary or part time work during land preparation and harvesting. Therefore, under current conditions a total of aproximately 5,500 persons are directly employed in the tambaks. This means that in Central Java alone as many as 30,000 family members are directly affected by developments in shrimp aquaculture at the tambak level alone.

Tambak producers are organized through a producer's association, HKTI (Himpunan Kerukunan Tani Indonesia). This is a national association whose primary organizational unit is the "group" (kelompok petani) at the village or district level. Groups are composed of between 15 and 100 members. HKTI is a representative body of private sector producers.

In addition to the processors, fishermen and tambak farmers, there are several other actors in the industry. Tambaks are stocked with fry purchased from either traditional collectors or one of several modern hatcheries. The Provincial Fisheries Service (Dinas Perikanan) regulates and provides extension service to both fishermen and tambak growers.

There is a government organized cooperative of small-scale fishermen (PUSKUD Mina Baruna) which controls the marketing of its members' products and which has recently become involved in the processing business. Finally, the Directorate General of Fisheries in Jakarta has established the Brackishwater Aquaculture Development Center (Balai Budidaya Air Payao, BBAP) in Jepara, Central Java as a center for research and development for the industry. Each of these participants will be discussed in greater detail as they relate to particular issues below.

Problems, Opportunities and Constraints in the Shrimp Industry

The Tambak Aquaculture System

In spite of (or perhaps as a result of) its long history, the Indonesian tambaks are characterized by one of the least intensive production systems found anywhere aquaculture is practiced. Annual production is on the order of from 25 to 250 kilograms of shrimp per hectare with an average yield well below 150 kilograms. This compares with estimates of 300 to 1,600 kilograms per hectare in India, 250 to 900 kilograms per hectare in the Phillippines, 750 to 1,500 kilograms per hectare in Taiwan and 2,000 to 3,000 in Japan [14].

It is estimated that with current tambak conditions and only minor changes in farming practices, average yields could easily surpass 400 kilograms per hectare per crop. With more significant pond improvements, more substantial changes in farming prac-

tices and with two to two and one half crops per year, an eventual goal of 3,000 to 4,000 kilograms per hectare per year is not unreasonable.

The current low levels of productivity reflect the existence of a number of problems and constraints affecting the tambak system. Three of the most important concern feeding, water quality and fry supply. Each will be considered it turn.

Shrimp Nutrition

A nutritious, economical and properly applied shrimp food can substantially increase tambak productivity. This occurs by increasing the possible stocking density and rate of growth of the shrimp. A number of mixtures are being used commercially in other countries, but no supplemental food is used in Indonesia.

Farmers rely almost exclusively on traditional "natural" feeding systems. Prior to stocking, fertilizer is applied to the bottom of the pond. This promotes the growth of plankton, algae and other microrganisms which form the substance of the shrimps' diet. While natural feeding has historically been effective for extensive aquaculture, vastly improved feeding systems are now possible [15].

In experimental ponds it has been found that shrimp fed pelleted feed had growth rates twice that of shrimp fed pulverized (relatively unavailable to the shrimp) feed and three times that of shrimp cultured on natural productivity induced by fertilization [16]. Other estimates drawn from experimental and actual conditions find increased yields with food varying from 1.5 to 3.0 times [17].

The appropriate range of nutritional needs for shrimp have been determined from comparative diet studies and amino acid analyses of shrimp tissue [18]. Typical shrimp food requiress from 20 to 30 percent protein which can be supplied by combinations of a variety of ingredients including fish meal, shrimp head meal, soy bean meal, wheat or rice flour, vitamins and minerals and a material to bind the ingredients.

Given the types of locally available inputs and their nutritional values and prices, it is a straightforward problem to determine optimal mixes for the feed which could then be tested in ponds for actual response, optimal application rates, and the physical characteristic of the food.

Any supplemental diet is complementary to and supportive of the natural foods produced in the pond ecosystem [19]. The type of microorganisms and plankton found in ponds is dependent on the characteristics of the local ecosystem. Hence, foods which work in one area may not be as effective in another. This highlights the importance of local development and testing.

It is generally felt that a food to body weight conversion ratio of between 2.0 and 3.0 to 1 can be economically efficient. This means that each 2 to 3 kilograms of food is associated with a final product of 1 kilogram. Ralston-Purina's blend which is used in Central and South America is associated with a conversion of 3.0:1. The feed which has been tested at the BBAP has a conversion rate of 6.0:1, much too high to be commercially viable.

The Indonesian animal feed industry has not yet attempted to enter the potentially vast market for shrimp feed. Tambak operators are not accustomed to using food and this implies substantial market development costs. Furthermore, the vastness of the market depends on the availability of post-larvae (fry) and the solution of certain other tambak problems.

The feed producers often do not have their own capability to develop and test feed formulations. Most firms simply combine prespecified local ingredients with imported concentrates. Few have the capacity or, at present, the interest to undertake the research and testing required for the development of a commercially viable shrimp food.

The United Nations' Food and Agricultural Organization (FAO) has provided the BBAP with a complete set of equipment for food development. However, the Center has no special budget or proposed project activities in this area. They have developed several experimental formulations but they are expensive, inefficient, and largly untested.

Water Quality Management

Water quality is affected by a wide range of factors. Two of the most important relate to adequate fresh and salt water supplies to permit regulation of salinity and adequate mixing. The Asian Development Bank (ADB) is initiating a project which, among other activities, will improve 156 kilometers of irrigation canals in Central Java [20]. This represents a key step towards the solution of the water quality problem.

Water mixing and aeration are critical for high pond productivity. Inadequate circulation may cause oxygen depletion during daylight hours due to thermal and oxygen stratification. Nighttime declines of available oxygen are also common in high density culture ponds. Insufficient oxygen limits the amount of feed which can be applied to a pond. Excessive food applications can give rise to dense algal populations which are extremely unstable and are subject to spontaneous die-offs. Furthermore, these populations generate high biological oxygen demands during nighttime hours which can deplete pond oxygen levels and cause mass mortality of the shrimp [21].

Thermal and oxygen stratification can have a dramatic effect on the distribution of shrimp within the pond. In such situations shrimp migrate to shallow areas which results in severe crowding, environmental decline and stress. This can lead to high mortality. Furthermore, food in deep waters is not available to the shrimp and dissolves before destratification occurs.

These problems can largly be avoided by the use of appropriate low-energy water circulators and higher energy aerators. These devices can improve oxygen levels even with increased stocking densities. These simple devices have been used with considerable success in catfish ponds in the Southern U.S., increasing production by up to 400 percent. Given that bottom dwelling shrimp are even more susceptible to oxygen depletion than free-swimming catfish, the effectiveness of water quality improvement equipment is likely to be even greater in shrimp ponds. Pond circulators should be used during daylight hours to distribute oxygen produced by photosyntheses and pond aerators should be used at night to add oxygen to the water.

There is a diesel powered aerator available from a firm in Jakarta. This particular device has been designed for relatively large ponds and has not found a wide market. No ponds visited in Central Java use any kind of mixing equipment.

Fry Supply

Among those factors responsible for the poor performance of tambak shrimp producers is the shortage of high quality "fry" (post-larvae) available for stocking the ponds. Specialized shrimp culture depends on the existence of a reliable supply of high quality post-larvae. At the present time such supplies are not available to the tambak farmers in Central Java.

Traditionally, shrimp were secondary pond products with the fry coming from the sea as a by-product of the filling of the pond. As shrimp became a more important product, fry began to be collected from mangrove coastal areas in Central and East Java and sold to farmers.

Destruction of mangrove forests suitable for larval development, depletion of coastal shrimp supplies by traditional fishermen and contamination of brackish water areas have placed severe limitations on the availability of fry from traditional sources. It has been estimated by the Provincial Fisheries Service that only 20 percent of the total fry needed in the province come from traditional sources and that its potential contribution is declining.

The alternative to traditional sources is the production of post-larvae in hatcheries. The government of Indonesia, realizing the seriousness of the need, has been directly investing in hatcheries and is encouraging private sector investment in hatchery development. At the present time no processing plant

may be established on Java unless it jointly establishes a hatchery. There are three government and three private hatcheries in Central Java, but production is far below the level required to meet the needs of the tambak farmers.

With the estimated 5,100 hectares of shrimp tambak in Central Java and with a very low stocking density of 10,000 post-larvae per hectare per year, the total required supply of fry is approximately 51 million per year. If 20 percent of these needs can be supplied by traditional sources (i.e. 10 million fry), then the hatcheries must produce a minimum of 41 million fry per year. Under improved stocking densities (50,000 per hectare) and with two and one half crops per year the total requirement is approximately 638 million post-larvae per year in Central Java alone. And, this figure assumes absolutely no extensification of shrimp culture.

The current production rate in Central Java's hatcheries is a total of only about 8 to 10 million fry per year. The magnitude of the deficit even under existing conditions is obvious.

The fry deficit is reflected in a number of ways in tambak farming. The low stocking densities of shrimp are a direct result of the shortage. Farmers, in addition, are prevented from more intensive shrimp cultivation over the course of the year. As noted earlier, there is no more than one shrimp crop per year. Furthermore, tambak operators who wish to shift to shrimp culture to complement or replace milkfish production can not do so.

The shrimp which are grown and harvested are generally of lower quality than required for exporting. In one sample of Central Java's tambaks it was recently found that 25 percent of total tambak production, by weight and value, is composed of shrimp [22].

This result is surprising because shrimp is a high value crop worth several times more per kilogram than other tambak products. The equi-proportion of weight and value occurs precisely because much of the shrimp grown is naturally stocked, of mixed species and very low quality. If Penaeus monodon (Tiger Prawn) fry were available, the value of the shrimp grown would be ten times greater per kilogram, than for the "trash shrimp" which is now practically given away.

The Agroprocessing Model of Tambak Improvement

In the past the tambak system has successfully resisted the development of modern aquacultural practices. Farming practices are based on a long tradition which seems to earn the operators a satisfactory level of income. Efforts to improve practices, for example the government extension program, have not met with success.

One possible reason for this failure is that the complexities associated with vertically interconnected systems have not been adequately taken into account in the analysis of alternative interventions. In this kind of situation, each set of participants in the system responds to different incentives and constraints. Since the successful development of one part of the system is closely dependent on what happens in other parts of the system there is a built-in tendency for such systems to resist development efforts.

The most successful cases of agroprocessing development in the world have occured when the private sector has taken the responsibility for advancement in its own hands. Examples such as the British American Tobacco Company, where the processors have seen to the development of high productivity smallholder tobacco farming, can be found in a variety of countries including Indonesia. Development need not be stifled by the search for private economic gain.

The local processing firms have a strong financial incentive to increase shrimp production. There has been to date no move in the direction of processor-led technical assistance by the local businesses. Shrimp processors in Central Java understand the approach and find it attractive, but, until now, have felt that it was not possible. Apart from complete vertical integration (which is legally prohibited on Java), however, processors in Central Java have little knowledge of how they can participate in the overall development of the industry.

They are faced with a substantial amount of uncertainty as to what the private sector might be permitted to undertake given the highly visible and increasing level of public sector participation in the industry.

The CJEDP can play an important role in stimulating the private sector's interest in taking responsibility for speeding the development of their own raw material supply system. The proposed subproject will encourage the private sector to undertake activities, complementary with government programs, to improve tambak production.

The CJEDP will assist in getting such a program started by subsidizing the costs of certain activities which can promote private sector participation. Activities will include developing and testing of selected technologies and techniques which can be demonstrated in the project's pond development programs and then to work with the processors, feed companies and hatcheries to promote a program to disseminate this learning to the farmers.

The Shrimp Hatcheries

There is a high degree of variability in the performance of both public and private sector shrimp hatcheries in Indonesia. For the most part, however, performance is far below desirable

levels. Among the private hatcheries in the province, the situtation is extremely serious.

The poor performance of the hatcheries is due, for the most part, to the requirements for precision control and regulation of the production system. At each step in the process, from the care of the broodstock, water control, and monitoring, to feeding practices, there is a need for precision that many of the local private hatchery operators are only beginning to understand.

The early stages of shrimp culture require small algae cells for food. The feeding rates in these stages must be controlled to a definite number of cells per milliliter. Water in the hatchery tanks must be maintained at above 25 degrees Celsius. And, with existing technology, later stages in larval rearing require the feeding of brine shrimp (Artemia) at a cost of Rp. 40,000 per pound of cysts.

The hatchery business is an extremely complex, multifaceted technology. The learning curve is costly and it often takes considerable time and resources before even experienced operators can expect to make a profit with a new facility. The successful commercial hatcheries in the U.S. are owned by the Coca Cola Company, Union Carbide, Grace Agricultural and Ralston-Purina. Some of these hatcheries are run by Ph.D.'s in this field who have lived shrimp for years.

Even at the BBAP, survival rates, that is, the proportion of fry surviving from the time they are hatched until they are post-larvae-10, is on the order of ten percent. In the National Marine Fisheries Service (NMFS)'s Galveston hatchery, survival rates are on the order of 50 to 60 percent. The three private sector hatcheries in Central Java are lucky to get one percent survival.

The BBAP in Jepara is the center for technical research and development for hatcheries. The quantity and quality of direct technical assistance which it is able to provide to the private sector hatcheries is severely limited by budgetary and personnel constraints. There are also certain technical areas (e.g. disease control) in which the center's capabilities have not yet been sufficiently developed.

The improvement of the hatchery system in Central Java is among the highest priorties in an overall strategy to contribute to the development of the province's shrimp industry. The private hatcheries are on the verge of collapsing. Their problems must be resolved quickly. Furthermore, given the need for a considerable number of new hatcheries, it is desirable that the capacity to assist the operators be institutionalized both in the private and public sector. The CJEDP can make an important contribution in both of these directions.

Product Marketing and Quality Control

Apart from increasing the quantity of shrimp production there is also the important question of product quality. Indonesian exporters have the distinction of consistently forming a significant subset of those listed on the U.S. Food and Drug Administration's "block list," meaning that there have been a sufficient number of quality problems in the past to justify rigorous inspection of each shipment of frozen shrimp to the United States. This is one reason that practically all of the country's shrimp exports are sold in Asian markets.

Nearly all of Central Java's shrimp exports are sold to the Japanese. Japan has the world's highest per capita consumption of shrimp and is the world's largest importer. The Japanese importers generally offer the world's best price and are the only shrimp buyers willing to offer prices which are guaranteed for as long as one month. Japan also has a reputation for being relatively lenient with regard to product quality standards.

There is currently, however, increasing evidence of a substantial inventory "overhang" in the Japanese market. This is likely to place downward pressure on the offered price and promote increased concern with the strict enforcement of product quality standards. The recent destruction of over ten tons of Indonesian shrimp due to the presence of cholera can be taken as an indication of what the future holds in store.

Even without long term tightening of Japan's quality control on shrimp imports, local processor-exporters have a strong interest in tapping the European and American markets. With increased production of shrimp it will be necessary to extend markets beyond Japan. At the present time the constraint to expanding export markets is quantity; given greater quantities, the constraint will be product quality.

The quality of the final product depends on the quality of the input. Pond cultured shrimp are a premium product. They are superior to sea shrimp because they can be harvested without the shell damage common to fishing. Furthermore, "fear" hormone concentrations which adveresly affect product quality are less for tambak harvest techniques than with capture from the sea. It is important to try to preserve the quality of the tambak product before it arrives at the processor.

At the present time handling of shrimp from the producers (or fishermen) to the processors is not consistent with the maintence of high quality standards [23]. It is not uncommon for up to 30 percent of the producer's (or broker's) product to be rejected by the processor due primarily to damage and decomposition.

There are a variety of problems in the handling of shrimp between the producer and the processor. Among the most important are inadequate use of ice, the absence of initial cleaning and

deneading and inefficiencies in the marketing system which increase the amount of time in pond to processor product movement.

Immediate product icing, sufficient to keep the shrimp cooler than 4 degrees Centigrade or 40 degrees Farenheit, will substantially slow the rate of product decomposition. It is desirable that the ice be made with water chlorinated at 10 to 15 parts per million (ppm). With proper icing, maintenance of the prescribed temperatures can efficiently be accomplished through the use of high quality insulated boxes.

It is also useful to wash the shrimp and remove their heads before packing. The head of the shrimp is most susceptable to bacterial decay and material in the head promotes rapid bacterial growth. A chlorine wash at approximately 300 ppm can substantially reduce bacterial contamination.

At the processing level, quality can be improved through the adoption of modern manufacturing practices. One of the cold storage plants in Central Java was recently inspected by the FDA to learn how they could adapt their processes to meet American standards. A number of the procedures of the processor were found to be inconsistent with what are termed, "good manufacturing practices". Among the factors noted were the absence of chlorine-based water purification, some minor flaws in the building and premises and careless practices followed by employees. All necessary modifications are considered relatively simple and inexpensive.

It is also important to have local laboratory certificate testing available. This is necessary for internal firm quality control and is also useful to importers. Certification should be available for bacterial analyses (E. Coli, Salmonella, Coagulated Positive Staph, Coliforms, etc.) and other factors such as count, drain weight, black spot, freezer burn, shell breakage, glaze and denydration.

Proposed Subproject Description

The CJEDP can contribute to the development of shrimp production and marketing through four types of subproject assistance. These are: (1) hatchery technical support; (2) tambak technology development and testing; (3) pond development and management; and, (4) quality control improvements.

These efforts are aimed at increasing the role of the private sector in the provision of development assistance while at the same time making appropriate use of existing governmental institutions and technical capabilities.

Hatchery Assistance

Provision of technical support to Central Java's private sector shrimp hatcheries is directed towards three objectives: increasing the production of post-larvae; improving the ability of the Indonesian government, particularily the BBAP, to deliver assistance to the private sector; and, to facilitate the establishment of new hatcheries in the province.

The CJEDP, through the provincial government, will directly enter into a subcontract with the BBAP. The contract will cover a twenty-two month period and will provide for establishment of a program for delivery of technical support to the private sector hatcheries in Central Java. It will include budget resources to support one full-time Indonesian BBAP staff expert, two assistants and provide funds for travel, per diem and needed equipment and supplies.

The contract will, in addition, provide for two training workshops for private hatchery operators; two, two-month training courses at BBAP's facility for up to five selected participants; and, two study tours for the hatchery program staff. One of the tours will cover selected Indonesian hatcheries and the second will be to the successful hatcheries and support institutions in Taiwan and either the Philippines or Thailand.

At the same time, the CJEDP will provide short-term, expatriate technical assistance to the private sector hatcheries. The expert will spend an initial period of five months working with the three private hatcheries in the province. This person will work with and be backstopped by the BBAP subcontract team. The main focus of his efforts will be the transfer of technical ability to the private sector and extension techniques to the BBAP.

Over the course of twenty-two months a total of three and one half person-months of additional foreign short-term assistance will be provided by CJEDP. At least one person-month will be directed at overcoming marketing problems facing the hatcheries.

The CJEDP will also provide assistance to those wishing to establish new hatcheries in the province. The project staff will assist entreprenuers in arranging management or operational consulting services and facilitate participation in BBAP training programs.

Tambak Technology Development and Testing

The activities grouped under the heading of tambak technology development and testing are aimed at increasing the development and dissemination of appropriate technologies and improved pond management practices which can generate greater output and employment in Central Java's shrimp industry.

Attention will initially be focused on the development and testing of shrimp food, aerators and economic pond management techniques.

Shrimp Food Development

The CJEDP can play an important role in stimulating the development of supplemental shrimp food by subsidizing the initial research, development and testing required before commercialization is possible in Indonesia. Given the facilities and expertise available at the BBAP, it is recommended that this center serve at the locus of these activities.

The food development activity will focus on strengthening BBAP's ability to formulate and test potentially commercially viable foods. The CJEPD will provide funds through an 18 month subcontract to BBAP for two full-time staff members, equipment repair, maintence and operation, material procurement, food production and pond testing. In addition, the CJEDP will provide four man-months of short term assistance from an expatriate shrimp nutritionist over the contract period.

The contract will call for the immediate development of five food formulations using local ingredients. These will simultaneously undergo a 45 day test program in BBAP ponds to find two formulas which show the greatest commercial prospect. The remaining time will be spent in backstopping the pond development program (see below) and in continuing research and development efforts. At the end of the eighteen months the results of the program will be published and distributed to the private sector for commercialization.

Private sector participation will be sought for the food development activity. It is likely that private feed companies such as P.T. Cargill would provide samples of their shrimp food now sold in Central America for use in the initial testing program. Furthermore, the American Soybean Association may be willing to donate meal for the test formulations. These arrangements will be the responsibility of the subproject's full-time staff.

Water Quality Technology Development

Beginning in November 1983, the Central Java Provincial Planning Board (BAPPEDA) will be following up on several issues raised during the design phase of the CJEDP using its own resources. They will contract with a private foundation for the development of four testable, prototype water circulators and a prototype aerator. The equipment will be powered by different energy sources: bicycle power, motorcycle power, electric motor and diesel or gasoline engine [24]. These will be developed according to designs already available with technical assistance from experts presently on contract with other USAID projects in

Indonesia. Preliminary testing will be the responsibility of the developer. These aerators will be available to CJEDP for use in its pond development program.

The CJEDP will also have available a small quantity of resources to continue with these activities including some short term technical assistance from a water circulation expert. These efforts will be directed at insuring the availability of a workable product for the pond development program and introducing water quality monitoing as an integral component of pond management.

Economic Pond Management Technique Development

With the assistance of the CJEDP core research team and an expatriate aquacultural economist, a micro-computer program will be adopted for use in shrimp pond management. There are a number of farm management packages which have been and are being adjusted for use in micro-level pond production management.

This program will essentially determine optimal harvest time by comparing marginal revenues to marginal costs in a dynamic programming framework. It will be based on information such as growth rates, food conversion and market price. This program will be tested and used in the pond development activities and once perfected will be made available to any interested public or private parties.

Pond Development Program

Dissemination of appropriate technologies and techniques depends on demonstrated effectiveness in actual pond situations. The CJEDP will facilitate such demonstrations through its pond development program.

The objective of this program is to provide direct technical assistance to groups of tambak farmers in order to test and demonstrate technological developments, illustrate incremental pond improvement packages and to create a replicable, private-sector producer-group tambak development alternative.

The CJEDP pond development program will work through small groups of tambak farmers. With the assistance of the HKTI producers' association and a local foundation (e.g. LP3ES) familiar with group organization, the project staff will select three groups of approximately ten tambak farmers, each willing to participate in the program. Each group should control between twenty and thirty hectares of contiguous ponds. The three groups will be selected from different districts.

The project will enter into a one year "no-loss" pond management contract with each of the participating farmers. Under the terms of this agreement, the CJEDP will have full

management control over the ponds. The participants will provide workers and agree to follow the direction of the CJEDP pond managers. In return they will earn a guaranteed revenue based on potential "without-project" earnings and a share of the revenue of the group after operating expenses are met.

The CJEDP will provide competent field management for each of the sites, high-powered technical support, necessary capital equipment and pond improvement, record keeping, marketing of output and pay all operating expenses including labor, fry, fertilizer, feed and fuel during the contract period.

Three different pond management systems will be practiced in each set of ponds. This will provide a basis for the analysis of the testing and also offer a range of technological options to the tambak farmers. One possible program is illustrated in Table IV-2. The final determination of the precise characteristics of the systems will be made by the implementation team based on the nature of the ponds used in the program.

Table IV-2

Alternative Pond Management Systems for Pond Development Program

Characteristic	SYSTEM I	SYSTEM II	SYSTEM III
Stocking Source	Hatchery	Hatchery	Hatchery
Stocking Density	Low	Medium	High
Fertilization	Yes	Yes	Yes
Supplemental Feeding	No	Yes	Yes
Aeration	No	Yes	Yes
Water Exchange	No	< 3%/day	> 3%/day
Number of Crops	~1.5	~2.0	~2.8
Management	Yes	Yes	Yes

After one year the project will select a second set of three groups for the program. All will remain the same except that the farmers will be required to pay the costs for capital equipment and pond improvements. The CJEDP will assist the farmers in obtaining needed finance from existing sources.

In the third year every effort will be made to spin-off as many of the program's activities to the private sector. If successful, the program should attract the interest of private sector entities willing to deliver appropriate packages of assistance on a commercial basis. It is likely that the processing plants will be willing to seriously consider taking on the delivery of the project's services. The CJEDP will continue, through the end of the third year to provide technical assistance to the program.

Based on the technology and pond development programs, the processors will be encouraged to develop backward linkages (extention and financial) to their marketing agents and tambak farmers which will continue after year three. This will include the dissemination of the information resulting from the test program as well as possible financial assistance for undertaking selected improvements. Technical assistance will be provided by the subproject's long-term staff.

As noted earlier, the processors have shown an interest in this type of program. The producer's association (HKTI) is also anxious to see the private sector attempt to deliver effective technical assistance to the tambak farmers.

Most of the shrimp purchased from the tambaks are handled by independent middlemen or agents employed by the processors. Many of these brokers have long-standing relationships with the farmers which enhances their ability to conduct business in this industry. These actors will form an important element of the extension efforts of the processors.

Tambak intensification is associated with changes in the requirements for both fixed and working capital. Cropping patterns will follow a more rigid seasonal pattern changing the timing of inflows and outflows; higher stocking densities require greater cash for materials; also any fixed capital additions must be financed.

Sufficient funds are available in the Indonesian financial system, but tambak owners have, in the past had difficulties getting access to them. Collateral requirements for some program loan schemes are high. The KIK/KMKP loans require ownership of at least two hectares of land. Furthermore, low productivity has limited the ability of farmers to payback money which they have borrowed. The CJEDP will work towards increasing the role of the processors and input suppliers in promoting the use of supplier credit in the system and at assisting producers to secure institutional credit. This will be done by obtaining information for potential borrowers, presenting evidence to lenders about the sub-project activities and risks associated with tambak loans and encouraging their participation in tambak development.

Quality Control and Marketing Program

The problem of quality control will be addressed in producer-processor marketing (procurement) channels and at the processing level. Initial activity in marketing channels will be undertaken as part of the pond development program.

All of the production in the pond program areas will be subject to strict quality control efforts. The shrimp will immediatly be deheaded, washed in chlorinated water and packed with ice in proper insulated boxes. Temperature will be monitored prior to delivery. Processors will be informed of the procedures followed. With proper handling, the shrimp will be preserved long enough to search out the highest offered price.

The CJEDP will sponsor a workshop and prepare training materials on product handling for the benefit of processors, their agents, other brokers, government extension personnel and producers.

At the processing level, the CJEDP will provide two weeks of consulting time to each of the province's cold storage facilities. This consulting will cover topics related to meeting U.S. Food and Drug Administration standards for product quality.

The quality standards consultant will also assist in the development of a reliable lab certification scheme for the exporters.

For export marketing, the subproject will sponser a workshop and provide 25 hours of individualized consulting time to processors on international marketing strategies. Focus will be placed on serving non-Asian markets.

Implementation Plan and Staffing Requirements

Each of the four proposed activites, hatchery technical support, technology development and testing, pond development and marketing and quality control, represent necessary components of a single, effective subproject. They form an integrated assult on problems related to a poorly coordinated, vertically structured system. The proposed implementation plan and staffing requirements for the subproject are presented in the figures which follow.

The shrimp production and marketing subproject will be directed and coordinated by the senior subproject advisor, an expatriate aquaculture generalist who is a member of the CJEDP core team, and a senior Indonesian counterpart. In addition, each of the four components of the subproject will be staffed by various contract counterparts in combination with local and expatriate technical assistance.

Because of the importance of obtaining highly competent, experienced short term technical assistance it is recommended that, to the extent possible, such support be arranged on an institutional subcontract with one of the U.S.-based aquaculture centers. This would substantially reduce the search costs involved with identifying qualified personnel to fill the varied roles for foreign consultants.

Figure IV-1

Time Phasing of Subproject Activities

Input(*)/Activity(-)	YEAR 1	YEAR 2	YEAR 3
Subproject Staff in Place	-		
HATCHERY SUPPORT			
Expatriate Specialist	*****	** * *	
BBAP Subcontract	**********	**********	
Hatchery Study Tours	-	-	
Direct Assistance to Private Hatcheries	---------	----------	
Training Seminar and Courses	- --	- --	
TECHNOLOGY DEVELOPMENT	---------	---------	
Food Development	---------	------	
Expatriate Specialist	**	* *	
BBAP Subcontract	**********	**********	
Initial Formulation and 45 Day Trials	---		
Continuing Development and Testing	------	--------	
Commercialization		-	
Water Quality Dev			
Management System Dev	----	----	
Expatriate Specialist	*	*	
Core Research Economist	**	**	
Development and Testing of Program	--	--	

Figure IV-1 (Continued)

Input(*)/Activity(-)	YEAR 1	YEAR 2	YEAR 3
POND DEVELOPMENT PROGRAM			
Expatriate Specialists			
Pond Management	** *	*	**
Water Quality	**	*	
Indonesian Specialists			
Pond Engineering	**	**	**
Group Organization	**	*	*
Pond Managers	**********	**********	**********
Group Identification and Organization	--	-	-
Pond Preparation	--	--	--
Pond Production	------	----------	----------
Information Analysis	-	-	- - -
QUALITY CONTROL PROGRAM	------	----------	----------
Expatriate Specialists			
Quality Control		* **	* *
Export Marketing			**
Indonesian Specialists Training		**	
Counterpart	**	**********	**********
Marketing of Pond Pdn	--	----------	----------
Procurement Training Workshop		-	
Processor Training Seminar		-	
Processor Quality Control Consulting		-	-
Lab Certification Pgm			- -
Export Mkt Seminar and Consulting			-

Figure IV-2

Scheduling Subproject Activities

Activity	Implementor	Begin
HATCHERY SUPPORT		
Contracting with BBAP	Subproject Staff	S + 1M
Indonesian Hatchery Study Tour	BBAP Team S.T. Hatchery Spec.	S + 3M
Assist Private Hatcheries	S.T. Advisor BBAP	S + 4M
Operator Training Seminar	S.T. Advisor BBAP	S + 5M
Training Course	S.T. Advisor BBAP	S + 9M
Foreign Study Tour	S.T. Advisor BBAP	S + 13M
Second Training Seminar	BBAP	S + 15M
Second Training Course	BBAP	S + 19M
BBAP Contract Expires	Subproject Staff	S + 24M
TECHNOLOGY DEVELOPMENT		
Food Development		
Contracting with BBAP	Subproject Staff	S + 2M
Initial Formulations and Testing	BBAP Team S.T. Shrimp Nutritionist	S + 3M
Backstop Pond Dev Pgm	BBAP Team	S + 6M
Continuing Development and Testing	BBAP Team S.T. Shrimp Nutritionist	S + 6M
Commercialization	BBAP Team	S + 20M
Management System Dev.		
Development and Testing	CJEDP Research Economist S.T. Aquac. Economist	S + 7M
Backstop Pond Dev. Pgm.	CJEDP Research Team	S + 9M

Figure IV-2 (Continued)

Activity	Implementor	Begin
POND DEVELOPMENT PROGRAM		
Finalize Program Plan	Subproject Staff S.T. Pond Specialist	S + 2M
Identify and Organize Groups	Subproject Staff S.T. Pond Specialist S.T. Pond Engineer S.T. Group Organizers	S + 3M
Pond Preparation	Subproject Staff S.T. Pond Specialist S.T. Pond Engineer	S + 5M
Pond Production	Subproject Staff	S + 7M
Involve Processors	Subproject Staff	S + 18M
Information Analysis	Subproject Staff CJEDP Research Staff	S + 12M
QUALITY CONTROL PROGRAM		
Market Pond Dev Pgm Output	Subproject Staff	S + 10M
Procurement Training Workshop	Subproject Staff S.T. Qual Specialist S.T. Training Spec.	S + 17M
Processor Training Seminar	Subproject Staff S.T. Qual Specialist	S + 23M
Processor Quaility Control Consulting	S.T. Qual. Specialist	S + 24M
Dev Lab Certification Program	Subproject Staff S.T. Qual. Specialist	S + 30M
Export Marketing Seminar	S.T. Export Mkt. Spec.	S + 25M
Export Marketing Consulting	S.T. Export Mkt. Spec.	S + 25M

Figure IV-3

Staffing Chart (Person-months)

	Year 1		Year 2		Year 3	
Subproject Staff						
Senior Aquaculture Advisor	12.0E		12.0E		12.0E	
Senior Shrimp Counterpart		10.0I		12.0I		12.0I
Pond Management Counterparts		30.0I		36.0I		36.0I
Assistant Pond Managers		21.0I		36.0I		36.0I
Quality Control Counterpart		2.0I		12.0I		2.0I
	12.0E	53.0I	12.0E	96.0I	12.0E	96.0I
Subcontract Staff						
Hatchery Support Subcontract		18.0I		24.0I		
Food Development Subcontract		18.0I		18.0I		
		36.0I		42.0I		
Short Term Advisors						
Hatchery Specialist (IC)	5.0E		3.5E			
Shrimp Nutritionist (IC)	2.0E		2.0E			
Aquacultural Economist (IC)	1.0E		1.0E			
Pond Management Specialist(IC)	3.0E		1.0E		2.0E	
Water Quality Specialist (IC)	2.0E		1.0E			
Pond Engineering Specialist		2.0I		2.0I		2.0I
Group Organization Specialist		2.0I		1.0I		1.0I
Training Specialist				2.0I		
Quality Control Specialist (IC)			3.0E		2.0E	
Export Marketing Specialist (IC)					1.5E	
Total Short Term	13.0E	4.0I	11.5E	5.0I	5.5E	3.0I

Note: E = expatriat; I = Indonesian, IC = Institutional Contract.

Table IV-3

Shrimp Production and Marketing Subproject Budget
USD Thousands

	USD	Rp.	Year 1	Year 2	Year 3
Senior Shrimp Counterpart					
Salary and Benefits	0	69	20	23	26
Per Diem and Local Travel	0	35	10	12	13
Hatchery Technical Support					
BBAP Hatchery Subcontract	0	151	65	86	0
Technology Development					
BBAP Food Development Subcontract	0	196	106	90	0
Water Quality Equipment	0	15	10	5	0
Management System Dev.	0	4	2	2	0
Pond Development Program					
Pond Managers	0	193	45	69	79
Assistant Pond Managers	0	113	24	41	48
Pond Costs	0	375	125	150	100
S.T. Specialists (Ind)	0	23	8	7	8
Quality Control Program					
Counterpart	0	32	2	14	16
Equipment and Supplies	0	17	5	6	7
S.T. Specialists (Ind)	0	5	0	5	0
Institutional Cont (all expat. S.T. Specialists)	485	0	205	185	95
Contingency -Excluding Subcontracts (15%)	0	130	67	77	59
Total Subproject Costs	485	1358	694	771	451

GRAND TOTAL USD (Thousands): 1916

Note: See Annexes C:1 and C:2 for further budget details.

Expected Subproject Benefits

An array of benefits can be expected through the implementation of this subproject. These can be grouped as economic benefits, institutional development and learning. Each is treated in turn.

Economic benefits

Analysis of the economic benefits resulting from the shrimp production and marketing subproject can be approached from a number of perspectives. Given the complexity of constructing reliable and complete with- and without-project financial budgets for each of the participants in the industry, the approach followed here relies on macro-level estimation of economic benefits.

Given the increased availability of fry, the adoption of improved feeding circulation and aeration practices and improved pond management, the production of shrimp in tambaks is expected to increase substantially as a result of project activities. Quality control improvements will assure the marketability of the incremental production. The magnitude of this increment depends on adoption rates and assumptions regarding the increased level of productivity (both per crop and number of crops per year) per hectare. Four scenerios were analyzed over a twenty year period given a low and high estimated adoption rate and a low and high estimated productivity increase. From the scenerios the minimum and maximum values are taken to give a range of possible outcomes. The complete analysis is presented in Annex C:3 and summarized in Table IV - 2 [25].

