# DEVELOPING SMALL BUSINESS IN INDONESIA:

# REFLECTIONS ON THE CENTRAL JAVA ENTERPRISE DEVELOPMENT PROJECT

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The Central Java Enterprise Development Project was the result of the dedicated work and commitment of a great many people and the generous support of A.I.D. and the Government of Indonesia. CJEDP was conceived under the thoughtful guidance of Doug Tinsler and Bob Dakan, both with A.I.D./Jakarta during the design of the project. Terry Myers and, later, Gordon West served as able and supportive project officers for the implementation phase of CJEDP.

It is easy to overlook the fact that, while CJEDP was an avocation for some, others took extraordinary professional risks in fighting the bureaucratic battles necessary for the creation and survival of the project. Ir. H. Suparno, the GOI's project manager for CJEDP, was such a one; without Pak Suparno, there would have been no CJEDP.

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# EXECUTIVE SUMMARY

The Central Java Enterprise Development Project (CJEDP), an experimental project sponsored by the U.S. Agency for International Development (A.I.D.) and the Government of Indonesia (GOI), was designed to test innovative approaches to the generation of employment and income through development of small enterprises. The project was distinguished by the following features:

- CJEDP was an application of an industry or subsector approach to enterprise development. Target subsectors were chosen during the design phase of the project on the basis of the existence of significant opportunities for strengthening the role and competitive position of small firms. Project resources were concentrated on the chosen subsectors rather than on cross-industry credit, technical assistance, or training programs. Activities were selected on the basis of their probably effect on the overall development of the industry and their enhancement of the importance of small enterprise within the subsector.

- CJEDP possessed the flexibility to assist any chosen client or type of client in order to accomplish its objectives. Emphasis was placed on private sector clients and beneficiaries. CJEDP tried to structure and implement its program in such a way that the client could achieve self-sufficiency.

- CJEDP's toolbox included the ability to perform certain industry functions temporarily, provide expert technical and business advice, and sponsor specialized training programs and the authority to contract for and provide technical direction to service providers. It could also administer transaction-cost subsidies and take other catalytic actions. Almost every activity involved a different combination of tools, and there was considerable adjustment in the mix over time. This flexibility was a key element in the CJEDP approach.

- The status of the project was experimental, so the risk of failure was accepted, decisions on what to do with whom were directed largely by technical rather than political criteria, and the structural environment was free of most bureaucratic rigidities and constraints.

CJEDP activities were organized into three subprojects: the shrimp production and marketing subproject, the metal and engineering industry development subproject, and the light manufactured export development subproject.

## The Shrimp Production and Marketing Subproject

The aim of the shrimp production and marketing subproject was to alleviate three constraints that were hampering the development of the shrimp aquaculture industry in

Central Java while strengthening the economic position of small-scale pond producers. The three main subproject activities were focused on the problems of seedstock, pond practices and technology, and the availability of supplemental feed.

- The problem of a shortage of seedstock (post larvae) for pond farmers was addressed through the establishment of a model hatchery designed to produce fry on a commercial basis and to disseminate technology and skills to improve the performance of existing hatcheries and lower the start-up costs of new facilities. CJEDP assisted an indigenous nonprofit organization to design, construct, and operate the facility and subsidized the initiation of research, technical outreach, and training functions.

- The problem of low pond productivity was addressed through an intensive, hands-on training program that enabled an indigenous nonprofit group to develop and implement a progressive extension program to small-pond farmers that was based on an innovative model of demonstration and risk-sharing agreements.

- The feed constraint was addressed through a cooperative research program that involved feed manufacturers, the American Soybean Association, and CJEDP experts; it was designed to develop, test, and commercialize effective, inexpensive diets appropriate for a range of pond conditions and production technologies.

Overall, the shrimp program was a marked success. The Dian Desa model hatchery has become commercially viable, production and sales are growing, and the hatchery staff continue to refine their technical capability. There is an active research and development effort that has already resulted in several important technological breakthroughs. The formal training program has developed more slowly than anticipated, but Dian Desa has initiated a highly successful apprenticeship program for workers from other hatcheries. The public domain character of the hatchery has attracted the interest of hatchery owners and potential investors, and a series of training videotapes are being produced.

The pond development program progressed far more slowly than planned, but the end results of CJEDP's efforts were much greater than expected. The pond team transformed adversity into an innovative production strategy with widespread implications for small-pond farmers throughout Indonesia. The addition of a specialized nursery function between the hatchery and pond stages permits significantly higher pond productivity with lower levels of risk -- even in the inferior ponds owned by smallholders. The program is now being expanded and replicated by the nonprofit client with World Bank funds. It is notable that this was the first time that such funds were passed through to a nonprofit organization in Indonesia. A key element of the program is an innovative risk-sharing arrangement between Dian Desa and the growers, which has already become self-financing. Expansion is now under way in three different locations in Central Java. With well-planned distribution of the program ponds, this effort will reach thousands of Central Java's poor pond farmers.

The effects of the feed development program are more difficult to access. The

program was designed to assume a risky industry research-and-development function for a limited period to accelerate the rate of development and influence the mix of products the industry would bring to the marketplace. In the course of the program, CJEDP shared its formula with feed mills and assisted them with the formulation of semi-intensive and semi-extensive diets. Both controlled feeding and actual field trials were conducted, and the results were shared on a confidential basis with the client companies. There has been a dramatic increase in the supply of supplemental feed on the market since the initiation of the project, but there is no way to link this directly to the CJEDP formulation and testing effort. Those involved directly with the program believe that CJEDP was instrumental in improving the quality of locally manufactured diets, but the proprietary nature of commercial formulas makes the extent of project influence difficult to document.

**The Metal and Engineering Development Subproject**

The metal and engineering industry development subproject was designed to foster the entrepreneurial instinct for innovation and new product development. The project worked with three main client groups: a cooperative venture between a nonprofit organization and an indigenous university, local government workshops, and private metal firms. Project resources were used to subsidize selectively the development and testing of replicable prototypes that could, with appropriate design and production assistance, be adapted for commercial production by local firms.

CJEDP's efforts enabled at least 15 small and medium-scale manufacturers, one cooperative, one private voluntary organization, and two government workshops to translate innovative ideas for new or adapted products into forty-four marketable and potentially marketable pieces of postharvest agroprocessing machinery or sets of spare parts. In many cases, this was the first time that these entrepreneurs and institutions succeeded in completing a full cycle of innovation, prototype development, and commercialization. In nearly every instance, the CJEDP metal team was able to work with the client to identify the missing ingredient or ingredients in an ongoing, client-initiated process. CJEDP tailored its assistance to the specific needs encountered in each situation and tried to provide the minimum amount of support required to reinforce the clients' own efforts.

CJEDP's assistance was organized around the main, definable stages in the prototyping process: product identification, design, prototype development, testing, detailed drawings, production, and commercialization. The level and mix of assistance varied by client type and client. In some instances all that was needed was words of encouragement and support -- acknowledgment of the value of the idea and the reasonableness of the approach. In others, the missing ingredient was the solution of a key design, technical, production or bureaucratic problem. At times, much more work was required to help turn an idea or conception into a design on paper or a prototype worthy of testing. Often, CJEDP agreed to provide financial support in the form of agreement to underwrite the costs of constructing a prototype.

Of the 44 new products developed with CJEDP assistance more than a third had become commercially successful by the end of the project. Development and commercialization efforts are continuing for most of the others without continuing project support.

The immediate benefits of the metal subproject depend on the change in output of the client firms, their suppliers, and the end users of the machinery that has been developed. More interesting and important, however, are benefits that may continue to be generated as a result of changes in the behavior of the client firms and institutions or the development of an improved capacity for delivery of services in the province.

While it is expected that the process of innovation, once experienced, will sustain itself in at least some of the client firms, an active attempt was made to institutionalize the capacity for continuation of CJEDP-type services in several different bodies.

## The Light Manufactured Export Development Subproject

The export development subproject was designed around three pillars: increased contact with buyers, support of buyer-supplier interactions, and provision of technical assistance to producers on the basis of that interaction. Underlying the subproject was the assumption that appropriately targeted transaction-cost subsidies combined with responsive assistance to manufacturers and traders could exert a positive influence on the level of export sales and thereby on employment and incomes in small enterprises. By identifying product lines in which Central Java was likely to have a long-term comparative advantage and delivering assistance to private enterprises capable of sustaining commercial relations with buyers and suppliers, successful project activities would result in long-term, self-sustaining trade relations.

### Export Inventory and U.S. Market Outreach

CJEDP worked with a U.S.-based marketing firm to conduct a general survey of Central Java's export potential and market the identified potential actively in the United States. The effort was centered on the products and firms featured in a buyers' book generated during the inventory. Serious inquiries were generated for rattan, wooden furniture, and brass. The project contracted for the work performed in the inventory, preparation of the buyers' book, and two weeks of the time involved in the market outreach. Efforts were continued solely on the basis of commercial interest. Sizable orders for rattan products were generated, and the company has taken steps to represent eight Central Java firms formally in the U.S. marketplace.

### The Rattan Export Development Program

The rattan program was CJEDP's principal export activity. The project worked through two private companies enlisted to serve as system leaders in the industry. These companies would transact with buyers, organize their own production and the procurement of finished goods from other manufacturers, ensure quality control, organize the supply of materials, finance the cash flow of the trade, and serve as a bridge between small producers and the export market. CJEDP worked to develop the capacity of village-based producers as a primary source of supply for the exporters.

CJEDP provided several different kinds of assistance to the rattan industry:

**Buyer assistance**. CJEDP introduced overseas buyers to local exporters; the project offered a variety of support services to buyers, including complimentary visits to the province, local transportation, translation, telephone and telex services, and production and shipment of samples; in selected instances, CJEDP provided quality guarantees, freight subsidies, outright discounts, and inward and outward shipment of samples.

**Transaction assistance**. The project was active in the finalization of order and sales documents, fumigation certification, shipping arrangements, shipping documentation, facilitation of letters of credit, and other transaction-related formalities.

**Producer assistance**. CJEDP worked with manufacturers to develop systems for product pricing and with the exporters to develop management strategies and financial plans, and simplified accounting and financial reporting systems; the project trained more than 100 small manufacturers to diversify product lines, increase production efficiency, and improve product quality to enable them to become suppliers to exporters.

From modest, uncertain beginnings, the rattan program grew to dominate the export subproject, influence national rattan policy, and become a model for the GOI's countrywide program of small-industry export development. Furthermore, the national attention generated by the activity prompted the president to designate Central Java a rattan industry development center -- this in spite of the fact that all materials are imported from other regions of the country and that one client intermediary failed to respond to project assistance in any significant way.

As a result of the rattan export development program, the output and earnings of CJEDP's two primary client firms and their small-scale suppliers increased. The significance of these direct benefits will depend on the ability of the exporters to sustain and improve their ability to perform in export markets. In addition, increased sales by the small firms trained by the project to other exporters or in the domestic market must also be counted in measuring direct benefits. In spite of the sound performance by P.T. Djaka Utama Jaya and the supply centers, it is highly unlikely that the total of these benefits can, by themselves, justify the rattan program economically.

Nevertheless, there can be little question that the overall effect of the rattan program has far outweighed its costs. The program's influence on the development of the province's

rattan industry and on the character and quality of the national government's rattan promotion efforts have been significant. While there can be no claim that CJEDP is entirely responsible for the development of the province's rattan industry, there can be little doubt that a large share of the credit goes to the project, illustrating the complementarity between policy change and project support. Without CJEDP, the government's promotional efforts would have left the province untouched. CJEDP trainees would not be sharing in the benefits, nor would the tens of other new firms that employ hundreds of workers and contract with many other small suppliers be positioned to capture their share of a growing market.

### Other Export Promotion Efforts

During the course of the project, CJEDP carried out a number of smaller product-specific and general export-promotion efforts. Included were wooden furniture, handcrafted garments, ornamental brass, and leather products. CJEDP responded to the nonrattan inquiries in much the same manner that it supported the rattan buyers. The project organized their travel itineraries and arranged visits with local producers, offered one-shot transaction subsidies for shipping sample products made by Central Java producers to international markets, advised local producers on new products or modifications that should be made in existing products to keep them abreast of the world market and more responsive to international demand, and helped maintain communication between buyers and potential suppliers.

The export team worked with a number of local companies and government bodies seeking both general and specialized information about exporting. The project staff developed considerable expertise in a wide range of export-related topics and became a resource center for businessmen and officials. While CJEDP no longer exists, the director of the export development subproject has established a consulting firm in the province and continues to provide the same types of service on a commercial basis.

## What Can be Learned from CJEDP?

Even though it is difficult to assess the effects of CJEDP empirically, a variety of lessons that bear on the challenge of designing and implementing effective strategies for enterprise development have been learned from the experience. CJEDP has provided a first-hand opportunity to explore a variety of ways of working with clients in the private sector to achieve development objectives in three different subsectors of the Indonesian economy. This experience affords an excellent vantage point for exploring three of the fundamental challenges of practical enterprise development -- deciding what to do, establishing the way it should be done, and doing it.