The results of the economic projections suggest that average annual tambak shrimp production in Central Java will increase by between 1,800 and 4,800 metric tons compared to production without the project over a twenty year period. This assumes an eventual project impact on between 5,000 and 10,000 hectares. Furthermore, total without project productivity (including yield per hectare per crop and number of crops per year) is assumed to increase by 150 percent over the twenty years and "with-project" productivity by between 480 and 570 percent.

These assumptions are actually quite conservative. Yield per hectare per crop with the project rises to no more than 400 kilograms per hectare per crop at 2.5 crops per year. This is far below estimates of 1,000 to 1,500 kilograms per hectare per crop and 3.0 crops per year which many experts think are reasonable.

On the basis of these production assumptions it is possible to estimate the total increase in exports which can be expected as a result of project implementation. Taking the lowest and highest production increase estimates for each year, computing exportable weight as 70 percent of production volume (to account

for head removal), and, assuming a 5 percent annual increase in the nominal export price, exports of frozen shrimp will increase by an annual average of between $ 20.2 and $51.7 million over twenty years. The mean annual increment is $ 36.0 million.

Table IV-4

With- and Without-Project Tambak Production Estimates

	Year					
	1	3	5	10	15	20
Without Project						
Yield/ Hectare/ Crop (kgs.)	150	150	150	200	250	250
Number of Crops/ Year	1.0	1.0	1.0	1.5	1.5	1.5
Annual Yield/ Hectare (kgs.)	150	150	150	300	375	375
With Project						
Hectarage Affected (1,000's)						
Slow Adoption	0.0	0.5	2.0	5.0	5.0	5.0
Fast Adoption	0.0	1.0	4.0	10.0	10.0	10.0
Yield/ Hectare/ Crop (kgs.)						
Low Estimate	150	200	250	350	350	350
High Estimate	150	250	350	400	400	400
Number of Crops / Year	1.0	1.5	2.0	2.5	2.5	2.5
Annual Yield/ Hectare (kgs.)						
Low Estimate	150	300	500	875	875	875
High Estimate	150	375	700	1000	1000	1000
Total Annual Increase in Production (m.tons)						
Minimum Slow - Low	0	75	700	2875	2500	2500
Maximum Fast - High	0	225	1600	5625	5625	5625

Source: CJEDP Design Team

Applying a 12 percent discount rate on future earnings, these figures represent a net present value of between $ 104.5 and $ 274.1 million with a mean value of $ 189.3 million. Since 85 percent of these earnings is applied to domestic cost items, the net foreign exchange savings have a discounted present value of approximately $ 160.9 million. This implies a discounted net foreign exchange increment of approximately $ 8.0 million per year for the next twenty years.

Each dollar of export sales contains a certain amount of labor income and therefore employment. The design team's research has led to the conclusion that just over 15 percent of the FOB value of frozen shrimp represents returns to labor. With an assumed wage rate of Rp. 1000 per day and an exchange rate of 975 rupiah to the dollar each $1 million of exports contains 100,230 man days of employment. At 313 man days per year, this represents 466 full-time man-years of employment.

The employment impact of the subproject is significant. Over twenty years the project will generate approximately 340,000 jobs or an average of 17,000 per year.

If it is assumed that a job created in the future is worth less than a job created today, the net present value of export earnings figures presented above can be used in the analysis of employment effects. Accordingly, the direct employment generated by the project will be approximately 4,500 "discounted" jobs per year for the next twenty years.

Table IV-5

Estimated Labor in Shrimp Export Industry

Stage	Dist. of Gross Receipts	Labor Costs by Stage	Pct. Labor Share	Jobs per $ 1 mill. [a]
Port and Expedition	.1%	50.0%	.05%	1.6
Processors	20.6%	10.0%	2.06%	64.2
Marketing and Transport	7.2%	20.0%	1.44%	44.9
Tambak Farmers	62.4%	18.0%	11.23%	349.8
Hatcheries	9.7%	5.0%	.49%	15.3
	100.0%		15.27%	475.8

Source: CJEDP Design Research

[a] Each job created is one person-year of employment calculated with the following assumptions: FOB export value of $ 1 million, exchange rate at Rp. 975 = $ 1, wage rate = Rp. 1000 per day and 313 man-days per year.

This does not count the thousands of jobs in other sectors resulting from indirect and secondary employment effects. Nor does it take account of increased employment in shrimp food and

water quality equipment production and the increased labor requirements for feeding and circulator operation on the tambaks.

For shrimp aquaculture the ratio of indirecv economic effects to direct effects is thought to be about two to one. Thus, the employment generation figures presented above can safely be multiplied by three to calculate the total employment effect of the project.

Apart from increasing foreign exchange earnings and jobs, it can not be overlooked that the increases income from the project will affect those already employed in the industry and their family members. This includes the hatchery operators and employees, tambak owners and operators and the multitudes of women in the processing plants.

Institutional development

Institutional development is an additional area of expected project benefit. Long term strengthening of the BBAP in both hatchery support and shrimp nutrition is a major output of the project. In addition the ability of the private firms, both producers and processors, to manage their own development will also be stregthened. Aerator development through a private foundation will build their ability to undertake technical engineering work.

Pilot Project Lessons

There are a number of important pilot project lessons which will emerge from this suoproject. The model of private sector technical support to producers may have applications in a wide range of agroprocessing industries. The reluctance of the private sector to become involved in activities which are in the jurisdiction of the government is common across industries. Given the projected reduced government budgets in the forseeable future, private sector responsibilities will necessarily grow. Thus the application of this model in the shrimp industry will provide important evidence as the the requirements for broadening private sector participation in other industries.

NOTES

[1] The design team is most greatful to the assistance provided by Dr. Billy Miles, Dr. James McVey, Dr. Robert Shleser and Dr. Arlo Fast in the preparation of this subproject. Of course, the design team is fully responsible for the content of the proposal.

[2] Central Java's shrimp exports made up approximately 15 percent of the nation's exports of shrimp (by value) in 1982. This proportion has shown a gradual increase since 1976. Indonesia's total frozen shrimp exports were approximately $ 162 million in 1981.

[3] This figure is taken from, Asian Development Bank, "Report and Reccomendation of the President to the Board of Directors on a Proposed Loan to the Republic of Indonesia for the Brackishwater Aquaculture Development Project," ADB, October 20, 1982, p.18.

[4] The six processors are: (1) Central Java Marine Products (CSJMP), Semarang, private joint venture with Japan; (2) Semarang Cold Storage, Semarang, private branch of Wirontono Cold Storage, Jakarta; (3) Central Java Cold Storage, Cilacap, private; (4) P.T. Tirta Raya Mina, Pekalongan, government; (5) PUSKUD Cold Storage, Semarang, government cooperative; and (6) P.T. Laut Jawa Sunur, Semarang.

[5] Asian Development Bank, "Technical Assistance to the Government of the Republic of Indonesia for the Brackishwater Aquaculture Development Project," ADB, September 1981, p.2.

[6] See Iman Sardjono, "Trawlers Banned in Indonesia," ICLARM Newsletter, October 1980, p.3 and David Thomson, "Conflict within the Fishing Industry," ICLARM Newsletter, July 1980 for further analyses of the rationale for and merits of the trawling ban.

[7] This opinion is shared by many observers of the fishing industry but is especially well stated by Robert Shleser, "Testimony of the Oceanic Institute to the U.S. House Agriculture Committee," Maui Surf Hotel, Hawaii, August 20, 1983.

[8] This analogy was drawn by Yung C. Shang, Aquacultural Economics:Basic Concepts and Methods of Analysis, Westview Press, Boulder Colorado.

[9] There are two informative historical treatments of Indonesian aquaculture. The more general is found in Shao-Wen Ling, Aquaculture in Southeast Asia: A Histroical Overview, University of Washington Press, 1977. The classic historical analysis of Javanese aquaculture is W.H. Schuster, Fish Culture in Brackish-water Ponds of Java, Indo-Pacific Fisheries Council Special Publication Number 1, 1952, Diocesan Press, Madras. This paper was originally published under the title De Viscultuur in de Kustvijvers op Java (Fishculture in Saltwater-ponds on Java), Fisheries Division of the Agriculture Service of the Department of Agriculture and Fisheries, Indonesia, 1949.

[10] Schuster, 1952, p.3.

[11] ADB, 1982, p. 8 (ibid).

[12] Data from Provincial Fisheries Service (Dinas Perikanan) reported in Neil Ross, Final Report: Development Recommendations for Indonesia's Tamabk Extension Program, USAID, Jakarta, June 1, in three volumes.

[13] Total production figures for shrimp on the order of 4,000 tons per year are often reported by the Fisheries Service. This figure is quite confusing because if it were true it means that tambak productivity is nearly 1,000 kilograms per hectare per year. Field visits by the design team and others have confirmed that production of 150 kilograms per hectare is a reasonable (if slightly optimistic) estimate of productivity. The error seems to enter when this figure is multiplied by the total number of tambak hectares (25,000) rather than by the total number of hectares in of tambak in shrimp production. The reported figure of 778 metric tons represents the design teams adjustment of the Fisheries Service information.

[14] Yield estimates are available from a number of sources. These figures were taken from J.E. Bardach, J.H. Ryther and W.O. McLarney, Aquaculture: The Farming and Husbandry of Freshwater and Marine Organisms, Wiley - Interscience, USA, pp. 587 - 632, and from personsal discussions with Dr. Shleser and Dr. Mc Vey. The Japan estimates are based on pond culture of, at most, two crops per year and do not reflect productivity in more modern, continuous production facilities.

[15] Ling, 1977 (op.cit.) presents a clear explanation of the natural feeding process and the merits of natural productivity.

[16] P.H. Fair and A.R. Fortner, "The Role of Formula Feeds and Natural Productivity in Culture of the Prawn, Macrobrachium rosenbergii, Aquaculture, 24 (1981): 233-243.

[17] E.W. McCoy, "Feasibility of Pond Culture of Shrimp in Panama," Directorate of Aquaculture, Ministry of Agriculture, Republic of Panama, C.A., n.d.

[18] A bibliography of materials on shrimp food can be found in Michael B. New, "A Bibliography of Shrimp and Prawn Nutrition," Aquaculture, 21 (1980):101-128.

[19] See Margo S. Stahl, "The Role of Natural productivity and Applied Feeds in the Growth of Macrobrachium rosenbergii, Proceedings of the World Mariculture Society, 10:92-109 (1979).

[20] It has proven surprisingly difficult to obtain up-to-date information on the planned ADB project activities for Central Java. The most recent published information is found in ADB, 1982 (ibid).

[21] Much of the technical detail presented in this section is based on the work of Arlo W. Fast, "Sea Grant Project Proposal: Development of Pond Oxygen Management Devices and Predictive Procedures for Increasing Prawn Production," and "Progress Report: Low Energy Water Circulators Use for Increasing Prawn Pond Production," UH - Sea Grant and Aquaculture Development Programs, 1982.

[22] See Amythas, 1982 (op.cit.).

[23] An outline of prescribed practices in the handling and processing of shrimp can be found in FAO, "Code of Practice for Shrimp or Prawns," Fish Production and Marketing Service, Fisheries Industry Division, Rome, 1979.

[24] Interesting discussions relating to the potential for using labor-intensive, appropriate technologied in pond circulation are found in James C. McCullagh (ed.), Pedal Power in Work, Leisure and Transportation, Rodale Press, Pennsylvania, 1977, and Alex Weir, The Dynapod: A Pedal Power Unit, VITA, 1980.

[25] Basic data and coefficients for the economic analysis are drawn from the design teams field research and other publications which bear on certain of the important issues including: Wiratno, An Economic Analysis of Brackish-water Pond Operation in Central Java, Indonesia, Unpublished Master's Thesis, Thammasat University, Faculty of Economics, Bangkok, 1978; McCoy, n.d. (op.cit.); and Shang, 1981 (op.cit).

V. LIGHT MANUFACTURING EXPORT PROMOTION SUBPROJECT

Background

In 1982 Central Java's exports totaled US$ 90 million [1]. This represented a decline of nearly 10 percent from 1981, due in large part to the effect of the global recession on the demand for many of the raw or semi-processed agricultural products which make up the bulk of the province's exports. Prior to 1982, Central Java's exports had shown long term slow but steady increase and early indications from 1983 are that exports are beginning to rebound with the gradual recovery of the world economy.

The vast bulk of Central Java exports in 1982 (70 percent by value) were the product of fisheries or agricultural production with 53.7 percent being accounted for by frozen shrimp, rubber, tobacco, coffee, and other estate crops. Only about 28.9 percent of total provincial exports were categorized as industrial or handicraft products and most of those were closely related to primary sector production (plywood, molasses, cassava pellets, calcium citrate and wooden floor tile). Within this group of exports batik, furniture and readymade clothing were most important, but accounted for only 2.25 percent (US$ 2 million) of the total export volume [2].

There is great potential for increasing exports of the products of Central Java's light manufacturing enterprises. Such enterprises are characterized by their relatively low capital/labor ratio, their use of simple production technologies and traditional worker skills and the relatively low increment of value added per unit of labor. They are differentiated from handicraft enterprises primarily by the fact that they produce in response to demand from buyers and adapt their products to satisfy their preferences.

Handicraft enterprises are defined as those producing traditional items according to traditional designs and trying to sell them with little regard to characteristics or dynamics of the market.

The factors which suggest that there is a potential for substantially increasing the production and export of light manufactured products include the following:

- the strong demand for products which are, or could be, produced in Central Java, in the international market;
- the large underemployed labor force in the province;

- the common local practice of agricultural families undertaking some type of non-agricultural production or commercial activity to supplement their household incomes;

- the existence of concentrations of certain types of household and small-scale enterprise activities in specific geographic areas;

- the experience which has been gained by the few light manufacturing enterprises in Central Java which have managed to become involved in the export market;

- the low cost and relative sophistication of labor in the province and the positive attitude of the people towards productive work.

Increasing the exports of light manufactured products from Central Java is also very consistent with Government of Indonesia priorities which emphasize increasing non-oil and gas exports.

This priority of the government is supported by an export certificate scheme which enables exporters to recover import duties they pay on imported goods which are subsequently re-exported. In fact, the export certificate scheme, as it currently operates, reflects and compensates for the additional cost of all main inputs over their corresponding world prices whether they have been imported or manufactured locally.

Currently, efforts are being made by the GOI to streamline bureaucratic procedures in the export process and eliminate harmful practices such as the payment of unofficial administrative costs which increase the cost of exports. If they are followed up and enforced aggressively they can contribute to increasing the exportation of various types of non-traditional products from Central Java, and other parts of the country as well.

Various statements which have been made by Indonesian President Soeharto and others concerning Repelita IV (Fourth Five Year Development Plan), which is to be inaugurated in April, 1984, indicate that the emphasis on increasing exports from privately owned enterprises will receive even greater emphasis in the coming years [3].

Problem Identification

There are four different types of constraints which currently hamper the development of effective and profitable export manufacturing enterprises in Central Java. There are constraints in the marketing system, production constraints, constraints resulting from government policy and administrative procedures and infrastructure constraints.

Marketing Constraints

The primary marketing constraint is the lack of contact between Central Java producers and international buyers and the lack of support facilities for buyers who wish to make contact with local products and producers. This presents a major constraint for exporters because it effectively raises the search and procurement costs for buyers in commodity lines where price is important and thus weakens their competetive position. In other words, to be effective, an exporter (producer) must make the work of the importers (buyers) as inexpensive and convenient as possible.

The National Program for Export Development (NAFED, or BPEN in Indonesian) has taken a number of positive steps towards developing greater contact between Indonesian manufacturers of potentially exportable products and potential buyers. These include the publication of a quarterly export promotion magazine and sponsorship and organization of Indonesian exhibits at international trade fairs. They also seek to perform some of the functions being plannned for this subproject to bring buyers and sellers together.

The effectiveness of their activities is limited, however, because they are focused in Jakarta with only a very limited presence in the provinces (there is no full time NAFED representative in Central Java) and they are oriented more towards the promotion of Indonesian products than the active recruitment of international buyers and facilitation of their work or the adaptation of Indonesian production capabilities to meet the needs of the international market.

Another important marketing constraint which must be overcome if Central Java, or indeed Indonesia, is to significantly increase the quantity of its light manufactured export commodities is the negative experience which many international buyers report having had in trying to do business here in the past. These bad experiences stem from the lack of support for (and at times an apparent government hositility towards) international buyers who try to do business here. They are not provided with the kind of assistance they need to identify appropriate producers of the goods they are seeking and are offered little help in terms of making contacts with producers or following up their orders.

The CJEDP will seek to identify, analyze and suggest appropriate ways of resolving these and other specific marketing constraints which arise from its efforts to promote increasing exports from Central Java. This should lead to practical steps on the part of government to facilitate the work of international buyers and other participants in the export process.

Production Constraints

There are also a number of production constraints which currently work against the growth of export oriented manufacturing activities in Central Java. These include: the lack of specific necessary skills in the work force and in the entrepreneurs and managers; the lack of access on the part of entrepreneurs to current designs which could be sold on the international market; lack of access to fixed and working capital; lack of appropriate production equipment; lack of experience in competing in the international market place; and, inefficient management.

While it is necessary for the CJEDP to recognize and address all of these constraints in promoting Central Java exports, the crucial importance of the management issue must be emphasized. In researching the potential for exporting Central Java brass products, a cost comparison was done with similar products now produced in Thailand. It was found that although both raw materials and labor were as much as 50 percent less expensive in Central Java, the ex-factory price of comparable products was as much as 35-40 percent higher in Central Java. The advantage of low-cost labor and raw materials was thus effectively wasted due to production inefficiencies, management weaknesses and the high cost of dealing with the administrative requirements of the export regime.

Policy and Administrative Constraints

An example of the type of policy constraint which the government places on the development of non-traditional exports is the restriction on foreign businesses allowed to operate in Indonesia. It is very difficult for a foreign buyer to operate a buying office in Indonesia or to legally keep a person here to oversee production against specific orders and the quality control process. In fact, there are overseas buyers living, or spending the majority of their time, in Indonesia doing those things, but they are forced to exist on the fringes of the legal system, using "borrowed" export licenses and looking for ways to maintain their visas, rather than being encouraged by government policy.

Another factor is the frequent changes which are made in policy regarding exports which make it difficult to determine exactly what government policy is at any particular time. For example, is a particular product subject to export tax or can the exporter qualify for a rebate under the Export Certificate Scheme? If so, what is the rate applied? It is very difficult for local producers or foreign buyers to enter into long term transactions when the official policy of government over the medium term is not fairly predictable.

Administrative inefficiency is another factor which constrains export development in Indonesia. Excessively complex administrative requirements (export licensing, shipping, etc.)

slow down the export process considerably and hence raise the cost of exports while at the same time occasionally causing shipping delays which detract from the reputation of Indonesia as a reliable trading partner.

Informal administrative payments often serve as a means for obtaining timely and efficient action on the part of government servants related to the export process. This makes it difficult to determine the actual costs that an exporter must expect to incur in doing his business. Several hours of research on two different days failed to provide a specific and reliable answer to the question of how much it would cost to move three tons of brass products through the port of Semarang. In a highly cost competitive business such as exporting, it is necessary for the exporter to know exactly what his cost factors are before quoting a price to an overseas buyer.

Infrastructure Constraints

The basic infrastructural constraint in Central Java is the lack of an international port facility capable of dealing with containerized shipments and the lack of a major airport with direct access to overseas buyers. Central Java is relatively well served by roads, electricity, water and communications facilities. Although there is certainly room for improvement in these infrastructure facilities, and areas of both West Java (around Jakarta) and East Java (around Surabaya) enjoy a considerable competitive advantage in the provision of such facilities, they are not viewed as being a major constraint to export development in the province.

A port improvement program, scheduled for completion in 1985, should increase the quality of service available through the Semarang Port considerably and lower the cost of passage through the port. Larger vessels will be able to dock directly at the piers, eliminating the need to use lighters between the docks and the larger vessels anchored as much as three miles at sea.

A container capability will also be installed which will increase the attractiveness of the port to international shippers considerably. One of the major freight forwarding companies (Jakarta Lloyd) has announced its intention to open a "feeder line" for container shipments to Tanjung Priok (Port of Jakarta) in November of 1983. This should alleviate the containerization problem somewhat, prior to the completion of port rehabilitation.

The lack of direct international air links is less likely to be resolved but the problem is also somewhat less serious as transhipment through the airport in Jakarta is often feasible and shipment of high value goods (the most likely to be shipped overseas by air) to Jakarta by truck is relatively inexpensive.

Subproject Activities

The light manufactured export subproject will focus on the development of Central Java's ability to compete in international trade through the reduction of transaction costs facing buyers and sellers and by providing directed technical and managerial assistance to manufacturers attempting to overcome constraints they face in fulfilling export orders. The services to be offered by the project can be considered under four general headings.

Increasing Buyer Contact

The first task will be the preparation of an inventory of products and services which might be exported from Central Java along with a list of names and other basic data related to the producers. This information will provide the information base for the activities which follow and will help in orienting the long term team members responsible for this activity with the products and services which they will be marketing.

The CJEDP team will then work closely with NAFED and a team of specialized consultants to develop a program and appropriate materials to increase international buyer awareness of the products, skills and services available in Central Java. This material will include various general promotional brochures and flyers which can be directed to potential buyers of specific Central Java products.

This material will be distributed through all available channels including NAFED itself, the commercial attache offices of various foreign embassies in Jakarta and Indonesian embassies abroad, the American Chamber of Commerce in Jakarta, trade associations in selected countries and U.S. government programs such as the Overseas Private Investment Corporation (OPIC), the Joint Agricultural Consultative Corporation (JACC), the USAID Trade and Development Program and the EXIM Bank.

The team will also assist with the preparation of material to be included in various international trade shows under the NAFED umbrella and one issue of the NAFED magazine, Indonesia Exporter, will profile the productive activities and potential of Central Java.

Besides these general means of increasing buyer awareness of Central Java as a supplier of goods and services for export, CJEDP advisors will reach out directly to contact buyers via commodity-specific advertising in trade journals, targetted direct mail campaigns to specific buyer groups and following up on leads which are generated in the course of dealing with other buyers.

As soon as individual buyers with a possible interest in doing business in Central Java are identified, individual contact, via the mail and telex, will be initiated to answer their questions and encourage them to visit to see what the province can offer.

One of the major factors which will assist in the attraction of increasing numbers of international buyers to Central Java will be the operation of the Export Trading Service which will be discussed next. The program to increase buyer contact will be used to publicize the existence and operation of this program.

Export Trading Service

Once buyers are convinced that they might find the goods and services they need in Central Java and decide to come and visit, it is necessary to provide them with the services they require to carry out their business effectively and be confident that any order they place here will be rigorously followed up and filled according to the specifications of the contract. Among the services which the CJEDP would provide to the buyers are the following:

- introduction to producers of the types of products they seek;
- assistance in acquiring the supporting services they require in seeking producers in Central Java such as transport, office space, translators;
- information about trade, labor finance and other relevant regulations and introductions to people who can respond to special questions of individual buyers;
- assistance in the negotiation and finalizing of contracts with local producers or producer groups;
- follow-up services to insure that necessary documentation is taken care of as required and that the goods shipped comply with the terms of the contract.

These services will be provided primarily by the members of the long term team and offered to the foreign buyers free of charge. Commercial firms in other countries commonly charge the buyer a commission of between two percent and six percent for such services. One measure of the success of the activity will be the extent to which private companies have determined that the provision of such assistance can be a profitable venture and have decided to enter the field themselves.

CJEDP will work with any company wishing to begin such activities to insure that the effort will be both profitable to the company and effective in the promotion of Central Java exports. It will stimulate the development of such a firm during

the third year of the project if one does not arise naturally earlier. If it becomes necessary to select one firm for CJEDP assistance from among several candidates, the choice will be based on the competence and experience of the firm and its potential to effectively service foreign buyers and promote Central Java exports.

Producer Services

In addition to providing the types of assistance discussed above which are aimed at increasing the amount, and productivity, of contact between international buyers and Central Java producers, this subproject will also provide direct assistance to local businesses which have the opportunity and potential to export but need certain types of assistance in order to compete effectively in the international market.

Although the export trading services will assist buyers of all products, the more intensive producer-oriented assistance will initially be provided only to producers of three basic product groups: ornamental brass, handcrafted garments (batik and embroidery) and rattan/wicker products. This focus is necessary to avoid spreading the limited resources of the subproject too thinly over a number of production activities and reducing the impact of the effort on any of them.

This assistance will take the following forms:

- Assistance in the identification of specific problems which are holding back the growth of exports or decreasing the competitiveness of Central Java products with those produced elsewhere;

- Assistance in the adjustment of a producer's production process so as to produce marketable products of a correct and consistent quality;

- Assistance in the development, selection and acquisition of appropriate technologies for the production of goods for export which can compete effectively with goods available elsewhere and the training of local producers in their use;

- Assistance with various aspects of business management including the development of cost estimates for various products, the acquisition of required fixed and working capital and the development of appropriate management systems to reduce losses due to management inefficiencies; and,

- Provision of appropriate management and technical training programs for producers of specific commodities to enable them to compete more effectively in the international market.

The three groups of products (ornamental brass, garments, and rattan/wicker products) were selected on the basis of the experience of Central Java producers in their production, and in some cases with limited export; the ready availability of appropriate production skills and raw materials; and, the high probability that viable export markets can be developed for them.

In ornamental brass, for example, research in Thailand and Singapore indicated that Central Java (Juwana) producers can compete with similar producers in Thailand and other countries which produce relatively higher quality products than the mass produced products which are exported from India, Taiwan or Korea. Preliminary negotiations with one buyer indicated that it would be possible for Juwana products to compete with those from Thailand in terms of both quality and price. There are more than 100 producers of ornamental brass products in Juwana, many of whom participate in subcontracting systems with the three largest producers who will serve as the conduits for export orders and technical and managerial assistance.

Skills related to the export of ready-made garments are to be found in the batik centers of Pekalongan and Solo as well as in Kendal and Kudus which produce embroidery in small scale and household enterprises. There are currently at least three firms in Pekalongan which are actively engaged in the export of finished garments. Two of these report that they could produce more if they had sufficient orders. The third claims to be doing as much business as it wants on the basis of an exclusive marketing arrangement with one foreign buyer who personally supervises the production and quality control process.

The embroidery skills found in Kaliwungu and Kudus can be used to prepare fabric for sewing into garments by these exporters or by others located outside of Central Java in areas which are known for their export of finished garments. These people are currently producing for the local market in Jakarta and for sale to travels -- Haj pilgrims for example.

Foreign buyers interviewed agreed that there is a good skill base in Central Java for the production of exportable garments but stressed that steps must be taken to insure that the buyers receive the type and quality of goods they need on time every time if the reputation of Central Java in this area is to be enhanced.

There is also a good potential for increasing the production of rattan products for export. Although the raw material for rattan products is brought into Central Java from other parts of the country, there is a large base of production skill for its processing in Central Java.

Two Central Java companies have the capacity to produce rattan and wicker products of export quality. One of them, P.T. Sari Rose in Ungaran, has experience in the production of various

handicraft products (mostly wicker baskets) for export subcontracting with workers based in Ungaran and in parts of Kab. Jepara and Kab. Boyalali. They have been commissioned a "foster father" under the Industry Department's Bapak Angkat (foster father) program and contracted by the Department of Labor to provide training to workers in the areas mentioned above to enable them to improve their production to meet export standards.

P.T. Sari Rose is currently having a difficult time as the single export buyer with which they have worked for several years has stopped buying for a reason the company does not know and they have no other export outlets for their production.

C.V. Kusen, located in Semarang, employs more than 40 people in the production of export quality rattan furniture. This company could also serve as a coordinator for other producers cooperating in the fulfillment of large export orders.

Research

The CJEDP staff will also carry out a limited amount of research on specific constraints to increasing the exportation of light manufactured products from Central Java. Recommendations will be made to appropriate government authorities when it is clear that a specific government policy or administrative procedure is having the effect of keeping total exports at a lower level than might otherwise be attained.

One such study will focus on analyzing the process by which export documentation is obtained and suggesting alternatives. Another will focus on ways in which changes in government policy (often very minor changes) would promote foreign buying activity in the province. Other topics will arise in response to real problems encountered in the process of implementation.

Implementation Plan and Staffing Requirements

This subproject will be initiated at the commencement of CJEDP implementation activities and terminated upon the handing over of export trade service activities to a private company at the end of the third year. The need to continue providing production assistance to producers in a second phase of the CJEDP program will be evaluated along with other major project components.

The subproject will be carried out under the direction of one core staff member, the export marketing advisor, and staffed by one local counterpart, the senior export marketing counterpart, on a full-time basis. A total of 50 person months of short-term assistance (mostly Indonesian) will be used during the three year life of the project and subcontracting relationships with local firms and non-governmental organizations will be developed to accomplish three different functions.

The subproject plan calls for working with and through private sector organizations in accomplishing the objectives of the subproject except in the case of NAFED, a division of the Ministry of Trade, which will be involved in efforts to increase buyer contact with local producers, and the Department of Industries which will cooperate in the provision of production assistance to producers. This will serve to make use of the considerable skills and experience of the private sector organizations in Indonesia as well as give them the opportunity to further develop their talents and expand into new areas [4].

Figure V-1 presents a timetable for the start-up of various subproject activities while Figure V-2 illustrates the time phasing and duration of subproject activities. Figure V-3 shows the types of long term and short term personnel who will be used in the implementation of the various components.

All short term technical assistance personnel will be recruited and placed by the prime contractor to perform the various functions outlined in Figure VI-1. Non-profit organizations and technical institutes will be contracted to carry out specific tasks related to the provision of production assistance, management assistance and training to producers. See Section VII of this report for a full discussion of the contracting mechanisms to be used.

The Senior Export Marketing Counterpart, who will be working on this subproject full time, will be recruited as soon as the expatriate members of the contract team are in place. This person will be hired on a contract basis.

As soon as both long term team members are in place they will begin the preparation of an inventory of products and services which either are, or might be, exported from Central Java. This exercise will expand on data collected during CJEDP's design phase. It will focus on the three commodity groups being specifically developed under this subproject but will also include other types of light manufactured products (wooden or clay products for example) for which an export market might be developed. Two months will be devoted to this survey and no outside assistance will be used. The output will be an inventory of exportable products from Central Java and information about their producers.

Figure V-1

Scheduling Project Activities

Project Activity	Implementor	Begin
Senior Export Marketing Advisor Arrives	Contractor	Startup (S)
Senior Export Marketing Counterpart Hired	Core Team	S + 1 mo.
Inventory of Exportable Products/ Services	Subproject Staff	S + 2 mo.
Buyer Contact Promotional Prog.	Subproject Staff NAFED S.T. Advertising and Graphic Specialists	S + 4 mo.
Export Trading Service Prog.	Subproject Staff S.T. Buying Consultants	S + 6 mo.
Producer Needs Assessment for Selected Commodities	Subproject Staff S.T. Product Specialists	S + 6 mo.
Production Assistance	PVO Groups Technical Institutes Industry Dept S.T. Product & Training Spec.	S + 8 mo.
Management Assistance	Subproject Staff PVO Groups S.T. Management & Training Spec.	S + 10 mo.
Research of Specific Export Constraints	Subproject Staff S.T. Research Specialists	S + 12 mo.
Spin-off Export Trading Service to Private Firm	Subproject Staff Private Firm	S + 30 mo.

Figure V-2

Time Phasing of Subproject Activities

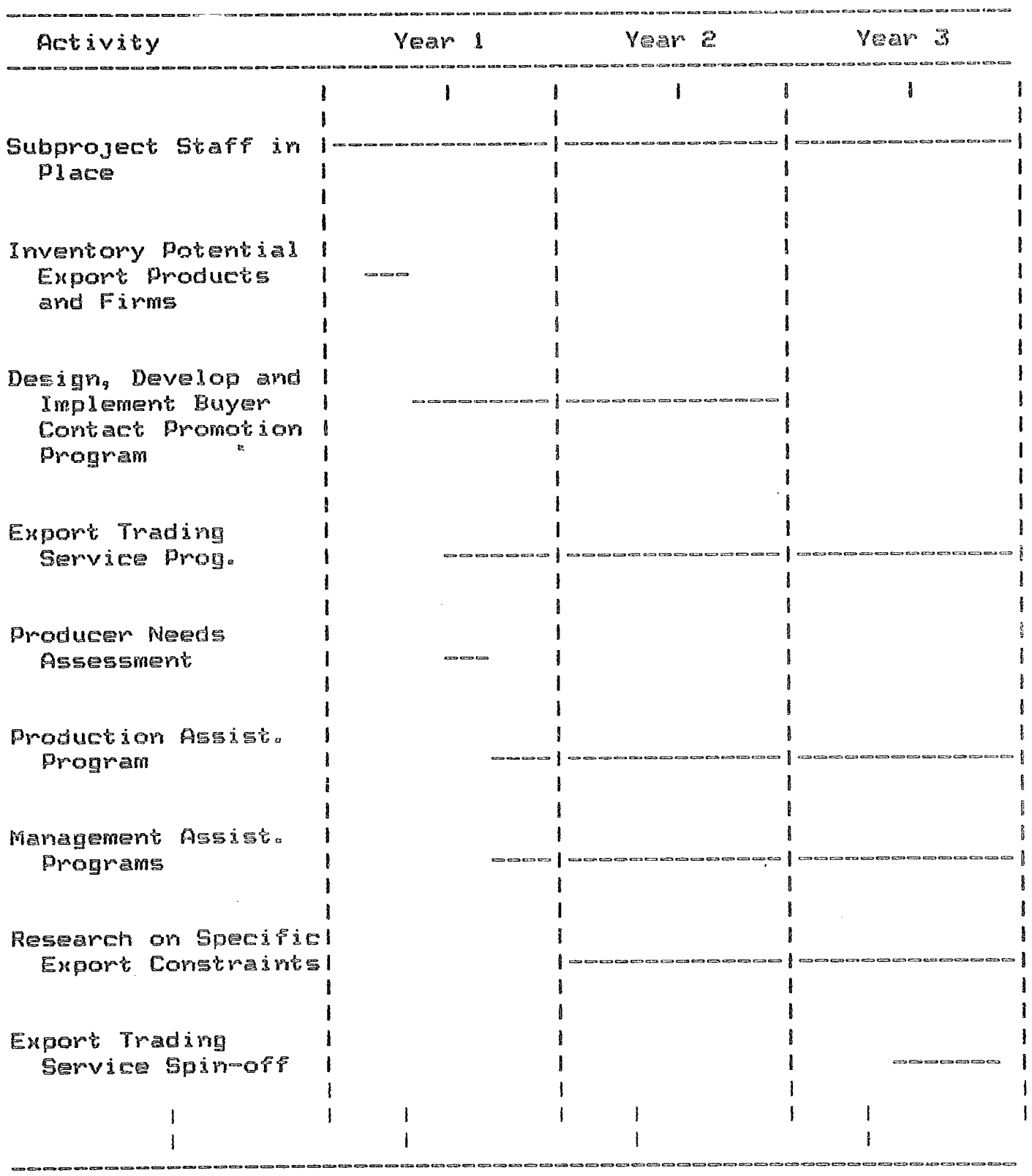

Figure V-3

Staffing Chart

	Year 1		Year 2		Year 3	
Subproject Staff						
Senior Export Marketing Advisor	12E		12E		12E	
Senior Export Mktng. Counterpart		11I		12I		12I
Total Full-time Staff	12E,	11I	12E,	12I	12E,	12I
Short-Term Advisors						
International Buyers or Buying Consultants	4E					
Advertising Specialist Photog. and Designer	1E,	2I				
Product Specialists	1E,	2I	3E,	6I	3E,	6I
Training Specialists	1E,	1I	1E,	2I	1E,	2I
Research Specialists			1E,	6I	1E,	6I
Total Short Term	7E,	5I	5E,	14I	5E,	14I

Note: E = Expatriate
I = Indonesian

Based on the above information, the CJEDP team will work closely with NAFED to develop a program and appropriate promotional material for increasing international buyer awareness of the products, skills and services available in Central Java. In this case the long term team will be supplemented by one month of assistance from an expatriate advertising specialist with experience in the area of export promotion, an Indonesian commercial photographer (one month) and an Indonesian graphic designer (also for one month). The output of this effort will be a set of high quality promotional material designed to stimulate buyer interest and a program to generate and follow-up on specific buyer contacts.

These start-up activities will lead to the inauguration of the export trading services activity in the sixth month of project activity. One month of expatriate technical assistance from an international buying consultant will be used to finalize the design of export trading service activities but they will be implemented entirely by the long term staff members. This component will serve as the centerpiece of the overall export development effort and will continue throughout the three year life of the project.

During the last six months of the project (months 31-36), if one has not arisen naturally, the core team will identify a firm capable of taking over the function of the export trading services activity on a commercial basis and assist it to establish itself in the field. This will, of course, enable this component to be dropped during any extension, or institution building, phase of the CJEDP.

A detailed survey of the needs of various producers of the three promoted commodity groups will also be conducted in months six and seven of the project. Three foreign buying consultants will spend one month each working with the long term team and producers of the commodities they know best. They will approach the producers from the position of buyers and identify specific items which might be developed for export and point out the problems that are causing them to be less competetive than they might be in the international market.

This survey will target the specific types of technology development which need to be undertaken and the content of training programs which will most effectively increase the ability of Central Java entrepreneurs to export their products.

The next step will be the initiation of production assistance to the producers in month eight. The focus of this assistance will be in the area of production technology. Yayasan Dian Desa and the Metal Industry Development Center (MIDC), or other qualified organizations, will be contracted to study specific technical problems and suggest ways to resolve them so as to increase either the quality of the products being produced or the efficiency with which they are produced.

In cases where local organizations may not be able to resolve the problems themselves, a budget will be available for recruiting short term specialized assistance from elsewhere in Indonesia or overseas to work with the subcontracting agency concerned and thus not only contribute to the resolution of a serious problem but also enhance the local agency's capability. A total of ten such subcontracts will be let during the life of the project.

The technical innovations developed will be passed on to producers via these same organizations and the associations, formal or informal, which link the producers of a certain type of product in an area. The larger firms which serve as coordinators

and supervisors of the production of large export orders will also play a very important role in passing on technical innovations to the smaller producers with whom they are affiliated.

In cases where credit is required to enable producers to acquire the equipment they need to produce exportable commodities, core team members (management and finance advisors) will assist in the preparation of feasibility studies and will help to identify and obtain appropriate commercial bank financing. The CJEDP itself will include no loan fund. Its finance efforts will focus on helping entrepreneurs acquire the credit they need from existing credit sources.

A managerial assistance program will also be initiated in month eight. It will overlap with the production assistance activities just discussed and will complement those more technical services. The primary vehicle for providing this assistance to these producers will be the private voluntary organizations who have experience in undertaking these types of programs.

Yayasan Purba Danarta, LP3ES and LPPM will be contracted to provide management training to the producers emphasizing methods for determining and controlling production costs, purchasing, labor management and other important management factors. The specific topics of these training programs will be determined by the needs assessment survey which will preceed them and the adaptation of various production systems which are developed in the production assistance activities.

Throughout the three year life of the project short term technical and management training programs will be held in the following locations: Juwana (brass producers), Kaliwungu (embroidery), Kudus (embroidery), Pekalongan (batik), Solo (batik), Ungaran (rattan), Boyolali (rattan) and Jepara (rattan). In all, twelve one month training sessions will be held involving at least 30 producers in each case at an average cost of $15,000 per training session.

A small amount of short term technical assistance will be provided to assist the organizations conducting the training to prepare their curriculum and to provide specialized input to a training program where this may be required.

This training will be designed in response to specific needs which have been identified in the process of working with entrepreneurs in the various product groups and directed at helping them to overcome specific problems. There will be no standardized curriculum for all training programs. This will increase the cost of the training somewhat as a new curriculum must be developed for each course, and perhaps different instructors will have to be identified and recruited, but the impact should be much greater than has been the case in the past with generalized management training or achievement motivation training.

The subproject staff will also provide direct managerial assistance to larger enterprises as time and the capabilities of the staff members allow.

Research related to specific export constraints will be initiated at the beginning of the second year of project development. It will be conducted primarily by members of the long term team with an adequate budget being provided to augment these staff resources with seven months of short-term assistance each year (one expatriate and six local).

The effort to "spin-off" the export trading services to a private company will also be handled directly by the long term team at the end of the third year. It is not anticipated that any outside resources will be required to effect this. The CJEDP will provide assistance directly to a company which wishes to, and is capable of, taking over these functions on a commercial basis. The assistance will be primarily in helping the company to plan and obtain financing for its activities as well as introducing the firm to clients (buyers and producers) who were developed and served during the earlier period.

The estimated costs of this subproject over its full three year life are presented in Table V-1.

Table V-1

Export Promotion Subproject Budget
USD Thousands

Activity	U.S. $	Rp.	Yr 1	Yr 2	Yr 3
Senior Export Marketing Counterpart					
Salary and Benefits	0	52	15	17	20
Inventory of Exportable Products and Services					
Staff Per Diem	1	1	2	0	0
Buyer Contact Promotional Program					
S.T. Advertising Specialist	15	0	15	0	0
S.T. Graphic Specialists	0	4	4	0	0
Material	0	1	1	0	0
Printing	0	10	0	2	0
Distribution and Follow-up	0	10	5	5	0
Export Trading Service Program					
Short Term Buyer Consultant	15	0	15	0	0
Staff Per Diem	7	7	3	5	6
Material and Other Costs	7	7	3	5	6
Producer Needs Assessment for Selected Commodities					
S.T. Buying Consultants	45	0	45	0	0
Staff Per Diem and Other	2	2	4	0	0
Production Assistance Program					
S.T. Product Specialists (Ex)	115	0	15	48	52
S.T. Product Specialists (Ind.)	0	31	4	13	14
Subcontracts	9	160	20	80	60
Materials	0	42	7	20	15
Staff Per Diem and Other	9	9	4	6	8
Producer Training Programs					
S.T. Training Specialist (Ex.)	40	0	15	16	17
S.T. Training Specialist (Ind.)	0	12	2	5	5
Subcontracts	0	215	30	86	99
Staff Per Diem and Other	11	11	4	8	9
Research on Specific Export Constraints					
S.T. Research Specialists (Ex)	33	0	0	16	17
S.T. Research Specialists (Ind.)	0	30	0	14	16
Staff Per Diem and Other	5	6	0	5	6
Spin-off Export Trading Service					
Staff Per Diem and Other	4	4	0	0	0
Contingency excluding subcontracts (15%)	40	36	25	28	30
Total Yearly Expenditures	365	649	246	379	388
Total Subproject Expenses					1013

Subproject Benefits

The primary beneficiaries will be the entrepreneurs who organize the production of export products and the workers who gain access to productive employment opportunities as a result of the increasing level of exports from the province. Although it is difficult to precisely predict the magnitude of these benefits, a series of conservative assumptions will enable us to make an estimate as to the order of magnitude of the benefits which may be expected. Such assumptions and the resulting conclusions as to benefits are presented in Table V-2.

Table V-2

Estimated Subproject Benefits

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Increased Exports Resulting from CJEDP Activity (USD thousands)	300	1500	3000	3450	4000	12250
Average Labor Coefficient of Increased Exports	.3	.3	.3	.3	.3	
Returns to Labor (USD thousands)	90	450	900	1035	1200	3675
Average Annual Income Per Job (USD)	313	313	313	313	313	
Number of Jobs Created	288	1438	2875	3307	3834	3834
Average Return to Entrepreneur Coefficient	.1	.1	.1	.1	.1	
Returns to Entrepreneurs (USD thousands)	30	150	300	345	400	1225

Direct Benefits

The subproject is expected to increase the exports of light manufactured products by 150 percent by the third year of implementation compared with 1982 figures and directly generate some 2875 sustainable new jobs during its life and 3834 by the end of year five. The number of beneficiaries will be much greater, however, as many of the jobs will be done on a piecework, part-time basis. This will increase the total number of people who benefit to as many as 7000 or more during the life of the project. Further increases in exports will of course generate more

jobs and it can be expected that exports will continue to grow by at least 15 percent per year, in real terms, once the subproject is completed based on the systems established during the period of its implementation.

The number of jobs resulting from the subproject will also depend upon the types of products which are exported as different products have different labor coefficients. For example, the labor co-efficient for brass production is estimated at a relatively low .2, while rattan and wicker processing reach the neighborhood of .3 or .4 and embroidery activities, which often rely on material supplied by the buyer, can approach .7 or more.

The mix of males and females employed and owning the enterprises which will benefit from this subproject varies depending upon the type of product being promoted for export. For example, most of the brass product manufacturing firms are owned by men and will employ a majority of men although there will also be women engaged in certain functions such as polishing and packing. Embroidery enterprises on the other hand are more likely to be owned by women and employ a workforce that is predominantly, if not entirely female. Rattan/wicker production firms will employ a mix of male and female workers.

In analyzing the figures presented in Table V-2, it is evident that a project cost of just over one million dollars generates a total of 3834 sustainable jobs by year five -- an average cost of $279 per job. Similarly, $3.67 million in increased returns to labor over five year costs approximately $0.29 (in subproject costs) per $1.00 in increased worker income. These average figures will be reduced substantially as benefits extend and grow into the future and subproject costs stop after the third year of CJEDP implementation.

Indirect Benefits

Several different types of indirect benefits will also arise from the implementation of the subproject. Among them are the secondary and indirect employment effects resulting from the increased worker income as it is transformed into demand for other goods and services and from the business-related demand which will be generated related to the production process. Although it is not possible to predict precisely what this multiplier will be, it is safe to assume a factor of at least two which would have the effect of doubling the employment impact of the project.

The increased foreign exchange earnings, estimated at $ 3 million in the third year, for the national economy is also an indirect benefit of subproject implementation. This is of greater importance now than previously as income from the export of oil and natural gas is declining and the government has attached a high degree of importance to increasing non-oil exports.

Also of great importance, in the long run, is the increased level of interaction between Indonesian entrepreneurs and the international market place and the experience which will be gained by Central Java producers in participating in that market. This experience will serve as the basis for expanding such interaction, and therefore the level of export business done, in the future.

Similarly, the increased experience and ability of the labor force to produce according to precise specifications and of entrepreneurs to manage their businesses in such a way as to be able to compete effectively in the international marketplace will set the stage for further expansion of production for export and integration of the Central Java economy to the world marketplace.

Footnotes

[1] Realisasi Ekspor Jawa Tengan Tanun 1982, Kantor wilayah Perdagangan, Semarang, 1982.

[2] Ibid.

[3] The CJEDP design team became interested in this area of activity as an offshoot of its research into the metal industry -- specifically the manufacturing of ornamental brass products. Investigation of the potential for exporting brass products, primarily crafted in Juwana (Kabupaten Pati), both in Indonesia and overseas indicated that there is a potential for developing this export market but that the effort will be stronger and more likely to succeed if the product focus is somewhat broader than just brass. There are economies of scale to be gained by including several items in an export development program. The inquiry was thus broadened and it also appeared that there is also a good potential for exporting garments, rattan and wicker products and others as well.

Research activities leading to the design of this subproject included visits to a large number of small and medium scale firms who will profit from the development of a viable export promotion activity in the province, discussions with Ministry of Trade personnel from the National Federation for Export Development both in Semarang and Jakarta, discussions and field visits with potential domestic exporters and foreign buyers, visits to both Singapore and Bangkok to investigate market potential and channels for brass products in particular and the requirements of an effective export promotion service in general, and review of the existing literature related to the needs of a successful export development program and examples of how success was achieved elsewhere -- particularly in Asia.

The result of this research is a relatively low-cost CJEDP subproject activity which is at once driven by private sector demand and builds upon the successful experience which others have enjoyed elsewhere. A successful conclusion of this activity would be to have it "spun off" to a capable private sector entity which sees that it can earn a profit for itself by providing the types of services to be introduced by CJEDP and promoting the economic development of the province at the same time.

[4] The private voluntary organizations which might participate in the implementation of this subproject are described and assessed briefly in a working paper which was prepared in conjunction with the work of the design team. It is included as Annex E to this report.

VI. METAL INDUSTRY DEVELOPMENT SUBPROJECT

Background[1]

Introduction

Indonesia's workers must eventually be equipped with tools and machines if they are to increase their productivity and achieve a higher standard of living. There is a thin line between an industrial sector which leads the development of an economy, and one which lags behind, requiring imported equipment to support the inevitable progressive mechanization of society.

Other Asian countries have effectively bolstered their economies by selectively restricting imports, acquiring new skills and technologies and purposefully developing their engineering and metalworking industries. Progressive machinery industries have found new ways to multiply the effort of hand labor, extracting more value added from natural resource endowments and returning a better income to the worker.

The task set for CJEDP's Metal Industry Development Project is to provide support to those activities and enterprises within the engineering and metalworking industry which will propel growth, development and employment in Central Java.

Following a discussion of the structure of the industry and employment and output magnitudes, this chapter is organized as follows:

- Prospects for Metal Industry Development, including a section on how to reach the small producers;
- Agroprocessing Machinery and Equipment, with sections on demand for output of the metalworking industry, both existing and to-be-generated from presently unmechanized operations; and the need for new production and precision capacity within the agroprocessing manufacturing industry;
- A Program to Develop the Metalworking Industry in support of agroprocessing, providing both a top down and a bottom up approach to improvements and expansion in the engineering and metalworking industry;
- Import Substitution of Components for Assembled Equipment;

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- Implementation Arrangements and phasing of the subproject, both for agroprocessing machinery production and import components production, including access to credit, with tables of scheduling and timephasing of project activities;

- Estimated Subproject Costs; and,

- Subproject Benefits, direct and indirect employment gains, and growth and development of the economy.

Structure of the Industry

Engineering and metalworking in Central Java have been shaped by the historical antecedents which gave birth to the industry in the early 1900's. The medium and heavy machinery manufacturing demands of the sugar and transport sectors led the Dutch to make major investments in plant and equipment. Today these activities continue in Central Java in the form of the 100 percent government-owned company, P.T. Barata, (a branch of the country's largest factory-machinery company based in Surabaya), and P.T. Dwika.

Together with a third plant, P.T. Petra, established in 1946 and largely unimproved since, these Tegal-based firms service the heavy requirements of maintaining and improving 23 government-owned sugar mills operating in West and Central Java. These plants are integrated self-contained operations that cast, finish and machine parts and components, with minimal subcontracting to smaller more specialized producers [2]. They also service other clients, both public and private, and produce a wide variety of subsidiary repair and machine products, particularly pumps and irrigation system water control devices. All three plants are estimated to be operating at less than 50 percent of installed machinery and facility capacity.

Ceper is the center of the ferrous metal casting and surface finishing activity in Indonesia. An enterprising entrepreneur began casting pots, pans, and irons in 1915, and the knowledge permeated the local area, consistent with the spreading pattern of other Javanese handicraft skills. There are currently 150 registered members of the local cooperative, including 126 firms actively providing a broad spectrum of capability and craftsmanship in the casting of iron products. These include both finished products and components for larger machines and equipment. From the 36 firms surveyed in Ceper, the products produced include:

water pumps
sugar factory spare parts
sewing machine legs
water piping
foot valves
rubber factory spare parts
marine spare parts
telephone service spare parts
automobile spare parts
press spare parts
pipe fittings
machinery parts [3]

The foundries depend upon contracts from government agencies, some by way of the cooperative association, and direct contracts with private buyers. With the exception of the few highest quality casters, known throughout Indonesian for the precision of their work, there is significant unused capacity in this locally-based industry subsector.

There is a center of ornamental brass casting and finishing in Juwana whose products and designs are determined by the tastes of the domestic market. These producers will be helped to enter the international market by the CJEDP's export services subproject and will not be included in the metal industry development subproject.

Machine repair shops constitute the third component of the metalworking industry. Wherever imported machinery has been used, facilities to fix or replace parts or to reconstruct or duplicate at least a portion of the original equipment have developed. These often began as shade tree operations and added equipment to weld, turn, shape and mill metal parts. Now fully equipped shops exist in every major population center. In Semarang, the repair facilities of P.M. Slamet Sumbing and P.M. Subur among others, appear fully capable of manufacturing new mediuim-scale machinery but do so only rarely or not at all. Their involvement generally ends with machining a part larger than an equipment fabricator can handle or as a repair reconstruction. During 1983, these facilities were operating at less than 50 percent of capacity.

Coke and pig iron for the foundries are imported from either Taiwan or Australia, and are available throughout the province from private suppliers. Melted scrap iron is used in varying proportions to provide additives not found in pig iron and to reduce the price of the finished product. There is no steel casting done by the metal working industry in Indonesia, but a well-developed system of private company imports and services (both European and Japanese) provides steel varieties, assistance in chosing appropriate strengths and degrees of brittleness, and tempering after machining (in Jakarta). Except for the repair industry, however, there is little steel being worked in the

factories of Central Java. Cast iron is the material used for metalworking and machined products, with an occasional brass or bronze alloy used for valves and fittings.

Economic theory suggests that capital investment in the engineering and metalwork industry in Indonesia should be limited, with as many operations as possible done by hand. Each expensive machine would be surrounded by a craftsman with appropriate helpers, haulers and carriers, and a sweeper. Shift work would maximize use of the scarce resource -- capital equipment.

Theory and practice merge in the casting industry in Ceper. There is little expensive equipment in evidence except where low-interest loans have been made available to a few selected firms to purchase new capital equipment. The crucibles are hand carried and the molten iron hand poured. All sand castings are hand molded and surface finishing is highly labor intensive.

There is an enigma in the machining subsector, however. Those activities which can be done by hand are, sometimes even when capital equipment is available. Two laborers were observed hand sawing a metal bar within ten meters of a million dollars worth of usable metal working equipment. Capital investment has been constrainted by the high cost of capital except in cases where subsidized loans have been made available to replace worn out equipment. Machines are old, often purchased second hand [4]. Yet for each machine in use, there are two or three standing idle, and the labor force in view could not physically operate half the equipment available. The first level of observation and the perception of managers and owners of enterprises in the metalworking industry is that there is not sufficient demand to keep the machines busy [5].

Employment and Output Magnitudes

The metal industry, as defined by SIC codes 38111 (agricultural and handtools including blacksmithing and foundries) and 38200 (machinery manufacture and repair), employed 7,926 workers in 1979, in 2,012 enterprises. Growth in employment in these two categories registered 44 percent from 1974/75 to 1979 [6].

Employment in the production of agricultural and handtools (SIC 38111) is concentrated in household and small scale enterprises. 1979 census data shows no medium or large scale enterprises in this category although at least a few are known to exist and have been visited. Employment in the manufacture and repair of machinery (SIC 38200), on the other hand, was concentrated (63 percent) in the medium and large scale enterprises with no household enterprises being recorded.

It is not possible to determine the total output of enterprise in these two categories from available data sources. One unofficial analyst estimates that total autput of firms classified as 38111 was around Rp 1.8 billion (U.S. $2.9 milion) and Rp

11.5 billion (U.S. $18.4 milion) for those classified in the 38200 category in 1980. Although it is not possible to reasonably estimate the rate of growth of output, available indicators suggest that it has no more than kept pace with the inflation rate and that output per worker may have actually declined.

Supporting Institutions and Policies

The Metal Industries Development Centre (MIDC):

Located in Bandung and housed within the Ministry of Industry, MIDC was established in 1970 and has received technical and equipment assistance from UNIDO, West Germany and Belgium. It presently employs 23 qualified engineers and technicians. MIDC has a full range of product design and testing facilities for the Indonesian metal industry.

MIDC accepts as its charter the improvement of quality, skills, material inputs, technical methods and management and productivity among 10,000 metal industry firms. To make its tasks manageable, it accepts limited assignments and often works through cooperatives or the small industry program (BIPIK) of the Ministry of Industry and concentrates on a few selected products.

The best known MIDC activity in Central Java was its contracting to provide 200,000 water meters to the Department of Public Works, and subcontracting their production to small firms. MIDC designed and tested both the casting mold and a new alloy to meet high pressure requirements, then provided direct technical assistance to producers. The operation was successful. Even though many of the local firms who participated claim not to have profitted financially, all welcomed the opportunity to learn new techniques [7]. MIDC can undertake only a limited number of such projects, however, without additional funding and staffing assistance.

BIPIK:

In contrast to the success of MIDC, the Small Industry Program of the Ministry of Industry finds it difficult to stimulate and assist small industries in the province [8]. While the program may have helped some firms, the concept of generalized technical assistance and the provision of equipment and machines which belong to everyone (and thus no one) has not won great favor among producers [9]. The BIPIK program works from the government to producers. CJEDP will be based on a different concept of the most appropriate way to stimulate private sector development.

Yayasan Dian Desa:

Yayasan Dian Desa, the only non-profit organization assisting metalworkers in Central Java, is headed by a qualified engineer. Based in Jogjakarta, Dian Desa has been providing

assistance to interested firms in technology, management and organization of production. In their metal workshop they have built and tested prototypes and extended new ideas into commercial production. They have been one of Asia's most successful organizations in stimulating the use of appropriate engineering technology, particularly in the agricultural and agroprocessing fields.

Bapak Angkat (Foster Father):

The Ministry of Industry has established this special program to encourage assemblers and major buyers of components to support small producers through subcontract mechanisms. There are two designated Bapak Angkats in Central Java, one in the metal industry. This is P.T. Kubota, a Japanese/Indonesian joint venture which has successfully subcontracted with 29 small producers to supply component parts. This well publicized effort, which was the subject of a recent article in the Far East Economic Review, has been highly praised and researched [10].

The vast majority of locally-made components for Kubota's assembly operations are hand produced washers, bolts, and aluminum tanks or iron trays which are sand casted. None require the use of even medium level technology and no larger machine shops are involved. Kubota provides little technical assistance to its suppliers and pays them up to 15 days after receipt and acceptance of the component parts thus obtaining a portion of its working capital requirements from its small scale suppliers.

With locally produced components now equal to approximately 40 percent of the value of Kubota's assembled diesel engine, the easy substitutions have been made. There is little reason to believe that, under existing circumstances, there will be any significant increase in local manufacture of more technically demanding components, unless GOI policy decisions make it a practical necessity.

The potential of this model is promising. With technical assistance to allow production of more sophisticated components and with the potential for buyer, or third party, rather than supplier credit for inputs or necessary machinery, the transfer of technology from larger assemblers to smaller component producers has excellent potential for modernizing the industry [11].

Government Policy:

Government of Indonesia policy has been clearly enunciated to promote the local manufacture of assembly components and the complete local construction of major new agroprocessing plants, beginning with sugar mills. Local assemblers have been warned that the importation of components will be stopped in the near future. The next five-year plan will call for construction of 16 sugar factories. Meetings, organized by the Ministry of Industry, were held in Central Java in September 1983 with potential parts manufactures to describe the program. Sugar

factory construction will be under the overall responsibility of P.T. Barata, but the government will encourage private suppliers to provide parts and equipment. How this will be done, and under whose responsiblity, is yet to be determined. Major palm oil factory construction is also featured in the coming five-year plan. This program will also call for local production of the machinery.

The emphasis on private sector investment and the development of non-oil exports which will be a major focus of Repelita IV also indicate that the demand for new equipment and machinery will continue to grow.

Prospects for Metal Industry Development

Major studies of Indonesia's engineering and metal industry were carried out in 1971, 1973 and 1976, each leading to a recommendation for an integrating strategy [12]. Then, as now, there was apparent overcapacity, a lack of aggressive marketing of existing products, relatively little capability to develop new product lines, and a tenuous grasp of the technology and equipment required for precision machinery manufacturing.

Since heavy manufacturing is concentrated outside Central Java, a metal industry development strategy for the province must rely on "nichemanship", the art of finding local comparative advantage on which to base industry modernization and expansion. Analysis of the existing organization of Central Java's industry suggests that creation of an equipment design capacity, specialization of production, and stimulation of growth through the use of subcontracting mechanisms offers strong potential for the future.

Within the engineering and metalworking industry there are two bright prospects for development: the fabrication of agroprocessing equipment and machinery, and the production of components for metal products assembled in Indonesia other than in the agriculture and food industry.

Reaching the Small Metalworking Firms

There are large firms in West and East Java which are fully integrated operations, from casting through machining to fabrication. The generation of yet another single-stage producer in Central Java would not help the many small casting firms or machining establishments to add to their skills and produce more and better components and parts. In the absence of a heavy industrial capacity in the province, orders for machinery are placed outside of Central Java, where very little subcontracting is done. The failure of one overriding and powerful firm to emerge in Central Java is a potential advantage if support can be rendered to the industry as a whole.

There is a natural harmony between the machinists, casters and fabricators in Ceper and Semarang which might be extended to the partially integrated operations in Tegal. P.T. Rabda is the most striking example of a firm which started in small consumer goods, was displaced from the market by Japanese imports after the war, then moved into producing agricultural equipment. Today Rabda manufactures tobacco processing equipment, feed mixers, light tea processing machinery, and a dozen other pieces of agricultural processing equipment from designs copied and adapted from imports.

Rabda has no casting facility and subcontracts all such work to the Ceper foundries. It also subcontracts heavy machining to specialized firms in the immediate Semarang area, as its own facilities are limited. Without formal engineering training, but with experience and entrepreneurial talent, the firm is operating in a manner which benefits smaller and more specialized producers in Central Java.

While Rabda sells almost exclusively to the private sector, P.T. Matahari SS, in Tegal, is a company which has moved from light consumer products into roof tile machines and hand presses, under government contract for the BIPIK program. Its machining capacity far outstrips its foundry and cooperative endeavors with larger casting firms would seem to be natural. There are others that specialize in one kind of machine or in one size of operations that present opportunities for mutual benefit through specialization.

Agroprocessing Machinery and Equipment

Central Java is a center of agricultural processing activities, with 29 private estate concessions and five large government plantation groups providing raw materials for major processing facilities in sugar, tea, rubber, coconut oil, coffee, tobacco, palm oil, essential oils, tapioca, and vegetables and fruit canning, preserving and drying. In an open economy, demand for new equipment and repairs could be projected based upon the age and use of the equipment. But with government-owned operations in a mixed and regulated economy, demand is often a matter of government budgets, policies and priorities.

There are three potential markets that a revamped engineering and metalworking industry could tap in the manufacture of agroprocessing equipment and parts.

Major Factories and Heavy Processing Equipment

For construction of large tea factories, the manufacturing firm of P.M. TeHa (Bandung), has been named by the government as the primary contractor [13]. P.T. Barata (Surabaya) is responsible for construction of rubber factories. It appears that Barata will also be the principal contractor for new sugar fac-

tories, with components and parts subcontracted out to a number of smaller producers. The process by which firms are named as subcontractors is unclear. Central Java firms will not (and should not) attempt to compete with the heavy manufacturing capability of Bandung and Surabaya, but instead should seek to supply components for the new factories. These represent millions of dollars of casting, finishing and machining potential.

New Processing Machinery for Existing Plants or Presently Unmechanized Operations

There is a small but growing market for new processing machinery to fit into existing plants, often built around new processes, or new products required by foreign buyers. New machines are being constructed for tobacco curing, feed mixing, oil pressing, etc. which either are significant improvements on original equipment or represent additional capacity. Nearly all of the 29 commercial plantations in Central Java are in need of factory renovation. The market for light to medium agroprocessing equipment can be exploited by Central Java's metalworking firms, with support from the metal industry development subproject.

There is also a growing need for the development of agroprocessing and food industry machinery that is neither a copy nor a substitute for imported equipment. Indonesia has special resources and requirements which call for unique solutions to the process of mechanization. There will always be a need for rural-based appropriate technology -- bicycle-pedal solutions to village problems. Few other countries generate the level of potentially usable agricultural waste that Indonesia possesses, nor the vast quantity of inexpensive labor. For example, a shrimp pond aerator powered by an imported diesel engines is presently available in Jakarta for about $750.00. An appropriate technology design, powered by hand or leg action, should sell for $100 to $150 to the owners of half-hectare tambaks. Both the design and the fabrication of this kind of local solution to opportunities for development present attractive prospects to the metalworking industry in Central Java.

Repairs and New Part Construction

The repair business keeps much of the Central Java's metalworking industry going. In the largest factories, such as the sugar mills, equipment repair is contracted to both government and private sector firms. Any repair under $5,000 is arranged directly from the factory. Repairs exceeding this amount are arranged by the headquarters of government plantations.

Managers of repair facilities explain that a half-dozen firms possess medium-scale repair capability, the three primary ones being in Tegal. The competitive factors are price, known quality of work and timely delivery. The factories do spread

their work and, during the off-season (when the sugar mills do not run), all three major repair facilities in Tegal have significantly expanded business.

Some sugar factory repair contracting is handled through middlemen, adding to the cost of doing business. The price to the repair supplier is inevitably lower, and the cost to the government higher, under these arrangements.

Productive and Precision Capacity in Agroprocessing Machinery Manufacturing

As a result of market and policy forces at work in Central Java in 1983, there is an oversupply of metalworking firms and an undersupply of engineering talent. The government's policy of extending subsidized loans to selected firms provides one incentive for overexpansion. But many private investments have been made on the assumption that demand will grow as economic activity increases, since movement from hand-powered processing to machines is a necessary concommitant of increased non-agricultural output.

Assembly of component parts is an expanding activity and new processing machinery will be required to match the growing productivity of plantation agriculture. To date demand has not kept pace with productive capacity. But a further analysis of the situation suggests that it is not overcapacity but under utilization that threatens Central Java's metalworking industry. There is a growing market, but Central Java's firms have not yet learned to capture it. Orders for agroprocessing machinery go elsewhere, domestically or for imported equipment.

Underutilization has developed because of the province's lack of engineering capacity to design, test and then produce new machinery rather than depend upon repairs to, or duplication of, existing units. Only four firms in the province produce completed machinery. Two medium scale firms produce agroprocessing equipment and water pumps, and two light manufacturers make roof tile machines or cement mixers. As new firms have entered the industry, and casting capabilities have been upgraded in Ceper, there are simply more services available to satisfy the same market.

Those Indonesian and expatriate mechanical engineering specialists who have examined the industry, believe much more could be done with existing productive capacity. There is only one qualified engineer in the private sector metalworking firms visited, which included all known medium and larger scale enterprises in the province. Owners and managers have risen through the ranks on the strength of their experience and, while they can copy prototypes, few can adapt them to local conditions or equipment. They are unable to examine an imported machine containing a high percentage of steel, and determine which replacements could be made with cast iron. While they can work steel, and do

in providing repairs, few firms machine steel for use in fabricating processing machinery.

Designs are necessary that match capacity with the next level of precision required for faster, more demanding equipment. In upgrading the industry there will be a need for precision tools to augment the present machinery inventory, balancing facilities to allow manufacture of simple rotating equipment, steel processing capacity, management training, and an organizational structure which builds upon the strengths of the casting and machining capacity in Central Java. Using its existing capacity as a base, the industry can be helped to fabricate new and necessary answers to Indonesia's growing need for higher quality agroprocessing machines and component parts.

A Program to Develop the Metalworking Industry in the Manufacture of Agroprocessing Machinery, Components and Spare Parts

There will be two "tracks" in the development of the metal industry's capacity to expand its agroprocessing machinery construction capacity in Central Java. The first will focus on bringing leadership to the "top" of the industry by developing a design and prototype testing capability for agroprocessing equipment within local engineering firms.

Based upon the findings of a market demand and production capability study, six types of processing equipment will be identified for design and testing. The CJEDP will bring in a team of U.S. agroprocessing equipment designers, matching their understanding of modern technology with the practical experience of engineers working in Indonesia. Working together with local machinery, casting and fabricating firms, and the potential end users, this teams' task will be to develop new designs and prototypes and have it tested on estates in the province.

The subproject staff will help link the results of testing of the new designs to the public and private sector clients to identify a sound market, so that commercialization and production can get underway. At least four new major pieces of agroprocessing equipment will be placed into commercial production during the life of the project, with total value of output more than $1,000,000 per year each when the products, and their markets, are fully developed [14]. The most valuable contribution will be to help generate, within the private sector, an engineering and design capacity which can adapt to the changing needs of the agroprocessing facilities in Indonesia.

The introduction of designs for new machinery will likely call for new processes, equipment, skills and organizations. These will be provided o made possible by the subproject, based upon subcontracting arrangements between the primary assembler of the agricultural equipment produced and the many component producers. The upgrading of the industry will take place against a

set of orders for new machinery, so that the knowledge transferred, and the technologies developed will have direct application to a marketable product.

New investment in the industry will be encouraged, beginning with direct participation by a U.S. engineering firm in providing technical assistance in the design and prototype testing process. If that is successful, they will be encouraged to enter into a joint venture with a local firm to undertake manufacture of the equipment. The market demand and production capability study, to be done early in the project, will identify the machinery, producers and buyers to be first priority for the design, testing and commercialization process. Access to credit for new machinery for local firms will be facilitated by the subproject, working with commercial and development banks in Central Java.

The second track of the subproject will increase the capability of the metalworking industry from the bottom up, through the design and testing of small, technologically appropriate machinery which can be manufactured by small and medium scale metalworking firms in Central Java. The major source of these designs will be Yayasan Dian Desa which has a successful track record of developing new designs and products and transferring their production to small producers.

Working on a series of subcontracts with the CJEDP, Dian Desa will first provide a design for a piece of equipment which it feels can be produced by small and medium scale metalworkers in the province and will find a ready market. When the CJEDP core staff agrees with the development of a particular product, Dian Desa will, using its own machine shop and facilities, produce and test one or more prototypes before assisting private firms to develop appropriate techniques for its production on a commercial basis. Twelve different products will be developed in this way and it is expected that eight will actually be put into commercial production achieving an average output of about US$300,000 each when fully developed.

Other designs will be obtained by way of an ongoing design competition in which the general public will compete for awards of US$2,000 to $5,000. Successful designs will be selected by an awards committee made up of CJEDP core staff and others including the Department of Industries and MIDC on the basis of a set of criteria which includes the following elements:

- the potential for production on a commercially viable basis based on identifiable market demand;
- the ability of small and medium scale local firms to produce the item using existing technical skills and equipment;
- the amount of useful innovation reflected in the design;

- the degree to which production of the design offset the need for imported products.

The competition will not be limited to qualified engineers or draftsmen and, although the awards committee must be able to understand the design from a picture and written description, the quality of the draftsmanship will be of less importance than the quality and potential of the innovation.

Winning designs will be subcontracted to private firms for the development and testing of prototypes. Thirteen awards will be given throughout the life of the project and all thirteen will see prototypes developed. It is estimated that eight will be put into commercial production with an eventual output value of $200,000 per item.