### Applying the Principle of Leverage to Small Enterprise Development

CJEDP sought opportunities for enterprise development in which large numbers of

firms could be influenced through focused interventions. There were a number of cases in which this principle of leverage demonstrated considerable potential as a cost-effective means of reaching the targeted small firms. Several types of leverage were used in the course of CJEDP. These included leverage through commercial-led linkages, leverage through development of self-sustaining service programs, leverage through pump-priming, leverage through demonstration and leadership, leverage through research and development, and leverage through policy change.

In almost every situation, levers are industry-specific or subsector-specific and involve considerations that go beyond the small-enterprise target group. They involve relations between small firms and larger firms, between firms specialized in different functional areas within an industry, and between the environment for enterprise development and enterprises. The subsector approach is well suited as a diagnostic tool and as a basis for the implementation of leverage-based interventions.

Some important issues bear on the prospects for success of such programs. These include the choice of client intermediaries, recognition that the clients are generally private economic actors rather than government agencies, development of risk-sharing mechanisms with intermediaries, and maintenance of a credible relationship.

The most important implication of these issues is that flexibility, adaptability, and virtual autonomy in choice of clients and mix and level of assistance are essential ingredients in successful enterprise development. A serious challenge to donors, moreover, lies in the inherently small size of many CJEDP-type interventions. It is highly inefficient for a donor to fund individual activities that may be called for in a selected subsector. Furthermore, activities at different stages in an industry may call for an array of skills not generally possessed by single organizations. CJEDP served an important intermediary function for both A.I.D. and the GOI by providing an efficient structure for implementing small activities that required varied mixes of skills.

The CJEDP approach to enterprise development is bound to fail in certain situations and with certain clients. The project must be able to recognize failure and be sufficiently flexible to develop new activities.

**Summary and Conclusions**

CJEDP was about a process for identifying ways of supporting small enterprise development through cost-effective interventions (the subsector approach), development of a structure that would enable the identified program to be effectively implemented (semiautonomy and flexibility), and the particular program implemented in Central Java (the three subprojects). In spite of numerous constraints and a relatively short lifetime, CJEDP was sufficiently successful to justify continued experimentation with the approach. Other projects, in a variety of settings, have also shown the potential of different aspects elements of the CJEDP approach. The question of the way to profit from the investment in CJEDP is now on the table.

# CHAPTER ONE

## INTRODUCTION AND OVERVIEWError! Bookmark not defined.

In October 1985 the U.S. Agency for International Development (A.I.D.) and the Government of Indonesia (GOI) launched the implementation phase of an experimental project designed to test innovative approaches to the generation of employment and income through the development of small enterprises. The Central Java Enterprise Development Project (CJEDP) combined a subsector-based approach to identification of opportunities and constraints with precisely targeted, flexibly administered assistance to enable small-scale entrepreneurs to respond to market-sustainable business opportunities. In June 1988, after 31 months of operation, the experiment drew to a close. Now the task of digesting, assessing, and capitalizing upon the CJEDP experience begins.

CJEDP departed from the standard approaches of both A.I.D. and the GOI to small enterprise development and donor project organization. The project was implemented by a semi-autonomous body rather than a government agency, its program crossed the traditional parochial boundaries of line agencies, and its activities were defined by a process rather than a predrawn blueprint. As a result, after 18 months of focused design work and 23 months of redesign and preimplementation activity, CJEDP was born after difficult labor, without a legitimating structure, and with far fewer resources than had been planned into an environment where survival depended on the ability of the project to demonstrate quickly its potential for generating success.

CJEDP's program was organized into three subprojects, each focused on development of the role of small enterprise in a specific subsector of the economy. The shrimp production and marketing subproject sought to enhance the role of small growers by increasing the availability of fry and feed and developing the capacity to extend appropriate pond technology and management practices. The metal and engineering industry development subproject ventured to reinforce the process of innovation and new product development in order to stimulate the growth of business opportunities for small producers. The light-manufactured export development subproject attempted to provide expanded market

opportunities to small manufacturers through a combination of inducements to overseas buyers, direct assistance to exporters, and production assistance to village-based enterprises.

In spite of the modest size and shorter-than-expected lifetime of the project, CJEDP achieved more than could reasonably have been expected, given the numerous constraints encountered during its extended start-up period. A large proportion of the individual CJEDP interventions accomplished their objectives, and a few went far beyond. Even though it is still too early to assess the long-term effects of the project, there is every indication that the approach has much to offer in the search for cost-effective means of facilitating the development of small enterprise. This paper represents an effort to review and document the record of CJEDP so that the experience gained from the project can be of practical value in the design and implementation of strategies to promote enterprise development.

In addition to providing a thorough description of the project and its implementation program, this report will examine several generic issues to which input from the CJEDP experience is particularly relevant. These include:

- The use of an industry- or subsector-based approach to identification of opportunities and strategies for promotion of small enterprise;
- The implications of a subsector-based approach to project implementation, including the choice of clients -- public, private, or independent[1] -- as vehicles for reaching small enterprises in a cost-effective and sustainable manner; and
- Some suggestions about the way A.I.D. can proceed to further test the viability and potential of CJEDP-type enterprise development efforts.

In addition, a number of more specialized considerations related to project design and implementation and specific program areas will be addressed in the course of the presentation.

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[1] "The independent sector" refers to nonprofit organizations, private voluntary organizations, and nongovernment organizations. The term distinguishes between profit-motivated private businesses and independent organizations which generally operate on the basis of explicitly social or developmental objectives. The use of the term is attributed to Anton Soedjarwo, Director of Yayasan Dian Desa, one of the leaders of the Indonesian

The first major task of the paper, however, will be to take an intensive look at the project itself. The chapter that follows will be focused on the nature and characteristics of CJEDP and will include discussions of its history, objectives, structure, and implementation strategy. This will be followed in Chapters Three, Four, and Five by detailed descriptions of the three CJEDP subprojects. Each of the main activities undertaken in the context of CJEDP's three major subprojects will be outlined, and in Chapter Six the discussion will be focused on the lessons learned; the final chapter will offer some conclusions of particular relevance to the issue of profiting from the CJEDP-experience.

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independent sector.

# CHAPTER TWO

# THE CENTRAL JAVA ENTERPRISE DEVELOPMENT PROJECT

Just as the blind men struggled to describe the allegorical elephant by tactile exploration of its varied appendages, those chartered to describe CJEDP have labored to discover the essential character of the project. CJEDP does not fit into any of the usual small-enterprise project molds. The project's institutional organization and structure reveal something of its essence but fail to capture the dynamic processes of design and implementation. The diversity inherent among its three distinct subprojects and component activities and the evolution of the individual activities over time tend to obscure the common threads that unite the program. And, while it is tempting to call CJEDP a technical-assistance project, many of the more interesting and successful interventions had nothing to do with technical advice at all.

CJEDP embodies three primary elements. The first is an approach to identification of constraints on and opportunities for enterprise development. The second is an institutional structure that enables application of the necessary mix of inputs in addressing the constraints and capturing opportunities. The third is the set of activities undertaken during the lifetime of the project. In this section, which is focused on the first two elements, the nature and characteristics of CJEDP will be examined, primarily through the dynamic perspective offered by exploration of the project's history, and the section will conclude with a more static summary of the project. The third is the subject of Chapters Three, Four, and Five.

## The Development of CJEDP

CJEDP was a direct response to the challenge of generating productive and sustainable employment opportunities in Indonesia. In spite of the country's impressive record of oil-led economic growth throughout the decade of the 1970s, the inward-oriented New Order economy proved structurally unable to create jobs at a pace compatible with the rapidly growing labor force. Entering the 1980s, Indonesia faced a classic employment problem, which, from a

macroeconomic perspective, could be addressed only through continued acceleration of growth rates or significant adjustments in the labor-intensity of output. With the rate of economic growth projected to slow throughout the early 1980s, the inertia of the growing labor force posed a serious economic and political challenge that required immediate attention.

As early as 1980, the A.I.D. mission to Indonesia began to explore the possible contribution of nonfarm employment generation and small-enterprise development to the easing of the apparent trade-off between growth in output and generation of employment. Given the growing body of evidence that development of small enterprise could have an important positive effect in the creation of jobs and economic opportunities, A.I.D. commissioned a yearlong effort to examine constraints to enterprise development thoroughly and explore ways the mission might best proceed. Central Java, the poorest of Java's three provinces, with a population of more than 27 million, was designated the target region, and Development Alternatives, Inc. (DAI) was selected to conduct the design.

The interim (April 1983) and final (November 1983) reports of the DAI design team confirmed that there were, indeed, significant opportunities to generate employment and increase incomes through the promotion of small enterprises. The growing employment problem, coupled with the generally poor or counterproductive performance of public and independent enterprise support services, offered strong justification for action. Detailed studies of selected industrial subsectors identified a number of opportunities for interventions that would offer significant development potential. The principles of operation embodied in the final design were that success depended on the ability of the project to approach enterprise development as business development and that its ability to find and implement market-based solutions to problems and opportunities facing private entrepreneurs was essential.

The basic approach of the original project was to offer catalytic assistance -- technical, business, and financial -- at key points in the subsectors. These key points could be with service institutions -- public, independent or private -- with key groups of small enterprises, or with businesses at key nodes -- that is, with strong backward or forward linkages to small business. The project would consist of a combination of responsive and programmed efforts. Flexibility was a cornerstone of the original design.

The question of the way to structure and implement this model posed more serious challenges. The technical and administrative demands of the project were a radical departure from the existing pattern of state institutions. A new institutional structure was needed -- one sufficiently close to the government to ensure political and financial support but sufficiently distant to attract the interest and inspire the confidence of the private sector. Given the clear political and technical risks inherent in the CJEDP approach and given the complexity of the issues related to the location and structure of such a body, it was decided that the main institutional questions would be tabled until the project could prove that such efforts were justified. In the interim, CJEDP was to be positioned as a semiautonomous project implementation unit chartered to demonstrate the viability of its approach.[2]

While the Indonesian government was prepared to move forward with the design team's recommendations, A.I.D. was somewhat more hesitant. In spite of the Agency's apparent commitment to CJEDP, evidenced by the decision to base a full-time preimplementation adviser

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[2] Throughout the six-year history of CJEDP the issue of institutionalization attracted more attention than perhaps any other. The apparent lack of attention to questions of institutionalization in combination with the semiautonomous structure of the implementation team evoked images of the worst kind of donor-assisted development. What will happen when the expatriates go home and the AID funds run out? Those unfamiliar with the history of the project proved particularly vulnerable to misinterpreting the institutionalization objectives of CJEDP.

A significant portion of the design work leading up to the Interim Report was focused on the institutionalization question. In that report a number of options were presented as to the eventual home for the project. These options were weighed against criteria deemed critical for a project with CJEDP's focus and the conclusion was reached that CJEDP could only succeed within a semiautonomous structural form, probably attached someplace quite high in the provincial government.

Given the clearly experimental nature of many of the envisioned project activities and the revolutionary character of the approach from the perspective of the Indonesian bureaucracy, AID made the explicit decision that one of the outputs of the first three years of the original project would be a set of concrete recommendations on the process of institutionalization. In Phase II, years four and five, the focus would be on the institutionalization process. It is perhaps unfortunate that the version of the project that was actually implemented never reached the

in the province, the mission came perilously close to abandoning the entire effort. After just more than one year, a compromise was reached in which A.I.D. would proceed with the project, but with a further level of experimentation built in. The project would be implemented as an amendment to the ongoing Private Sector Development Project and would initially be funded for two rather than the proposed three years, with the A.I.D. budget reduced from $6 million to $1 million. As the project demonstrated its potential, funding would be increased, and if all went well, much of the original project would eventually be realized.

During the remainder of the preimplementation stage, much of the groundwork for the institutional structure of the project was laid and several implementation activities were begun. DAI was awarded the technical assistance contract, and on October 15, 1985, the official implementation phase of CJEDP began. Less than 18 months later, despite positive indications of project accomplishment, A.I.D./Jakarta decided to shift its portfolio of projects away from hands-on implementation efforts toward policy level reform and, giving the project sufficient time to wind up what had been started, elected to close the project in June 1988.

**Project Goals**

Formally, the objectives of CJEDP were to:

- Undertake activities that will result in the creation of productive and sustained employment opportunities in Central Java, primarily in small- and medium-scale private sector enterprises;
- Create a capacity to sustain and expand the benefits of the project on the basis of private initiative and resources, without the need for continued direct project or government activity or expenditure, including the identification of policy adjustments that can support such growth; and
- Discover the necessary and sufficient structural and procedural conditions that are consistent with achieving the objectives, in order that the capacity to carry out such activities might be institutionalized in Central Java and possibly replicated elsewhere.

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second phase.

**Project Structure and Organization**

CJEDP was an intermediary organization, empowered and endowed to identify and address opportunities and constraints that influence the development of small enterprises. CJEDP was a peculiar sort of organization, created as a temporary institutional base from which various innovative, private-sector-oriented approaches to enterprise development could be launched and tested. Constituted as a semiautonomous body "attached" to the provincial planning agency (BAPPEDA) in Central Java and operated with GOI policy direction, CJEDP was managed and its activities were implemented by a team of advisers from a U.S.-based consulting company (Development Alternatives, Inc. or DAI) and an Indonesian nonprofit organization (Yayasan Dian Desa, or YDD). This vehicle served as a first step in the complex process of sorting out what might work and why and the way the process of institutionalizing the project could best proceed.