Import Substitution of Components for Assembled Equipment

If market demand in the agroprocessing industry is of critical importance to medium and large scale metalworking firms, substitution of component parts for imports in equipment assembled in Indonesia other than agroprocessing machinery is equally important to the smaller scale producers, particularly the casting industry in Ceper. The Kubota experience suggests that local producers reach an import substitution stopping point beyond which their productive capacity does not advance. They cannot take the next step beyond the casting of simple tanks or stamping of washers and bolts. Knowledge of the components imported, comparative prices, and quality requirements would allow selected items to be added to the locally-produced list. The small producers cannot undertake this activity on their own, however, and need assistance in prototype design, production specifications and technical training.

These small firms also have little ability to find their own markets. The firms cooperating in the water meter project are seemingly content to wait until the government (MIDC) finds another import substitution project which provides new work, or until a private fabricator downstream in the machinery assembling and production process calls for special castings under a subcontract.

The subproject will assist MIDC to replicate the successful water meter experience with other products and extend it to many more small production units in Central Java. MIDC will, with CJEDP assistance, examine the present list of imported components for equipment, vehicles, engines, and machines which are assembled in Indonesia (in almost every case because government policy has closed the importation of the assembled item) and determine which are appropriate candidates for local production. MIDC will then seek supply contracts from the assemblers, develop and test prototypes, and train small scale producers to manufacture the article according to the necessary specifications.

This component of the project, of particular importance to the small foundries, will help upgrade their capacity, and improve precision output, organization and management skills through special training courses to be offered by private voluntary organizations presently providing such services in the province. At least 20 new component prototypes will be designed and tested by MIDC and an estimated 12 will be put into commercial production by the end of the project generating average sales of $200,000 per item per year within up to 50 firms and setting the basis for continued future expansion.

Implementation Arrangements and Phasing of the Subproject

The metal industry development subproject will be initiated in the seventh month of CJEDP implementation with the arrival of the senior metal industry advisor and the hiring of the senior metal industry counterpart.

Agroprocessing Machinery Production

Assistance which will generate leadership for the metal industry in Central Java begins with a market demand and production capacity study for agroprocessing equipment under the direction of the CJEDP core team, with a short term metal industry specialist as a team member. MIDC will be included on the team as will a representative of the Industry Department -- since some of the issues to be addressed involve government policy. With a mix of mechanical and industrial engineering and firm-level economics, the study will determine likely markets for agroprocessing machinery and component parts, and the relevance to existing productive skills within the industry in Central Java.

One output will be a feasibility study for new investment in the industry, including the partnership between existing local engineering and metalworking firms and a U.S. agroprocessing equipment manufacturer. A second will be the specification of machinery and component parts to be produced, with the likely buyers identified, including estimated production costs, selling prices, and design and testing requirements. A third will be a plan (including technical skills, machinery and equipment and management practices) for upgrading local industry, both medium and small producers, to meet the specifications of the new machinery to be produced. A fourth output will be policy recommendations to the Government of Indonesia for dividing the work within the industry, to allow Central Java to compete for a share of the agroprocessing machinery market.

While this study is underway, the CJEDP core team will arrange to activate a subcontract with a U.S. engineering and agroprocessing machinery manufacturing firm to begin providing design assistance to local entrepeneurs. Under this subcontract

two specialists will team with local design engineers, industry representatives, potential users of the new equipment and officials from the Ministry of Industry to form a team which will suggest and review designs for new agroprocessing equipment. Working with a group of local firms, the team will begin design and prototype activity which will continue over the life of the project until design and testing capacity is internalized within private firms in the metal industry in Central Java.

Building from the base of the industry will begin as Dian Desa is subcontracted to develop and test prototypes of two machines of its own design. Two such proposals have been received already, one for a rice husk brickette machine to produce fuel in rural areas, and a second proposing to utilize waste by-products of existing coconut processing operations (shells) to produce a valuable export commodity. As each prototype is tested and placed into commercial production, additional proposals for new equipment design will be reviewed.

In addition, CJEDP will conduct an open competition for new designs in the agricultural processing or food industry field, with awards for innovation and prospects for commercial applications. These designs will be screened by a select committee and the winners sent to private firms for prototype construction and testing, on subcontracts from the CJEDP. Twelve such prototypes will be developed on the basis of new award-winning submissions.

Although each mini-proposal submitted for CJEDP consideration, or each design entered in the award contest for small agroprocessing or food industry field equipment, will include proposed buyers for the machinery, the marketing specialist on the core CJEDP team will provide supplemental data on possible demand and independently conduct a market study. These will be used to contact clients and determine estimated demand and likely buying price for the new machinery before the final decision is made for the project to support commercialization. All designs will be in the public domain and can be test produced by any individual entrepeneur.

Import Components in other than Agroprocessing Machinery

This component will begin with a short study, to be contracted to MIDC, to research the importation of components of assembled machinery, vehicles, and equipment outside the agroprocessing field and determine technical specifications and price of commodities which can be produced in Central Java. This three-person, three month effort will lead to a plan for:

- MIDC prototype design and materials testing of the commodities to be produced under government contract. MIDC will then (as it has in the past) contract to supply the commodities and subcontract to small producers in Central Java, providing technical assistance and special materials (alloys) as needed. MIDC will submit a proposal to the CJEDP for each commodity to be placed under subcontract to small producers, with details of costs, timing and production levels. Up to six products per year will be commercialized in this way. Contracting will be direct between the CJEDP and MIDC.

- MIDC prototype design and materials testing of the commodities to be produced for private sector buyers. CJEDP will serve as a broker bringing together buyers and producers. Whenever possible, one of the larger fabricating firms can serve as the primary contractor, letting subcontracts to smaller producers. Up to six commodities per year will be commercialized in this way.

Commercialization of Production of New Products

CJEDP will provide three different types of assistance to firms who want to begin commercial production of the new products. First, it will, through its full time subproject and core staff, identify markets for the products and estimate future demand given technical and cost data resulting from the testing activities. In the case of assembly components, MIDC will play a key role in identifying markets and negotiating contracts which can be passed on to small scale producers.

Secondly, a series of training programs will be provided by locally based PVOs operating on CJEDP subcontracts. These courses will cover technical matters, production processes, related to specific products as well as management issues such as cost analysis, group buying and marketing processes, financial planning, production planning and control and general management.

The groups invited to participate in providing this training on the basis of CJEDP subcontracts will include Yayasan Purba Danarta, LP3ES, Yayasan Dian Desa and LPPM. Training sessions will be organized around the schedule of the participants with classroom sessions being presented in the evenings and the instructors providing follow-up training with the participants in the daytime.

Training would include 50 entrepeneurs per year, during the second and third years of the project, in each of three locations (Semarang, Tegal and Ceper), timed to complement the technical assistance provided to small firms to commercialize new designs for small agricultural processing machinery and assembly components.

Modernization of productive capacity, expansion of precision production, upgrading of labor skills, acquisition of better raw material inputs, and production for inventory, rather than against firm orders, presents the producers with demands for capital. In some instances, this will only be feasible if the entrepreneur has access to some commercial source of medium term credit. The CJEDP project will assist private firms to obtain access to credit through one of the commercial or development banks, or non-bank financial financial institutions, by helping in the preparation of feasibility studies, and assisting with paperwork and licensing requirements. The project will not itself enter into credit arrangements for new equipment, facilities or other costs that will be incurred by private sector firms.

Figures VI-1,2 and 3 which follow present a schedule for the start-up of various subproject activities, a time phasing chart for various activities and a staffing chart.

Figure VI-1

Scheduling Subproject Activities

Project Activity	Implementor	Begin
Subproject Staff in Place in Place	Contractor	S + 7 Mo. (S=Startup)
Market Demand and Production Capacity Study	Subproject Staff MIDC Dept. of Industries S.T. Metal Ind. Spec.	S + 8 Mo.
Design, Development and Testing of Sophisticated Agroprocessing Equipment	U.S. Engineering Subcontract Local Firms	S + 13 Mo.
Design, Development and Testing of Simple Agroprocessing Equipment	Dian Desa	S + 8 Mo.
Assmebly Components Study	MIDC	S + 9 Mo.
Design Development and Testing of Assembly Components	MIDC	S + 12 Mo.
Design Competition	Subproject Staff	S + 9 Mo.
Development and Testing of Design Competition Winners	Private Firms	S + 13 Mo.
Commercialization of Sophisticated Agroprocessing Designs	Private Firms U.S. Engineering Subcontract	S + 19 Mo.
Commercialization of Simple Equipment and Assembly Components	Subproject Staff PVOs Private Firms	S + 15 Mo.
Producer Training Programs	PVOs Subproject Staff	S + 17 Mo.

Figure VI-2

Time Phasing of Subproject Activities

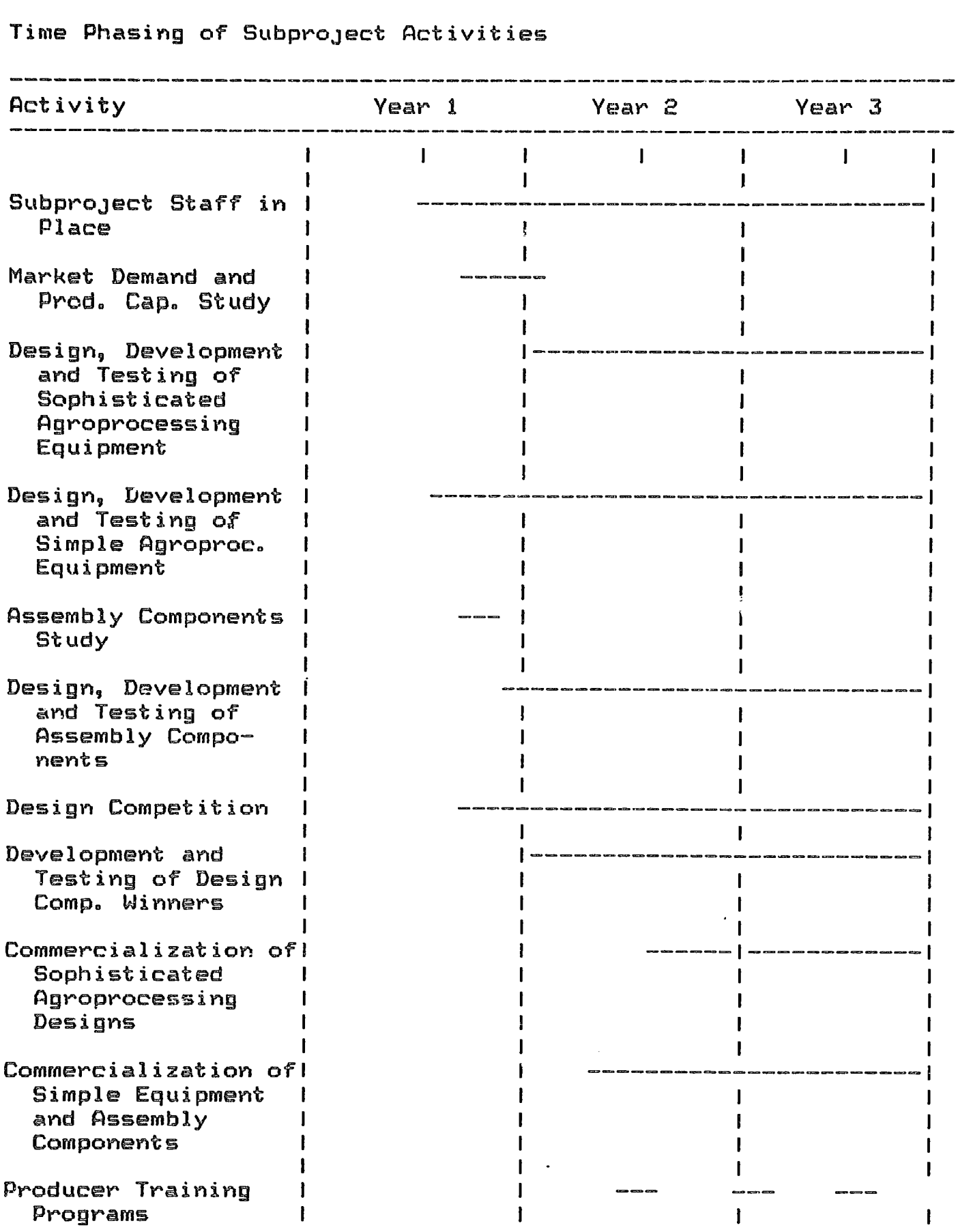


Figure VI-3

Staffing Chart (person months)

	Year 1		Year 2		Year 3	
Subproject Staff						
Senior Metal Industry Advisor	6E		12E		12E	
Senior Metal Industry Counterpart		6I		12I		12I
Short Term Advisors						
Market Demand and Prod. Capability Study Industrial Engineer and Marketing Spec.	2E	15I	1E	3I		
Design, Development and Testing of Sophisticated Agroprocessing Equipment [a]			12E		8E	
Design, Development and Testing of Simple Agro-Processing Equip. [b]						
Assembly Components Study [a]		9I				
Design, Development and Testing of Assembly Components [b]						
Design, Development and Testing of Design Comp. Winners [b]						
Commercialization of Sophisticated Agro-Processing Designs [b]						
Commercialization of Simple Equipment and Component Designs Training [b] Tech. Assistance			3E	9I	3E	9I
Totals (short term)	2E	24I	15E	12I	8E	9I

NOTES: [a] Services provided under subcontract, time specified
[b] Services provided under subcontract, time not specified

Estimated Costs for the Subproject

The estimated cost of the Metal Industry Development Subproject, for three years, is U.S. $1,431,000 of which U.S. $920,000 will be expended in Rupiah, and U.S. $511,000 in dollars. Major Rupiah expense items are subcontracts, in rupiah with Indonesian short term specialists, companies, private voluntary organizations, or specialized government institutes, such as the MIDC. Dollar expenses are primarily used to provide specialized external technical assistance in conducting the market demand and production capability study, in developing the design capability of larger scale firms (through a subcontract with a U.S. engineering firm) and in providing short term assistance to firms as they try to commercialize production of the new designs. A detailed budget estimate for the subproject follows as Table VI-1.

Table VI-1

Metal Industry Development Subproject Budget

Activity	U.S. $	Rp	Yr. 1	Yr. 2	Yr. 3
Senior Metal Development Counterpart					
Salary and Benefits	0	45	8	17	20
Travel and Per Diem for Full-Time Staff	11	11	4	9	9
Market Demand and Production Capacity Study					
S.T. Metal Industry Specialist (Ex)	- 46	0	30	16	0
S.T. Metal Industry Specialists (Ind	0	37	30	7	0
Design, Development and Testing of Sophisticated Agroprocessing Equipment[a]					
Subcontract with U.S. Eng. Firm	330	0	0	193	137
Design, Development and Testing of Simple Agroprocessing Equipment					
Subcontracts with Dian Desa	0	359	50	144	165
Assembly Components Study					
Subcontract with MIDC	0	18	18	0	0
Design, Development and Testing of Assembly Components					
Subcontract with MIDC	0	121	10	52	59
Design Competition	0	47	3	21	24
Development and Testing of Design Competiton Winners					
Contracts with Private Firms	0	113	0	48	65
Commercialization of Sophisticated Agroprocessing Designs					
Subcontract with U.S. Engineering Firm [1]					
Commercialization of Simple Equipment and Assembly Components					
Training Subcontracts	0	57	0	17	40
Technical Assistance					
S.T. Production Spec. (exp)	100	0	0	48	52
S.T. Production Spec. (Ind)	0	44	0	21	24
Contingency Excluding Subcontracts (15%)	24	28	11	21	20
Total Subproject Costs	510	880	164	613	614
Grand Total 1390					

NOTE: [a] included in subcontract with U.S. engineering firm described above.

Subproject Benefits

Employment and Output Gains

There are four different types of activities which will result in increased capacity and production output. These will bring forth four different employment benefit streams. In the first years, as new designs are developed, tested and introduced, new output will increase only slowly. Employment impact will also be rather low during these years although the employment factor of marginal production will be higher than it would be if new capital expenditures were required to introduce the new products. For the most part, this new production will be undertaken using what is now an overcapacity in the metalworking industry.

The full impact of the project in terms of marginal output and employment will only be felt in years four and five, after conclusion of the project, when the new products introduced during the project are fully commercialized. Using a set of conservative assumptions (see Table VI-2), it can be projected that marginal output as a result of the project will be over U.S. $10 million by year five and that more than 5,900 new sustainable full time jobs will have been created. This represents a nearly fifty percent increase in output as a result of the project as well as a 75 percent increase in employment when compared with 1979 (employment) and 1980 (output) estimates.

Total subproject costs per job created in year five will be approximately U.S. $260.00. Total direct marginal returns to labor as a result of the subproject during the five years are estimated to be over U.S. $3.9 million. Thus the project cost per dollar return to labor during the period is only U.S. $0.40.

It must be assumed that the benefits of these activities will continue to be felt and increase after the project itself is concluded. The new products introduced will continue to be produced after the project is over and the firms themselves will have an increased capability to identify and develop new products. New commercial relationships will have been developed which will continue to generate new business and it is hoped that the MIDC and the PVOs will continue to be encouraged and assisted in their efforts to help the small scale producers.

Direct employment benefits are found in the casting, machining and fabricating companies. Indirect employment is estimated to attend in the raw materials suppliers, service industry personnel, transportation, and packaging firms which are upstream or downstream in the production process. Dian Desa, on the basis of efficiency studies conducted on the small metalworking enterprises, estimated a total of five new jobs for every direct productive hire (not tea server) in the engineering and metalworking industry. This indirect employment impact is not included in the benefit calculations presented here.

Table VI-2

Estimated Benefit Schedule

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Sophisticated Agroprocessing Equipment						
Increased Output ($)	0	250000	1420000	3010000	4000000	8680000
Labor Factor	n.a.	.15	.15	.15	.15	
Returns to Labor ($)	n.a.	37500	213000	451500	600000	1302000
Avg Value Per Job ($ per year)	417	417	417	417	417	
New Jobs Created	n.a.	90	511	1083	1439	1439
Simple Agroprocessing Equipment (Dian Desa Designs)						
Increased Output ($)	0	300000	1104000	2004000	2400000	5808000
Labor Factor	n.a.	.2	.2	.2	.2	
Returns to Labor ($)	n.a.	60000	220800	400800	480000	1161600
Avg Value per Job ($ per year)	313	313	313	313	313	
New Jobs Created	n.a.	192	705	1281	1533	1533
Assembly Components						
Increased Output ($)	0	250000	1020000	1938000	2400000	5608000
Labor Factor	n.a.	.25	.25	.25	.25	
Returns to Labor ($)	n.a.	62500	255000	484500	600000	1402000
Avg Value per Job ($ per year)	313	313	313	313	313	
New Jobs Created	n.a.	200	815	1548	1917	1917
Design Competition Products						
Increased Output ($)	0	150000	652000	1270000	1600000	3672000
Labor Factor	n.a.	.2	.2	.2	.2	
Returns to Labor ($)	n.a.	30000	130400	254000	320000	734400
Avg Value per Job ($ per year)	313	313	313	313	313	
New Jobs Created	n.a.	96	417	812	1022	1022
Totals						
Increased Output ($)	0	950000	4196000	8222000	10400000	23768000
Returns to Labor ($)	n.a.	190000	819200	1336800	1590800	3936800
New Jobs Created	n.a.	577	2448	4723	5911	5911

Growth and Development of the Economy

The major benefit of expansion and improvement in the engineering and metalworking industry is not direct worker employment in the machine shops or casting foundries. Rather it is in the increased labor productivity of the users of the equipment produced and the increasing total production which is stimulated in industries using this equipment.

With Central Java's rapidly growing workforce, the alternatives to increasing productive off-farm employment opportunities are underemployment in agriculture or in the services industry. There are only so many car parkers or sweepers that can be absorbed without an increase in the income of the spending, productive population.

While "labor-intensive" is the appropriate mix for capital and labor when combined in a productive investment, there is a clear requirement for much more power-assisted machinery and equipment if Indonesia is to develop. An increasing percentage of the working population must be engaged in operating machinery--simple and appropriate to the available labor supply. It is the local manufacture of this machinery, the capacity to see opportunities for mechanization at proper factor costs, that provides the propelling impetus for growth from a thriving metalworking and engineering industry.

This propensity for local mechanization to drive growth has been evident in every country. The danger is that backyard steel mills are seen as the solution to an absence of mechanical assistance to a nation's labor force. In this subproject, support will be concentrated on what Central Java does best, which is grow and process agricultural commodities. Some growth will come from the production of larger, more complex agroindustrial equipment. Other growth will come in the form of simple mechanical solutions appropriate to rural Indonesia, manufactured in small facturies using mostly hand labor. The metal industry development subproject supports them both as well as further developing the small metalworking shops' capability to produce metal components for machinery and vehicles being assembled in other parts of the country using largely imported parts.

In doing so it places a premium on building a dynamic motor for development within Indonesia's private sector.

FOOTNOTES TO THE METAL INDUSTRY DEVELOPMENT SUBPROJECT

1. This subproject draws upon the case study analysis within the Interim Report and further field investigation by the design team, including Ing. W.G. Heyneker, and Ing. Anton Sudjarwo.

2. The three plants present a very different picture of the industry. P.T. Barata is well-funded, organized and provided with office staff and facilities. The workspace is uncluttered, the supporting services identify a government operation. P.T. Dwika has been, in the past, a larger producer of more complex machinery than today. The inventory of what the company has done, including pistons and casings for marine diesel enginers, is impressive. Much of the large capacity is unused. P.T. Petra looks like a factory museum, with power provided by belt to an overhead line from ancient two-cylinder diesels. The equipment and the work force are 1946 vintage. While both Dwika and P.T. Petra have casting facilities (P.T. Barata's are handled by the main office in Surabaya), those of Dwika were in use for large complex fittings.

3. Informasi Perdagangan dan Perindustrian -- Jawa Tengah, Kantor Statistik, Semarang, July 1980, pp. 133.135.

4. One well-travelled lathe, in a small repair shop in the LIK in Tegal, bore the clasped hands of a past AID project. The owner said he purchased it as an import from Taiwan.

5. It is not merely demand, of course, which keeps a machine shop running at full capacity. There is an increased demand for management of different jobs as the facility and equipment move toward 80 percent utilization. It is likely that management and organizational training will be required before the present facilities can approach their potential capacity.

6. Sensus Industri 1979, Kantor Statistik, Semarang.

7. The alloy was new, and more difficult to handle than traditional brass. Many of the early castings were rejected, and hand to be recast.

8. The Interim Report, Working Paper number 3, provides a comprehensive review of the state of all major enterprise development programs in Central Java.

9. One concept of the BIPIK program is to "give" machinery to cooperative associations, LIK (small industrial estates) users and other non-owner-specific locations, often with an understanding that charge will be made for the services, or that a repayment will be made from a principal user. The review cited in Number 7, above, did not find this program popular, or heavily used by producers.

10. Far Eastern Economic Review, August 18, 1983, page 56. The Kubota operation has been the object of five separate investigations by the design team, including an indepth review of subcontracting arrangements.

11. For a fuller discussion see Subcontracting in Central Java, the report on a consultancy carried out by Dr. Donald C. Mead of Michigan State University in Central Java during April and May of 1983. That paper is attached to this report as Annex D.

12. In 1971 by a Japanese team whose results have not been consistant with later projections. In 1973 by FGU-KRONBERG/KU Gummersbach, a sector study by a German technical assistance team, and in 1976 by the World Bank, Problems and Prospects for Industrial Development in Indonesia Volume II, Industry Surveys, May 25, 1978, pages 58-86.

13. In 1974, TeHa was primarily a repair facility employing 75 workers. He was approached by Ing. W.G. Heyneker to undertake rehabilitation of tea processing machinery on a large estate in West Java. Heyneker participated in the design for the new machinery, and in the tests of the new machinery. TeHa was able to convince the government, working under a World Bank loan, that its machinery could meet international standards, and the firm was awarded a major tea factory rehabilitation contract. In 1983, TeHa has a 400-worker factory in Bandung, and a smaller factory near Jakarta serving the outer islands.

14. Without any increase in technical capacity, Central Java's industry could furnish the extensive array of conveyers, belts, product movement devices thorough the sugar factories. With minor assistance it could build medium sized screw presses (to 5 tons), heat exchangers, sugar centrifuge machines, vacuum pan cookers and slow stirring vertical crystalizers. For palm oil, the separators for the kernels, piping, pumps and tanks are all within the reach of the local industry.

VII. IMPLEMENTATION PLAN

A. ADMINISTRATIVE ARRANGEMENTS

Implementation Schedule

The following time schedule (Figure VII-1) spells out the types of internal milestones which will have to be met if the project is to be formally initiated by August 1, 1984. This is a very tight schedule indeed, but it is hoped that the work done in preparing and reviewing the design team's Interim Report and this Final Report will provide the background necessary for both USAID and the GOI to move effectively and quickly in satisfying the requirements of getting the project started.

Each of the subproject descriptions (Chs IV, V, VI) contains a schedule of activities to be undertaken by those subprojects. The proposed schedule for program evaluations is presented later in this chapter.

Factors in Administrative Design

Certain capabilities are required in CJEDP if the project is to fulfill its mandate to increase productive employment by supporting innovation, easing constraints, facilitating coordination, and improving capabilities affecting participants in selected subsectors of private enterprise activity in Central Java.

The first is the ability to achieve demonstrable impact through the subproject interventions that are the immediate focus of the project. This calls for appropriate technical skills, effective leadership, and control over deployment of resources. Moreover, project staff must stimulate the cooperation of key actors in the private sector whose interest and participation, in response to market incentives, is critical if project benefits are to be sustained.

A second project requirement is analytic capability. The focus of project research will be on specific issues arising from experience in the subsectors selected for intervention. Such analysis will build on the work begun during the design phase to identify those points where current and future project interventions are likely to have the most impact. As the first set of subprojects is completed, whether due to success or recognized failure, the research process will lead to the recommendation of new subprojects for review and implementation.

Figure VII-1

CJFDP Implementation Schedule

Activity	Target Date	Responsibility
Submission of Design Team Final Report	Nov. 15, 1983	Design Team
Completion of Project Paper	Jan. 1, 1984	USAID
Approval of Project Paper	Feb. 1, 1984	USAID/J AID/W
Completion of USAID/GOI negotiations (ProAg signed)	Mar. 1, 1984	USAID/J GOI
Release of Request for Proposals for Implementation Contract	Mar. 15, 1984	USAID/J
Deadline for Receipt of Proposals	May 1, 1984	Candidate Contractors
Selection of Winning Proposal	June 1, 1984	USAID/J GOI
Negotiation of Contracts (USAID/Contractor, GOI/Contractor)	July 1, 1984	USAID/J GOI Contractor
Field Team in Place	Aug. 1, 1984	Contractor
Project Start-up	Aug. 1, 1984	Contractor USAID/J GOI

In addition, the project will gather policy-relevant information in the selected subsectors in order to document and raise issues of policy and administrative procedure that have an impact on the ability of enterprises to operate profitably in Central Java.

A third challenge for the project is to build capacity in those public and private sector institutions with a direct participant or support role in the selected subsectors. Whenever possible, the project will work through these institutions to deliver services or provide needed linkages. The project will also have a mandate to build capacity within its own Indonesian

staff. These staff members will participate directly in the necessary organizational functions of planning, management control, subproject oversight, and institutional learning that will be integral parts of the project team agenda. These skills will represent an important institutional resource in whatever form CJEDP activities continue beyond the life of the initial project.

Administrative Plan

The CJEDP's administrative structure is designed to give the project team a necessary degree of control over day-to-day operations, subject to the policy guidance and oversight of provincial authorities under whose auspices the project will be carried out.

This will be achieved by means of a formal contractual arrangement between the contractor and the GOI as well as between the contractor and USAID. In this way the contractor will have a high degree of control over project activities and the expenditure of funds provided that the guidelines established in the contracts are respected. At the same time, the accountability of the contractor to GOI authorities is also specified and formalized.

The Ministry of Home Affairs will delegate the responsibility to oversee the operation of this contract to the Governor of Central Java who will, in turn, appoint a team from the BAPPEDA (Provincial Planning Board) and the SEKWILDA (Provincial Secretariate) to oversee the project. The project will be housed in the BAPPEDA offices as was the planning phase of the project.

There is ample precedent for this approach in other GOI agencies that have contracted for overall management of project implementation, mostly in the area of infrastructure development.

Placing operational control in the hands of the project team is a necessary strategy in order to maximize the freedom of project management to demonstrate that well-conceived, carefully targeted interventions can have an impact on selected private enterprise subsectors and that this impact will include significant employment benefits. This demonstration must precede attempts to institutionalize new programs either within existing or newly created agencies of the Indonesian government or within the private sector itself. An attempt to achieve quick impact and to undertake this kind of centralized institutionalization simultaneously would doom both efforts to failure. The proposed arrangement minimizes the risks and delays associated with establishing a new organization while also assuring closer monitoring and direction from funding sources to whom the contract team will be directly accountable.

Another factor favoring this project strategy is that the ultimate institutional home for many project activities will best be found in the private sector itself. Realistically, potential private sector sponsors will act only when there is adequate

demonstration of market opportunity. This demonstration, through research and direct interventions, is a major objective of this project.

Institutional development will take place through the impact of the project on various public and private institutions in Central Java that play a role in the selected subsectors. Several such entities have been identified in the subproject descriptions above. By contracting with these organizations and, where appropriate, providing technical assistance to them or through them, their capacity to play a broader productive role will be enhanced. In this way, the project's institutional development strategy will be based on specific linkages and activities.

The longer term question of the appropriate institutional home, if any, for the coordinating and management role assigned here to the project core staff should be answered on the basis of experience over the three years of the project. As a pilot effort, the project will take seriously the mandate to document the lessons of working with various service delivery mechanisms. Possible options include:

- o Transfer of the role of the project to an existing agency of government such as the provincial BAPPEDA;
- o Establishment of a new governmental body to assume the functions of the project;
- o Division of selected project functions among various public agencies; and
- o Discontinuation of public sector support for project activities, assuming private sector assumption of intervention strategies with proven benefit.

A decision on how project activities should be continued, if at all, will be made jointly by the GOI and USAID in the third year of the project. This decision will be based on the results of the project's internal monitoring and upon external evaluations conducted by USAID and the GOI in the project's 15th and 30th months (see Evaluation Plan below).

Since the activities of the project are outside the boundaries of normal BAPPEDA/SEKWILDA operations, an active staff role for them is not assumed. Participation of BAPPEDA/SEKWILDA staff with the project team in an observer and advisory role will be encouraged, however. BAPPEDA/SEKWILDA leadership will also serve the project by facilitating linkages with other government agencies offering enterprise services of relevance to the specific subsector interventions of this project.

The BAPPEDA/SEKWILDA team will also provide overall policy guidance and oversee the use of funds provided to the project through the GOI contract. This oversight will include approval

of work plans, review of expenditures, and a direct role in local subproject contracting for domestic services.

Project Staffing

To accomplish the above objectives, a staffing pattern that includes the combination of an expatriate contract team and local Indonesian professionals hired under the same USAID-funded contract is proposed.

The expatriate team will consist of five professionals, all of whom will arrive at the time of project initiation. These include:

- A management and finance specialist who will serve as Chief-of-Party;
- A research and information management specialist who will coordinate the project's overall learning, monitoring, and documentation process;
- An aquaculture specialist who will serve as director of the shrimp subproject;
- An export marketing specialist who will serve as the director of the export marketing subproject; and
- A mechanical or industrial engineer who will serve as the director of the metal industry subproject.

The Chief-of-Party will bear overall responsibility for the development of the three initially identified subprojects, recruitment, orientation, and training of local professional staff, identification and deployment of other technical assistance resources, and administrative management of the project. Technical specialists on the contract team will bear primary responsibility for the specific subprojects and for research and analysis in enterprise subsectors that will identify additional targets of opportunity for the project in the future.

These expatriate core staff will be joined by three Indonesian professionals hired under terms of the USAID contract and responsible to the Chief-of-Party through the subproject and research directors. These Indonesian staff, to be hired during the early months of project life, will include a specialist in management and finance who will assist the Chief-of-Party in project direction and the provision of subproject-related technical assistance.

Two researchers, one economist and one expert in market research will also be added. These three local professionals will work closely with the expatriate contract team and will be

provided with both on-the-job and other relevant training to equip them to sustain the work of the project, in whatever form it may take, after the initial three year contract period.

Three additional Indonesian professionals will be added to the contract team to work directly with the expatriate technical experts in implementation of the three subprojects. Each of the subprojects will thus have two full-time professionals providing direction to the required analytical, subcontracting, technical assistance management, and coordinating tasks. The role of Indonesian professionals in this project is particularly important since this project is not attached to an institutional base with counterpart implementation staff.

These Indonesian counterpart staff members will be individuals well qualified in their fields of expertise. They are likely, however, to require some additional training in specific subjects (enterprise management, agroprocessing techniques, quality control standards and maintenance or others) in order to maximize their usefulness to the project and prepare them to assume an expanded role in CJEDP operations and possible follow-up activities. A small budget is being set aside to provide such training, in the form of short courses (up to six months) overseas throughout the life of the project. The allocation of these funds can only be made once the staff is in place and it is possible to determine where it can best be utilized.

The necessary clerical staff will be locally hired under the contract to support the work of the project team. These staff will also be responsible to the Chief-of-Party and funded under the basic USAID contract.

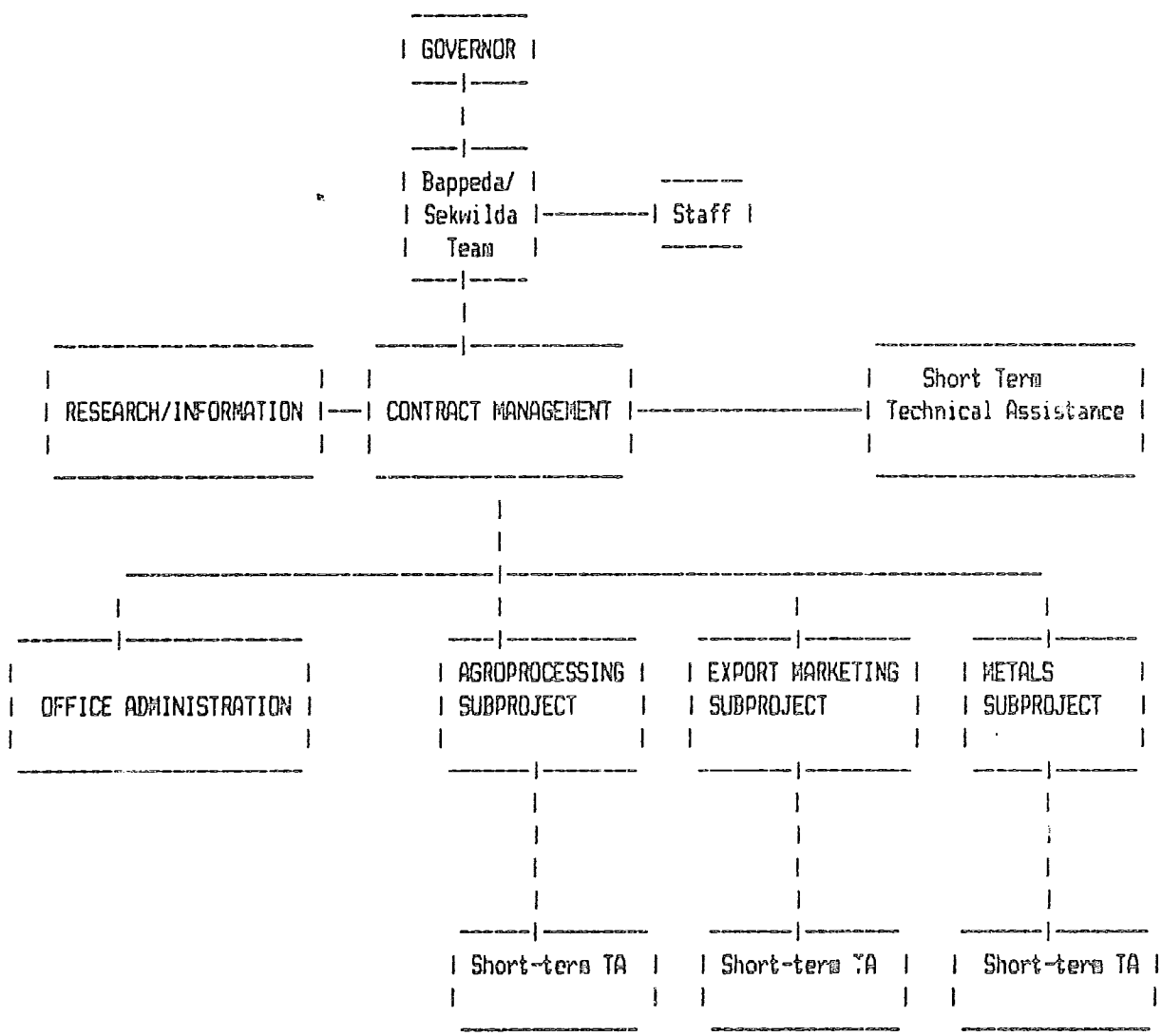
Augmenting the long-term contract staff will be short-term technical assistance personnel supporting general project management and research activities. A total of four months of expatriate short term TA and 18 months of Indonesian short-term assistance is projected for core team support. It will be used to provide management assistance to the chief of party as well as to supplement the resources of the research staff on particular studies. This technical assistance will be funded from the USAID contract and these persons will be responsible to the Chief-of-Party or his designees among the long-term staff.

Additional technical assistance will be supported by USAID and GOI funds designated specifically for subproject support. Some will be recruited directly by the contract team in response to specific subproject needs and others, the largest portion, will be provided on the basis of subcontracts between the CJEDP and other service providers. The schedule for utilization and cost of this assistance is detailed in the relevant subproject descriptions. These advisors will have specific assignments that will determine their reporting responsibilities within established lines of subproject management but will be under the overall direction of the Chief-of-Party.

The overall project organizational structure is portrayed in Figure VII-2.

Figure VII-2

Project Organization



Financial and Contracting Arrangements

Project funding and accountability will take place under the terms of separate contracts with USAID and the GOI. As noted above, the USAID contract, incorporating both grant and loan funds, will fund an expatriate project team, long-term Indonesian project staff, expatriate and local short-term technical assistance, and dollar-funded subcontracts with U.S. or other foreign sources of technical services. In addition, the USAID contract will finance other direct project costs including travel and per diems, certain office equipment such as microcomputers and peripherals and photocopiers, and dollar-funded subproject material and equipment costs.

The mechanism of the second contract between the contractor and the GOI (Ministry of Home Affairs) makes it possible to include all Rupiah denominated subcontracts as well as operating costs and certain staff support costs in the GOI budget and still maintain for the contract team the degree of control it needs over the deployment of project resources. It can do this and still remain relatively free of potentially harmful bureaucratic constraints such as procedural delays and salary limitations.

The key to achieving this is in making certain that the original contract is written in such a way as to enable the team to make the most flexible use of the money as possible while respecting the need for oversight from, and responsibility to, the GOI. Such freedom is essential if the project hypothesis is to be adequately tested.

The contractor will be chosen jointly by USAID and the GOI. The Central Java BAPPEDA should be involved in the selection process due to their familiarity with the design phase and their counterpart role in the project itself.

Release of GOI funds will be keyed to the normal Indonesian budget cycle. The project will be a single entity requiring a single annual set of DUP/DIP documentation with line items covering the various expenditure categories, including local subcontracts. Small local contracts (under $20,000) can be undertaken directly by the Chief-of-Party with later review and approval of the provincial government according to the terms of KEPRES (Presidential Decision) 14a. Larger subcontracts will be let by the Governor's office on the advice of the contractor.

Functions of the Core Team

The core project management team of five expatriate and three Indonesian professionals will be responsible for all aspects of project management as well as overall direction of the subprojects. Broad project issues, both administrative and technical, will be the responsibility of the expatriate Chief-of-Party and research specialist and the three Indonesians contracted for the core team. They will determine project priorities

for both implementation and analysis. They will work together to insure that research and action are closely linked as future subsector activities are defined. They will coordinate the project's effort to generate productive linkages, both horizontal and vertical, among firms operating in the targeted subsectors. And they will ensure that lessons from testing the project's model of working in and through the private sector are adequately documented.

Certain aspects of project management will be of somewhat unique importance to effective implementation of the CJEDP. The first of these is oversight and review of all local and foreign subcontract and licensing arrangements, subject to the policy and procedural guidance of the provincial government and USAID. Appropriate subcontractors must be identified, scopes of work developed, and contracting arrangements negotiated by project management. In conjunction with USAID and the GOI, project management will closely supervise and monitor the work of these subcontractors.

A second major responsibility will be to develop, screen, and bring forward for USAID and GOI review and approval new subproject recommendations to build upon or replace, if necessary, the initial three. These proposals will require careful background research, thorough implementation planning and budgeting, and identification of needed technical assistance and subcontract resources. Initial suggestions may arise from staff involved in the original subprojects, the research specialists, USAID, the GOI, or outside parties familiar with the project. These ideas will be screened against the criteria listed in the Project Description (Ch III) as well as against information about constraints and opportunities that is derived from project experience. No new subproject will begin without the approval of USAID and the provincial project oversight team.

A third priority of project management will be to mobilize private sector support resources in support of Central Java enterprise development. Project management will identify opportunities to link one firm's need to a stronger firm's opportunity. Staff will actively contact companies that have a potential role to play as buyers of products or as sources of technical assistance. The project will provide them with appropriate information and identify market incentives to encourage their participation. Subproject inputs themselves can overcome many constraints that are a disincentive for firms to broaden their role in the provincial economy. CJEDP management will remain alert to such opportunities and provide suggestions for appropriate initiatives within the subprojects.

Fourth, the core project team will coordinate management of the three initial subprojects. Under its direction, the three expatriate subsector specialists, together with the three Indonesian professionals with direct subproject responsibility, will manage day-to-day implementation in accordance with the detailed plans presented in the Project Description.

B. FINANCIAL PLAN

Table VII-1 presents a detailed budget for the "core" operations of the project. The cost of the expatriate consultants who will serve as the directors of the three subprojects are included in this budget in an effort to centralize these costs and in recognition of the fact that they are also available to work on other subprojects should their assistance be necessary. Each of the subproject description chapters (IV - VI) contained its own detailed budget. Figure VII-2 presented presents a summary of all four of these budgets.

The dollar/rupiah breakdown of expenses provided in these budgets is not meant to coincide with any USAID grant/USAID loan/GOI budgetary distinction. This breakdown is merely intended to reflect the currency in which specific payments are likely to have to be made. The further breakdown by funding source (USAID grant, USAID loan or GOI) is presented in the Financial Analysis (Annex B) as is the budget back-up data and the assumptions on which the budgets are based.

It is important to recognize that this is a very technical assistance intensive project and that the dollar component is therefore relatively higher (nearly one half of the total) than it would be if construction or large amounts of local procurment were involved.

Table VII-1

Core Budget (US $ thousands)

Category	U.S. $	Rupiah	Yr 1	Yr 2	Yr 3	Sub Totals
Long Term Core Staff						
Chief of Party	386	0	120	128	138	
Research Director	322	0	100	107	115	
Research Counterparts	0	104	30	35	40	
Mgmt and Finance Counterpart	0	52	15	17	20	
Total Long Term Core Staff						755
Long Term Subproject Staff						
Agroprocessing Director	322	0	100	107	115	
Metal Director	272	0	50	107	115	
Export Director	322	0	100	107	115	
Total Long Term Subproject Staff						916
Short Term Staff						
S.T. Expatriate Consultants	63	0	30	16	17	
S.T. Indonesian Consultants	0	42	12	14	16	
Total Short Term Staff						105
Long Term Staff Support						
Housing	0	236	63	81	92	
International Travel and Per Diem	129	0	60	0	69	
Local Travel (All L.T. Core Staff)	0	35	10	12	13	
Local Per Diem	116	0	36	39	41	
Rest and Relaxation	17	0	0	17	0	
Total Long Term Staff Support						533
Capital Costs						
Vehicles	0	67	67	0	0	
Microcomputers and Peripherals	9	0	9	0	0	
Photocopy Machine	5	0	5	0	0	
Office Furnishings and Equipment	0	10	10	0	0	
Total Capital Costs						91

Operating Costs						
Office Space and Utilities	0	83	24	28	32	
Office Operations	0	52	15	17	20	
Vehicle Operation and Maintenance	0	71	20	23	27	
Communications	19	0	6	6	7	
Total Operating Costs						225
Administrative Staff						
Administrative Director	0	35	10	12	13	
Accountant	0	28	8	9	11	
Secretaries	0	21	6	7	8	
Drivers/Messengers	0	42	12	14	16	
Total Administrative Staff						125
Counterpart Staff Training	16	0	8	8	0	16
Other Expenses						
Honorariums for GOI Supervisory Team and Advisory Board	0	35	10	12	13	
Language Training	10	0	5	5	0	
Total Other Expenses						45
Contingency Excluding Professional Salaries (15%)	48	107	58	43	54	155
Totals	2057	1018	999	969	1107	3075
Grand Total Core Project Expenses	3075					

Table VII-2

Summary Budget (USD thousands)

Component / Item	Year 1 $	Year 1 Rp	Year 2 $	Year 2 Rp	Year 3 $	Year 3 Rp	Totals $	Totals Rp
Core Operations								
Long Term Professional Staff	470	45	556	52	598	60	1624	157
Long Term Staff Support	96	73	56	93	110	105	262	271
Short Term Staff Consultants	30	12	16	14	17	16	63	42
Operating Costs	6	59	6	68	7	79	19	206
Administrative Staff	0	36	0	42	0	48	0	126
Capital Equipment	14	77	0	0	0	0	14	77
Counterpart Staff Training	8	0	8	0	0	0	16	0
Other Expenses	5	10	5	12	0	13	10	35
Contingency [1]	19	38	11	32	18	37	48	107
Subtotals	648	350	658	313	750	358	2056	1021
Shrimp Production and Marketing Subproject								
Long Term Professional Staff	0	20	0	23	0	26	0	69
Long Term Staff Support	0	10	0	12	0	13	0	35
Short Term Staff Consultants	0	79	0	136	0	151	0	366
Equipment and Supplies	0	142	0	163	0	107	0	412
Subcontracts	205	171	185	176	95	0	485	347
Contingency [2]	0	38	0	50	0	45	0	132
Subtotals	205	460	185	560	95	342	485	1361
Export Promotion Subproject								
Long Term Professional Staff	0	15	0	17	0	20	0	52
Long Term Staff Support	9	8	12	12	18	19	39	39
Short Term Staff Consultants	105	10	80	32	86	35	271	77
Material and Other Costs	2	22	2	30	3	18	7	70
Subcontracts	0	50	0	166	0	159	0	375
Contingency [2]	17	8	14	14	16	14	48	36
Subtotals	133	113	108	271	123	265	365	649
Metal Industry Development Subproject								
Long Term Professional Staff	0	8	0	17	0	20	0	45
Long Term Staff Support	2	2	4	5	5	4	11	11
Short Term Staff	30	30	64	28	52	24	146	82
Design Competition	0	3	0	21	0	24	0	48
Subcontracts	0	78	193	261	137	329	330	668
Contingency [2]	5	6	10	11	9	11	24	28
Subtotals	37	127	271	343	203	412	511	882
Other Subprojects	0	0	350	400	750	1000	1100	1400
Total Project Costs	1024	1051	1573	1887	1920	2376	4516	5313

9829

C. EVALUATION PLAN

Two major mid-project Evaluations will be scheduled during the three years of the CJEDP project in order to assess the degree to which the project is achieving its stated objectives and to provide outside inputs to the project management learning process. The first of these evaluations should be scheduled for about the 15th month of project implementation. By that time the initial three subprojects will be well into implementation and the pattern of the broader subproject development process will be sufficiently developed to assess its quality and effectiverness.

The second evaluation should be scheduled during the 30th month. This evaluation, combined with the results of ongoing project monitoring, will provide the basis for the implementation team, USAID, and the GOI to consider in detail what steps should be taken to continue the benefits of project activities. Options include extending the project under contract, spinning its functions off to private sector firms and agencies that have become involved, or finding a new mechanism for maintaining government sponsorship of the effort.

Since CJEDP Indonesian staff are likely to become a key resource, by whatever means project activities are continued, an assessment of their role to date and recommendations regarding their future role should be an output of each evaluation.

In measuring the direct impact of the project, specific employment and enterprise development benefits of the subproject will be the focus of attention. To evaluate the testing of CJEDP's model of private sector assistance, the documentation of learning by the management team will be the focus.

The two proposed evaluations can be summarized as follows:

Mid-Project Evaluation #1

Time:	15th month
Participants:	USAID/Jakarta GOI Outside Consultant (enterprise development specialist)
Purpose:	Assess progress towards achievement of LogFrame objectives Identify and analyse "Lessons Learned" to date Make recommendations concerning adjustment of project methodology, subsector focus or other matters
Duration:	Four weeks in the field (Jakarta and

Semarang) including write up time

Mid-Project Evaluation No. 2

Time:	30th month
Participants:	USAID/Jakarta AID/Washington GOI Outside Consultants (enterprise development specialists) preferably including at least one Indonesian
Purpose:	Assess achievement of project goal and purposes. Identify and analyze "Lessons Learned" from project implementation experience Consider future adjustments in CJEDP methodology, subsector focus or other factors Make recommendations as to if and how CJEDP should be institutionalized
Duration:	Six weeks in field (Jakarta and Central Java) including write up time

Both of these evaluations should be carried out with the full cooperation and involvement of the implementation team. Although the team which carries out the second evaluation will be larger than the first one, every effort should be made to insure that all, or at least most, of the participants in the original team will also take part in the second evaluation.

Both evaluations should be financed and managed by USAID in collaboration with the GOI to insure that questions arising from the Indonesian Government are heard and responded to appropriately.

ANNEX A

LOGICAL FRAMEWORK MATRIX

CENTRAL JAVA ENTERPRISE DEVELOPMENT PROJECT

LOGICAL FRAMEWORK MATRIX

GOAL: To increase nonfarm employment opportunities and incomes, and thus the quality of life, for the rapidly growing labor force of Central Java.	VERIFIABLE INDICATORS: Increased nonfarm employment Increased worker income Improved quality of life housing education nutrition health
PURPOSE: 1. To increase output and employment in three subsectors through the implementation of at least three subprojects which have been identified and others which will be developed during the second and third years of project development. A. Shrimp Production and Marketing Subproject B. Light Manufacturing Export Promotion Subproject C. Metal Industry Development Subproject 2. To increase the capability of local institutions to support private sector enterprise development. 3. To improve the policy environment within which private sector enterprises operate in Central Java. 4. To test means of developing the role of private sector as an engine of growth in the Central Java economy.	(purpose level indicators) 1. 3 yrs 5 yrs Shrimp Subproject Inc. Output $1.1M $13.2M Inc. Jobs 468 4472 Export Subproject Inc. Output $3.0M $4.0M Inc. Jobs 2875 3834 Metal Subproject Inc. Output $4.2M $10.4M Inc. Jobs 2447 5911 2. A. Participation of local institutions in CJEDP subproject activities. B. Increased capability/activity of local institutions as a result of CJEDP activities. 3. Changes in government policy and administrative procedures. 4. Implementation of project using methodology described in design document.

OUTPUT: 1. The implementation of at least three subprojects as described in the design document and others which will be identified and designed in the second and third years of project implementation. 2. A. Subcontracting with and assisting local institutions to carry out specific assignments related to the implementation of CJEDP subproject activities. B. Coordinating project activities with appropriate local institutions and transfering knowledge and lessons learned to them. 3. Analyzing specific policy and administrative constraints to enterprise development and making recommendations to government decisionmakers. 4. Identification and analysis of issues, opportunities, and problems affecting enterprise development in selected subsectors	(ouput indicators) 1. Three subprojects implemented consistent with designs in this document. 2. A. Six Subcontracts negotiated with local institutions consistent with needs identified in design document. B. Level of coordination and cooperation with local institutions in implementation of CJEDP subprojects. C. Existence and activities of a Central Java enterprise development coordinating committee. 3. At least three policy/administrative procedure analyses carried out each year with appropriate recommendations being made to government decisionmakers. 4. Ongoing reseasrch and documentation of project experience.
INPUTS: 1. Personnel A. Long Term Expatriate Staff B. Long Term Local Staff C. Short Term Expatriate Consultants D. Short Term Local Consultants E. Subcontracts with Appropriate Local and International Organizations 2. Funding A. USAID Grant Support B. USAID Loan Support C. GOI Budget Support	INPUT TARGETS: 1. A. 5 long term expatriate core staff B. 6 long term local core staff C. 30 person months of short term expatriate consulting assistance D. 99 person months of short term local consulting assistance E. 2 subcontracts with international agencies F. 6 subcontracts with local agencies 2. USAID grants $2,875,000 USAID loans $2,858,000 GOI support $4,097,000

MEANS OF VERIFICATION:	IMPORTANT ASSUMPTIONS:
(Goal Level) Macroeconomic and census data	(Goal level) Validity of the Development Hypothesis (purpose to goal linkage)
(Purpose Level) Project records Monitoring reports Midproject evaluation Postproject evaluation	(Purpose level) Continued political and economic stability within the country Economic recovery in the world market Validity of Operating Hypothesis (output to purpose linkage) Willingness of government policy makers to consider policy recommmendations Willingness of local institutions to coordinate their activities in conjunction with CJEDP subproject activities Ability of local institutions to effectively carry out the work related to specific subcontracts

(Output level) Project Records Project Monitoring Reports Periodic Site Visitations Mid-Project Evaluation Post-Project Evaluation	(Output Level) Continued government support for private enterprise development at the national level Support for the project concept and subprojects from provincial level decisionmakers. Willingness/ability of local institutions to work with CJEDP in the implementation of subprojects Cooperation from private entrepreneurs in the subsectors identified as primary targets for CJEDP assistance Relative freedom from standard bureaucratic procedures and requirements regarding procurement, recruitment and payment of personnel, travel, etc.
(Input Level) Project Documents USAID Documents GOI Documents	(Input Level) Availability of funds as budgeted and required for project implementation. Ability to identify and recruit qualified local long term staff and short term consultants Ability to identify and contract with appropriate local institutions

ANNEX B

PROJECT ANALYSES

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ANNEX B.1

TECHNICAL ANALYSIS

Overview

The CJEDP, as designed, is technically feasible and can be effectively implemented given the availability of human and material resources as specified in this design document. The emphasis of the project is on the effective adaptation and application of known technologies to problems identified in the field, rather than the development and testing of major new production technologies which would add to the risk of private sector participants.

The technical approach to be taken by the project is one of introducing an integrated set of technical and managerial interventions into the development of specific, pre-identified, industrial subsectors based on a thorough understanding of the current, and probable future, importance of those subsectors in the provincial economy and the problems which are constraining their development. This understanding is obtained through an intensive research effort into the structure, patterns, trends and relationships within those subsectors (subsector analysis) before any interventions are designed or undertaken. No interventions are taken isolation or in the absense of this comprehensive understanding of the subsector.

This type of subsector analysis has served as the basis of the subproject designs put forward in this document. One of the primary functions of the research unit attached to the core staff of the project will be to continue carrying out such research and capturing the information which is learned in the natural course of project implementation.

This research and information management function will serve as the basis for remaining current with economic trends in the overall economy as well as for tracking and documenting changes in the specific subsectors being assisted. It will also serve as the basis for identifying new subsectors and subprojects in the future when it becomes possible to expand CJEDP activities beyond the original three subprojects.

Subproject Production Technologies

Although efforts will certainly be made to modify existing production technologies as required to enable Central Java products to compete effectively in the national and world markets and maximize the return to labor and entrepreneurs as a result of

productive activities, these changes will be of an incremental nature and based, as much as possible, on the technologies currently in use.

For example, in the shrimp development subproject, a principal need is to increase the productivity of brackish water ponds. The project is proposing a comprehensive but stepwise process to gradually improve farming practices based on solid research and practical experience gained in other countries, and a program of controlled testing to be carried out by the project itself. Farmers will not be encouraged to undertake major changes in their production practices until the viability of those changes have been tested under Indonesian conditions.

Similarly, in the metal industry development subproject, the effort will be made to identify incremental changes in production technologies which will increase the range and competitiveness of metal products produced in Central Java by using existing capital equipment as much as possible. The second part of the effort will focus on improving the capacity of local engineers to design and test new products.

Staffing

The project is to be implemented by a small core team of Indonesian and expatriate enterprise development generalists and specialists in the industries being assisted. This team will provide a general technical umbrella under which all assistance is rendered and will serve as the technical management unit for each of the subprojects, coordinating the assistance which will be acquired from other sources. A broad range of technical skills and experience will be represented within this team which will contribute to the success of all of the subprojects.

These few advisors will not be able to provide all of the technical knowledge required by the individual subprojects, however. In cases where very specialized knowledge is required, appropriate short term specialists will be recruited.

For example, although the export promotion subproject will be headed by a qualified marketing specialist, such a person is unlikely to be able to design and carry out a promotion program, assist producers to identify items with export market potential and suggest the changes in their production systems which would make their products both desirable and competitive on the international market. All of these functions are necessary if the subproject objectives are to be achieved, however, so the senior marketing specialist will be supplemented by a counterpart staff member with complementary skills and experience and short term specialists as required to effectively address the full range of project requirements.

One possible source of technical risk in the project design is that it was designed as an enterprise development project by a team of enterprise development specialists and economists rather than by experts in the fields of shrimp production and marketing, the production and exportation of light manufactured goods or the metal industry. There are two factors which mitigate this risk.

First, is that a great deal of care was taken to gain the advice of recognized technical experts in the fields being proposed as the focii for CJEDP activities and the proposed subproject designs have been reviewed and discussed with such individuals prior to their inclusion in this report.

The second factor, and an important one, is that the subproject descriptions identify problems within the subject subsectors as specifically as possible. They do not really propose specific technical solutions to those problems. The design team has rather proposed the process by which appropriate solutions will be identified and put into effect. In other words, the targets (problems) are specified, as are the general means of addressing them. The precise technical solutions to be applied will be developed by the contract team working closely with short term technical advisors and beneficiaries. These technical solutions will, thus, be identified and applied based on the actual situation in the industries at the time of project implementation and the uncertainties of "blue printing" solutions to complex technical problems in a dynamic environment are avoided.

ANNEX B-2

FINANCIAL ANALYSIS

Introduction

The financial plan for the CJEDP, set forth in Chapter VII, has been developed to ensure adequate funding for all project activities, based on an analysis of the types and levels of inputs needed for each subproject and the core activities and their associated costs. This Annex presents detailed accounts of the sources and uses of funds and the assumptions used in the preparations of the various budgets throughout this report.

Sources and Uses of Funds

The CJEDP will be financed from USAID grant and loan funds and host country (GOI) budgetary allocations. Over the first three years of the project the total USAID contribution is estimated to be $5.73 million with $2.88 million as grant and $2.86 million as loan. The GOI contribution over the same period will be approximately $4.10 million.

Figure 1 shows the categories of expenditures which will be met by each of the three funding sources. USAID grant funds will be used for the direct costs of the long term expatriate staff, a portion of their in-country support costs, all costs associated with expatraite short-term consultants and a portion of core operating costs.

Loan funds are allocated to the direct costs of local long term professionals, a portion of the support costs for long term professional staff, all local consultancy costs, the administrative staff, a portion of the core operating costs, U.S. dollar capital equipment purchases, counterpart staff training, other dollar core expenses, subproject materials and equipment and all foreign subcontracts.

GOI funds will be used to pay for a portion of the support costs for the expatriate and Indonesian long term staff, Rupiah core operating costs, Rupiah capital equipment purchases, other core and subproject expenses and all local subcontracts.

The strong technical assistance bias of the CJEDP necessitates that loan and GOI funds be used for certain of the costs that are normally covered out of grant funds. Notably, the foreign subcontracts in the shrimp and metal subprojects will be paid for from the loan funds. These packages of technical assistance were selected becasue of the relative simplicity of negotiating only two contracts compared with the GOI securing appropriate technical assistance on a person by person basis.

Figure 1

Sources and Uses of Funds - CJEDP

Uses of Funds	Sources of Funds: USAID Grant	USAID Loan	GOI
Long Term Professional Staff			
Expatriate	X		
Indonesian		X	
Long Term Staff Support			
Expatriate	X	X	X
Indonesian		X	X
Short Term Staff Consultants			
Expatraite	X		
Indonesian		X	
Administrative Staff		X	
Core Operating Costs	X	X	X
Capital Equipment		X	X
Counterpart Staff Training		X	
Other Core Expenses		X	X
Subproject Material, Equipment, Supplies, etc.		X	X
Subcontracts			
Local			X
Foreign		X	

Further detail on the size of the various budget item by expenditure category, source and year are presented in the four budget tables which follow. The final budget includes the total figures for the three year life of the project.

Projection of Expenditures by Source of Funds — Year One
(U.S.D. Thousands)

Item	USAID Grant	USAID Loan	USAID Total	GOI	TOTAL
Core Operations					
Long Term Professional Staff	470	45	515	0	515
Long Term Staff Support	96	0	96	73	169
Short Term Staff Consultants	30	12	42	0	42
Operating Costs	6	0	6	59	65
Administrative Staff	0	36	36	0	36
Capital Equipment	0	14	14	77	91
Counterpart Staff Training	0	8	8	0	8
Other Expenses	0	5	5	10	15
Contingency [1]	15	9	25	33	58
Subtotals	617	129	747	252	999
Shrimp Production and Marketing Subproject					
Long Term Professional Staff	0	20	20	0	20
Long Term Staff Support	0	0	0	10	10
Short Term Staff Consultants	0	79	79	0	79
Equipment and Supplies	0	0	0	142	142
Subcontracts	0	205	205	171	376
Contingency [2]	0	15	15	23	38
Subtotals	0	319	319	346	665
Export Promotion Subproject					
Long Term Professional Staff	0	15	15	0	15
Long Term Staff Support	0	9	9	8	17
Short Term Staff Consultants	105	10	115	0	115
Material and Other Costs	0	2	2	22	24
Subcontracts	0	0	0	50	50
Contingency [2]	16	5	21	5	26
Subtotals	121	41	162	85	247
Metal Industry Development Subproject					
Long Term Professional Staff	0	8	8	0	8
Long Term Staff Support	0	2	2	2	4
Short Term Staff Consultants	30	30	60	0	60
Design Competition	0	0	0	3	3
Subcontracts	0	78	78	0	78
Contingency [2]	5	6	11	1	11
Subtotals	35	124	159	6	164
Other Subprojects	0	0	0	0	0
Total Project Costs	773	614	1386	688	2074

Projection of Expenditures by Source of Funds — Year Two
(U.S.D. Thousands)

Item	USAID Grant	USAID Loan	USAID Total	GOI	TOTAL
Core Operations					
Long Term Professional Staff	556	52	608	0	608
Long Term Staff Support	56	0	56	93	149
Short Term Staff Consultants	16	14	30	0	30
Operating Costs	0	6	6	68	74
Administrative Staff	0	42	42	0	42
Capital Equipment	0	0	0	0	0
Counterpart Staff Training	0	8	8	0	8
Other Expenses	0	5	5	12	17
Contingency [1]	8	9	18	26	44
Subtotals	636	136	773	199	972
Shrimp Production and Marketing Subproject					
Long Term Professional Staff	0	23	23	0	23
Long Term Staff Support	0	0	0	12	12
Short Term Staff Consultants	0	136	136	0	136
Equipment and Supplies	0	0	0	163	163
Subcontracts	0	185	185	176	361
Contingency [2]	0	24	24	26	50
Subtotals	0	368	368	377	745
Export Promotion Subproject					
Long Term Professional Staff	0	17	17	0	17
Long Term Staff Support	0	12	12	12	24
Short Term Staff Consultants	80	32	112	0	112
Material and Other Costs	0	2	2	30	32
Subcontracts	0	0	0	166	166
Contingency [2]	12	9	21	6	28
Subtotals	92	72	164	214	379
Metal Industry Development Subproject					
Long Term Professional Staff	0	17	17	0	17
Long Term Staff Support	0	4	4	5	9
Short Term Staff Consultants	64	28	92	0	92
Design Competition	0	0	0	21	21
Subcontracts	0	193	193	261	454
Contingency	10	7	17	4	21
Subtotals	74	249	323	291	614
Other Subprojects	100	250	350	400	750
Total Project Costs	902	1076	1978	1481	3459

Projection of Expenditures by Source of Funds — Year Three
(U.S.D. Thousands)

Item	USAID Grant	USAID Loan	Total	GOI	TOTAL
Core Operations					
Long Term Professional Staff	598	60	658	0	658
Long Term Staff Support	110	0	110	105	215
Short Term Staff Consultants	17	16	33	0	33
Operating Costs	0	7	7	79	86
Administrative Staff	0	48	48	0	48
Capital Equipment	0	0	0	0	0
Counterpart Staff Training	0	0	0	0	0
Other Expenses	0	0	0	13	13
Contingency [1]	17	8	25	30	54
Subtotals	742	139	861	227	1107
Shrimp Production and Marketing Subproject					
Long Term Professional Staff	0	26	26	0	26
Long Term Staff Support	0	0	0	13	13
Short Term Staff Consultants	0	151	151	0	151
Equipment and Supplies	0	0	0	107	107
Subcontracts	0	95	95	0	95
Contingency [2]	0	27	27	18	45
Subtotals	0	299	299	138	437
Export Promotion Subproject					
Long Term Professional Staff	0	20	20	0	20
Long Term Staff Support	0	18	18	19	37
Short Term Staff Consultants	86	35	121	0	121
Material and Other Costs	0	3	3	18	21
Subcontracts	0	0	0	159	159
Contingency [2]	13	11	24	6	30
Subtotals	99	87	186	202	388
Metal Industry Development Subproject					
Long Term Professional Staff	0	20	20	0	20
Long Term Staff Support	3	5	5	4	9
Short Term Staff Consultants	52	24	76	0	76
Design Competition	0	0	0	24	24
Subcontracts	0	137	137	329	466
Contingency [2]	8	7	15	4	19
Subtotals	60	193	253	361	614
Other Subprojects	300	450	750	1000	1750
Total Project Costs	1200	1169	2369	1927	4296

Projection of Expenditures by Source of Funds — Total
(U.S.D. Thousands)

Item	USAID Grant	USAID Loan	USAID Total	GOI	TOTAL
Core Operations					
Long Term Professional Staff	1624	157	1781	0	1781
Long Term Staff Support	262	0	262	271	533
Short Term Staff Consultants	63	42	105	0	105
Operating Costs	6	13	19	206	225
Administrative Staff	0	126	126	0	126
Capital Equipment	0	14	14	77	91
Counterpart Staff Training	0	16	16	0	16
Other Expenses	0	10	10	35	45
Contingency [1]	40	27	67	88	155
Subtotals	1995	405	2400	677	3077
Shrimp Production and Marketing Subproject					
Long Term Professional Staff	0	69	69	0	69
Long Term Staff Support	0	0	0	35	35
Short Term Staff Consultants	0	366	366	0	366
Equipment and Supplies	0	0	0	412	412
Subcontracts	0	485	485	347	832
Contingency [2]	0	65	65	67	132
Subtotals	0	985	985	861	1846
Export Promotion Subproject					
Long Term Professional Staff	0	52	52	0	52
Long Term Staff Support	0	39	39	39	78
Short Term Staff Consultants	271	77	348	0	348
Material and Other Costs	0	7	7	70	77
Subcontracts	0	0	0	375	375
Contingency [2]	41	26	67	16	83
Subtotals	312	201	513	500	1013
Metal Industry Development Subproject					
Long Term Professional Staff	0	45	45	0	45
Long Term Staff Support	0	11	11	11	22
Short Term Staff Consultants	146	82	228	0	228
Design Competition	0	0	0	48	48
Subcontracts	0	408	408	590	998
Contingency [2]	22	21	43	9	51
Subtotals	168	567	735	658	1392
Other Subprojects	400	700	1100	1400	2500
Total Project Costs	2875	2858	5733	4097	9829

Cost Estimating

The following set of assumptions were used in the preparation of all of the budget estimates contained in the project design.

1. Long term expatriate salaries include all costs related to the employment of expatriate staff - basic salary, benefits, related overhead, fee, post-differential, allowances, etc. The base figures used for the first year are $120,000 per year for the COP and $100,000 per year for others.

2. Long term local professional staff are costed at $15,000 per person-year including all costs.

3. Long term staff support (dollar budget) includes all international travel, shipping, household effect storage, etc.

4. Long term staff support (rupiah budget) includes housing (including utilities and maintenance) for expatriates plus local travel and per diem for all long term staff.

5. Short term expatriate staff consultants are valued at $15,000 per person-month including all related costs (fully burdened daily rate plus travel and per diem).

6. Short term local staff consultants are valued at $2,000 per person-month with all costs included.

7. Capital equipment (dollar budget) includes three micro-computers @ $3,000 each and one photocopy machine at $5,000.

8. Capital equipment (rupiah budget) includes eight four wheel vehicles at $8,000 plus two motorcycles at $1500 and miscellaneous office furniture and eqipment at $10,000.

9. All subcontracts (except the shrimp institutional contract) include all costs of personel, travel and per diem and contingencies.

10. Inflation is calculated at 7 percent per annum on dollar costs and at 15 percent per annum on Rupian costs.

11. Contingencies for the subproject budgets are calculated at 15 percent of total subproject costs excluding subcontracts.

ANNEX B-3

ECONOMIC ANALYSIS OF THE CJEDP

Introduction

The proposed CJEDP does not easily lend itself to rigorous economic analysis. Each subproject directly affects several types of economic actors. The preparation of reliable financial and economic budgets for each of these participants is not possible with existing information and collection of the necessary data would be an expensive and time-consuming task.

Furthermore, much of the benefit stream resulting from the CJEDP depends on private sector response to project initiatives. This means that the analyst's crystal ball would be taken to its limit in foreseeing the form and magnitude of the economic activity which will "stem-from" the proposed subprojects.

Reliance on private initiative means that, in financial terms, successful activities will conform to accepted standards of private profitablilty. Since, in Indonesia, market prices undervalue capital and overvalue labor relative to their opportunity costs, the strong employment bias of the project's activities will insure, to the greatest extent possible, that the subset of financially profitable activities promoted will be those most consistent with standards of economic profitability.

The primary objective of the CJEDP is the generation of productive employment opportunities. In the absence of a single measure of project worth which accounts for this emphasis on employment, the project must be assessed against the subjective criteria of the reasonableness and acceptability of the costs associated with the quantity of employment which the project is expected to generate. The purpose of this Annex is to present available evidence to assist decisionmakers in assessing the justification for the expenditure of public funds in the manner recommended in this design document.

Approaches to the Assessment of Employment Benefits

There is little agreement among economists on the appropriate tool(s) for assessing a project when its primary benefit is employment. In this Annex two approaches are presented. The first is based on commonly used estimates of project cost per unit of employment created. Given anticipated job creation, the approach simply compares undiscounted project expenditures with undiscounted units of benefits.