The costs of supporting the implementation team were paid through a direct technical assistance contract between A.I.D. and DAI. Routine operational expenses were paid directly by the GOI, supplemented by A.I.D. in the later stages of the project. Funds for implementation activities were provided by both A.I.D. and the GOI. While A.I.D. directly disbursed its program funding, GOI money was passed to the authority of the implementation team through a series of contracts between BAPPEDA and the CJEDP implementation team.

Further detail on the sources and uses of funds is presented in Table 1. Throughout the 31-month lifetime of the implementation phase of the project, the total operational and program budget was US$1,033,985. Of this, more than 80 percent was contributed by GOI sources. More than 66 percent of those funds counted as A.I.D.'s contribution, moreover, were in fact made from concessional loan sources. This underscores the important role of the GOI in the funding of CJEDP.

**The CJEDP Program**

The CJEDP program was distinguished by the following features:

- o CJEDP was an application of an industry or subsector approach to enterprise development. Target subsectors were chosen during the design phase of the project on the basis of the existence of significant opportunities for strengthening the role and competitive position of small firms in market-sustainable segments of the industries. Project resources were concentrated on the chosen subsectors rather than on cross-industry credit, technical assistance, or training programs (although some of the same kinds of assistance were used across subsectors). Activities were selected on the basis of their probable effect on the overall development of the industry and on the enhancement of the role of small enterprise within the subsector.

- o CJEDP could, in theory, assist any chosen client or type of client -- private, public or independent, small-, medium-, or large-scale, developed, developing or new -- in order to accomplish its objectives. Emphasis, however, was placed on private and independent clients and beneficiaries. Whatever the client, CJEDP endeavored to structure and implement its program in such a way that the client could absorb whatever assistance was offered and continue to act or serve on a self-sufficient basis upon the withdrawal of support. Given the relatively small size of the project and the complexity of the client-choice issue, most assistance was channeled to or through private enterprises or independent intermediary organizations and was directed

**TABLE 1**

**CJEDP BUDGET STRUCTURE**
**SOURCES AND USES OF AUTHORIZED FUNDS**
**(U.S. dollars)**

| **Sources/Uses of Funds** | | |
|---|---|---|
| **SOURCES OF FUNDS** | | |
| USAID/Jakarta | | |
| Grant Funds | | 575,000 |
| Concessional Loan Funds | 1,125,000 | 1,700,000 |
| Government of Indonesia | | 986,674 |
| **TOTAL FUNDS AVAILABLE** | | **2,686,674** |
| **USES OF FUNDS** | | |
| USAID/Jakarta | | |
| Pre-implementation Operations | | 17,686 |
| Implementation Expenses | | |
| Technical Assistance Contract | 1,443,324 | |
| Program Activities | 114,923 | |
| Operational Expenses | 92,592 | 1,650,839 |
| Unspent Balance | 31,475 | 1,700,000 |
| Government of Indonesia | | |
| GOI Project Management | | 160,204 |
| GOI Operational and Program Expenses | | 826,470 |
| **TOTAL FUNDS USED** | | **2,686,674** |

toward improvement of their capacity to operate in a manner consistent with sound business principles while creating opportunities for enhancing the role of small enterprises.

- CJEDP held a hefty toolbox, which included the ability to perform certain industry functions temporarily, provide expert technical and business advice, sponsor specialized training programs, contract for and provide technical direction to service providers, administer transaction cost subsidies, and other

catalytic actions which fell within the boundaries of widely held legal and ethical standards. Almost every activity involved a different combination of tools and there was considerable adjustment in the mix over time. This flexibility was a key element in the CJEDP approach.

- The status was experimental, so the risk of failure was more or less accepted, decisions on what to do with whom were directed largely by technical rather than political criteria, and the structural environment was free of most bureaucratic rigidities and constraints.

CJEDP was composed of three subprojects: the shrimp production and marketing subproject, the metal and engineering industry development subproject, and the light manufactured export development subproject. These areas were selected during the design phase as subsectors in which there was considerable potential for the generation of sustained nonfarm employment through project-assisted enterprise-development efforts. Each subproject was composed of a number of activity areas which will be described in detail in Chapters Three, Four, and Five.

The CJEDP program can be outlined as follows:

| SUBPROJECT | PRIMARY ACTIVITIES |
|---|---|
| Shrimp | o Hatchery Development Program<br>o Pond Development Program<br>o Feed Development Program |
| Metal | o Prototype Development Program<br>o Metal Industry Support Program |
| Export | o Export Inventory and U.S. Market Outreach<br>o Rattan Development Program<br>-- P.T. Sari Rose Assistance<br>-- P.T. Djaka Utama Jaya Assistance<br>-- Supplier Training Programs<br>o Other Assistance Efforts<br>o Furniture Export Assistance<br>o Garment Export Assistance<br>o General Export Assistance Program |

**A Note on Start-up**

The establishment of an innovative project structure such as characterizes CJEDP proved to be an implementation activity in and of itself. A considerable amount of time was spent carving out an appropriate bureaucratic niche for the CJEDP Implementation Unit. In almost every project activity, CJEDP faced the challenges not only of doing its enterprise development work but also of establishing its legitimacy and credibility.

While the implementation phase of the project officially began in October 1985, CJEDP faced a battle of more than a year to develop a system for the release of GOI implementation funds to the team. As of October 1986 only four major activities had been funded, and other programs were initiated only by borrowing from the established activities. This caused the start-up of the majority of the program to be very slow and caused much ongoing activity to be stopped in November 1986. Only in December 1986 was the GOI Project Director finally successful in creating a mechanism for funds to be disbursed. Considering that the project was originally scheduled to end in October 1987 (later extended to June 1988), this delay must be remembered when the progress achieved so far is assessed.[3]

[3] At least a part of the responsibility for the delay rests with AID. The agreements with Jakarta-based officials that would have legitimized the project structure and prevented the delays in accessing the GOI funds were never obtained. Given the peculiar character of the financial structure of CJEDP, it would have been much simpler to approve the authorization process in Jakarta between A.I.D. and high-level GOI officials than at the provincial level between bureaucrats who did not have the authority to circumvent established procedures.

# CHAPTER THREE

# THE SHRIMP PRODUCTION AND MARKETING SUBPROJECT

## Subsector Context

Frozen shrimp was and continues to be Central Java's most important export commodity. In 1982, shrimp accounted for approximately 30 percent of the province's total exports, with an f.o.b. value of US$27 million. While this was nearly twice the 1976 value of US$14.8 million, the gains were entirely the result of price increases. The quantity of shrimp exported in 1982 was 3,200 metric tons, down significantly from the peak volume of 5,500 tons in 1977. The international market was strong, growing, and capable of absorbing whatever quantity of shrimp could be supplied; there were simply no shrimp to be sold.

There was little mystery about the source of the problem. In 1980, the Indonesian government acted to protect the sovereignty of its territorial waters, preserve coastal fisheries, and bolster the small-scale fishing industry by banning trawling in all but selected remote regions of the country. This significantly reduced the potential supply of exportable shrimp and brought pressure to bear for the development of alternative sources of supply. In the early 1980s attention was turned to the question of ways to modernize coastal Java's 500-year-old system of pond aquaculture.

In Central Java alone there are more than 25,000 hectares of brackish ponds and 18,000 full-time pond farmers. The average pond holding is just over one hectare per farmer. At the time of the design, the vast majority of pond area was dedicated to monoculture of milkfish, but polyculture of shrimp and milkfish was becoming more common. Almost no specialized shrimp aquaculture was practiced at that time.

Production systems on Java have been described as among the most extensive in the world. This is reflected in extremely low average productivity. Annual production in 1983 was on the order of from 25 to 250 kilograms of shrimp per hectare, with average yields well below 150 kilograms. It was conservatively estimated that with existing pond conditions and only minor changes in farming practices, average yields could easily surpass 400 kilograms per hectare per crop. With more significant physical improvements and changes in practices, an eventual goal

of 1,000 kilograms per crop, 2.5 times a year, would not be unreasonable.

The problems facing the shrimp industry are typical of a vertically organized agroindustrial system. Apart from basic technological concerns, the incentives for modernization at one stage of the system are highly dependent on developments at other stages. These externalities act to increase the cost and risk of investment at each stage. CJEDP set out to reduce the risk of development, hoping thereby to facilitate the coordinated growth of production, productivity, income, and employment in the industry as a whole.

**Overview of the Subproject**

The shrimp production and marketing subproject was aimed at alleviation of three key constraints that were hampering the development of the industry in Central Java while strengthening the relative economic position of small pond farmers. The three major subproject activities, representing scaled-down versions of a subset of the proposed design, were focused on the problems of seedstock, pond practices and technology, and the availability of supplemental feed.

The problem of a shortage of seedstock (post larvae) for pond farmers was addressed through the establishment of a model hatchery designed to produce fry on a commercial basis and disseminate technology and skills to improve the performance of existing hatcheries and lower the start-up costs for new facilities. The problem of low pond productivity was addressed through an intensive, hands-on training program, which enabled an indigenous nonprofit group to develop and implement to small pond farmers a progressive extension program that was based on an innovative model of demonstration and risk-sharing agreements. The feed constraint was addressed through a cooperative research program involving feed manufacturers and the American Soybean Association (ASA) that was designed to develop and test effective, inexpensive diets appropriate for a range of pond conditions and production technologies.

In each of these three program areas, emphasis was placed on the transfer of technology to organizations capable of sustaining the flow of either services or benefits without continuing subsidy. The strategy for achieving self-sufficiency was handled somewhat differently in each of the three areas. Nevertheless, the institutionalization of the shrimp subproject represents one of CJEDP's most significant achievements.

**The Hatchery Development Program**

One of the key factors that influenced the slow rate of progress in the development of the Indonesian shrimp industry was the shortage of seedstock for ponds. The supply of post larvae available from traditional sources was waning, and commercial hatcheries had not been able to take up the slack. While supply problems were highly seasonal in character, there was little incentive for further intensification of ponds without a more dependable supply of fry. The projected long-run fry deficit was severe.

The hatchery problem reflected both the poor performance of existing facilities and a slow rate of entry into the industry. A shrimp hatchery is an extremely management-intensive operation, and many of the early entrants had been unprepared for the discipline and control demanded by the technology. Furthermore, hatcheries are fragile systems that require continual diagnostic problem-solving. The skills needed for this kind of production process were not widely available in Indonesia. Out of the twenty-four hatcheries that existed in Indonesia in 1984 only fourteen had any production at all, and fewer than a handful could be called successful.

The central challenge facing CJEDP was to discover ways of transferring skills and technology to current and potential hatchery operators. Experience during the preimplementation stage of the project made it clear that provision of direct assistance to individual private hatcheries was not likely to have the desired spread effects, either during or after the lifetime of the project. While ex ante, hatchery owners were fully cooperative and open to the idea of sharing the benefits of assistance with their colleagues, as soon as production began to improve, the doors to further transfer of technology were slammed shut.

The natural intermediary organization for the activity was the government's Brackishwater Development Institute (BBAP) in Jepara. A close look at its program, however, revealed that it was unlikely to be prepared to continue an extension and outreach program once project resources had been withdrawn. Serious questions were also raised concerning BBAP's limited success in absorbing and profiting from numerous efforts at transfer of technology in the past. It was unclear how CJEDP could effectively assist the private sector through this institute.

In an unexpected turn of events, serious consideration was given to the possibility of working with a nonprofit organization, Dian Desa, as the key intermediary. This surprised many in the

Directorate General of Fisheries, in BBAP, and in A.I.D., but there was good reason to believe that this approach might work. Yayasan Dian Desa (YDD) had worked with DAI on the design of CJEDP and had developed a genuine interest in the shrimp industry. Throughout a two-year period their interest grew and when CJEDP needed counterparts to work with the pre-implementation stage hatchery consultant, Dian Desa elected to provide a team of engineers and biologists to work at his side.

The rate of absorption of knowledge by the YDD team was more than impressive. Shortly after the visit of the preimplementation phase consultant, YDD was asked to reengineer and manage one of the failing hatcheries in Jepara. Through another program, they were able to take an ownership position in the hatchery, and within six months it was among the best-performing facilities in the country.

The success of this kind of organization in a technically sophisticated field was sufficiently impressive that CJEDP was able to persuade A.I.D. and the GOI to provide a grant of approximately $90,000 through CJEDP to pay a portion of the costs of the construction of the CJEDP/Dian Desa model hatchery. This facility was to serve as the repository of CJEDP's planned long-term hatchery technical assistance. Because it was an open facility, the possibility of spreading the benefits was considered good. While the private sector is sometimes reluctant to call on the government for help, it was more likely that they would be willing to call on an independent organization. Furthermore, the nonprofit character of Dian Desa meant that net income could be channeled into training, outreach, and research and development.

Throughout the lifetime of CJEDP, the hatchery development program enabled Dian Desa, an indigenous, nonprofit organization to:

- Plan, design, and construct a commercially viable shrimp hatchery at approximately a third of the usual cost;
- Develop the capacity to conduct intensive, hands-on training programs for existing and potential hatchery operators and technical staff and carry out research, both subsidized and paid for out of earnings, on hatchery technology -- feeds, alternative species, water quality, and so on;
- Create a public-domain base for sharing information and technology with other participants in the shrimp industry, including hatchery owners and operators, potential investors, pond operators, and private- and public-sector assistance agencies;

- Contribute measurably to the supply of post-larvae available to support the pond production of shrimp;

- Convince donors and the GOI of their ability to implement assistance programs in aquaculture;

- Develop the capability to carry out the foregoing activities on a self-sustaining basis through earnings from operations and fees for service; and

- Design, construct, and operate with private funding a second, comparable hatchery adjacent to the first.

CJEDP's inputs to the process included:

- Initial stimulation of Dian Desa's interest in the shrimp industry during the design and preimplementation phases of the project;

- Initial unintended technical transfer to Dian Desa staff members during the preimplementation stage of CJEDP;

- Provision of a conduit for an A.I.D. grant of US$90,000 to pay a portion of the US$150,000 initial investment in the facility;

- Continuing advice on design and engineering of the physical plant and technical assistance during the first two years of CJEDP;

- Assistance in the construction of a training facility, procurement of training equipment, development of training materials, and planning and implementation of the first training program for 16 trainees; and,

- Financial and technical assistance in solving problems of water quality.

The nature of the relationship between CJEDP and the hatchery almost guaranteed that there would be tensions during the course of the project. Dian Desa owned and controlled the facility and was free to pick and choose from the advice offered by the CJEDP hatchery team. At times, some of the practices and policies of Dian Desa were judged to be inappropriate but proved impossible to influence. Certainly Dian Desa, from time to time, felt that they were being

pushed in directions in which it was unrealistic to go and wished to be free of the continuous flow of advice.

One fundamental difference in perception deserves to be highlighted. CJEDP attributed much of the variation in production that occurred throughout the first two years of operation to a lack of attention to detail in the management and control of the physical systems. Dian Desa had not increased staffing at the hatchery rapidly enough and was not willing to adopt a more structured management system. The final month of short-term technical assistance was used to based a well-known production expert at the facility in an effort to demonstrate how production could be increased simply by following the book.

From CJEDP's point of view, the consultancy was a success. The tanks managed by the adviser outperformed the others by a large margin. It was not the external factors such as water quality that were disrupting production, it was operational management. Nevertheless, Dian Desa was less than impressed. Grateful for the assistance, the director confessed that he understood that if he could afford personnel as competent as the CJEDP adviser, the hatchery would be performing at a very high standard. This was Indonesia, however. It will be many years before such high standards can be achieved. In the meantime, his objective was to provide as much control as possible over physical parameters and to keep costs at their lowest possible level in order to minimize the effect of day-to-day slippages and to ensure breaking even at the lowest possible output. The differences were philosophical and unarguable.

The long-term success of the hatchery development program depends, among other things, on the continued satisfactory technical and financial performance of the hatchery, continuation of an active research and development effort, and development of an effective outreach and training program. It is worth discussing these issues in greater detail.

**Hatchery Performance**

If the hatchery is not financially viable, there can be no noncommercial programs. Every available indicator, however, suggests technical and financial soundness. The hatchery has passed its break-even point and expects to turn a modest profit in 1988. Production and sales are up. Survival rates of PL-1 are averaging more than 60 percent. The technical situation has shown steady improvement, largely as a result of problem-solving and continuing innovation by

Dian Desa. Production of sufficient post larvae to recover variable costs has become routine.

The market for post larvae continues to grow. Pond farmers are expected to require increasing quantities of fry as more ponds are shifted into shrimp and production systems are intensified. Prices are holding firm or showing modest increases. The hatchery has established a solid market for its surplus nauplii with other facilities throughout Indonesia. Dian Desa is the only hatchery conducting ongoing production research on alternative species of shrimp fry, particularly P. merguiensis, which show great potential in less-than-optimal growing environments.

Unless unforeseen obstacles develop, the short- and medium-term horizon for the hatchery looks bright. In the long run, if the industry grows as hoped, the economics of the hatchery business may change. Increased competition may reduce the supernormal profits now available to successful hatcheries. The size of the current shortfall of fry and the complexity of the technology combine, however, to push these possibilities into the somewhat distant future.

**Research and Development**

An active research and development effort forms the backbone of the model hatchery idea. Dian Desa has already been responsible for several innovative achievements of real significance, including:

- The successful use of ferrocement in the construction of hatchery tanks as a substitute for more expensive fiberglass and less dependable wooden tanks;
- The mastery of maturation and the development of secondary markets for surplus nauplii;
- The development of an effective yet inexpensive ultraviolet water sterilization unit, which has widespread applicability throughout Indonesia;
- The design and development of a flow-through seawater filtration system, which has proven effective in overcoming bacteria and other contamination problems arising from the Java Sea; and
- The adaptation of a high-density "flashlight effect" algae-growing unit, which has already resulted in densities three to four times as great as the conventional open

system, with the expectation of much greater densities to come.

Dian Desa's fundamental curiosity and ingenuity will probably lead to a continuing flow of innovations that will contribute to the development of the industry.

**Training and Outreach**

There has been some disappointment that only one formal training program has so far been offered at the hatchery -- and that under some duress. ("Numbers trained" is of considerable importance in the politics of donor relations.) Late in the second year of the project, sixteen trainees from local universities, private hatcheries, and other nonprofit organizations completed an eight-week training course carried out with the assistance of CJEDP. The program was considered a success, but follow-up surveys revealed that only 20 percent of the trainees are now employed in hatchery-related fields. The trainee selection process is in need of improvement.

Dian Desa's hesitation to proceed more quickly with the program stemmed from a desire to "get its own house in order before trying to teach others how to clean." Now that production and cash flow have stabilized, Dian Desa has planned a second course for the fall of 1988 and expects to sponsor one formal program each year.

In addition to the formal training program, Dian Desa has initiated an apprenticeship program for workers from other hatcheries. Eight hatcheries have reserved slots in this program so far. This form of informal, intensive training is well suited to the complex, problem-solving nature of hatchery operations.

Other forms of outreach and education are also being employed. The hatchery is open to the public and is visited daily by a full spectrum of visitors, including government aquaculture agents, actual and potential commercial hatchery owners and operators, donor agency employees, and pond farmers. Giving open access to the facility and making its technology available are the first steps in transferring the benefits of the hatchery to the shrimp industry. A program is under way, in conjunction with Dian Desa's World Bank-funded Coastal Area Development Program (CADP), to document on videotape the various processes at the hatchery. Copies of this tape will be circulated around the country for education and discussion.

Overall, the hatchery program has been a success. A relatively simple design has been transformed into a functioning commercially viable facility. While the start-up was somewhat

slower than had been hoped, this was the result of unrealistic expectations rather than a flawed conception. Continued viability is expected, and there is every reason to believe that the model hatchery will grow in its function as an influential participant in the development of the industry.

**The Pond Development Program**

Transforming traditional aquaculture is no less complicated than transforming traditional agriculture. It involves changes in physical infrastructure, technology, practices, management, financial structure, risk-assumption, institutions, and so on. Modernization of extensive cultivation practices is a relatively simple matter on paper, but in practice it presents an enormous challenge to both developer and developee.

The CJEDP pond development program was based on the assumptions that demonstration, training, and risk-sharing were the essential ingredients for pond intensification and that it was economically sensible to work toward creation of a competitively secure niche for smallholders. The Indonesian drive to develop the shrimp industry has been focused on ponds in preferred physical environments, leaving behind a majority of the poorest farmers who are situated in less desirable areas. As the CJEDP program evolved, this group emerged at the most important target for assistance.

The pond development program had four main objectives:

- To develop, test, and evaluate a range of pond production technologies that are suited to the conditions in Central Java;
- To identify an economical and technically sound growth path that can be followed by pond owners or farmers as they gradually increase productivity;
- To test various approaches to the development and dissemination of technology to pond owners and farmers in the area of the CJEDP demonstration ponds; and
- To develop the capacity of an indigenous nonprofit organization, Dian Desa, to sustain and expand the pond development program on a self-sufficient basis.

The program was organized around 4.5 hectares of ponds leased by the project in the village

of Bumimulyo, Kabupaten Pati.[4] In contrast to the hatchery program, in which the facilities were owned and controlled by the target client, CJEDP retained control over the ponds and employed Dian Desa's pond staff on a cost-sharing basis. This strategy was selected because of the limited experience of the pond staff. The approach gave CJEDP greater leverage in the implementation of the pond program, but it increased the risks associated with sustainability.

**Start-up**

After a complicated seven-month site-selection effort, the pond team designed a system of test ponds and began the arduous process of moving earthen dikes, deepening the ponds, and completing other necessary physical improvements. An innovative design for a gate was developed and the gate was installed. Initial production runs were begun early in year two of the project. The strategy was experimental, testing three production systems at three levels of technical sophistication -- extensive, semi-extensive and semi-intensive -- to try to find those combinations of practices, inputs, equipment and physical systems that work in a less-than-optimal Central Java environment.

The first harvests, made in April 1987, were unimpressive, but they were within the expected range. In thorough analyses of the situation a number of specific factors were found that limited production, including the experimental mix of production strategies, unanticipated equipment failures, problems with the brackish water-supply system, and low capacity for water exchange -- all typical start-up problems and all easily solved. The novice pond staff had performed exceptionally well in their first attempt to manage a complicated production system. The first run also yielded valuable information on the basic physical parameters of the ponds, such as temperature patterns, oxygen and salinity levels, light extinction, and phytoplankton growth.

**The Specter of Failure**

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[4] CJEDP commissioned a detailed baseline study of the Bumimulyo area for use in evaluating the effectiveness of the pond program. During the lifetime of the project, it was not considered worthwhile to conduct a follow-up survey.

Almost immediately following reports of the harvest, word spread that the CJEDP pond program was a failure. In spite of a "big budget" and "foreign experts," CJEDP had failed to live up to outside expectations. Disappointment from A.I.D. and the GOI were obvious, and pressure was placed on both CJEDP and Dian Desa not to let this happen again. More serious, however, was the loss of credibility among the local villagers, who were the first-stage recipients of the transfer of technology.

From the perspective of project management, this bad publicity reinforced insecurities about the program and cast its future into question. All hope of disseminating technology in the pond area was abandoned. The series of informal training sessions in the area would continue, but attendance, which had been strong, would certainly decline. If there was a future for the program, it would be at the end of a very slow road to recovery. Nevertheless, the pond team knew that things were going to get better and saw the next set of runs as an the opportunity to recover their pride and sense of self-worth. The program continued as planned.

**The Second Run**

A number of physical and strategic adjustments were made in preparation for the second production runs. The semi-intensive strategy was abandoned, and since the traditional approach could not be included in the second run because of seasonal excessive water salinity, efforts were focused on a semi-extensive strategy. The planned experimental systems were shelved, and the water-delivery infrastructure was improved to facilitate pumping. The goal was production.

Nevertheless, it proved physically impossible to maintain acceptable salinity levels in the ponds, and just over a month into the run a serious die-off occurred. The team was forced to cut losses and consolidate all remaining juveniles into a single pond, SI-2. Once again, the specter of failure loomed.

In October 1987, two years into the project, pond SI-2 was harvested and the results were astonishing. More that 230 kilograms of shrimp were produced from just over 0.5 hectares, with a survival rate greater than 80 percent. By stocking the pond with 70-days-old juveniles instead of 20-days-old post larvae, survival and productivity were dramatically enhanced -- even at very high salinity levels. There was reason for hope after all.

**The New Approach - Nursery Ponds**

On the basis of the results of the second run, the team's attention was shifted to the development of a new nursery pond system, in which fry could be raised through their most sensitive growth phase. With such a system, a single small pond, intensively managed, could supply juveniles to a large number of pond farmers. There would be no need for sophisticated technology or for the assumption of high levels of risk on the part of the farmer. Drop 'em in the water and watch 'em grow.

At about the same time that this important discovery was made, CJEDP's shrimp adviser reached the end of his assignment and the CJEDP leases on the ponds were about to expire. The project could fund one additional run, but the Dian Desa pond team were, for all practical purposes, on their own. YDD assumed both managerial control and the majority of operational costs (including leases) late in November 1987. The pond program had not achieved the hoped-for financial self-sufficiency, but Dian Desa was committed to the continuation of the effort with whatever resources could be mustered.

**Run Three and Beyond: The Coastal Area Development Program**

The nursery system trials were marked successes. Four grow-out ponds had been harvested by June 1988, and production averaged about 1,000 kilograms per hectare, with survival rates of 66 to 85 percent. The Dian Desa ponds were by far the most successful in the area. Between November 1977 and May 1988, the pond program in Bumimulyo had earned nearly US$20,000 in gross income. The interest of local farmers, and indeed of all observers, was renewed.