While this methodology is often encountered it suffers from a number of conceptual and practical weaknesses. Not only does it fail to account for the timing of cost and benefit flows, but it does not provide the decisionmaker with a point of reference for comparing the worth of competing projects which may not rely as heavily on employment benefits.

In order to account for these problems, a second approach is adopted here which poses the assessment question in a somewhat different light. Given the structure of project costs it is possible to estimate the average annual benefit flow (in dollar terms) over a given length of time which will generate a prespecified internal rate of return (IRR) on project expenditures. From this estimate of "required benefits" and the expected units of employment to be generated, the "required benefit" per unit of employment is computed. This figure then provides a measure of the value which must be assigned by the decisionmaker to each unit of employment in order for the project to generate a specified IRR.

The Cost of the CJEDP

The initial step for both analyses is to examine the cost of the project and its various components. Table B3-1 summarizes the budgets presented in each of the subproject designs and for the core staff presented in Chapter VII. These costs do not include subproject activities which remain unspecified.

Table: B3-1

Costs of the CJEDP

Activity	Total Project Costs
	(USD Thousands)
Core Team Budget	3,075
Shrimp Subproject	1,846
Export Subproject	1,014
Metal Subproject	1,431
Total Costs	7,366

At the time new subprojects are introduced each will be subject to further economic analysis. As the CJEDP diversifies in later years the subproject overhead cost associated with core activities is reduced for all undertakings. Hence, to the extent that additional activities are incorporated under the core umbrella the current core cost is inflated for the three proposed subprojects.

It should be noted, however, that the costs considered here are only those costs incurred by the project. In a complete economic analysis based on participant financial budgets the costs incurred by others would also be included in the analysis. In the absence of this information, it is fair to view the costs as the amount of direct project subsidy rather that total costs of activities which are generated by the CJEDP.

Employment Generation in the CJEDP

Employment is created by the CJEDP directly as a result of project initiatives and indirectly as a result of private sector responses to project activities, linkage effects and economic growth. Both sources of employment benefits are important and both will be considered in turn.

Two concepts of employment are used in the analysis which follows. The first is a "person-year" of employment. This represents 313 man-days valued at prevailing wage rates. The second is a job created. This is sustained employment which is presumed to last indefinitely. Standard indicators of "cost-per-job-created" are normally based on the notion of sustained employment.

Direct Employment Generation

The shrimp production and marketing subproject is estimated to result directly in the creation of a total of 6,300 man-years of employment over a five-year period (see table B3-2). With a longer ten-year perspective the total rises to nearly 89,000. This represents 4,450 jobs created after five years and 21,700 after ten years. In the five-year case, the total cost per person-year of employment is $293 and per job created approximately $415. Over ten years, costs are substantially lower at $21 per person-year and $85 per sustained job.

In the export subproject, there are 11,750 person-years of employment generated over five years and 41,250 over ten. This is associated with 3,850 jobs after five years and 7,650 after ten years. The cost per person-year goes from $86 to $25 between the fifth and tenth year while the cost per job is $263 for the five year estimate and $133 for ten years.

Table: B3-2

Direct Employment Generated by the CJEDP

	Subproject			
	Shrimp	Export	Metal	CJEDP
Total Person-years of Employment				
Five Years	6,300	11,750	13,650	31,650
Ten Years	88,500	41,250	53,350	183,100
Project Cost per Person-year (USD)				
Five Years	293	86	105	233
Ten Years	21	25	27	40
Jobs Created				
Five Years	4,450	3,850	5,900	14,200
Ten Years	21,700	7,650	9,500	38,850
Project Cost per Job Created (USD)				
Five Years	415	263	243	519
Ten Years	85	133	151	190

For the metal subproject there are 13,650 person-years over five years with a cost of $105 and 53,350 over ten years at a cost of $25. In terms of jobs, 5,900 are created by the end of the fifth year at a cost of $243 each and 9,500 after ten years at a cost per job of $151.

Thus, the direct employment generated over five years is approximately 31,650 person-years or 14,200 jobs. Over ten years it is estimated that 183,100 person-years of employment will be generated which is equivalent to 38,850 jobs. When the costs of core activities are included, the total cost per person-year is $233 after five years and $40 after ten years. The respective costs per job created are $519 and $190.

Indirect Employment Generation

Each of the subprojects is based on the theory that businessmen pursue profitable opportunities. The CJEDP, by setting examples and reducing transactions costs, will create more oppor-

tunities for the private sector, increase information about these and existing opportunities and reduce the cost to the private sector of undertaking them.

From this point of view, direct project benefits are less interesting than the momentum generated by these endeavors for continued progressive development. Indirect benefits take the form of increased production and therefore employment and foreign exchange earnings. They result from direct CJEDP initiative, the strengthening of both private and public sector institutions and strengthening of the private sector itself.

In shrimp, the direct benefit of increasing production in the existing private sector hatcheries is important and significant. However, if the subproject is successful in increasing the capability for the continuing identification and solution of hatchery problems the long term benefit resulting from the subproject will far surpass the immediate gain. Even though direct hatchery support will be provided to only a few existing firms the indirect benefit could influence the development of the entire tambak shrimp industry in Central Java and beyond.

Similarily, the pond development and quality control programs will directly affect only a small proportion of the total tambak hectarage in the province. Yet, the eventual influence of the project's "demonstration" efforts will likely be much broader.

The export promotion subproject will directly facilitate and promote a certain quantity of new sales. If it succeeds in improving the image of Central Java and in the creation of a profitable private sector export trading service, the potential indirect benefits are great.

In the metal industry subproject, direct benefits result from the machinery and equipment which is designed and built and placed into operation. This activity, however, is simply a means to an end. The real benefit is the increase in the capacity of the industry to solve its own problems and create its own products. This could lead to very significant indirect employment both in the metal industry and in other related sectors of the economy.

It is difficult to estimate the size of the indirect benefit flow resulting from CJEDP activities. If the subprojects are successful in achieving their objectives then there is every reason for optimism regarding the significance of the indirect benefits.

An activity like the CJEDP, by its very nature as a private sector project, is heavily weighted in its dependence on indirect benefits. It is fundamentally different from a project which builds a dam, irrigation system or road or one that involves

distribution of inputs, technology or animals. The element of risk is somewhat more obvious, but at the same time the potential benefits are somewhat more substantial.

Valuing Employment Benefits

In order to compare the estimated employment benefits resulting from the CJEDP and the project's cost it is necessary to assign a value to a job created or person-year of employment. This value is a measure of the worth of a job from the standpoint of the decisionmaker. It bears no necessary relationship with the value of a job from the standpoint of the employed person.

For the purposes of making comparisons with traditional economic analyses, Table B3-3 presents the average annual benefit flow which is required for the CJEDP to achieve several prescribed internal rates of return (IRR). With an assumption regarding the duration of the benefit flow and specification of the minimum acceptable IRR the flow of benefits which must be obtained by the CJEDP can be found in the table.

Table: B3-3

Required Benefit Flow for Given Internal Rates of Return - CJEDP

	Five Year Horizon			Ten Year Horizon		
IRR	Average Annual Benefits	Cost per Person-month	Cost per Job Created	Average Annual Benefits	Cost per Person-month	Cost per Job Created
(%)	($ Million)	($)	($)	($ Million)	($)	($)
10	1.60	507	1,130	.99	54	255
12	1.62	513	1,143	1.04	57	267
15	1.66	524	1,168	1.11	60	285
18	1.69	533	1,188	1.17	64	302
20	1.71	539	1,202	1.22	67	314

If the "cut-off" IRR is, say 12 percent, then from the table it can be seen that a benefit stream of $1.62 million per year over five years or $1.04 million over ten years is required. If the minimum acceptable IRR were higher the average annual benefits must also be higher.

With this notion of the required level of benefits it is possible to make a rough assessment of the required valuation of employment benefits if the appropriate levels of benefits are to be obtained. Using the .12 IRR and assuming that all benefits cease after 10 years, the lowest acceptable annual flow of benefits is $1.04 million. By annualizing the direct employment benefits presented earlier for the ten year time horizon, the value per person-year and per job created which must be held by the decisionmaker to obtain an IRR of .12 are computed.

The results of this analysis indicate that if a person-year of employment is at least valued at $57 or if a sustainable job created is valued at $267 then, given direct employment benefits only, the CJEDP has an IRR of approximately .12. A longer time horizon or inclusion of indirect benefits reduces the required valuation.

With a prevailing wage rate in Central Java of approximately Rp. 1,000 ($1.02) per day, a person-year of employment is worth approximately $313 to the employee. A job sustained over ten years has a discounted present value (12 percent discount rate) of just over $1,000. While these figures bear no theoretical relationship with the subjective valuation which must be made by the decisionmaker, they do provide a rough benchmark for valuation. Against this standard, it appears that in terms of direct employment benefits alone the CJEDP has a project worth measured by the IRR of at least 12 percent.

A Note on Foreign Exchange Benefits

Given the present economic situation in Indonesia, foreign exchange is a critical economic variable. Even though trade goals are not within the specified objective set of the CJEDP, foreign exchange earnings and savings were explicitely considered in the design of the CJEDP. All three subprojects have the desireable feature that they either generate foreign exchange through increased exports or conserve foreign exchange through import substitution.

Table B3-4 illustrates the expected magnitute of the gross and estimated net foreign exchange earnings and savings associated with the CJEDP. The magnitudes, in terms of the Central Java economy are not trival. With total provincial exports of about $100 million dollars per year, the conservative ten year estimate of $240 million represents an annual average increase of 25 percent over current earnings. This foreign exchange profile is a highly desirable feature of the project.

Table: B3-4

Foreign Exchange Benefits of the CJEDP

	Gross Foreign Exchange Earning/Saving (USD Millions)		Net Foreign Exchange Earning/Saving (USD Millions)	
	Five Years	Ten Years	Five Years	Ten Years
Shrimp Subproject	13.2	186.1	11.2	158.2
Export Subproject	13.8	53.8	12.4	48.4
Metal Subproject	1.2	n.a.	.8	n.a.
CJEDP	28.2	(239.9)	24.4	(206.6)

ANNEX B.4

SOCIAL SOUNDNESS ANALYSIS

The Socio-Cultural Context

One of the Working Papers prepared in conjunction with the CJEDP Interim Report, "Human Factor in Enterprise Development" by Masri Singarimbun, clearly explained the complexity of the socio-cultural environment of Central Java.

In general, the attitudes of the Central Java people have been formed by historical influences from the Malay, Hindu and Moslem cultures and the natural resource base of the area.

Historically, the people of Central Java have had basic attitudes and motivations which are not fully oriented towards material gain and individual achievement. Certain of these attitudes are not consistent with the demands of the enterprise development process. Spiritual satisfaction is very important for them and they tend to avoid friction or even strong dialogue. Their aspirations are often not stated clearly.

These basic attitudes have been reinforced by a feudal history and a long colonial experience which placed a high value on obedience and relying or a higher power for personal needs and a low value on individuality and strong personal convictions or motivations.

The stratification of society, which can be seen from very early times in traditional society, was further encouraged by the colonialists who purposely pursued policies which would keep the Indonesian community divided into subgroups: European, Chinese, Pribumi, priyayi, abangan, wong cilik, etc. These distinctions still exist in Central Java and, in some instances, are reinforced by the economic interest of members of certain groups.

In general, however, it can be seen that these distinctions have begun to break down since independence. Many of the "priyayi" class (the original bureaucratic elite) who formerly looked down upon business people as greedy and crude have now gone into business for themselves. On the other hand many people from the original "abangan" or "santri" (lower) classes have risen to positions of power in the bureaucracy and politics--areas previously closed to them.

Thus we can see that there are historical and cultural factors at work which would appear to mitigate against a successful enterprise development effort in this province. On the other hand it is clear that economic pressures and exposure to other types of values and experience have begun to modify these values and break down some of the barriers which previously existed.

There, in fact, appear to be an abundance of entrepreneurs, real or potential, in Central Java, and even more who are eager to work to increase their incomes and improve the quality of their lives.

Socio-Cultural Feasibility

There are two steps involved in assessing the compatability of the project with the socio-cultural environment within which it must function. First is to identify the major characteristics of the project (its goals, strategies and activities) and assess the degree to which they are compatible with existing socio-cultural values and practices. The second step is to assess the extent to which prevailing socio-cultural characteristics might have important positive or negative effects on the project with the purpose being to assist the implementation team to make the most of the positive effects while minimizing the negative effects.

There are two major characteristics of the project which suggest a high degree of compatability with the prevailing socio-cultural norms of Central Java. First, the project will concentrate its efforts on the development of existing industries and enterprises rather than emphasizing the establishment of new ventures of types of production activities. They will be building upon experience and skills which already exists in the province thus avoiding the difficulties of introducing totally new technologies.

The types of activities being promoted by the CJEDP (shrimp farming, metal working, and handicraft production) have been popular activities in Central Java for many generations. In fact, the "tambak" farming system was apparently developed on Java some five centuries ago and the technology exported to other countries which now produce more efficiently than do the Javanese. The proposed project actually only revitalizes and extends the resources and capabilities which already exist in the region.

By focusing on the development of existing capabilities and resources the project can minimize the undesired cultural consequences of economic development such as those which have been experienced at the new iron ore developments of Sulawesi and Irian Jaya where thousands of workers had to be brought in to do the work because the local people were either unable or unwilling to do it and the cultural environment of the area has been changed substantially as a result. The same is true in other areas where major industries have required the importation of large numbers of skilled labor to do jobs which are outside of the experience of the local people.

The second major characteristic of the project which suggests a compatability with the local socio-cultural environment is the emphasis on working with and through private sector insti-

tutions. There are sound arguments which support the decision to give the private sector a central role in accomplishing the project's goals.

Private sector organizations are characterized by their grass roots orientation and their relative non-bureaucratic organizational and management structures. They tend to be small organizations which operate closer to where the people are and to share values with the people more directly than any government is able to do. They are able to respond more quickly to situations which arise in the field and to be more dynamic in their approach to development problems than their mass and inbred conservativeness will allow the heavily bureaucratic government structures to be. This is not a general endorsement of all private development organizations in Central Java, but these positive characteristics tend to be more typical of private organizations than they are of government agencies.

The second step in the analysis of the socio-economic feasibility of the project is the assessment of common cultural traits which may be either helpful or harmful to the project. There are two specific traits of the Javanese people which will be advantageous to the project. First is their appreciation of the importance of cooperation (gotong royong) as a means of achieving a common objective. Even apparent competitors will willingly join together to achieve something that will help them both and, at times, an entrepreneur who is considered "strong" will willingly offer assistance to a weaker colleague who will become a more effective competitor as a result.

This cooperative spirit will certainly be an advantage to the CJEDP where a high degree of cooperation among certain types of entrepreneurs is needed if the objectives are to be achieved. All three of the proposed subprojects involve an element of cooperation among primarily small scale producers.

The second beneficial trait to be considered is the high degree of patience which the people exhibit in working with minute details. Perhaps the clearest example is in the production of "batik tulis" where all of the intricate designs must be drawn on the fabric by hand using only a crude wax "pen". This will be especially important in the export and metal subprojects where quality control and detailed handwork are essential to capturing the export or local markets required to increase employment in these industries in Central Java.

Let us now turn to a trait which could be an impediment to the successful implementation of the project. That is the great appreciation which the Javanese people have for formality and structure, for the ceremonial and ritual aspects of an activity. There are times when they seem to be more concerned with the fact of having an organization and a nice structure to it than they are with its activities.

This trait is also apparent in various types of planning activities where a structure is elegantly defined along with its relationships with other institutions but the content of the program to be carried out may be difficult to identify. The CJEDP should be protected from undue negative influence from this trait, at least internally, by the high degree of specificity in the project plan and the administrative arrangements which have been proposed.

Beneficiaries

The primary beneficiaries of this project will be the people who find work as a result of its efforts. This will include not only the several thousand sustainable jobs which are projected to be created directly by subproject activities (see subproject descriptions for estimated jobs created data) but also those jobs which are created in industries upstream and downstream from the ones being assisted directly and those who are employed in ancillary and service activities as a result of economic growth in the area.

These will be primarily young people with a minimum of formal education and very limited job skills. Their employment will necessarily involve a degree of technical training before they are capable of carrying out sophisticated industrial production functions. Most of these people will come from agricultural backgrounds and, for many, their only previous work experience will have been part time agricultural employment or subsistence activities in the tertiary sector.

Another category of beneficiary will be those workers who are already employed and have attained a certain level of proficiency in their work (brass product molding, for example) but who will have the opportunity to enhance their skills, and thus their earning power as a result of CJEDP activities.

The project will also provide opportunities to middle level managers and technicians. In various places of this report it is mentioned that a major weakness of enterprises in Central Java is their lack of personnel with necessary management and technical skills. The CJEDP will provide the people who are in these positions in the effected industries with opportunities to upgrade their skills.

Still another category of beneficiary will be the entrepreneurs who own the businesses which the CJEDP will be helping to develop as a means of employing the primary beneficiaries. In some cases (small scale embroidery or wicker weaving businesses for example) the entrepreneur may be only slightly less poor than the person being employed.

It should be recognized that, although this is not a major purpose of the project, a certain proportion of these entrepreneurs will be people who are already far more wealthy than the

average person in their community and who would not qualify for assistance on any kind of equity grounds. These people are serving as the vehicles by which the major benefits of the project are generated and delivered to the primary target population. They are also providing capital and assuming a degree of entrepreneurial risk related to their business activities and participation in CJEDP activities and it is only reasonable to assume that the profits generated to them would accrue to them.

Women will form a major portion of the beneficiary group. They will benefit both as workers, a majority in certain of the industries, and as entrepreneurs. Women are particularly active in the embroidery and ready made garment industry, the weaving of small wicker and rattan products and the processing of shrimp for export. Many of the former two types of businesses are also owned and managed by women and involve work which can be done on a piece work basis in their homes so as not to interfere with the normal flow of family life.

Impact

Estimates of the number of jobs to be created in each of the areas of project activity are included in the three subproject description in the main body of this report. This data is analyzed and compared with cost data in the Economic Analysis section of this Annex. That information and analysis will not be repeated here. We will rather concern ourselves here with the issue of benefit "diffusion".

The CJEDP design incorporates two strategies to enhance the likelihood that the new practices introduced during the implementation stage will be diffused among other groups of producers. First is that the program will concentrate its efforts on assisting other agencies to improve their capability to provide the needed assistance to private sector enterprises. For example, the Brackish Water Aquaculture Institute in Jepara will be better able to provide assistance to private sector hatchery owners as a result of CJEDP activities. These organizations, from the public as well as the private sectors, will continue to provide such services long after the CJEDP has closed its doors.

The second factor which offers a high degree of probability that any gains realized under the project will be spread to others is that all of the industrial activities being assisted are market oriented. That is markets have been identified for the products and the development effort is directed at the production of the types of products which those markets can accept. If these efforts are successful, the businesses which participate in their production will also be successful. Experience in Central Java suggests that other entrepreneurs will copy the success of their neighbors on their own initiative without any subsidy or special outside assistance. Sometimes the successful neighbor may even help him.

Participation

The preparation of this project design has involved the participation of a very wide range of people throughout Central Java. These include government officials, bankers and private agency representatives as well as entrepreneurs and workers themselves. There have been two groups of people who have participated in the design process throughout. First is the counterpart team which is made up of 15 representatives of various public agencies and private sector organizations. This team has met six times during the planning process to discuss various aspects of the design team's work and various members of this group have participated individually in the collection of data, field trips, interviews and other aspects of the design process.

There is also a much larger group (50 to 100 individuals) which has met three times in a workshop setting (twice for two days and once for one day) to assist the design team to identify major enterprise development issues in the province, discuss possible project responses to those issues and review a draft version of this report.

Large numbers of entrepreneurs have been interviewed in the course of preparing the three subproject designs and most of the elements included in those designs have arisen from discussions with those entrepreneurs, who have expressed their desire to participate. The key factor is to demonstrate success with a limited number of enterprises in the first place. As was discussed earlier, others will be eager to participate when they see the success of the forerunners.

The participation of private and public development assistance organizations is also critical to the success of the project. There are two factors which suggest that this participation can be expected to materialize. First, is that the CJEDP is addressing a commonly felt problem in the province with which a number of agencies are already active and in need of support. These agencies, private and public, have expressed their eagerness to participate fully in the implementation of the project. On another level, it is clear that there is a financial incentive for certain of the agencies to participate as much of the work of the project will be carried out on a subcontract basis with the project paying the cost of their participation.

ANNEX B-5

ADMINISTRATIVE ANALYSIS

Summary

The administrative arrangements under which the CJEDP will be implemented are presented in Chapter VII of the main report. They are the result of a great deal of discussion between the design team and various GOI officials at the provincial and central levels as well as with USAID staff. They also reflect the pilot project nature of the CJEDP and the relationships which must be developed and maintained between the project and a wide variety of public and private sector participants if it is to succeed.

There are two major administrative factors which set this project apart a bit from most of the projects undertaken by USAID in partnership with the GOI. First, is that it will be established as a semi-autonomous unit outside of the structure of any of the technical line ministries. Second is that the implementation team will operate on the basis of a contract directly with the GOI (via Department of Internal Affairs) as well as with USAID. Each of these factors will be discussed briefly below.

Each of the participants in the administrative process has proven itself capable of performing the functions specified for it in this project. USAID has a great deal of experience in working with the GOI agencies involved at the national level as well as in Central Java and the planning phase of the project has been carried out with much the same set of participants from the GOI.

The administrative relationships and responsibilities which have been suggested form the basis of this project are feasible and their solid foundation is essential to the overall success of the CJEDP.

Project Location

It is proposed that the project be located outside of any of the technical line ministries involved in the enterprise development process in the province. It will rather be attached directly to the executive branch (Kantor Gubernur) at the provincial level and, through that office, to the Department of Internal Affairs (Departamen Dalam Negeri) in Jakarta. The work of the contract team will be monitored by a small management team appointed by the Governor from two provincial level organizations, the Provincial Planning Body (BAPPEDA) and the Regional Secretariate (SEKWILDA), both of which operate under his control.

There are three major reasons for this recommendation:

First is that it is unwise to specify a permanent institutional home for it within the existing government framework before the project methodology has been tested. It is intended that many of the projects' functions will be spun off to private sector organizations and private business before the end of the initial three year implementation period. It is also possible that the role of the CJEDP will be substantially redefined at the end of this trial period, or eliminated completely, if no viable long term role for the project can be identified.

Establishing the CJEDP as one unit of an existing technical department would tend to limit future options regarding the optimal organization structure and role for the project and create bias against transferring specific activities to private sector actors which can carry them on with or without continued public sector subsidies.

A second reason for establishing the project in the suggested manner is that it will involve a wide variety of public and private sector participants in various aspects of its program. Locating the project unit within just one of these organizations would tend to reduce its ability to attract the cooperation and active support of other key participants. Its attachment to the Governor's office, and specifically the BAPPEDA, where it will be physically housed, will increase the liklihood of attracting the types of support and stimulating the kinds of cooperation and coordination necessary to insure effective implementation of CJEDP activities as well as promoting the development of other programs by existing public and private sector organizations.

The third reason for proposing this type of organization structure is to provide the implementation team with the degree of management flexibility required to carry out the project effectively without being excessively bound up with the bureaucratic requirements of existing institutions which might hamper its effectiveness.

By being responsible directly to the Governor's office, and through that office back to the Department of Internal Affairs in Jakarta, the project team can operate rather freely in carrying out its mandate while retaining a necessary degree of financial and technical accountability to GOI institutions at appropriate levels. The nature and extent of the team's mandate will be spelled out in the contract which will be discussed more fully in the following paragraphs.

Two Contract Mechanism

As the CJEDP will use a mixture of USAID-provided and GOI-provided funds in its implementation and the implementation team will have reporting requirements to both USAID and the GOI, it has

been proposed that the selected implementation team base its work on formal contracts with both USAID and the GOI.

The host country contracting mechanism is, of course, a common one. What is unusual is to have two separate contracts covering one job. Although the establishment and management of these two contracts is rather complex, and significant problems could develop if they are not properly coordinated from the beginning, such a mechanism offers significant benefits to all of the parties.

One major advantage is that each of the parties will have a clear understanding of what it can expect from the others and what its responsibilities are towards them. It will be especially helpful in clarifying the relationship between the contract (implementation) team and the GOI bodies whose funds it is using and to whom it is accountable.

In many cases, the design phase of the CJEDP for example, the contract team is in the position of using GOI resources (and being held accountable for their use) and working with GOI officials on a day-to-day basis in matters of administration as well as technical matters without any clear understanding of who is responsible for what. Such understandings are left to be developed by the individuals concerned and often work out fine, as in the case of the CJEDP design, but they leave a degree of uncertainty in the relationships between the individuals involved which can be avoided by means of this mechanism.

Another advantage of the two contract mechanism is that it provides the implementation team with the degree of administrative flexibility it requires to effectively implement the project. Within the limits specified in the contract with the GOI, the contract team will be able to hire the local staff required to carry out the job outside of the normal government hiring practices and pay scales and subcontract directly with local organizations for carrying out specific subproject related functions. Only small subcontracts (with a total value of not more than U.S. $20,000 each) will be negotiated directly by the implementation team in accordance with the requirements of Kepres 14(a). Larger subcontracts will be negotiated directly by USAID or the GOI with the participation of the team. Ir all cases, the work of subcontractors will be supervised by the team.

For purposes of clarity and insuring that all contracting arrangements are understood and accepted by all three parties, it is advisable that, once the details of the two contracts have been worked out, they be merged into a single tri-partite contract agreement which covers the implementation of the project as a whole.

This dual contracting mechanism will not have the effect of reducing the accountability of the team for the use of GOI resources. It will rather formalize such accountability and increase the confidence of all the parties in the administrative relation-

ships which are developed and necessary for the effective functioning of the project.

Financial Administration

With the contracting relationships proposed above, the implementation team will be drawing funds both from USAID and the GOI for the implementation of project activities. In both cases it will be reimbursed on a monthly basis within the limits of the relevant contract budgets. The contractor will be responsible for maintaining appropriate financial records for the project and accountable to both of the funding sources for the use of their respective funds.

Internal Administrative Structure

An organogram detailing the internal administrative structure of the project team is presented in Figure VII-1 of the main report. It represents a rather traditional, and low-risk approach to effective project administration. Overall management responsibility will be assigned to the Chief-of-Party who will be in charge of all CJEDP activities and accountable to the two funding bodies. Reporting requirements will take the form of monthly financial reports to be submitted when seeking reimbursement of project expenses and quarterly progress reports of project activities which will be submitted jointly to the GOI and USAID.

ANNEX B-6

ENVIRONMENTAL ANALYSIS

None of the activities currently planned for inclusion in the CJEDP will have a noticeable impact on the human environment in the areas in which they are carried out. It is recommended that no formal environmental assessment be required prior to approval of the Project Paper and the authorization of project implementation activities.

Major changes in land use patterns are not envisaged (no new shrimp pond development is required for implementation of the shrimp production and marketing subproject) and none of the industries to be assisted are either extractive in nature (mining or forestry) or will require the diversion of farm land to other purposes.

The greatest potential for noise and air pollution is found in the metal industry. Only small and medium scale foundries using small coke burning furnaces are involved in the metal industry development subproject, however, so levels of air pollution are controlled at low levels.

Noise pollution from metal working firms is a problem in certain areas. This problem has caught the attention of government and current industrial licensing policy in Central Java is encouraging metal working firms to relocate to small industrial estates away from population concentrations in order to minimize this problem. CJEDP activities will have no impact on this situation other than to encourage the establishment of new firms in, or the relocation of existing firms to, areas where they will not constitute a public nuisance.

None of the currently proposed subprojects will have a noticeable impact on water quality in the project area.

Other possible sources of air and water pollution could arise in the development of certain types of agroprocessing activities not currently included among CJEDP subproject activities. Whenever new subprojects are being considered, the possible environmental impact of such activities must be assessed on a case by case basis. Such an assessment will form a key part of the evaluation process for proposed new CJEDP subprojects or new activities within existing subprojects.

B-30

ANNEX C

ANNEX TO CHAPTER IV

SHRIMP PRODUCTION AND MARKETING SUBPROJECT

Contents:

C1 Aquaculture Institutional Contract
C2 Supportive Budgets
C3 Economic Benefits Calculations

C1

ANNEX C1

Aquaculture Institutional Subcontract

Introduction

It is extremely important that the short term foreign technical assistance used in the shrimp production and marketing subproject be of high caliber and available on a timely basis. It is recommended that an institutional contract be let from the procurement of this assistance from a single U.S. based aquaculture instituion.

This contract could take any number of forms depending on the preferences of USAID and the GOI. The contract could be handled directly by USAID with CJEDP or other grant funds. Alternatively, it could be treated as a subcontract through the prime CJEDP contractor. The third option is for the GOI to enter into a host country contract directly with the institute using CJEDP loan funding.

Irrespective of how the contract is managed, there are certain essential elements which it should contain. The basic structure of the contract is outlined in this annex.

Personel Requirements

Shrimp Hatchery Expert:	Person must be experienced in all phases of hatchery operation; must be able to identify and solve technical problems; should have experience with both the Galveston and Japanese hatchery systems; knowledge of Indonesian language useful.
Shrimp Nutritionist:	Person must have training and practical experience in shrimp food formulation and testing; must have ability to work with local materials and adapt food to local commercial production.
Water Quality Expert:	Person will assess effectiveness of alternative aerator design. Must be willing to work on team with economist and should be interested into technology appropriate for local economic conditions.

Shrimp Pond Expert: Person will be involved the design and implmentation of pond demonstration program including production phasing, feeding and water mixing; should be a skilled grower; able to diagnose production problems; evaluate testing. Experience in Indonesia desireable.

Quality Control Expert: Person should be experienced seafood quality control expert who can advise shrimp processors and handlers on good manufacturing practices; should be experienced with U.S. Food and Drug Administration standards.

Export Marketing Expert: Person must be knowledgable about international shrimp market and marteting practices.

Aquacultural Economist: Person must be familiar with pond management strategies and planning using microcomputers.

Timing and Quantity of Assistance

	Year 1	Year 2	Year 3
Shrimp Hatchery Expert 8.5 person-months	*****	** * *	
Shrimp Nutritionist 4.0 person-months	**	* *	
Water Quality Expert 3.0 person-months	**	*	
Shrimp Pond Expert 6.0 person-months	** *	*	**
Aquacultural Economist 2.0 person-months	*	*	
Quality Control Expert 5.0 person-months		* **	* *
Export Marketing Expert 1.5 person-months			**

Total Contract Budget

Year 1:	13.0 person-months @ $15,000 per p.m.	$ 205,000
Year 2:	11.5 person-months @ $16,050 per p.m.	$ 184,575
Year 3:	5.5 person-months @ $17,174 per p.m.	$ 94,457
Total:	30.0 person-months	$ 464,032

** $15,000 per person month includes travel, salary, per diem, and overhead expenses. Figures for years two and three assume 7 percent annual inflation.

ANNEX C2

Supportive Budgets

BBAP Hatchery Support Subcontract
USD

Activity/Input	Year 1 (10 months)	Year 2 (12 months)
Full-time Senior Staff @ $750 per month	7500	10350
Full-time Assistants (2) @ $500 per month	10000	13800
Travel and Per Diem @ $200 per person-month	6000	8280
Equipment and Supplies	15000	10000
Training Workshops	3000	3450
Training Courses Two, two-month courses with 5 participants each @ $1000 per person-month	10000	11500
Study Tours		
Indonesia 5 persons @ $1000 per person	5000	
Taiwan, Philippines 5 persons @ $ 3000 per person		17250
Contingency (15%)	8475	11195
Total Contract Costs	64975	85825

GRAND TOTAL (USD) 150800

BBAP Food Development Subcontract
USD

Activity/Input	Year 1 (9 months)	Year 2 (9 months)
Full-time Senior Staff @ $750 per month	6750	7763
Full-time Assistant @ $500 per month	4500	5175
Travel and Per Diem @ $150 per person-month	2700	3105
Equipment Repair and Maintenance	1000	1725
Equipment Operating Costs	2000	2300
Equipment Procurement	5000	1000
Development and Testing		
Food Costs 4 Ha. test ponds 1-45 day test, 8-60 day tests 200 kgs shrimp per Ha. x 4:1 conversion = 800 kgs/Ha. x 9 tests = 7200 kgs x 4 Ha. = 28800 kgs. + 15% waste and loss = 33120 kgs x $ .50 per kg = $16560	9936	7618
Fry Costs Stocking Density = 25000/Ha. x 4 Ha x 9 tests x $ .10 per fry = $90000	54000	41400
Other Operating Costs	5000	5175
Dissemination of Results	1000	2500
Contingency (15%)	13783	11664
Total Contract Costs	105669	89424

GRAND TOTAL (USD) 195093

C3-1

ANNEX C3

Economic Benefits Calculations

C3-2

Economic Benefits Calculations
Shrimp Production and Marketing Subproject

	Without Project			With Project				
Year	Yield Kg/Ha/Crop	Number of Crops/Year	Annual Yield/Ha. (Kg)	Low-Yield Kg/Ha/Crop	High-Yield Kg/Ha/Crop	Number of Crops/Year	Annual Yield/Ha. (Kg)	Annual Yield/Ha. (Kg)
[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
1	150	1.00	150	150	150	1.00	150	150
2	150	1.00	150	175	200	1.00	175	200
3	150	1.00	150	200	250	1.50	300	375
4	150	1.00	150	225	300	1.50	338	450
5	200	1.00	200	250	350	2.00	500	700
6	200	1.00	200	275	400	2.00	550	800
7	200	1.00	200	300	400	2.00	600	800
8	200	1.00	200	325	400	2.00	650	800
9	200	1.00	200	350	400	2.00	700	800
10	200	1.50	300	350	400	2.50	875	1000
11	250	1.50	375	350	400	2.50	875	1000
12	250	1.50	375	350	400	2.50	875	1000
13	250	1.50	375	350	400	2.50	875	1000
14	250	1.50	375	350	400	2.50	875	1000
15	250	1.50	375	350	400	2.50	875	1000
16	250	1.50	375	350	400	2.50	875	1000
17	250	1.50	375	350	400	2.50	875	1000
18	250	1.50	375	350	400	2.50	875	1000
19	250	1.50	375	350	400	2.50	875	1000
20	250	1.50	375	350	400	2.50	875	1000

Notes and Assumptions:

[1] Years after project implementation.
[2] Assumed
[3] Assumed
[4] Column (C) [2] X C[3]
[5] Assumed low-yield projection with-project
[6] Assumed high-yield projection with-project
[7] Assumed
[8] C[5] X C[7]
[9] C[6] X C[7]

C 3-3

With Project

	Hectares Affected		Incremental Production			
Year	Slow	Fast	Slow-Low (Tons/Year)	Slow-High (Tons/Year)	Fast-Low (Tons/Year)	Fast-High (Tons/Year)
[1]	[10]	[11]	[12]	[13]	[14]	[15]
1	0	0	.00	.00	.00	.00
2	250	500	6.25	12.50	12.50	25.00
3	500	1000	75.00	112.50	150.00	225.00
4	1000	2000	187.50	300.00	375.00	600.00
5	2000	4000	600.00	1000.00	1200.00	2000.00
6	4000	8000	1400.00	2400.00	2800.00	4800.00
7	5000	10000	2000.00	3000.00	4000.00	6000.00
8	5000	10000	2250.00	3000.00	4500.00	6000.00
9	5000	10000	2500.00	3000.00	5000.00	6000.00
10	5000	10000	2875.00	3500.00	5750.00	7000.00
11	5000	10000	2500.00	3125.00	5000.00	6250.00
12	5000	10000	2500.00	3125.00	5000.00	6250.00
13	5000	10000	2500.00	3125.00	5000.00	6250.00
14	5000	10000	2500.00	3125.00	5000.00	6250.00
15	5000	10000	2500.00	3125.00	5000.00	6250.00
16	5000	10000	2500.00	3125.00	5000.00	6250.00
17	5000	10000	2500.00	3125.00	5000.00	6250.00
18	5000	10000	2500.00	3125.00	5000.00	6250.00
19	5000	10000	2500.00	3125.00	5000.00	6250.00
20	5000	10000	2500.00	3125.00	5000.00	6250.00
	Twenty-year Total		36893.75	47575.00	73787.50	95150.00
	Annual Average		1845	2379	3689	4758

Notes and Assumptions - continued

[10] Assumed
[11] Assumed
[12] C[10] X C[8]
[13] C[10] X C[9]
[14] C[11] X C[8]
[15] C[11] X C[9]

C3-4

Year	Exportable Weight Minimum (1000 Kgs)	Exportable Weight Maximum (1000 Kgs)	FOB Price ($/Kg)	Exportable Value Minimum (Mill $)	Exportable Value Maximum (Mill $)	Exportable Value Average (Mill $)	Jobs Created (Person-years)	Total Economic Benefits (Mill $)
[1]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]
1	0	0	8.50	.00	.00	.00	0	.00
2	4	18	8.93	.04	.16	.10	46	.19
3	53	158	9.37	.49	1.48	.98	468	1.90
4	131	420	9.84	1.29	4.13	2.71	1290	5.22
5	420	1400	10.33	4.34	14.46	9.40	4472	18.11
6	980	3360	10.85	10.63	36.45	23.54	11198	45.34
7	1400	4200	11.39	15.95	47.84	31.89	15171	61.43
8	1575	4200	11.96	18.84	50.23	34.54	16427	66.52
9	1750	4200	12.56	21.98	52.75	37.36	17771	71.96
10	2013	4900	13.19	26.54	64.61	45.58	21678	87.78
11	1750	4375	13.85	24.23	60.57	42.40	20169	81.67
12	1750	4375	14.54	25.44	63.60	44.52	21178	85.75
13	1750	4375	15.26	26.71	66.78	46.75	22236	90.04
14	1750	4375	16.03	28.05	70.12	49.09	23348	94.54
15	1750	4375	16.83	29.45	73.63	51.54	24516	99.27
16	1750	4375	17.67	30.92	77.31	54.12	25741	104.23
17	1750	4375	18.55	32.47	81.18	56.82	27029	109.44
18	1750	4375	19.48	34.09	85.23	59.66	28380	114.91
19	1750	4375	20.46	35.80	89.50	62.65	29799	120.66
20	1750	4375	21.48	37.59	93.97	65.78	31289	126.69
Sum	25826	66605	Total	404.85	1034.01	719.43	342207	1385.63
			Average	20.24	51.70	35.97	17110	69.28
Ave	1291	3330						
			NPV(.12)	117.05	306.93	211.94	100810	408.19
			Average	5.85	15.34	10.60	5041	20.41

Notes and Assumptions - continued

[16] Minimum C[12] to C[15] X .70 (Adjustment for head removal)
[17] Maximum C[12] to C[15] X .70 (Adjustment for head removal)
[18] FOB price inflated at 5 percent per year
[19] C[16] X C[18]
[20] C[17] X C[18]
[21] Mean C[19] and C[20]
[22] 475.7 (labor coefficient) X C[21]
[23] 1.9 X C[21] (See text. Indirect benefits on net foreign exchange earnings)

5

ANNEX D

SUBCONTRACTING IN CENTRAL JAVA

Report on Consultancy
April 25-May 16, 1983

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1. INTRODUCTION

Subcontracting arrangements can play an important role in the development of small industries in third world countries. By giving orders to suppliers, parent firms can help solve problems of marketing, finance and management as well as raising the level of technical skills in the supplier firms. Beyond this, subcontracting systems may provide appropriate vehicles for outside assistance, channeling aid through a limited number of larger producers to many smaller dispersed suppliers who would otherwise be difficult to reach effectively.