As CJEDP approached completion, Dian Desa had independently led an effort to secure additional assistance from donors for continuation of the pond program. In a remarkable development, Dian Desa was selected by the World Bank and the GOI to administer a portion of a major Coastal Areas Development Program loan to the Directorate General of Fisheries. This was the first time in Indonesia that such funds were passed through to a nonprofit organization. After an interesting political battle and against the advice of the Fisheries Department, Dian Desa was granted US$300,000 of World Bank loan money to develop and manage the program. According to the GOI, the National Planning Board (BAPPENAS) and the Department of

Population and Environmental Affairs decided to go ahead with this proposal after a site visit to the model hatchery, which convinced them of Dian Desa's capacity to undertake a complex, sophisticated development project.

In spite of the sustainability risks assumed by CJEDP, Dian Desa more than fulfilled expectations. CJEDP essentially provided a training ground for Dian Desa pond staff. The physical improvements made to the site, the equipment that was purchased, and the training materials that were prepared at project expense will continue to be used as the pond program expands.

**A Note on Dissemination of Technology to Farmers**

An important objective of the pond program was to develop a strategy for intensification that could be disseminated to local farmers. In spite of the roundabout journey, such a strategy was discovered and, as the project closed, was beginning to influence other producers. As the credibility of the program improved, the flow of interested visitors grew. Local farmers began to watch more closely, and those from surrounding areas queued to persuade the staff to visit and evaluate other sites. Pamphlets about the way to acclimate fry before releasing them into the pond were shared with pond farmers. Direct technical assistance was provided on such matters as how to determine water quality, when and how to circulate and exchange water, and how to use supplemental feeds. Dian Desa recently began production of a series of educational videotapes on practical aquaculture techniques.

**Dian Desa's Outgrower Service Program**

In the original design of the shrimp subproject, a novel system of risk sharing between the project and farmers was proposed. The system could not be included in the implemented version of the project, but it has been revived by Dian Desa in their Coastal Areas Development Program. The idea is quite simple. Dian Desa enters into an agreement with a pond farmer under which Dian Desa agrees to supply fry (juveniles), feed, pumps, power supplies, and the services of their technical assistance team. The farmer supplies the pond and labor. After the harvest the cost of the inputs is deducted and the remaining earnings are shared evenly between Dian Desa and the farmer. After one or two crops, it is assumed that the farmer will be able to continue without further assistance. Each of the program ponds becomes a demonstration pond, significantly extending the influence of the program.

The program was first tested during the third production run. Only one farmer could be persuaded to join. Nevertheless, at the end of January 1988 20,000 juveniles were stocked in that farmer's one-hectare pond. After two and a half months the pond was harvested, and the yield was 505.5 kilograms of shrimp, with 90 percent survival. The average harvest for the other farmers in the area was on the order of 150 kilograms per hectare.

Shortly thereafter 15 farmers signed up to participate. Because of the limited availability of

trained Dian Desa field staff, only seven could be accommodated, bringing the total to 8 hectares. The funds available through the CADP will allow expansion at a rate of approximately 50 hectares a year. The program is already self-financing. Expansion is now under way in three different Central Java locations. With well-planned distribution of the program ponds, this effort will reach thousands of Central Java's poorest pond farmers.

**The Feed Development Program**

In the traditional culture of shrimp, the nutritional requirements of the animals are satisfied by the natural production of microorganisms in the pond. As production moves up the scale of intensity (as measured by stocking density) nutritional demand rapidly exceeds the supply available from natural (primary) productivity and supplemental feeding becomes necessary. One of the goals of the pond development program was to identify the point at which the application of supplemental feed is economically justified. The feed development program, on the other hand, was an effort to find the best feed (both technically and economically) to apply in those situations and to see that such feeds are available to Central Java's pond farmers.

There are several good shrimp feeds in the world. In Asia, President's (Taiwan) and Gold Coin (Singapore) are the best known. Both are relatively expensive formulations designed for use in the semi-intensive and intensive culture of shrimp. They are being imported and used in Indonesia in some of the advanced production facilities around the country. No lower-priced, semi-extensive feed is available.

The market for feed in Indonesia is developing slowly. But with the exception of the few successful advanced production facilities, there is a relatively small market for supplemental feeds. The main feed producers have been reluctant to invest too heavily in research and development. Thus a chicken-and-egg coordination problem emerges where moves toward intensification are slowed awaiting the availability of feed (among other things), and the feed producers are slow in bringing feeds to market because of the slow rate of intensification.

The shrimp feed development program was designed to assume a risky industry research and development function for a limited time in order to accelerate the rate of development and influence the mix of products the industry would bring to the marketplace. CJEDP's function would be to help create and evaluate various locally available pond feeds and compare them in

feeding trials to standard, proven feeds. Along with and included in these trials were two commercial-quality, semi-extensive feeds developed by CJEDP in conjunction with the American Soybean Association (ASA).

During the course of the program, CJEDP shared its formula with six different feed mills and assisted with the formulation of semi-intensive and semi-extensive diets. Controlled feeding tests were conducted in a reserved section of the model hatchery, and actual field trials were conducted in a specially designed pond at the demonstration pond site. Results of the studies were shared on a confidential basis with the client companies.

**Program Issue: Shrimp Feed Production Needs Hi-tech**

In the first year of the project, efforts were made to enlist the cooperation of local, small-scale animal feed mills as primary clients of the feed development program. All but one of the "local" mills were either branch offices of larger companies based in Jakarta or Surabaya with little autonomy in decisionmaking or no interest in or preparation for entering the shrimp feed business. One local mill, however, was quite interested and eager to work with CJEDP and ASA. Its owner was also inclined to share the technology with other firms as they chose to enter the industry.

The plan was that the local producer would work together with CJEDP in the formulation and production of one semi-intensive and one semi-extensive diet. The trial diets would be tested by CJEDP and compared with other standard formulations and be improved until an acceptable standard of nutrition and cost was achieved. CJEDP planned to share trial production costs with the local firm but be fully responsible for testing. While the formula and production techniques would be in the public domain, the local pioneer firm would have a head start that would allow it to establish a firm market share as other manufacturers followed. CJEDP would then assist the local industry to develop the market for the feeds.

Problems started when the firm proved unable to produce two consecutive batches of a designated formula. Apart from the irritating fact that local components were often found to be adulterated, of inconsistent quality, or unavailable at the time needed, the degree of consistency and quality control demanded for the test diets was impossible to achieve with the company's chicken feed equipment. The CJEDP team and the owner of the company continued to explore

ways of overcoming these critical problems (including traveling to the United States to investigate the purchase of new machines), but eventually they decided that too much uncertainty remained for substantial new investments to be justifiable.

As a result, it was necessary to go elsewhere for production of the test diets. Dr. Dean Akiyama of ASA, who had been working with CJEDP, arranged for the cooperation of a larger mill in Surabaya for the initial production runs of the CJEDP formulas. The project team reluctantly resigned itself to the goal of simply getting appropriate feeds to the market, moreover, rather than attempting to strengthen local small-scale milling capability.

**The Formulation and Testing Program**

A total of twelve feeds were tested in the feed development program. Seven of these were based on the CJEDP/ASA formula. During the first year of the project, the feed development team formulated semi-intensive and semi-extensive diets made from locally available components, completed facilities for laboratory and field testing of diets, and undertook preliminary production and testing of those diets at the model hatchery. During the second year two feeding trials were completed. The first was a comparison of feeds in terms of growth and survival both at ad libitum (saturated) and controlled feeding levels ranging from 60 to 140 percent of daily estimated requirements.

**TABLE 2**

**DIETS INCLUDED IN CJEDP'S FEED DEVELOPMENT PROGRAM**

| FEED | DIET-TYPE | FORMULA | TESTING |
|---|---|---|---|
| CJEDP-1 | semi-intensive | + | + |
| CJEDP-2 | semi-extensive | + | + |
| Presidents | semi-intensive | | + |
| Gold Coin | semi-intensive | | + |
| ASA-1 | semi-intensive | + | + |
| ASA-2 | semi-extensive | + | + |
| Viterna-1 | semi-intensive | | + |
| Viterna-2 | semi-intensive | | + |
| Comfeed | semi-intensive | + | + |
| Cargill | semi-extensive | + | + |
| Winger | semi-intensive | + | + |
| Bangka | semi-intensive | | + |

The feeds tested included two imported feeds, an Indonesian-produced feed, and CJEDP 1, all intensive or semi-intensive. Results indicated that the designated standard diet, an expensive import, showed the greatest percentage weight gain over the period tested. The CJEDP diet, however, proved to be the most economical in cost per unit of weight produced. Comparison of hatchery results to pond results indicated that both the CJEDP and the Indonesian feed diets showed increased growth in the ponds. The costlier diets elicited similar growth in the hatchery as in the ponds.

The second trial was again a comparison of feed performance at saturated and controlled feeding levels ranging from 25 to 400 percent of the estimated daily requirement. The diets, tested at both the hatchery and the ponds, included CJEDP 2, an imported feed and three domestic feeds. Results indicated that an Indonesian commercial diet, formulated with CJEDP assistance, was superior to the imported diet in both performance and economy. The semi-extensive diets all elicited similar survival rates as the semi-intensive diets, although growth was much slower. This was explained by the lack of a vitamin and mineral package in these diets as well as the lack of primary productivity in the hatchery water (all water is filtered, containers are plastic). The utility of primary productivity as a source of minerals and vitamins must not be overlooked.

The final feed tests were conducted in the CJEDP-YDD demonstration ponds. This group of feed trials tested feeds for the first time using larger fry (Pl-90) of at least 1 gram to evaluate feed performance in later stages of the shrimp production cycle. The pleasant surprise in these trials was an Indonesian feed which was a close second to the control feed in average growth.

**Did the Feed Program Make a Difference?**

It is difficult to estimate the extent of the effect of the CJEDP feed program on the development of the industry. There has been a dramatic increase in the supply of supplemental feed on the market since the initiation of the project, but there is no way to link this directly to the CJEDP formulation and testing effort. Those involved directly with the program believe that CJEDP was instrumental in improving the quality of locally manufactured diets, but the proprietary nature of commercial formulas makes the influence of the project difficult to document. So far no semi-extensive diet is being marketed as such, but there are suspicions that

the CJEDP/ASA semi-extensive formula is being used in feed sold at the higher end of the market. Presumably, competitive forces will eventually transfer some of the newly captured gains from producers to consumers.

It is clear, however, that the testing program was valued by the feed companies. While the CJEDP tests were originally conducted without charge, as information about the program spread there was a greater demand for testing services than could be accommodated. The project elected to ration the available space through testing fees and was quite successful. Fees were paid in kind with feed, and the quantity earned was sufficient to meet the needs of the demonstration ponds for its last CJEDP-sponsored production run. Dian Desa did not elect to continue this activity in its program, but it illustrates an approach to self-sustainability that merits consideration.

# CHAPTER FOUR

## THE METAL AND ENGINEERING INDUSTRY DEVELOPMENT SUBPROJECT

### Subsector Context

During the early 1900s, Central Java's metal and engineering industry grew up around the state-owned sugar mills and the national railway company as a supplier of equipment and spare parts. As the colonial economy deteriorated, the metal industry contracted, leaving the province with a skeleton of its original industrial base. Nearly all the heavy manufacturing, assembly, and supporting operations shifted out of the province to the larger urban centers of Jakarta, Surabaya, and Bandung. The remaining medium- and small-scale firms seemed to have been more or less static since.

In 1983 the landscape of the area's metal and engineering industry was described by the CJEDP design team as follows:

- There were three medium to heavy machinery fabricators, largely dependent on orders for spare parts from the province's twenty-three sugar mills. These companies were operating at less than 50 percent of capacity and were, without exception, technically outdated and highly inefficient.

- There were two centers of small-scale casting and finishing firms, each with more than 100 enterprises. In spite of the government's technical assistance efforts and orders channeled to the producers through government-established cooperatives, there were significant excess capacity and underused talent in these centers.

- In each of the approximately 25 major population centers around the province were small- or medium-scale metalworking firms specialized primarily in the repair of agroprocessing equipment. These often began as shade-tree operations set up to repair imported machines, later adding equipment to weld, turn, shape, and mill metal parts. Several of these firms appeared fully capable of manufacturing machinery but rarely did so. During l983, these facilities were operating at less than 50 percent of capacity.

- One additional feature of the landscape worth noting is the P.T. Kubota joint-venture diesel engine assembly plant in Semarang. As result of pressure from the government,

> this company established a "model" subcontracting procurement system, buying component parts from 29 small producers. Most components procured in this manner are simple, sand-cast, rough-finished parts. With locally produced components then equal to approximately 40 percent of the value of Kubota's assembled diesel engine, the easy substitutions had been made. There was little reason to believe that there would be any significant increase in local manufacture of more technically demanding components, unless further import restrictions made it a practical necessity.

The industry, in general, was marked by 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 the manufacture of precision machinery. The only observable dynamics of any significance in the system were supplied by government demand. Innovation was externally generated through occasional government orders for new products. The private sector usually turned to imports or fabricators outside the province for its machinery and equipment needs.

In spite of this general lethargy, there were signs of considerable development potential in selected segments of the industry. Some of those entrepreneurs who had at least partially succeeded in escaping the sometimes smothering influence of government "guidance" dreamed of proving themselves through the business of their craft. For the small foundries this might mean succeeding in getting an order for a new component part from P.T. Kubota or other industrial buyer. For the repair shops this could mean making, copying, adapting, or inventing and possibly even selling a machine of their own creation. If CJEDP was to influence the development of the metal and engineering industry in Central Java, these were the places to begin.

**Overview of the Subproject**

The metal and engineering industry development subproject was designed to exploit these perceived opportunities and foster the entrepreneurial instinct for innovation and new product development. The subproject sought to increase the ability of local small and medium-scale producers to participate successfully in markets for agroprocessing equipment and, to a limited

extent, components and spare parts. The emphasis of the subproject was on incrementally upgrading the capacity of manufacturers to develop, produce, and market equipment and parts of increasing sophistication and complexity.

The project worked with three main client groups: a cooperative venture between a nonprofit organization, Yayasan Dian Desa (YDD) and Gadjah Mada University (UGM), which also served as CJEDP's implementation team; local government institutions; and private metal firms. Project resources were used to subsidize selectively the development and testing of replicable prototypes that could, with appropriate design and production assistance, be adapted for commercial production by local firms.

CJEDP's efforts enabled at least fifteen small- and medium-scale manufacturers, one cooperative, one private voluntary organization, and two government workshops to translate innovative ideas for new or adapted products into forty-four marketable or potentially marketable pieces of postharvest agroprocessing machinery or sets of spare parts. In many instances this was the first time that these entrepreneurs and institutions had succeeded in completing a full cycle of innovation, prototype development, and commercialization. In nearly every instance, the CJEDP metal team was able to work with the client to identify the key missing ingredient or ingredients in an ongoing, self-initiated process. CJEDP tailored its assistance to the specific needs encountered in each situation and tried to provide the minimum amount of support required to reinforce the firms' own efforts.

The strategy of the subproject was dictated as much by circumstance as by design. The scaling down of the project that occurred before the initiation of implementation resulted in a reduction of the metal subproject staff to only one full-time position and three person-months of short-term technical assistance. Instead of contracting a portion of the prototype development work to Dian Desa, as the original designers had recommended, YDD was asked to staff and manage the subproject as an integral member of the CJEDP team.[5] The position was shared by

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[5] Before CJEDP, Yayasan Dian Desa was perhaps best known as the only nonprofit organization assisting metalworkers in Central Java. With donor assistance, Dian Desa had established a first-class metal workshop in Yogyakarta, which served as a base for many of their engineering activities. They had proven particularly capable in adapting technology to the needs of small and micro-businesses and had established a successful program of assistance to local metalworking firms. They were and continue to be one of Asia's most successful organizations in stimulating the use of appropriate engineering technology, particularly in the agricultural and agroprocessing fields.

the engineer-director of YDD and a faculty member of Gadjah Mada University whose services were contracted for through YDD.

Apart from the small size of the subproject, the delayed release of GOI implementation funds, which severely constrained operations of the entire project for a year, was especially serious for the metal subproject. The development of prototypes is a money-intensive rather than a labor-intensive endeavor. Funds eventually began to be released in August 1986, leaving only about 20 months of funded implementation.

As a result, the metal team spent much of its time traveling and meeting with businessmen and government officials during the first year of the project. In the process, it was discovered that there was a tremendous demand for problem-solving services that simply were not available from other sources. Firms had started prototypes of new or copied machines or had tried to manufacture and market component and spare parts, but had run up against problems that they were unable to solve on their own.

The problems were diverse, ranging from simple design weaknesses through sophisticated engineering or materials problems to problems of obtaining proper certification to allow marketing of a newly developed piece of equipment. The extended field visits revealed a previously undiscovered market for responsive assistance in support of the innovation process. The subproject, originally to be led by the CJEDP/Dian Desa team, was now in a position to respond to an initiative from the private sector.

One additional adjustment in the subproject is worth noting. The original work plan of the implementation team focused considerable attention and resources on an active program to link local small foundries and finishing firms with large-scale manufacturers and assemblers through market-sustainable subcontracting arrangements. This was expected to be one of the cornerstones of the project and a significant opportunity to explore the development of such relationships. The program never got off the ground, for reasons that deserve to be recounted.

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The fact that YDD later became DAI's local partner in the implementation of CJEDP was a source of confusion to some, but it ultimately served to strengthen the implementation of the program.

**A Note on the Demise of Automobile Component Subcontracting**

Shortly after the start-up of implementation, a study was commissioned to help establish a clear starting point for the component and spare parts activity. A highly regarded, independent business research organization, Pusat Data Business Indonesia (PDBI), was hired to identify and assess the opportunities for linking Central Java manufacturers with larger companies through subcontracts for the supply of component and spare parts. As an integral part of this work, PDBI was expected to identify specific companies willing to cooperate with CJEDP and a list of specific products that could be developed.

After carefully considering the range of potential targets, the automobile industry was given priority among concerns of the subproject. This was based on the strong push being made by the Department of Industry for import substitution of automotive components. It was felt that CJEDP could be instrumental in assisting Central Java's metal firms in obtaining a share of this substantial market.

In the search for specific subcontracting opportunities, PDBI discovered that the situation in the automobile industry and the potential for developing new linkages was very different from what had been anticipated. In a growing industry, there are incentives for developing new sources of supply for manufactured components. More and more parts are needed, and companies are willing to experiment with alternative sources of supply. The cost of mistakes or failed efforts can easily be absorbed, and the government can comfortably act to influence private decisions to obtain wider distribution of economic benefits. When the size of the real economic pie is shrinking, however, other factors predominate.

The weakening Indonesian economic outlook forced the government to reduce pressures on the industry to substitute more expensive domestic products for imports. Domestic manufacturers were battling over existing market shares, emphasizing survival rather than the development of new sources of supply. The automobile assemblers were far more interested in protecting their current suppliers -- which were often subsidiaries -- than in participating in a program to develop new channels.

The PDBI study offered a great deal of insight into the requirements for the development of more widespread subcontracting. Most interesting was the strength of the perception on the part

of assemblers that government encouragement of subcontracting was contrary to sound business development. The idea of a new government program was resisted. It was seen as another tax without direct benefit. The notion that development of small enterprise represents politics rather than development was encountered frequently. Private firms wanted to avoid involvement with the government because of the costs they would be forced to bear without benefit. This bias, based on real experiences, was a serious obstacle for CJEDP as it attempted to establish a different sort of relationship with its clients.

Nevertheless, upon completion of the study, CJEDP was left with no place to go within the original plan. Given the constraints already discussed, the strategic decision was made to consolidate the subproject and focus primarily on the development and commercialization of agroprocessing machinery and equipment. This was a clear case of the project's flexibility paying off.

## The Prototyping Process and CJEDP Assistance

CJEDP's assistance was organized around the main, definable stages in the prototyping process: product identification, design, prototype development, testing, detailed drawings, production, and commercialization. The level and mix of assistance varied by client and type of client.

### Product Identification

The identification of candidate prototypes for the subproject involved considerations of commercial potential, client interest, the complexity of the equipment, and the overall resources of the subproject. CJEDP drew on three primary sources of ideas: the CJEDP/Dian Desa metal subproject team, government institutions, and private businessmen.

There is a tendency among development experts to place a great deal of value on feasibility studies. Some, including members of the CJEDP team, pushed hard for more thorough feasibility analyses preceding the selection of a prototype than had been conducted by the metal team. The reality of the situation, however, was that sufficient resources were simply not available to the subproject to pay much heed to formal analyses. Furthermore, given the

questionable reliability of preproject commercial assessments, even for much larger commitments of resources, there may be a legitimate basis to waive their use in smaller situations.

No formal feasibility analyses were conducted in the course of the metal subproject. The idea of commercial feasibility was continually pushed as a cornerstone of the effort, but it was "eyeballed," not formalized. It would clearly be interesting to compare the commercial success rate in a with- and without-study situation, but this is not possible. The conclusion can only be based on an assessment of the CJEDP success rate, which seems relatively high so far.

**Ideas from the CJEDP Metal Team**

The combined engineering and technical interests of the Dian Desa/UGM staff members on the CJEDP team was a natural source of ideas for candidate equipment. For the most part, the team-originated ideas anticipated future markets or involved prototypes of some sophistication. Because of the complexity of the products, development was done in the controlled environment of the Dian Desa metal workshop.

These prototypes were not client specific; at some point in the prototyping process a client to manufacture and market the equipment would have to be found. The separation of innovation from the entrepreneurial function, while not ideal, is often characteristic of the development process. Business entrepreneurs are often not technically able to master the process of innovation, and innovators are not necessarily entrepreneurs. Nevertheless, both functions are integral to enterprise development. Larger firms are able to employ innovators, while smaller firms generally cannot. The CJEDP program attempted to sow the seeds to encourage mutual interaction between Dian Desa, UGM, and small enterprise.

**Ideas from Client Manufacturers**

As noted earlier, on the basis of their own experience a number of the established small- and medium-scale workshops had generated sound ideas for new or adapted products that appeared to have commercial potential. These ranged from ideas in the head of the manufacturer, pencil sketches, or technical drawings to nearly finished prototypes. The commonality, however, was

that certain key ingredients needed to complete the recipe were missing.

In some instances all that was needed was words of encouragement and support -- acknowledgment that the idea was of value and that the approach of a manufacturer was reasonable. In other instances, the missing ingredient was the solution of a key design, technical, production, or bureaucratic problem. At times, much more work was required to help turn an idea into a design on paper or a prototype worthy of testing. Often CJEDP agreed to provide financial support in the form of agreement to underwrite the costs of constructing a prototype. In each instance CJEDP endeavored to serve the needs of the private sector entrepreneurs in their efforts to become better at their businesses.

**Ideas from Other Institutions**

Several local and national government institutions have a direct interest in the development of agroprocessing technology and are in good positions to provide input into the innovation process. CJEDP developed an especially productive working relationship with the Department of Agriculture's Engineering Workshop (BIEP) and officials of the LIK Workshop at a small-industry estate in Tegal. Many on the BIEP staff have a personal interest in postharvest machinery and through their years of experience in working directly with farmers have developed a good sense of their needs. The rigid financial structure of the government, however, severely restricts their ability to complete the prototyping process. The ideas from the government were generally undertaken in conjunction with a private client selected jointly by CJEDP and the institution concerned.

**Product Design**

Design involves translation of ideas into practical sketches and conceptions that guide the prototyping process. It is essentially a combined puzzle-solving and engineering exercise. CJEDP input was extremely valuable in this step of the process. Often a producer becomes stuck on a problem and needs a fresh vision of potential solutions or renewed confidence that his approach is satisfactory. In other instances modification of an existing product requires knowledge of the industry, materials, or technical details that are not easily available to an

individual producer. In these and many other situations, CJEDP's resources and linkages with other sources of information were sufficient to overcome most critical design-level constraints.

**Prototype Construction**

The actual construction of a prototype involves money and problem-solving skills. Small firms rarely have the resources to invest in research and development, and banks are generally unresponsive to such financing needs. The prototyping process, moreover, is risky. Technically, a piece of equipment may be 99 percent complete, yet the remaining one percent presents an intractable engineering or economic problem. Some of the riskier prototypes undertaken directly by CJEDP have gotten stuck for months looking for the solution to one "minor" problem. Commercially, a perfectly designed and functional machine may fail the test of the market. These factors and others can make the cost of innovation prohibitive for the small firm.

CJEDP was organized to provide funds to underwrite a part or all of the costs of building the prototype included in the project as a way of reducing the risk facing the entrepreneur. Equally important, however, is the fact that CJEDP experts were available during the manufacturing process to help the producer overcome technical constraints. Frequently, this technical assistance was quite simple but allowed the firm to see a fresh way of approaching a problem.

It should be emphasized that CJEDP's financial support was contingent on cofinancing by the client and the project's technical advice was offered only to those who were prepared to solve their own problems. This partnership arrangement with the private sector was surprisingly difficult to develop and was not always achieved. In Indonesia, businesses selected to receive "government guidance" had been conditioned to believe in what one observer called the Santa Claus syndrome: If you are bad, you get nothing; if you play the game, it's just like Christmas.

**Prototyping Testing**

Completed prototypes must be tested and, almost always, modified on the basis of test results. CJEDP has assisted in designing, carrying out, and evaluating testing programs. During this process, the knowledge and standard procedures of the testing are transmitted to the producers, which in the future will enable them to do pretesting themselves.

After the prototype had been built, testing was conducted jointly by the implementation team and the producer. For simple prototypes, testing was done in the field, but for more complicated equipment, testing was done in cooperation with UGM or one of the government research institutions. The testing periods varied from less than a month to more than ten months.

**Detailed Drawings**

Testing normally leads to modification and then more testing. Once a machine has met the established standards, the design and construction are documented in detailed drawings. These blueprints are very important for further development of the machines. CJEDP employed engineering students from UGM to complete the drawings. The CJEDP team then entered the details into a computer-aided design (CAD) system to check specifications and create a baseline for further modification.