The purpose of the consultancy reported on here was first and foremost to survey the extent and patterns of subcontracting in use in Central Java today; based on that survey, to explore the possibilities for either improving or expanding the operation of these subcontracting systems; more specifically, to make recommendations concerning possible activities for the Central Java Enterprise Development Project (CJEDP) in the area of subcontracting.

The report which follows is based on interviews with some 65 producers, merchants, government officials, cooperative organization officials, and other knowledgeable people, over the period April 26 - May 15, 1983. The writer would like to express appreciation for guidance, advice, and logistical support to the staff of the CJEDP, particularly Mr. Gary Kilmer, Project Chief of Party, and Bapak Pratomo, translator and interview companion; and to Dr. James Boomgard, USAID economist working with the CJEDP, who provided invaluable help in suggesting areas of work, sharing his understanding, and taking part in several of the interviews. Of course none of these share responsibility for views expressed here.

A disclaimer may be appropriate at the start. In the field work reported on here, the first two or three interviews in a particular industry were often sufficient to form a clear hypothesis about the structure of that industry, and the nature of the contractual arrangements in use there. When the number of interviews in the industry increased to ten or twelve, in a number of cases those early hypotheses turned out to be serious oversimplifications, in some cases, downright wrong. That is disquieting, to say the least. The second layer of understanding may be more accurate than the first, but it still may be quite inadequate. The world being described is complex, and outsiders can be misled, unintentionally or otherwise. Beyond that, in spite of inquiries made of a variety of informed people, it seems possible -- perhaps even likely -- that contractual relationships between manufacturers are substantially more extensive than what is reported here. In some cases this is because producers have an incentive to hide the facts (e.g., to understate the the magnitude of their business, to avoid taxes);

in other cases, it is because we didn't happen to ask the right questions of the right people. One must recognize the limitations of the study, and say: this is what one consultant was able to learn in just under three weeks in the field.

2. A NOTE ON DEFINITIONS

Although there is an extensive literature on subcontracting, there is no general agreement on the precise meaning of term. One might ask first about the prefix, the "sub" part of contracts: someone hired me (gives me a contract) to do a certain job; I in turn hire someone else to complete one or more parts of that task. In this way the contract "passes through" me to someone else. A clear example is provided by the construction industry: a contractor is hired to build a house; he in turns hires one firm to install the electricity, someone else to handle the plumbing, etc. In such cases, the word "subcontracting" is clear and appropriate. The term is used much more broadly than this, however. If a manufacturer selling consumer goods (e.g., cars) to the public contracts with a separate firm to produce parts (e.g., spark plugs) to be incorporated in his finished product, this would also universally be referred to as subcontracting. In this case, what is being referred to is essentially production according to a contract: an order is placed, then production responds.

In the most common usage, the person giving the order is himself a manufacturer, who "contracts out" part of the production process to another producer. This need not be the case, however. The person giving the order may be a merchant; arrangements of this type made by firms such as Sears Roebuck in the USA or Marks and Spencer in Britain are often referred to as commercial subcontracting. It is but a short step from there to include production undertaken under contract with the government. The essence of the term, then, is not the "sub" part, but the contract: production takes place in accordance with a contract previously negotiated and finalized. 1/

1/ In a broader context, one might note that such contractual arrangements constitute one of three alternative ways of achieving coordination between different steps in production/distribution systems reaching from raw material procurement through processing or manufacturing to delivery of the finished product to final users; the other two ways in which this coordination can be achieved are 1) through internal management within integrated firms, or 2) through purchase and sale of products in "spot" markets.

There is a further problem with the terminology. The word "subcontractor" is an ambiguous one; it could be used to refer either to the person who gives the contract or to the person who receives it. To avoid confusion, we will generally not use the term subcontractor, speaking instead about parent firms, on the one hand, and suppliers, on the other. We do, however, continue to refer to subcontracting systems or subcontracting arrangements, although from what has been said above it should be clear that in some cases these could be more accurately described simply as contracting systems or arrangements.

In the field work for this study, contractual arrangements between private suppliers and either merchants or government institutions as buyers have been examined only from the point of view of the private sector suppliers, not the commercial or public sector demanders. These aspects not covered here could provide fruitful areas for further examination by the CJEDP. The primary focus of our study has been on contractual links between independent private sector manufacturers, using this term to include household producers as well as small, medium, and large-scale firms.

The interviews were primarily concentrated in three subsectors: metal products, batik, and wood furniture. Beyond this, a few isolated examples of subcontracting were identified in other industries. After a brief description of the government's "foster father" program, these different sectors are discussed in turn below. The final sections examine some broader, cross-industry questions, and provide an overview and summary of some of the major findings.

3. INDONESIAN GOVERNMENT POLICY TOWARDS SUBCONTRACTING: THE FOSTER FATHER PROGRAM

For some time the Indonesian Government has sought to encourage the expansion of subcontracting systems. The main vehicle for this, as specified in the Third Five Year Plan, has been the Foster Father (Bapak Angkat) Program. This is an arrangement whereby a parent firm which is engaged in subcontracting is officially recognized as a bapak angkat. With this designation comes the expectation that the parent will provide assistance, as needed, to supplier firms (foster children): raw materials, technical advice, design development, marketing assistance, etc. For its part, the government is expected to support the relationship through the provision of a variety of "facilities." While these are not specified in detail, they were described in discussions as including the provision of technical, financial and marketing assistance, as well as the provision of suitable work places through Small Industrial Estates (LIK). One question explored in our interviews concerned the effectiveness of this Foster Father Program; we return to this question in section 8 below.

4. METAL PRODUCTS

4.1. Overview

Metal industries are often considered to play a key role in the process of development and modernization. In order to understand the patterns of contracting and subcontracting in this area of the economy, 32 interviews were done in Semarang, Tegal (Adiwerna and Talang), Ceper (Batur), and Pati (Juwana). In the course of those interviews, four different subcontracting systems or groups were identified. In two of these groups only the parent firms were interviewed. In addition to these four, a number of metal products firms were interviewed who are engaged in regular contract production for other private manufacturing firms or for various agencies of government. These different patterns are described below.

4.2. Kubota

In discussions of subcontracting in Central Java, the Kubota Diesel Engine Factory is always cited as the prime "success story." As explained by BIPIK 2/ officials in Semarang, this firm is the show-piece of the government's bapak angkat system in Central Java.

a) History. When Kubota began the production of diesel engines in Indonesia nearly 10 years ago, their production was based entirely on CKD parts imported from their joint venture partner in Japan. Since that time they have gradually increased their local content, until it is now described as 30-40% of sales values. Virtually all local production of parts is done on a subcontracting basis, purchased from 25-30 local suppliers.

b) The parent/child relationship. Discussions with the Kubota management made a distinction between two types of subcontracting relationships: those in the bapak angkat framework (foster parent/ foster child), and those operating on a strictly business basis. In the field, this distinction disappeared; most suppliers interviewed were designated by Kubota as foster children, but the suppliers said their relationship was strictly business. Very few wanted to acknowledge that they were foster children! In practice, the distinction is irrelevant.

2/ The government agency responsible for the guidance and development of small industries.

Firms found out about the possibility of being Kubota suppliers in a variety of ways: through short training courses arranged through MIDC 3/, through LIK's (small industrial estates), cooperatives, or word of mouth. When they approached Kubota, they were generally given one or a few sample parts, with technical specifications, and invited to try to produce them. These were then carefully tested by Kubota. If they were found acceptable -- or defects could be corrected on subsequent trials -- then the firm was invited to submit a bid (i.e., give a price quotation).

The price formation in the system is interesting. In no case did we hear of Kubota negotiating a price; they either accept or reject it. Their rule seems to be quite simple: if the quality is acceptable, they accept the bid if it is below the CIF price; if above, with only rare exceptions, it is rejected. Suppliers can also take the initiative in asking for changes in price, if their costs change; they expressed uniform satisfaction with the way this process has worked.

Kubota makes a policy of buying from at least two (preferably three) suppliers for each part they use. This increases their flexibility, and reduces their dependence on any one supplier. They accept bids from two (or more) suppliers even if the price offered is different, as long as both are below the CIF price (although they may give more orders to the supplier with the lower price). In distributing orders among a variety of different suppliers, more firms get to participate in the system; but the amount bought from any one is correspondingly smaller. Only rarely did Kubota orders account for as much as 50% of the supplier firm's total sales; a more usual figure was around 20%.

While Kubota is rather flexible with regard to price, its quality standards are strict. Suppliers are chosen with care, and those not able to meet the quality standards cannot participate. The fact that 60-70% of the parts are still imported from Japan reflects the fact that no domestic producers have been able to produce these with adequate quality. In Batur, we were told that many casting firms have tried to produce parts for Kubota, but were not able to meet the quality standards. Each part is inspected as it comes back from the supplier; the March 1983 report shows 98 parts brought in from 24 suppliers, with the following distribution of rejection rates:

3/ Metal Industries Development Center, in Bandung.

Rejection Rates	Number of Cases
0%	41
1-9%	42
10-19%	8
20-39%	5
40-60%	2
Total	98

In cases of high rejection rates, the Kubota technical staff works with the supplier firm to try to correct the problem. In fact, as far as we could tell, all of Kubota's technical assistance to suppliers was focused on such "problem solving" activities.

It was surprising to find that in general Kubota provides no fixed or working capital to their suppliers. With rare exceptions, raw materials and machines are purchased by the supplying firms. If anything, the flow runs the other way: the suppliers are paid 15 days after delivery of the product (ostensibly to give Kubota a chance to check the products for rejects -- but in fact providing a limited amount of credit from suppliers to parent).

c) Evaluation and future prospects. The Kubota management seems to be quite pleased with the way the system is operating. They commented on the extra overhead costs they bear in terms of greater attention to quality checking, to logistics, to ensure the desired supply is available at the correct time, and the extra costs of the technical assistance provided; but they also expressed satisfaction at the ways in which the system permits them to reduce other aspects of their overhead costs (particularly in relation to fixed and working capital). By reducing their reliance on imported parts, the system decreases their risks arising from either economic or bureaucratic/ administrative forces which might disrupt that source of supply. On balance, the system seems like very good business for them.

From the other side, the suppliers are also generally very pleased about the way the system operates. Kubota suppliers are uniformly proud to have been chosen to participate in the system. The prices they receive are judged to be fair, the business practices straight-forward and smoothly operating. The main problem for the suppliers is that the orders are too small. All expressed a wish that they could expand their sales to Kubota. The parent firm's own limited market, combined with its policy of distributing orders among a number of different suppliers, means that this market channel does no more than supply a relatively reliable underlying base of orders for the supplier firms; they must scramble for other outlets for their products, to bring them closer to their full production capacity.

The orders are also somewhat variable from month to month. The normal pattern seems to be for orders to be placed in the middle of month 1, to be produced in month 2 and delivered to Kubota by the 10th of month 3. There is also a (non-binding) "indicative plan" for each supplier, telling of anticipated orders over a three month horizon. The size of the orders is based on Kubota's own sales expectations and inventory position, and does involve fairly wide month-to-month fluctuations in orders to suppliers. The suppliers obviously wish not only for more orders, but for a more regular pattern of them. The variability was not a major problem or complaint for them, however.

On the whole, the Kubota subcontracting system could be judged a real success. It is well administered, and provides benefits to both parent and suppliers.

The main question which may be raised about the system concerns the 60-70% of parts still being imported. I would be the last one to suggest that they be forced to use more higher cost and lower quality local components. With the system in place, though, this would seem to be an ideal focus for programs of technical assistance by MIDC, designed to enable some of the better firms to move on to more complex and sophisticated technologies. An appropriate function of CJEDP could be the coordination of technical assistance needed to bring this about.

For some components, the problem may be one of scale rather than skill (the total Indonesian market may be too small to justify a plant of the required scale). This raises the further question -- reaching beyond Central Java and the CJEDP -- of supply patterns used by the other two diesel motor manufacturers in Indonesia. Both of these are located outside of Central Java; neither was interviewed, but neither was reported to be making use of subcontracting systems. One would like to know whether this is so; if so, why; and whether changes in this situation might increase the scale of production to a point where other components could be efficiently manufactured locally.

4.3 Krisna Kerajinan Kuningan, Juwana

Although they operate with much less publicity, the subcontracting arrangements developed by the Krisna Brass Handicraft company in Juwana are in many ways as impressive as those of Kubota.

a) History. Krisna has been producing brass products in Juwana for many years. Until the mid 1970's their main products were locks, door handles, hinges and various kinds of fittings, a product line which matched that of many other producers in the area.

Competition was stiff, and returns only modest. In the mid 1970's, Krisna decided to try another approach. He changed his product line to concentrate on what might be called ornamental brass: lamps, vases, and various kinds of nick-nacks. This involved substantially more attention to high quality finishing. In the process of doing that, he developed a network of subcontracting arrangements, now involving 25 supplier firms. He has established five retail stores in major cities of Java; these also operate as wholesalers for other retailers who carry his products.

b) The parent/child relationship. The supplier firms have quite a different relationship to Krisna, compared to those of Kubota. For one thing, most are located very nearby: many within a few hundred meters, none more than one kilometer away. More fundamentally, each of these suppliers sells 100% of its output to Krisna. Beyond that, each part is made by only one supplier (although each supplier makes several different parts).

The subcontracting relationship here is based on a good deal of specialization. Each supplier firm does the casting of a few selected parts. Perhaps 25% of the work force in each of the supplier firms is engaged in casting, with the rest doing primary finishing: filing, grinding, milling with lathes, some preliminary polishing. Krisna himself does some of these same things, for more complex or larger pieces (he does 20% of the casting himself), plus the final polishing, assembly, quality control, packing, and marketing.

The pricing system starts out -- as with Kubota -- by a bid from the supplier; the response, though, without the CIF price ceiling or the import alternative, is not a simple yes-or-no but a process of negotiation. The suppliers with whom we discussed this (in the presence of Mr. Krisnawan, the owner) were quite satisfied with the outcome. Price changes are negotiated from time to time with the whole group, resulting in a uniform percentage change for all parts bought.

As in the case of Kubota, Krisna exercises strict quality control, rejecting parts found unacceptable. His technical staff spends quite a lot of time working with the suppliers, to help overcome their problems.

The supplier firms have a substantial amount of machinery: lathes, grinders, welding equipment, and polishers, along with the simple furnaces which melt the brass for casting. Krisna supplies interest-free loans to suppliers to buy these machines, as needed, and as he has the funds available. To data 75% of the suppliers have received loans ranging in size from Rp 200,000 to Rp 3 million. 4/

4/ The exchange rate is currently US$1 = Rp 965.

Repayment is in cash, when the borrower has it available; the repayment rate is reported to be good.

For newly established suppliers, Krisna also provides raw materials (scrap brass) on an advance-against-product basis. As soon as they are able, though, he expects the suppliers to provide their own working capital, buying the raw material themselves from the active market in Juwana.

When asked why he uses the subcontracting system, Mr. Krisnawan first answered in terms of his own limited production capacity, relative to the total demand he faces. When pressed that he could have built up that capacity inside his firm rather than through the suppliers, his answer was in terms of his moral responsibility towards other producers in his area, who otherwise would face severe marketing problems. When asked whether it would be cheaper to produce inside instead of through subcontracting, he responded, of course; direct production costs (labor, brass, machinery and tools) would be the same, and he would then avoid having to pay the profits earned by the suppliers. When asked again why he does it, if it costs him more, the response was again in terms of moral responsibility. He made no mention of possible benefits to him in terms of gains from specialization, reduced needs for working and fixed capital (including the land and buildings of the work place), the spreading of risks, or the increased respect he gains this way in the community. As a non-pribumi (i.e., Chinese ancestry) businessman dealing entirely with pribumi suppliers, this latter could be an important consideration.

Production was again based on written orders, but in this case, these were only one week in advance. The potentially disastrous effects of this arrangement -- being 100% dependent on only one buyer, who lets you know only one week in advance how much he will be buying -- is in this case mitigated by that same sense of moral responsibility, effected through a willingness on the part of Krisna to accumulate inventories of parts in anticipation of later sales. This might be verified, either by checking records or by further interviews with suppliers; from what we were told, it seems to work.

c) Prospects and problems. Krisna's current market for ornamental brass products -- 100% domestic -- is reported to be strong, and continuing to grow well. He is interested, though, in moving on to new products and/or new markets; he would particularly like to explore the export market. My non-expert judgment is that because all products are channeled through his effective finishing facilities, the quality of his products is good. One might have more questions about the production efficiency, which would be reflected in his comparative cost position. Casual observation of several of the suppliers' workshops suggests a great deal of busy-ness, but a rather

uneven level of efficiency with which the labor, raw materials, and equipment are used. In the present expanding market where he has a clear quality edge over his competitors, with pay to suppliers based on their production costs tempered with a measure of "parental" responsibility, the market discipline pressing for efficiency of production has been largely missing.

Selling in an expanding domestic market, improved production efficiency could mean higher returns to management and/or to workers, which are obviously desirable things. For sales in the export market, they may be indispensable, if the products are to be competitive with alternative sources of supply. The subcontracting system in this industry as currently organized tolerates varying levels of efficiency in different suppliers, and provides no extra rewards for those who work hardest to improve efficiency. For export production, this will probably need to be changed. One realistic approach -- suggested by Krisna in discussion of this point -- would be to enable the suppliers to bid for the production of parts of products to be exported; the awards would go to the lowest cost firms. The existing more tolerant system could then continue to operate for other suppliers, for the domestic market. The problem, of course, is that the availability of that more tolerant domestically oriented system may eliminate any incentive for suppliers to make the extra efforts which may be needed to improve efficiency for export sales.

The reasoning on this point has been conjectural. To move it beyond that level requires more detailed knowledge of the export market: product types, demand trends, and particularly prices and costs. It would be entirely appropriate for CJEDP to help locate and perhaps help finance a visit by selected agents, buyers, or specialized consultants in this area. A few such visits could quickly clarify whether the exporting of a modified range of Krisna's products is a realistic undertaking.

4.4. Mahmotin, Adiwerna

Although again not as widely known in Semarang as Kubota, this firm seems to have many of the same characteristics and operating procedures. Like Kubota, he has been officially recognized as a bapak angkat. He specializes in automobile and electrical parts. He operates as a contract supplier to PT Toyota Mobilindu and Beta Sarana, a subsidiary of PT Astra. Mahmotin meets about 60% of the orders which he received from his own production, focusing on the most sophisticated products, requiring the most precision work, in which he is specialized; the other 40% is passed on to 22 subcontracting suppliers with whom he deals on a regular basis.

When Mobilindu and Beta Sarana place orders with him, they generally provide the necessary raw materials. For orders which he passes on to his suppliers, he either provides the raw materials or guarantees a bank loan to the supplier. With the loan, the supplier buys the raw materials for processing; when the finished parts are delivered to Mahmotin, he pays part of the proceeds directly to the bank in repayment of the loan, with the residual going to the supplier. There is a similar system of guaranteed loans for machine purchases.

He said that his designation as a bapak angkat has been very helpful to him in providing direct access to government officials. This has been helpful in obtaining a number of government contracts, including a series of orders from the telecommunications department for electrical supplies.

The subcontracting system enables him to accept orders beyond his own capacity. Beyond that, it enables him to concentrate his work on the precision parts which are his specialty, passing on orders for simpler activities to his suppliers. On orders which he passes on, he takes a 20% commission.

This system has not been investigated thoroughly. None of Mahmotin's suppliers were interviewed, and the discussion with him lasted only for one hour. One could raise questions about the terms of the contracts, about the degree of variability of orders, and a variety of other issues. On the face of it, though, it reflects desirable features of a rather high degree of specialization combined with a system linking a number of middle-sized suppliers to this growing market.

4.5. Mutof

This firm in Talang produces a variety of products, as the orders come in, including such things as hand sprayers for the Department of Transmigration, and bolts and nuts for Krakatau Steel. As a general rule, when he gets an order, Mutof takes about 60% of it for his own production, subcontracting the other 40% (with no commission) to 9 workshops in his neighborhood. All of these are people who previously worked in his factory, and are now established on their own. In such cases, he supplies the raw materials for them to work on.

The motivation seems to be primarily a moral one: he feels a responsibility to help provide markets for his former employees. This is particularly striking since he seems to have trouble finding enough orders for himself.

4.6. Other Metal Products

A number of other metal products firms were interviewed who produce on a contract basis. Perhaps the most striking thing about the list is the extent to which it is dominated by sources of demand which are either branches of the government or public enterprises. These include drain covers and pipes for the city of Yogyakarta; water pumps for a public housing project; pulleys, switches, and other equipment for the railroad; electrical parts for PLN (the electricity company); water meter housings for the water company (through MIDC); and machine parts for the (public sector) sugar factories, in addition to the hand sprayers (for the transmigration program) and bolts and nuts (for Krakatau Steel, a public company) referred to above. Only in the case of parts for rice mills (ordered by an assembler in Jakarta) and cast iron molds (for a ceramics factory in Semarang) did the demand emenate from the private sector. Perhaps this balance reflects the "luck of the draw," in terms of firms we happened to hear about for interviewing; there was no intent to bias the selection in this direction, however.

The public sector has both advantages and disadvantages as a source of such contract demand. On the one hand, a number of respondents commented that government contracts may involve an "element of subsidy" in that the prices they pay -- often channeled through cooperatives -- are somewhat higher than those from private sector demanders. On the other hand, these public sector contracts more often require payment of turnover and sales taxes, universally ignored for other contractual sales, as well as fees to the cooperatives and assorted other informal payments associated with government contracts. The result often is that while the government may start out paying a relatively high price, the amount which gets to the producer may be relatively low. There is a standard way of dealing with this, however, which is to compensate by lowering the quality of the product. Thus the government ends up paying prices which are on the high side, and getting products whose quality is on the low side. Producers have no complaints about this system (they are used to it); their main problem -- here as in the whole industrial sector, it seems -- is that there are not enough orders.

5. BATIK

5.1. Background

The batik industry in Indonesia is extensive and complex, covering many products, firm types, and marketing channels. The overview presented here is based on interviews with 8 middle-sized producers in Pekalongan; 3 large producers in Solo; officials

(including some producers) in 4 different batik cooperatives (3 in Pekalongan, 1 in Solo); and several knowledgeable outsiders. No secondary studies were consulted, although it seems probably that many have been written. If further work is done in this area by CJEDP, a search for such reports would deserve high priority.

5.2. Product Types

There are two different ways of producing batik:

a) batik tulis: this, the traditional way of making batik, involves drawing with wax by hand on cloth, to cover areas which will not "take" the color, when the cloth is dyed. This may be done a number of times, to produce several different colors on a piece of cloth. Results are often intricate and very beautiful.

b) batik cap (pronounced "chap"): in this procedure, a metal stamp with a design is dipped in wax, then stamped on the cloth. The cap, or stamp, may be quite complicated. This technique is often combined with some hand drawing (tulis) to supplement the cap.

The market for these wax-and-dye batik products has been sharply challenged in recent years by the expanded production of printed cloth with batik designs. This technique, which can be done either by hand or with modern machines, involves a silk screen process, passing the colors directly to the cloth without the use of wax.

The total market for textile products grew rapidly in the early and mid 1970's, with the result that many batik producers faced a shortage of white cloth. In the late 1970's, there was a considerable expansion in weaving capacity. The subsequent weakening of demand in the 1980's has left many of these weaving firms -- including several started by batik cooperatives -- with substantial excess capacity, with resulting severe financial problems.

As suggested above, the market for traditional batik products has been strongly affected by the rapid expansion in production of printed cloth with batik designs. Twenty years ago, this product seems to have been of negligible importance; by now it probably accounts for a volume equal to that of traditional batik. The reason, of course, is the price; a piece of batik tulis can easily cost ten times as much as its printed counterpart. 5/

5/ In one middle-sized household "factory" which we visited where printing is all done by hand but the fixing of colors, washing, drying, and handling of cloth (folding, rolling, etc.) involved large but simple machines, 100 workers produced 2,000 pieces (continued on next page)

Different people gave different answers concerning future prospects for the three batik types. Some said that proportions have now stabilized; others thought the printed share would continue to rise, either at the expense of cap alone or of cap as well as tulis. These questions are obviously of considerable importance, in view of the much greater labor intensity of batik tulis, on the one hand (which is important in terms of employment creation -- or potential employment destruction), but the much lower price of printed cloth, on the other hand (which contributes to consumer welfare, as well as opening up possibilities for substantial expansion in the total market).

5.3. Firm Types, Marketing and Production Systems

There are two large-scale batik producers in Central Java (both in Solo), with over 1,000 production workers apiece, each with a national network of retail stores. Rough guesses are that these two together supply less than 10% of the national market for batik products (see chart 1). Below these two, there are many firms with 50-200 workers, and even more household-based producers, some with as many as 50 workers. A few of the middle-sized firms have their own retail outlets; some are able to sell their products through the retail outlets of one of the major batik producers; most sell primarily to merchants, of whom there are very many. These merchants buy either for sale in their own retail outlet or as wholesalers, supplying retailers in countless markets across the country. As we shall see, some of these merchants are also directly tied into the production process.

Alternative ways of organizing the production system, particularly with regard to subcontracting, arise primarily with regard to the production of batik tulis; subsequent discussion is focused on this product.

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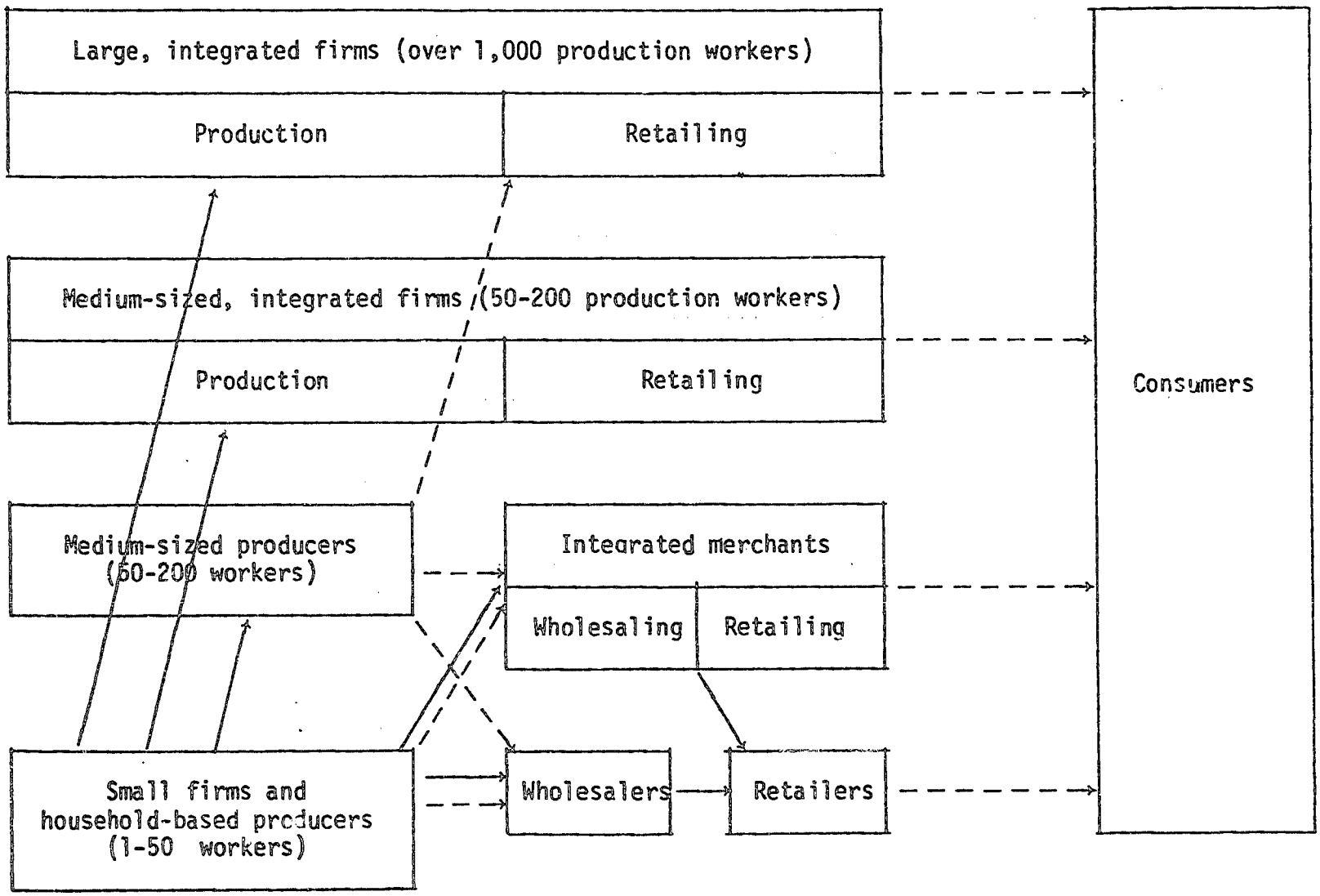
of cloth per (7-hour) day. A firm nearby has a regular, in-house work force of 40; the owner said that if he set these people to work making "combination" cap plus tulis batik, they could produce 130 pieces per (7-hour) day; working on pure tulis, they could make only 10. Even this may be too high; other observers suggest much more than four days per person per piece implied by these figures. Perhaps he was speaking of quite simple tulis. We did not collect information on capital and raw materials which would permit full cost comparisons; but these figures suggest why printed batik has succeeded in making such big inroads into the market.

Chart 1: Batik Production and Distribution Patterns in Central Java



→ subcontract production

- - - - - - - - → product flows for sale in spot markets (i.e., sale of completed products, on a non-contract basis)

Middle and large scale producers of batik tulis face a choice between making this product themselves, on their own premises, or contracting with others -- either smaller factories, or households -- to make it for them. Merchants of batik do not have the option of manufacturing it; for them, the choice is one of buying from what is presented by the producers, or contracting with them to make particular items or designs. For the large firms which are both producers and retailers, there is a three-way option: produce themselves, buy what is presented by other producers for resale through their own outlets, or make contracts with other producers (either firms or households) to produce particular products. All of these alternatives can be observed in the market. In many cases, one participant uses at least two of these patterns on a regular basis. The largest firm in the industry, both a producer and a retailer, makes some 30% of the products it sells in-house, obtains another 20% through subcontracting arrangements, and buys the remaining 50% in spot markets from other producers. The second largest firm, also a producer/retailer, obtains nearly 20% of its batik supplies -- virtually all tulis -- by subcontracting, with the rest all produced in-house; this firm makes no spot purchases of finished cloth from other suppliers. The same approach is followed by the other medium and large-scale firms: some batik tulis is made in-house, but a substantial portion -- often half or more -- is obtained on a subcontracting basis.

5.4. A Comparison Between Alternative Production Systems

Let us compare three alternative ways of arranging the production of batik tulis: i) in a household or other small producing unit, producing without contract (i.e., for sale in the market, and through a merchant); ii) in a household or small producing unit according to a contract with a large producer or merchant; and iii) production by (within) a large producer.

a) Marketing and market risks. It is a commonly claimed advantage of the subcontracting system that the producer who makes something according to a contract is freed from the problem of marketing his product, as well as the risks of not being able to sell it, or not being able to sell it at a satisfactory price. Unless the person giving the contract is either a final consumer or someone who has also received a contract from a final consumer, however, these risks are not <u>eliminated</u> from the system, they are just <u>shifted</u> from the producer to someone else. On the other hand, if the person giving the contract knows the market better than the producer, then the overall risk may be reduced by a system which enables those with the best knowledge of the market to have the greatest influence on actual production patterns.