**Commercialization**

By definition, the innovation process is risky, and for a host of reasons, some ideas work and some do not. Even if a piece of equipment proves to be a technical success, it still must pass the ultimate test imposed by the market. Many otherwise successful development projects have failed because of a lack of attention to economic and commercial concerns. The metal team, however, did not believe that its efforts were wasted if a particular product did not pan out commercially. Stimulation of the innovative process could still be expected. Nevertheless, the importance of positive feedback to an innovator from commercial success was never underestimated.

CJEDP provided several different types of commercialization assistance, depending on the product, the nature of the market, and the needs of the manufacturer. The most common forms of assistance will be discussed below.

- **Public domain designs.** The final detailed drawings for equipment developed with project assistance were placed in the public domain. Any manufacturer may obtain a copy of the blueprints through Dian Desa, UGM, BIEP, and other government agencies. Finished prototypes are permanently displayed at designated areas around

the province.

- **Certification**. CJEDP was effective in helping to bridge the bureaucratic gaps involved in obtaining government certification of newly designed equipment. Marketing of new agroprocessing equipment in Indonesia is greatly facilitated if a government-issued performance certification is obtained. This process had proven to be quite cumbersome for some manufacturers. It requires testing by the provincial office of the Department of Agriculture and then a letter of certification (Surat Uji) issued by a special committee (Komite Pengujian) in Jakarta. Because of CJEDP's unique position between the private and public sector, the project has been able to assist in overcoming some of the problems that can delay this process.

- **Exhibition**. CJEDP provided its client firms and institutions an opportunity to display their completed prototypes publicly at the month-long 1987 Central Java Development Fair (PRPP). The project provided space in a booth of 60 square meters and staffed the display with qualified personnel. More than thirty completed prototypes were displayed, and a number of commercial sales and inquiries resulted from the promotion.

- **Other commercialization efforts**. Other commercialization efforts have included subsidization of the costs of materials for the production of marketing samples; printing and distributing brochures through seminars, smaller exhibitions, and direct distribution to potential buyers; and assisting small producers to develop market links for subcontracting with larger firms.

## The Prototypes

A total of 44 new products were developed with CJEDP assistance. From a technical point of view these prototypes varied from the very simple (a pedal-powered thresher) to the complicated (bioenergy machinery). A list of each of the new products, the type of client, the type of input provided by CJEDP, the end-of-project status of the prototype, and comments, when they are appropriate, are presented in Table 3. Complete descriptions, sketches, and detailed drawings of each of the prototypes are available from any of the CJEDP implementing institutions.

The status column in Table 3 classifies the progress of the prototyping process into four main groups.

- **In process** means that the prototype is still being developed. The prototypes in this group were either undertaken late in the project or have presented various problems

that have proven troublesome. Thirteen percent of the products are still in development.

- **Testing** means that the prototype is in the testing stage. The testing periods vary from a few weeks for a simple thresher to as much as eight months for the vacuum sealer, refrigerated container, and steam generator. Twenty-two percent of the prototypes are now being tested.

insert table 3

- **Promotion** is the initial commercialization stage. After the testing has shown satisfactory results, the promotion process begins to introduce the product to potential buyers. The method of introduction varies from product to product. A few rice hullers, for example, are installed in the field for use by local cooperatives or the Agriculture Service at reduced rates during the harvest. To create interest from medium fish or shrimp traders the cold container can be rented at an attractive rate. Twenty-eight percent of the products are now being promoted.

- **Commercial** means that the prototype has passed the promotion stage and is being successfully manufactured and marketed. Thirty-seven percent of the prototypes have reached the commercial stage.

## Institutionalizing the Innovative Process

The immediate benefits of the metal subproject depend on changes in the output of the client firms, their suppliers, and the end users of the machinery that has been developed. More interesting and important, however, are benefits that may continue to be generated as a result of changes in the behavior of the client firms and institutions or through the development of an improved capacity for delivery of services in the province.

### Institutionalizing Innovative Behavior

CJEDP was in a good position to appreciate the problems faced by other government bodies that have addressed or may attempt to address this or similar processes. The implementation team was under constant pressure to "finish the prototypes." This presupposes that the value of the activity can be assessed in the same terms that might be applied to procurement and neglects the central significance of the process that is set in motion.

The test of the success CJEDP's metal activities rests with the postproject behavior of those within the project's sphere of influence. While the successful commercial introduction of any of the CJEDP-sponsored prototypes is a well-appreciated dividend, it does not provide the real development impact that was sought. The more important questions turn on the way the project influenced the development of the next generation rice huller or any of the potential applications of bioenergy technology, and so on.

While it is expected that the process of innovation, once experienced, will sustain itself in at least some of the client firms, an active attempt was made to institutionalize the capacity for continuation of CJEDP-type services in several different bodies.

**Training and Technology Transfer to the Private Sector**

The process of prototype development as described earlier is an educational experience in and of itself for the CJEDP clients. The project team emphasized hands-on self-reliance to the greatest extent possible. Only when it proved impossible for the client to continue on his own did CJEDP intervene.

In addition to the case-by-case assistance, the project organized an innovative training program with the Department of Agriculture and the Department of Industry in development of agroprocessing equipment (Latihan Kontak Bengkel). The program, held midway through year two of the project, was specifically designed and executed in the setting of the project-sponsored prototype development work. Representatives of each of the clients were brought together to learn what techniques had been identified as being inadequate and to explore opportunities for improving the function of the local metal industry in serving the needs of the agroprocessing market.

The program was innovative, in part because it brought together for the first time the departments of Agriculture and Industry to assist in executing training for small- and medium-sized metal producers. This combination of resources worked so well that the two agencies are planning similar programs focused on other integrated issues. One important reason for integrating the two departments into the CJEDP program was to take advantage of the unique skills and information held by the two parties. The Department of Agriculture, for example, knows that the government's push of soybean plantations will bring about an increase in production next year. At that time the existing traditional soybean handling system will become obsolete. This means there is a need for postharvest soybean processing machines. If the agromachinery producers begin now to make the prototype and get acquainted with its operation, they will be in a better position to benefit from that market movement when it comes. On the other hand, the producers -- especially small producers -- are still not in a position to profit from

that momentum because of problems such as insufficient technical skill, lack of design capability, and the financial risk involved in prototyping. The aim of the training program was to overcome this type of problem.

**Improved Delivery of Services**

Yayasan Dian Desa has broadened its already strong reputation as a center for development of metal engineering. Dian Desa is also strengthening its own capacity in this area through its several CJEDP prototyping efforts and its related work with computer-aided design systems. The Agroprocessing Technology Faculty of UGM in Yogyakarta has been actively involved in the CJEDP-Dian Desa efforts and is further developing its capabilities to extend its knowledge to the private sector. A number of the CJEDP prototypes will become practical learning aids, permanently housed at the faculty. CJEDP has worked closely with the Department of Industry and the Department of Agriculture to bridge gaps between these two agencies and between these agencies and the private sector.

Producers of agromachinery in Central Java who were involved in the CJEDP training program realized their mutual interdependence. In an effort to coordinate their activities and their access to support resources they established an association called Assosiasi Pengusaha Alat Pertanian Jawa Tengah. This was done on the initiative of the participating firms and is a positive indication of the demand for forward-looking support in the development of agroprocessing equipment.

# CHAPTER FIVE

# THE LIGHT MANUFACTURED EXPORT DEVELOPMENT SUBPROJECT

## Subsector Context

In 1982 Central Java's total exports were US$90 million, the vast bulk of which -- 70 percent by value -- were the product of fisheries or agriculture. Only about 29 percent of total provincial exports were categorized as industrial or handicraft products, and most of those were closely related to production in the primary sector -- plywood, molasses, cassava pellets, calcium citrate and so on. The design team estimated that the products of small-scale industry accounted for only 2.25 percent (US$2 million) of the total volume of exports.

There was every indication that Central Java possessed significant untapped potential for export growth, particularly in light manufactured goods.[6] The distribution of such goods reacts strongly to labor-cost differentials and therefore tends to shift in time to areas of labor-cost advantage. Within the largely exogenous bands of similar labor costs, buyers seek out the suppliers that are best able to satisfy their demands. The markets for many types of light manufactured goods are complex and broad, moreover, offering opportunities for goods to break into the market at relatively low quality levels.

Other structural features of Central Java that indicated export potential include the strong, growing international demand for products that are, or could be, produced in Central Java, the large underemployed labor force in the province, the low wage rates, the concentrations of certain types of household and small-scale enterprise activities in specific geographic areas, and the relative sophistication of laborers in the province and their positive attitude toward productive work.

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[6] The term "light manufactured goods" refers to those products manufactured with the use of relatively simple, labor-intensive technology and relying on a relatively high proportion of unskilled to skilled labor. Such goods are differentiated from handicrafts in that they are tailored to the preferences of buyers and consumers, while crafts rely on traditional designs and are produced with little heed to the requirements of the market.

A number of constraints hampered the development of profitable export sales. The most important of these arose out of the lack of contact with the international marketplace. Trade in light manufactured goods is characterized by a high degree of buyer input into design and production. Developing relations with buyers requires, not only initial contact, but support facilities to reduce the costs of search, procurement, and other transactions. In the absence of intervention, such exposure and institutions develop slowly, at best. Once the start-up barriers have been overcome and the ability to satisfy buyers' needs has been proven, export potential and sales can snowball.

Indonesia started its export push from a position of disadvantage. The country's economic policy was a classic example of inward orientation, with all the associated problems of high prices, inefficient freight systems, unsupportive local officials, and so on. For the country to transform itself into an exporter, fundamental policy changes would be required. Nevertheless, there appeared to be considerable potential to increase employment and incomes within the boundaries of the policy-imposed constraints and to influence those constraints through the generation of concrete information.

**Overview of the Subproject**

The export development subproject was designed around three pillars: increasing contact with buyers, support of buyer-supplier interactions, and provision of technical assistance to producers on the basis of that interaction. CJEDP would assume the function of an export trading service, with the objective of transferring skills directly to the private sector. The project would also work to influence regulations and policies that were found to constrain successful exporting.

Underlying creation of the subproject was the assumption that appropriately targeted transaction-cost subsidies, combined with responsive assistance to manufacturers and traders, could exert a positive influence on the level of export sales and thereby on employment and incomes in small enterprises. By targeting product lines in which Central Java is likely to have a long-term comparative advantage -- labor-intensive goods, products based on local skills or experience, local material-based advantage -- and delivering assistance to and through private enterprises capable of sustaining commercial relations with buyers and, in the case of intermediaries, suppliers, successful project activities would result in long-term, self-sustaining

trade relations.

A transaction-cost subsidy is a particular form of cost sharing undertaken with the assumption that a business relationship can be profitable but is not undertaken because of high start-up costs. One example can be seen in the case of attracting overseas buyers. We assume that a buyer might eventually develop a satisfactory relationship with a particular supplier but that the high cost of making the first visit to a new area and the risks associated with doing business with an unknown company act as deterrents -- that is, raise the perceived ex ante costs -- to the establishment of the connection. A carefully targeted subsidy designed to offset all or a portion of the start-up costs is likely to offer sufficient inducement for a trial transaction, which, if successful, can result in a continuing relationship. The subsidy is basically a one-time activity and can be withdrawn without any negative consequences. This is very different from a subsidy that reduces the cost of credit or raw materials, withdrawal of which could undermine the venture.

**Early Export Promotion Efforts**

During the design and preimplementation stages of the project a considerable amount of effort was directed toward identification of the specific product lines that held the greatest potential for success in international markets. While trading services would be offered for a wide range of products, assistance would necessarily have to be focused on a limited number of product lines. The prime candidates appeared to be handcrafted garments, wood products and wooden furniture, ornamental brass, and rattan and wicker products. Late in the preimplementation stage three activities were initiated that were to have an important bearing on the eventual shape of the export development program.

**PUSPETA Furniture Venture**

In mid 1984 the feasibility of moving and expanding the operations of a Jakarta-based furniture exporter was under consideration by the owner of the firm, its overseas marketing representative, and PUSPETA, a secondary-level service cooperative located in Klaten. Plans were stalled because of the marketing firm's inability to continue to provided needed expatriate

technical consulting services. It was unclear how the venture would pay the adviser's salary during the start-up and training phase of the project.

The preimplementation team arranged for the release of $12,000 of project funds to support the start-up of PUSPETA's furniture production operation, allowing the project to go forward. In addition, CJEDP worked closely with PUSPETA to obtain needed export licenses and to work through the logistics and financing of early orders. CJEDP assistance was gradually phased out during the first two quarters of implementation.

The furniture company quickly became a great success. It now employs well over 100 workers, either directly or through subcontracted piecework, and employs four expatriate advisers on a full-time basis. Sales are approximately US$75,000 a month. Now known as P.T. Alias Jaya Chippendale, the company was recently the subject of a story in the **New York Times** and the **International Herald Tribune** as one of the world's finest manufacturers of solid mahogany reproduction furniture.