This reasoning suggests that subcontracting systems can have the effect of shifting marketing risks away from household producers of batik tulis as well as reducing marketing risks for the system as a whole. Production within integrated firms has the same result -- but it also has the effect of shifting the production itself out of the household.

b) Finance: household producers without contract must provide for raw materials from their own resources. This clearly could be a problem for them, although for batik tulis it is probably not a major one. For subcontracted production, working capital in the form of cloth, wax, and colors is usually provided by the parent firm.

c) Designs: these are sometimes provided by parent firms as part of a subcontracting arrangement. If the parent firms know which designs and colors are most in demand, this transmission of information can improve the marketability of the product. On the other hand, one large producer also buys products from a variety of independent suppliers precisely because he feels the need for more diversity of design than he could provide himself.

d) Income to the workers: it would obviously be of considerable interest to compare income to workers obtainable through each of these three supply systems. This study has not attempted to collect information on this topic.

e) Labor force characteristics: those who work on batik tulis are mostly women. If they produce this product in a factory, they mostly do it on a full-time basis. If they produce in their homes, either as subcontract suppliers or as independent producers, it is often done on a part-time basis, fitting in between other household chores. There are benefits to be derived from the provision of such opportunities which can take up the slack of underemployment in urban as well as rural areas.

f) Market price/market promotion/future prospects: in the absence of comparative cost data on alternative organizing systems, it is difficult to guess about the effects of these different systems on profits and market prices. One might expect that if production of batik tulis is done either inside of or by direct subcontracting to large firms, it will be more widely available and more actively promoted; total production of batik tulis would be more likely to expand in such a case than if it were simply made available to merchants, if they should choose to buy it.

5.5. Evaluation and Future Prospects

An examination of the future prospects for subcontracting in the production of batik tulis raises questions in two areas: (i) the future prospects for batik tulis itself, and (ii) the desirability of producing the product on a subcontracting basis. On the first of these, our guess is that printed cloth will continue to increase its share of the market, but primarily at the expense of batik cap; the total demand for batik tulis will continue to grow, as some people continue to buy the readily identifiable, higher priced but higher prestige item.

With only limited exceptions, parent firms using subcontracting systems to produce batik tulis seemed well pleased with the arrangement, and expect to continue to rely on it in the future. Such a pattern fits well with the goals of national policy, in terms of the growth of cooperatively or communally based production and marketing arrangements, as well as the encouragement of small industries. Subcontracting systems permit a greater dispersion of economic activity, reducing the burdens of urbanization and agglomeration; they permit people to combine work on batik production with other household responsibilities; they provide opportunities for creative expression for a wider range of people.

There are other desirable features of the subcontracting relationship. The contract removes the risk to the producer that she may be forced to sell her product at an unexpectedly unfavorable price. It opens a channel for the person giving the contract to provide information about market tastes and trends, as well as to supply working capital to the producer, if this is needed. By linking the producers directly with more active marketing agents, there may be opportunities for more rapid expansion of the total market for batik tulis.

Of course there are potential counterarguments. The most serious is that the dispersal of workers provides them with less benefits (e.g., health insurance), less protection against arbitrary acts by employers (e.g., dismissal), and less opportunities to work together for improvement in wages and working conditions. Moving jobs to people who have fewer alternatives and are therefore willing to work for lower pay may be seen by some as taking advantage of people's unfortunate circumstances; it may also be seen as an effective first step in moving to change those circumstances.

6. JEPARA FURNITURE

6.1. Background

In some ways, Jepara furniture production is simpler than other product groups discussed here. Although the subsector includes a diverse range of products -- chairs, tables, beds, dressers, and an assortment of related bric-a-brac (mirror frames, shelves, etc.) -- it is quite homogeneous in style. It is geographically concentrated, with most production taking place in one kecamatan (sub-district). It clearly competes in the national market with both plain wood furniture and with metal products made elsewhere, but for carved wood furniture, it has established an overwhelming market dominance. The results reported on here are based on discussions with 5 producers, 6 merchants, and several officials of one of the two furniture coops in Jepara. This is obviously a small number, so generalizations should be treated with caution.

6.2 Market Participants

On arrival in Jepara, one's first impression is of a road lined with furniture displays. Although we did not count them, a guess is that there may be 75-100 of these along the main road. Some of these people are producers, with their own manufacturing facilities; many (probably most) are assemblers.

Their customers are buyers who come from all over Indonesia to buy the famous Jepara furniture. Some of the buyers are retailers, with stores in Jakarta, Bandung, Surabaya, or elsewhere in Java. Others are wholesalers, supplying smaller stores in the big cities as well as many retailers in the other islands. Some of these buyers come to place orders, giving a 50% down payment towards the final price; others buy from the extensive inventory which the assemblers maintain.

As suggested above, many assemblers do not themselves produce furniture; instead they buy from any of the 1,700 or more furniture producers in that area. As in the case of their sales, some of their purchases are by contract; the assemblers place orders with suppliers, again advancing 50% of the cost as down payment. For the rest, they drive through the network of back roads in the area, purchasing from the stock of finished products held by producers.

From the producers' perspective, their sales options include producing on a contract basis for one of the local assemblers; producing "for inventory," i.e., in anticipation of sales to an assembler or outside buyer who happens down his road; or linking

up directly with an outside buyer. Of the producers we interviewed, one had been working for two years as a supplier of a Jakarta retail firm, working on a series of contracts. A second had received a series of contracts from an exporter, who sold his products regularly in Australia, and was hoping to arrange for sales in Germany. The others sometimes got contracts from local assemblers, but more often produced "for inventory." They said that in general they found a buyer within a week of completion of their products. In general they seemed satisfied with the prices obtained this way.

In addition to the production-for-contract between merchants and producers described above, there are two types of subcontracting practised in Jepara. One involves subcontracting of complete products, in case a producer receives an order which surpassed his production capacity. This was the case, for example, for the producer supplying the exporter, discussed above. This man told us that he would prefer to expand his production capacity, to be able to fill the whole order in his own workshop; but he cannot find the skilled workers to do this, so his orders substantially exceed the amount he can produce himself. Some of the people who have worked for him in the past and learned their skills in his workshop have chosen to try to establish themselves on their own; although they have acquired the skills, they have a hard time with both orders and capital. By contracting with them to supply orders he has received which are beyond his own capacity, this man provides not only the training but also the capital and the markets to establish those people in business. This is subcontracting at its best.

Another man interviewed reflects a different pattern of subcontracting. He is a wood carver, operating out of his home, some 10 km. from the center of town. He receives furniture frames from a manufacturer in town, which he carves, being paid on a piece-work basis for the work he does. He has worked in this way for a number of different furniture manufacturers, working for "whoever pays him the most." He said there are several others near his house who operate in the same way.

In addition to contracting out the carving of furniture, it seems to be common practice to hire outsiders to weave the rattan seats and backs of chairs and couches. In addition, then, to the reported 1,700 firms in the area, there are substantial numbers of individual craftsmen, many doing this kind of subcontracting work in their own home. A cooperative official estimated their number at 10,000, although I was not able to verify this number.

6.3. Contracting and Subcontracting Implications

It is useful in this section to distinguish between contract production and subcontracting, more narrowly defined. Contract

production takes place whenever a producer makes a piece of furniture according to a contract, presumably with a merchant, either one of the local assemblers, a retailer, wholesaler, or exporter. Clearly such an arrangement reduces the market uncertainty and risk for the producer; it provides him with finance for working capital; it provides him with information about the types of product he should make. As long as such a contract does not put him into a more dependent position towards one buyer (compared to his present situation, where he can "shop around"), it seems to be very much in the producer's interest to expand the system.

The problem is that if efforts are made to expand the use of this system, those who get the contracts will be those who need them the least: the producers of products most in demand, whose buyers might be glad to use contracts to assure themselves of a supply of products from the more capable firms. For less skilled producers, making products in less demand -- those for whom contracts would be most useful -- the prospects of negotiating them seem least likely. This suggests that one should not be too optimistic about changes along these lines. Fortunately, the present non-contract-based marketing system seems to be performing reasonably effectively.

Moving on, then, to the subcontracting relationships, we have seen that these arise in two types of situations: ii) subcontracting of complete products, where one producer has orders which exceed his own production capacity; and (ii) subcontracting of particular activities, e.g., carving, or weaving of seats in chairs. Subcontracting in each of these ways has the desirable features of providing working capital finance as well as links to the market for firms which might otherwise find difficulties in these areas. The main problem with the arrangement arises for suppliers of complete products; they may find the demand for their services to be quite unstable. In fact the system could be characterized as one which permits the parent producer to limit his production capacity to what he can keep employed on a full-time basis; whenever he has orders which reach beyond that base capacity, he passes these on to his subcontracting suppliers. The result might be considerable instability in the supply of subcontracts. The interviews did not clarify the extent to which this is true, although the only producer interviewed who makes use of this system indicated that he is permanently short of capacity, and uses the system not now and then but all the time. In such cases, this problem of fluctuating availability of contracts might not be a major problem.

One of the key advantages of subcontracting arrangements in this industry is that they could permit the development of greater specialization, either by function (e.g., carving), by quality level, or by product type. If supplier firms are able to enter into contracts with any of a variety of different parent producers and conversely, then the parents can channel their orders to the supplier best suited to the product or quality level they wish to purchase. Such specialization can be important in permitting costs to go down, returns to producers to go up, and quality to improve.

7. OTHER SECTORS OF THE ECONOMY

Our primary interviewing was in the three sectors of the economy discussed above, since these were the areas where subcontracting was reported to be most extensive in Central Java. The interviews also uncovered a few other examples of subcontracting. These are described briefly here.

a) Baskets: There is a firm in Ungaran which has in the past produced large numbers of baskets, primarily for export to Germany. The firm made some of the baskets in its own work place, but also subcontracted to produce substantial numbers of them in village households in another district. When problems developed with the buyer, the firm fell on hard times; it is currently looking for new markets, but is finding this difficult in spite of substantial government subsidies (free machines, provision of tecnnical training for workers and staff time to supervise the subcontracting workers).

b) Troso cloth: In this village near Jepara, household-based factories make cloth by a process which involves dying of the thread with a pattern prior to weaving. The designing and wrapping of the thread is often done on a subcontracting basis. A number of household firms in the villages produce cloth in this way.

c) In the Kampongs (urban villages) of Semarang (and probably other cities of Central Java as well), there are small producers making camera cases, ladies' handbags, shirts and dresses on the basis of a "putting out system:" the entrepreneur provides the materials and the designs, while the sewing is done in suppliers' households. Pay is on a piece-work basis.

d) A producer in the small-scale industrial estate (LIK) in Tegal makes rubber parts for a producer (assembler?) of water pumps. It would be interesting to know whether the other components are also made on a subcontracting basis.

e) A large scale shirt manufacturer in Ungaran has contracts to buy cardboard boxes, plastic bags, thread and buttons from other producers. These purchases are small relative to his total production costs, but since he produces 5,000 shirts per day, they constitute quite an important market for the suppliers. The box manufacturer also supplies Krisna in Juwana.

These are examples we happened to hear about and interview; there are probably many more.

8. GENERAL FINDINGS

8.1. Taxes

Concern has been expressed that the potentially cascading sales and turnover tax (PPN and MPO, totalling 4.5%) could operate to discourage subcontracting systems, since in principle they are levied each time the product changes hands. As presently administered, this is a non-problem. Such taxes are currently collected only on products destined for the public sector, and then only at one stage. In all other cases, if the supplier answered the question (which was almost always), he said that tax collection was not enforced on products he sells.

Of course the fact that the tax is on the books may still have a deterrent effect, either because people fear that some day it may be enforced, or because the non-enforcement may cost something. As of the moment, though, it seems not to be a problem.

8.2 Contracts

The topic of this paper concerns contracts and subcontracts; yet the fact of the matter is that the contract itself is simple in the extreme. In most cases, it is in writing, but usually takes the form of a simple order, specifying the product (sometimes by code number), the quantity, price, and delivery date. All concerned recognized that disputes over interpretation of this document would depend solely on bilateral negotiations between the two parties involved. Some fear was expressed that more formalized contractual arrangements might be a prelude to more extensive taxation or other intervention from outside. With only rare exceptions, neither side seemed the least bit uncomfortable with the current arrangements.

8.3 Finance

The extent to which parent firms provide capital -- fixed or working -- to suppliers varied widely among the sectors studies. At one extreme is the Kubota case, where the suppliers provide (short-term) credit to their parent. There are more cases of the parent firm providing either the raw materials themselves (batik, furniture carvers) or the money to buy these materials (furniture makers, some metal products). Krisna follows a different pattern, providing (interest-free) loans for machines, but leaving the provision of working capital to suppliers. In only one case (Mahmotin) did the parent firm arrange (in guaranteeing bank loans)

to provide both fixed and working capital to suppliers. On the whole, the provision of capital from parent to supplier firms is an important component of the subcontracting system.

It is important to notice in this regard that when parent firms provide raw materials to suppliers, substantially more is involved than simply the provision of working capital. When they behave in this way, the parent firms are doing the job of search and selection of inputs, which may be costly and time-consuming, but for which there are significant economies of scale. By controlling inputs, parent firms can have an important impact on the quality of the product, tailoring it to meet market demands. Parent firms in this way also share with suppliers some of the risks that things may go wrong in the production process. In some cases, the raw material can be re-used (brass can be re-melted and cast a second time); but in other cases (batik, or carved furniture) this second chance may not be possible. This means that the working capital is subject to much higher risk from problems in the production process in some industries than in others; by providing the raw materials, the parent firms bear a higher share of that risk.

The practice of having parent firms guarantee bank loans to suppliers is not widely practiced, but seems like a potentially fruitful arrangement, particularly for the purchase of machinery and equipment. At present only one firm (Mahmotin) reported such arrangements; banks and parent firms might be encouraged to explore the wider use of this system.

8.4. Technical Assistance

The provision of technical assistance is uneven. The most usual pattern is that it is provided if and only if problems arise which involve the delivery of unacceptable products. More general tasks of upgrading of product quality, improved ability to produce more complex products, or improved efficiency to reduce costs are goals which exist in rhetoric more than in practice. Once again, one might ask whether this might be a fruitful intervention point, encouraging either parent firms or government agencies providing technical assistance (e.g., MIDC) to do more in this regard.

8.5. Marketing Assistance

In some industries, [illegible]ers do not make anything unless they first have an order (e.g [illegible]ialty metal products). In other industries, if they don't have an order, they can go ahead and produce, but with the risk that they might not find a buyer, that the buyer might want a different style or quality, or that the price

may be unexpectedly low. Contract production -- including sub-contracting -- solves these problems by eliminating these marketing risks, or shifting them to someone better able to bear them. By helping the producers target their output more accurately to meet the market demands, contracting can reduce the overall level of risk in the system. With limited exceptions, contracting does not expand total demand for the products of a sector, but enables producers to adapt their production to that demand more effectively. The exceptions come when more carefully targeted production (and perhaps lower prices) encourages consumers to increase their total demand for a product.

8.6. Bapak Angkat

The official bapak angkat designation has been used sparingly; only few firms have been so designated. To date, such firms have received only few benefits. They have obtained technical advice through MIDC, BIPIK, and the LIKs, although it seems that this has been quite limited.

A number of firms engaged in subcontracting activities have expressed a strong wish to be designated as bapak angkat. The reasons they give are three:

a) First and foremost is the honor which this term conveys, and the recognition of the firm as one which takes seriously its responsibility for other producers. In Javanese society, this is an important consideration.

b) The designation may also open doors to government officials, providing contacts which are useful in obtaining orders. A particularly strong case can be made for obtaining a large order if this will be passed on in part to a number of subcontracting suppliers.

c) Although current foster parents receive only modest technical assistance from the government, that assistance can be important. This is particularly so for non-pribumi firms, for whom such a designation could provide access to people and to types of assistance currently not available to them.

On the whole, while the bapak angkat system has provided only limited benefits to its participants, it is a useful and important instrument for the encouragement of subcontracting. The government should be urged to use it more actively, both in the sense of coordinating the provision of a variety of types of assistance to make these available on a more regular basis to bapak angkat, and in terms of designating more firms as bapak angkat. As suggested in this report, there are a number of appropriate candidates, several of which would be eager to be recognized in this way.

9. A SUMMARY OF POSSIBLE FOLLOW-UP ACTIVITIES

The kinds of follow-up work suggested by this paper fall into three major categories:

a) Gather further information about the nature and extent of subcontracting systems, and whether they are working in a satisfactory way: check previous studies of the subsectors and systems examined here; be on the look-out for subcontracting arrangements in other industries; examine more closely the government's contractual procurement practices, and contractual supplies for merchants; compare income of batik workers under subcontracting with those working in parent firms; determine the extent of variability in demand among subcontract workers in furniture and metal products industries.

b) Seek to expand the use of the subcontracting system: recognize those who do it well, honoring them by designating them as bapak angkat; look for efficient ways to administer the system, in order to reduce the cumbersome burdens which supervision can impose. At a more general level, look at the characteristics of industries where subcontracting systems are currently working well; on that basis, see if there are opportunities to introduce it into other industries where it is not currently used in Central Java.

c) Work through existing systems to effect changes: channel additional support (technical assistance, commercial bank lending, exploration of other new market opportunities) to existing subcontracting systems to enable them to expand (for example, exploring the possibility of accelerating the process of import substitution for precision parts); explore possibilities for export of brass or furniture products.

Subcontracting systems are alive and well in Central Java. While the discussion of this paper does not imply that these arrangements provide the substance for major new and independent aid initiatives, it does suggest that they offer useful areas of work for the CJEDP, and opportunities for growth in the industrial sector of the region and the country as a whole.

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ANNEX E

PVOS AND ENTERPRISE DEVELOPMENT IN CENTRAL JAVA

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October 1983

PVOS AND ENTERPRISE DEVELOPMENT IN CENTRAL JAVA

In considering the role of the Indonesian Private Voluntary Organizations (PVOs) in the enterprise development process in Central Java one should consider the ways in which such organizations are founded, the patterns which are followed in their development and the nature of their relationships to government and other private sector organizations.

The founding of an Indonesian PVO is usually based upon the observation of a social or economic problem in the field by an individual, or group, who are motivated to try to do something about it. A small group (organization) is formed which tries to address the problem in a straight-forward and pragmatic way. Such groups are often very small and informal and have a very localized orientation. They are also frequently lacking in relevant expertise at this point. This may be considered the "embryonic" stage of PVO development.

During the next stage of PVO development, which we characterize as the "crystallization" stage, the group begins to develop greater organizational and technical strength and staff development becomes a high priority. It begins to refine its understanding of the problems with which it is dealing and of its role in the resolution of those problems. It begins to look towards the future and develop long term program objectives.

Once the PVO has settled into a self-defined role and developed an appropriate level of internal capability and stability it enters what we call the "take off" stage where it develops its program, staff and and base of financial support.

The History of PVOs in Indonesia

Many theories have been developed concerning the nature of the "state." Similarly, many theories have been developed to explain the nature and role of "government". Although these theories provide interesting points of view or academic discussion regarding the distinctions between the two, the reality in many developing countries is that the "state" and the "government" are, in fact, the same thing and may be considered as a single concept--"state government".

Such a concept raises the question of the position and role of private individuals and organizations in a country. There are times when such "state governments" represent the antipode of individual rights and freedoms. Those who believe that this relationship is unavoidable subscribe to the view that the weaker

the role of government, the stronger will be the rights and dignity of individuals. In other words, the less government the better.

Regardless of the appropriateness of this view, it is clear that in most developing countries, the role of government has become stronger and stronger over time. In the 1960s they began to implement so-called national development strategies. Centrally planned economic development, previously attempted only in the socialist countries, is now the norm in most developing countries.

Human idealism still seeks to strengthen the role of individuals in determining their own future, however, and this spirit of human dignity and self-reliance is the basis of various types of PVOs. How strong or healthy or flourishing a PVO is depends both on the willingness and ability of the government to provide and create a favorable environment to stimulate the growth of people's creativity as well as the level of people's awareness.

Available documents show that the development of PVOs in Indonesia dates back as far as 1920 when "nationality consciousness" inspired Boedi Oetomo to do something for the nation in the field of education. Sarekat Islam was formed to develop entrepreneurship and reduce dependency on the colonial system. From initiatives like these, various types of transformations and innovations were able to take place climaxing in the country's independence.

Situations may change, but the creativity and dedication of private citizens to participate in national development do not. Accordingly, various organizations appear, dedicated to addressing problems in the areas of health, technology, enterprise development, education, environmental concerns, etc. This should be considered a healthy phenomenon continuing and enriching the traditions of the nation. The differences of approach and heterogeneity of purpose of these organizations are healthy symptoms and justified by the common basic spirit of individual self-help and national development they share.

There is a great deal of confusion about terminology among the development agencies with many of them developing their own terms for dealing with common concepts as ways of emphasizing their uniqueness. For example, in the enterprise development field the terms "appropriate technology", "intermediate technology", "alternative technology", "capital saving technology", "light capital technology", "low cost technology" and "environmentally sound and socially appropriate technology" all refer to basically the same concept.

In Indonesia, the same sort of confusion exists when referring to the group of private, non-profit development assistance agencies this paper is concerned with. Three years ago they were being referred to as ORNOP (Organisasi Non-Pemerintah) a direct, and Anglicized, translation of NGO (Non-Governmental Organization). This grouping included all organizations which are not

directly under the jurisdiction of a government body. Any sports club, businessmans' association, or profit-making organization could be included under the ORNOP banner. Many profit making companies began to operate small charitable activities under this umbrella as a means of avoiding the payment of taxes.

This became so complex that the government began to treat all non-governmental organizations in the same way -- like profit making companies -- and made them all subject to taxation. Thus, now yayasans (the currently common name for PVOs in Indonesia) are subject to taxation based on their total revenue. To avoid taxes, they must prove each year, by public audit, that in fact they make no profit. Any accumulated funds, which are necessary for an organization to stabilize its program and develop its capability, are usually considered as "profit" and subject to taxation accordingly.

This is a particularly serious matter for the smaller organizations which are struggling to get their programs off the ground. This is the contradition. On the one hand, government encourages people's participation in the development process. On the other hand government policy serves to keep the private organizations, which can be efficient channels for such participation, small and financially insecure.

In order to identify themselves as distinct from other types of non-governmental organizations, the private development assistance agencies, in 1981, dropped the term ORNOP, as a means of referring to themselves, and began using the term LPSM (Lembaga Pengembangan Swadaya Masyarakat or Community Self-Help Organization), and LSM (Lembaga Swaday Masyarakat or Self-Help Organization). Both terms are used to refer to organizations which are not profit making, not power oriented and not affiliated with any political power group.

This identity will hopefully enable government to differentiate these development-oriented agencies from other types of non-governmental organizations and develop special treatment for them which recognizes their developmental natrure and encourages their participation in the development process.

In this paper, as a matter of simplicity to the English-speaking reader, we refer to these organizations as PVOs throughout.

Attitude of the Government Towards PVOs

The heterogeneity of the PVO community, as illustrated by the wide range of vision and purpose within it as well as the experience of its members, makes it difficult to identify a common attitude towards it from the government. The attitude of one government official may differ substantially with the attitude of another.

Various types of dialogues and seminars have been held to try to better specify the attitude of government towards the PVOs and the role of PVOs in the development process. The following are among the general conclusions of those discussions:

- There is a fundamental difference between PVOs in Western countries and those in Indonesia. Western PVOs are frequently anti-establishment in nature and may even become overtly involved in political activities while the Indonesian PVOs are apolitical.

- From the very first, Indonesian PVOs have played a positive role in the development process. They often handle issues which are still not cared for by the government and they call the government's attention to particular issues earlier than they might otherwise be noticed.

- The government should pay greater attention to the PVOs and provide them with greater opportunities to participate in national development. PVOs should be invited to participate in the planning and implementation of government programs and assisted in carrying out their own programs when they are consistent with government policies and priorities.

- Government participation in activities which have been started by the PVOs should be welcomed, as a source of additional momentum and support, rather than resented as an intrusion.

The development of such an encouraging environment has resulted in increasingly productive cooperation between PVOs and various government agencies. The climax came in 1982 when the role of PVOs in the development of environmental law was clearly spelled out. PVOs now have a "clear" platform from which to speak and their participation in government programs is welcomed. Involving PVOs in any of the CJEDP programs would clearly be consistent with government policy and practice. PVOs are free to act as clients of, or partners in the implementation of, this type of development assistance activity.

PVO Activities in Central Java

The PVOs considered in this section are those which are involved in various activities in Central Java, whether or not they are based or have a representative office in the province.

PVOs ordinarily begin their life on the basis of a single program or activity and then gradually expand their activities from that base. Therefore it is not surprising to find a PVO that is well-known as primarily a health care services oriented organization but which now includes a credit union program or enterprise

development program among its activities. A recent survey of Central Java PVOs indicated their primary fields of activity as the following:

Area of Activity	%
Education and Training	24
Social Service	19
Agricultural Development	16
Women's Affairs	8
Research and Development	6
Cooperative Development	6
Policy Analysis	5.5
Handicraft, Small Industry and Enterprise Development	5
Health Services	4.5
Legal Aid	4
Housing and Transmigration	2
	100.0

Many of the activities mentioned in this list have various types of technology implications: management technology, marketing technology, health technology, food technology, building material technology, agricultural technology, etc. These different types of technologies can themselves be divided into two categories -- "hardware" technologies and "software" technologies.

The same survey showed that most PVOs in Central Java are working with the "software" technologies (96%) and very few (4%) with "hardware" (production oriented) technologies. One reason for this is the difficulty of identifying and attracting technically qualified people in the "hardware" technologies as they have greater personal opportunities working with private industry.

The classification of the development stages a PVO goes through was discussed earlier. Based on such a classification system, the PVOs working in Central Java break down as follows:

Embryonic Stage	54%
Crystallization Stage	22%
Take Off Stage	24%

This configuration is fairly good, especially in comparison with some other Indonesian provinces where 100% of the PVOs may still be in the embryonic stage. Nevertheless some caution is in order in that more than half of the total PVOs the province still have very little professional experience and are not yet strong in terms of their staff or their program capabilities.

PVO Staffing

Most PVOs are fairly small and work under difficult financial circumstances. Most of them are pragmatic, simple and non-bureaucratic in their approach. They are viewed by many as being unprofessional, informal associations with little capability. This may be true in some cases but a few are noted for the expertise and professionalism of their staff and the quality of their work. Organizations such as LP3ES, YIS, Dian Desa or LPPM have placed several of their staff members on consulting assignments throughout Asia for a variety of international clients.

The staffing level of various PVOs ranges from two to sixty persons. The level of professionalism of this staff is frequently called into question by those who take a different approach to their work. PVO personnel tend to work in a straight forward, action oriented manner and often neglect the paper work and bureaucratic processes which are very important to the government worker and essential to the bureaucratic process. Each side tends to look down on the other. They are sometimes unable to provide government officers with the types of analyses and other requirements they need and are critical of the bureaucrats need for such "red tape".

On the other side, the government worker may consider the PVO staffer to be rebellious and disrespectful and unprofessional in wanting to do everything in his or her own way. This sense of mutual frustration will never end unless a mechanism is devised to get the two workers working together on something and getting to know each other. This is beginning to happen now, and the CJEDP, as it has been designed, would promote the process further by promoting partnerships between the two sectors in the pursuit of common objectives.

PVO Funding

There are basically three different modes by which PVO activities are financed: project related, or general, financing from government or private sector donors in Indonesia or abroad; self generated income; and sponsorship by a private, for-profit firm or group of firms.

Most PVOs tend to begin on the basis of funding a particular activity, a project. At this time the project overhead is the same as the organizational overhead because the organization is only engaged in one project. This works fine until the project is finished and the PVO is forced to find another in order to obtain additional funding to maintain itself. There is little security in such a funding cycle and it becomes very difficult for a PVO to develop a strong professional staff or any stability in its operations. This period is a most difficult one for the PVO.

There are also some cases where long term, non-project specific grant support is acquired to support the institutional devel-

opment of a PVO and assist in paying its legitimate overhead costs. The first type of project specific grant funding has the danger of turning the agency into a "project chaser" in order to maintain its operations. The second type of grants have a built-in risk of turning the PVO into nothing more than an implementer of its funders' policies when they become dependent upon them for their continued financing.

The second type of funding is the self-generated income of the PVO itself. Such income may come from consulting fees earned by the professional staff participating in outside projects, income from commercial or industrial activities, the sale of publications and subscriptions, membership fees, income from educational and training courses, etc. This is quite a popular mechanism for Indonesian PVOs who have developed a number of ingenious ways to generate income. Even so, none of them can be 100 percent independent based on their own income. Their dependence on outside funders is reduced, however, and those PVOs who have the capability of generating a significant portion of their own funding tend to be the more stable and professional ones in Central Java.

The third method of PVO financing is sponsorship by a private firm or group of private firms. Such organizations are frequently controlled by their benefactor and at times are organized specifically for the purpose of meeting some need of the funder. They generally have difficulty establishing their credibility with their clients.

One of the main sources of pride for the PVOs is their independence -- which is frequently equated with not accepting any government money. This demonstrates a simplistic view of the funding relationship. It is much more reasonable to look at each funding relationship to determine the extent to which the PVOs independence is respected or compromised than it is to declare certain types of funding "clean" and other types "dirty".

A 1983, OECD (Organization for Economic Cooperation and Development) sponsored survey of funding sources for Appropriate Technology activities indicated quite different patterns for Asian and European PVOs. This difference is illustrated in the following figures:

Source of Funding	Asia PVOs	Eurpoean PVOs
Government	60.8%	25.4%
Voluntary Help	13.6%	33.0%
Self-Generated	12.1%	25.8%
Industry	5.2%	4.6%
University (private)	0.0	6.4%
Others	8.3%	4.8%
	100.0%	100.0%

From the above figures it can be seen that the European PVOs are, in fact, much less dependent upon government for their funding support than are their sisters in Asia as a whole and that they generate a far larger portion of their overall support from their own activities. It would be useful for the Asian PVOs to follow the same course. It was noted earlier that several of the larger Indonesian PVOs are already active in this area, but still other mechanisms should be attempted to build up the income of these organizations -- all aimed at improving the financial stability and independence of the PVOs, enabling them to provide better services to their target populations in the future.

Problems Relating to Self-Generated Income for PVOs

Although increasing the amount of their self-generated income is a common concern of the Indonesian PVOs, there are problems which are generated by this type of activity as well.

Many of the PVOs are registered with the government as non-profit, socially oriented organizations which is classically interpreted to mean a charity, or a provider of gifts. As participants in such organizations, PVO personnel are accorded a certain respect in the community. This status is lost, and their motives are frequently called into question, when the PVO is begins charging something for its services or seeks other means of generating funds to pay for its programs. Only the really mature PVO can pass through this phase intact. Those who are able to develop a strong core of self-generated income and maintain a strong base of community support will be the ones with the strongest leadership.

A second problem is that many of the PVOs may not have a strong enough professional staff to enable them to generate funds in the commercial sector by selling their services as consultants or publishing or other means. In these cases there is little to be done for the PVO.

Another problem is the lack of funding (capital) required to finance an income generating activity. Only a few of the most progressive funding agencies are able to support this type of activity and, even then, they tend to see it in terms of training, or technical assistance or a rolling investment (loan) fund rather than in terms of venture capital which, at times anyway, would be more useful.

Still another pitfall to be avoided is the "conflict of interest" situation in which an agency which discovers that it can sell its services, is no longer willing to provide them to needy clients free of charge and, in fact, becomes a for-profit company and the original reason for their existence is lost.

Even if such activities are successful, there is still the question of taxes to be dealt with as described earlier. It should be clear from the above that the PVOs have to walk a very tiny path in developing their income generating capacity.

What PVOs can be Involved in the CJEDP

The Central Java Enterprise Development Project is a project with high expectations and it is designed to address one of the most complicated problems in the area -- unemployment. There are three different ways in which PVOs can participate in this program as it is implemented.

- Relatively strong and mature PVOs can be involved in the implementation of the project by providing staff members to the core contract team or by subcontracting to carry out specific tasks under the umbrella of the project;
- They can be clients of the program who use various aspects of the program (e.g. training or technical assistance) to build up their internal capability;
- They can participate in both of the above ways simultaneously.

The following criteria should be used when considering in what way a specific PVO might participate:

- The capability of its personnel;
- The experience of the organization;
- The PVOs in-house facilities;
- The ability of the agency to analyse information and develop concepts;
- The overall stability and maturity of the organization.

Based on these criteria it is felt that the following PVOs are currently capable of playing an active role in the development of the CJEDP:

- Yayasan Dian Desa is strong in the area of technology development and has the in house facilities required to develop various types of hardware technology. They have experience in major local industries such as the manufacture of traditional medicines, metal working, noodle making, clay tile production and winged bean and coffee processing. The agency also has experience in the organization of small producers to undertake joint manufacturing activities and in conducting technical and management training programs. Besides this, Dian

Desa maintains a technology information system which has direct links with other resource centers overseas including SATIS, VITA, Brace Research Institute, NCAT, and others. With only slight modification this information network can be used by CJEDP.

- Yayasan Purba Danarta is a Semarang-based PVO which specializes in running management and salesmanship training courses. They also run a follow-up program for the entrepreneur-clients and provide them with consulting assistance in overcoming their real business problems. This organization could be a valuable resource to CJEDP in its various training activities.

- LP3ES (Lembaga Penelitian Pendidikan Penerangan Ekonomi dan Sosial) is based in Jakarta but operates field programs Central Java. They currently operate a small industry program in Kabupaten Klaten which assists small scale producers to improve their businesses through various types of training, marketing and consultancy assistance.

- Yayasan Bina Swadaya is also a Jakarta-based organization with field programs in Central Java. This agency specializes in the development of self-help groups (usaha bersama) starting with development of credit unions and capital accumulation and moving on to the development of small scale industrial activities.

- Wirakop (Lembaga Wira Koperasi Indonesia), also headquartered in Jakarta, specializes in the development of "precooperative" groups and credit unions in Central Java and other provinces.

- LPPM (Lembaga Pendidikan Pengembangan Managemen), another Jakarta-based agency with clients in Central Java, is perhaps the strongest management training institute in the country. They are experienced in working with various types of small scale producers around the country and have developed training material and programs for larger companies as well and are capable of developing appropriate material for CJEDP-sponsored management training activities.

Another important aspect of working with the PVO community is the network which they have developed both among themselves and with local community groups. Through this network, many CJEDP ideas can be disemminated to a wide audience rather quickly. It can also bve helpful in identifying producer groups to participate in various CJEDP activities. The development of such a network is a very difficult and long term process which the CJEDP can avoid by working directly with the PVOs.

PVO Participation in the CJEDP

As mentioned earlier, there are three basic ways in which local PVOs can participate in CJEDP development. These can be elaborated on further as follows:

- Co-consultant: Some of the PVOs have a strong consulting capacity and can work directly with the contract team on a daily basis in the implementation of the project, enriching the PVO itself, the U.S. prime contractor and the project development process. A good example of this type of relationship is the partnership between Yayasan Dian Desa and Development Alternatives, Inc. in the CJEDP planning process.

- Subcontractor: Some aspects of CJEDP implementation can be subcontracted to qualified PVOs. Several such activities have been specified in the CJEDP design.

- Client: There are several ways the CJEDP can assist the PVOs to strengthen and stabilize their organizations. They can be assisted in the development of a capable enterprise development cell within the agencies as a number of PVOs would like to do. Such assistance could take the form of consulting assistance and advice or the provision of scholarships for training at institutions such as UP ISSI, Cranfield or Technonet.

  CJEDP can also help the PVOs to develop income generating activities just as they do with other private sector clients. PVOs can also be helped by giving them the opportunity to send staff members to work with the project on an apprenticeship basis.