**The Garment Workshop and Training Program**

The designers of CJEDP learned a great deal about exports from a group of Bali-based exporters and importers of handcrafted (embroidered) garments. Several of these operators had expressed an interest in developing the capacity to perform certain manufacturing stages in Central Java. The future of the industry had become uncertain as a result of the increasingly protectionist stance of the United States, and it was necessary to explore the issues in greater detail before giving priority to the manufacture of garments.

In October 1984, the CJEDP preimplementation team sponsored a workshop focused on the potential for expanding the opportunities for the export of handcrafted garments from Central Java. The two-day forum was attended by concerned individuals who represented the government, the private sector, financial institutions, importers, exporters, the U.S. Department of Commerce and the U.S. Customs Service. The objective of the workshop was to bring together the various important actors in the industry in order to identify specific ways in which local businesses could find niches in the international market despite increasing constraints imposed by importing countries.

While the conclusions of the forum were less than optimistic, CJEDP offered assistance to

several embroidery cooperatives to enable them to serve the Bali-based exporters better. Again working with PUSPETA, CJEDP funded a two-week visit by an interested Bali buyer who trained cooperative leaders in cutting, sewing, and packaging. This led to increased orders for embroidery and for the newly developed ancillary services as well. Shortly thereafter, the combination of restricted quotas and indecision on allocation of the available visas threw the entire industry into disarray. CJEDP and PUSPETA postponed further plans until the environment stabilized.

### Rattan Activity Design

As a result of inquiries from a U.S.-based buyer of rattan products, the preimplementation team began to take a serious look at the potential for developing exports of rattan products from the province. On the basis of input from buyers and other rattan experts, it was clear that there were excellent opportunities for promoting the export of rattan furniture and baskets from Central Java. Steps were taken to lay the groundwork for the quick start-up of a rattan export development program once the implementation phase had gotten under way. Much more will be said about rattan later in this section.

## Export Inventory, Market Outreach, and Export Trading Services

One of the first large tasks facing the CJEDP implementation team was to elicit sufficient input from buyers to identify priority product lines for the subproject. The rattan program provided a clear starting point for the subproject, but a wider swipe was required. Input was obtained from international buyers operating in Indonesia, but in general their interests were narrowly focused. Furthermore, while the definition of broad areas by the design and preimplementation team was essentially accurate, the project would have to accumulate a more thorough body of information about the export potential of the province.

A three-pronged strategy was employed to establish the needed center of gravity for the export subproject. The elements of this strategy were a general survey of Central Java's export potential, active market outreach efforts in the United States on the basis of the results of this survey, and, the development of a commercial export trading service capacity to support buyers

and facilitate transactions. The first two elements were conducted with the collaboration of a U.S.-based marketing company, Global Exchange, Inc. (GEI). Responsibility for the third would be shared by the project itself and cooperating private exporters.

**The Export Inventory**

GEI spent a month touring Central Java in an intensive effort to identify the products, manufacturers, and exporters that showed the greatest potential for entering the U.S. market. More than 40 firms were visited during the trip. During each interview two questionnaires were filled out, one describing the details of the products and production capacity and the other assessing the entrepreneurial capacity of the business. This information was incorporated into a standard buyers book, which became the foundation of CJEDP's continuing inventory efforts and the market outreach program.[7]

**U.S. Market Outreach**

On the basis of the information, photographs, and samples taken back to the United States, GEI initiated an extensive effort to reach out to potential buyers. The effort was centered on the products and firms featured in the buyers book. The products that showed the greatest potential were rattan, wooden products, furniture, ornamental brass, peanuts, ceramics, leather products, umbrellas, and cut flowers. Serious inquiries were generated for rattan, wooden furniture, and brass.

The nature of CJEDP's relationship with GEI was based on the transaction-cost principle of the subproject. The project contracted for the work performed in the inventory, preparation of the buyers book, and two weeks of the time involved in the market outreach. GEI's efforts continued solely on the basis of commercial interest. Significant orders for rattan products have been placed by GEI, and the company has taken steps to represent eight Central Java firms

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[7] The GEI/CJEDP Buyers Book, which was compiled in early 1986, is still in use today. At this writing, serious inquiries generated by the book continue to be received by the Indonesian companies.

formally in the U.S. marketplace.

### Export Trading Services

The development of commercial export trading services was an essential ingredient in the original design of CJEDP, but in the cutbacks that preceded implementation much of this effort was dropped. Nevertheless, if the project was to be successful with its buyer-led strategy, certain kinds of services absolutely had to be made available. The fragile legitimacy of the project structure dictated that any service requiring legal status, such as receiving orders or financing instruments and exporting, would have to be performed by a cooperating private company. CJEDP, however, was in a far better position to offer more generalized buyer support and transaction assistance, such as communication, transportation, and guidance through the regulatory environment and the financial system.

At the same time that these efforts were under way, the rattan export development program was gaining momentum. In time, most of the attention of the export team was gradually diverted from the broad-based approach to one more narrowly focused on a single set of products, namely, rattan. As a result, a large proportion of the export services provided were tailored to the requirements of the rattan program.

## The Rattan Export Development Program

The rattan export development program was CJEDP's most visible and perhaps most significant implementation activity. From rather modest, uncertain beginnings, the rattan program grew to dominate the export subproject, influence national rattan policy, and become a model for the GOI's countrywide small-industry export development program. Furthermore, the national attention generated by the activity resulted in a presidential decision to designate Central Java a rattan industry development center -- this, in spite of the fact that all materials are imported from other regions of the country.

Much can be learned from the rattan export development program about a variety of issues relevant to enterprise development. In this section the main features of the activity will be reviewed, with those issues that are instructive highlighted, while many details of a more

technical nature are skimmed over. These have been covered thoroughly in CJEDP's periodic reports cited in the bibliography.

**Background**

In 1985, the province's rattan industry consisted of a handful of villages in which low-quality products were produced for the domestic market, P.T. Sari Rose, an idle shell of a company that had, as the nation's leading basket exporter during the late 1970s, employed or contracted with as many as 300 craftsmen, and a high-quality furniture firm in the provincial capital that was doing quite well by furnishing the homes of expatriate consultants and wealthy Chinese businessmen and was little interested in low-margin export orders. In spite of the fact that Indonesia possessed 90 percent of the world's rattan supply, no raw materials suitable for the production of export quality products were available from local suppliers. Previous attempts by the Department of Industries to upgrade production in the villages through study tours and classroom training had little obvious effect.

Nevertheless, buyers visiting the province showed a great deal of interest in rattan products. Well-aged samples of baskets on the shelves at Sari Rose were considered to be of exceptional quality, and the products produced in Trangsan, one of the village production centers, were very close in both quality and price to the requirements of the low-end Australian market. With serious underemployment in the villages that had previously supplied workers to Sari Rose and significant excess capacity in Trangsan, there was a ready supply of workers and small companies. Raw materials were not considered a serious problem. Containerized port facilities were available and in the process of being substantially upgraded, and freight was no more expensive than from Jakarta or other areas of the country now successfully exporting rattan products.

The preimplementation team reached the following conclusions:

- Considerable potential exists for the development of exports of rattan products from Central Java. Indonesia has a plentiful supply of raw rattan, national policy is aimed at increasing the value added of rattan exports, the international market for rattan products is strong, and the production of rattan products is highly labor intensive, reflecting the resource endowment and relative factor prices in Indonesia.

- There are significant obstacles to the participation of local firms in international markets that are not likely to be overcome without external assistance. International competition is strong and requires local firms to satisfy stiff price and quality requirements; local manufacturers have had little experience in working in export markets, and there are many significant deficiencies in production, finishing, and management techniques that must be addressed.

- Government efforts in Central Java are weak or nonexistent. Most government effort is being focused on other parts of the country. CJEDP was offered and accepted the unique function of coordinating the provincial government's efforts to develop rattan exports.

At about the time that these assessments were being made, the project was approached by the principal of Sari Rose to see how CJEDP might be able to help his company get off the ground again. The company had been developed as a supplier to a single European buyer and had prospered under his care and feeding for several years. Under rather unpleasant circumstances the buyer had left and had never returned, and the company had not recovered. CJEDP, its expert advisers, and a group of buyers were convinced that Sari Rose had adequate management talent -- a new manager, the nephew of the owner, had been brought in -- and sufficient access to financial resources to make a serious attempt at revitalization. With the additional potential supply of furniture and accessories available from the 92 small and microenterprises in Trangsan (and later in other villages), Sari Rose was considered an ideal center for the province's rattan export development efforts and a base for the CJEDP rattan program.

**Overview of the Program**

The design of the rattan program followed closely the underlying model of the export subproject -- interest buyers, encourage their participation in the development of potential local suppliers, facilitate transactions and support the local industry in meeting buyers' needs through technical assistance and training. The unique features of the rattan activity, however, were the intermediary charter of Sari Rose and the decision to ensure that the program got off to a fast start by hiring a professional rattan trader to advise Sari Rose, train its suppliers, and export its products.

Early in the implementation of the program, however, it became obvious that Sari Rose was

unable to provide the leadership required to organize production in Trangsan. Problems in meeting orders for its own basket production, general weaknesses in management, and insufficient working capital to finance purchases of materials and inventories of finished goods cast serious doubts on the wisdom of forcing Trangsan orders and exports through the firm. A second company, P.T. Djaka Utama Jaya (DUJ), made itself available to the project and was brought in to handle exports from Trangsan. DUJ was a subsidiary of a larger group of companies but had had little experience in rattan. Essentially, DUJ became CJEDP's partner in the development of Trangsan, destined eventually, it was hoped, to be weaned from project support, to deal effectively in the international marketplace, and to continue to deliver orders to the village craftsmen.

These, then, were the actors: two private companies, P.T. Sari Rose and P.T. Djaka Utama Jaya, that had been enlisted to serve as the key system leaders ("channel captains") in the Central Java rattan industry. These companies would transact with buyers, organize their own production and the procurement of finished goods from other manufacturers, ensure quality control, organize the supply of materials and finance the cash flow of the trade. They would operate with decreasing degrees of assistance from CJEDP, aiming toward self-sufficiency at higher degrees of efficiency and productivity, stimulating the regional industry.

One of the questions that arose late in the project, for reasons that will become apparent, is, Why were these companies selected as the intermediaries? The answer is quite simple: They were the only companies willing to participate. While in the waning days of CJEDP there were private businessmen queuing up to work with the project, in late 1985 the story was much different. The negotiations that the project undertook to arrange the willing participation of Sari Rose and DUJ as CJEDP's guinea pigs is a book in and of itself. Many of the early efforts of the project in all of its subprojects was the development of credibility with potential clients and the negotiation of terms for sharing the risks of participation with the project.

Beginning in October 1985, CJEDP provided several different kinds of assistance to the rattan industry, which can be summarized as follows:

**Buyer assistance**. CJEDP introduced buyers from Australia, the United States, and Europe to local exporters and to the local industry; the project offered a variety of support services to buyers, including complimentary visits to the province, local transportation, translation, telephone and telex service, and free sample production and shipment; and, in selected

instances, CJEDP provided such facilities to prospective buyers as quality guarantees, freight subsidies, outright discounts, and inward and outward shipment of samples.

**Transaction assistance**. The project played an active role in the completion of order and sales documents, obtaining fumigation certificates, arranging shipping and shipping documents, facilitating the opening of letters of credit, and other transaction-related formalities.

**Producer assistance**. CJEDP worked with manufacturers to develop systems for pricing of products on the basis of the cost of production and on prices offered by competitive suppliers; CJEDP worked with Sari Rose and DUJ to develop management strategies and financial plans, introducing simplified accounting and financial reporting systems to Sari Rose and to small producers in Trangsan; and the project trained manufacturers to diversify product lines, increase production efficiency, and improve the quality of their products.

CJEDP relied on the technical input of two different short-term rattan specialists during the course of the project. The first, an Australian broker of rattan products, worked half time for CJEDP during the course of a year while simultaneously pursuing his own commercial interests. Later CJEDP enlisted the services of a retired Philippine rattan manufacturer for a total of 10 months. Additional short-term help was also employed for specialized needs.

**Export Performance**

The export performance of CJEDP's rattan industry clients is reported in table E1. The program got off to a very fast start. During the first year of the program a total of seventeen twenty-foot containers of baskets, furniture, and other accessories was exported as a direct result of the efforts of CJEDP. The total f.o.b. value of products shipped was $54,100. Eighty percent of the products sold were manufactured in Central Java (65 percent by Sari Rose in Ungaran and 15 percent in Trangsan). Products were sold to six different buyers -- four based in Australia, one in France, and one in the United States. In addition to the six buyers that actually placed orders, serious inquiries were made by several others.

Toward the end of year one and for the first half of year two, the project sought to maintain moderate growth in sales while focusing attention on the development of capacity in production

and management. Sales did grow, although somewhat slower than anticipated. DUJ struggled to capture the attention of buyers and was successful in generating a strong surge in demand only toward the end of the year. Sari Rose, on the other hand, had developed strong linkages with two of the most important buyers in the United States which offered unlimited growth possibilities, and turned away a number of others but consistently failed to perform.

By the end of the project, in June 1988, DUJ had a huge backlog of orders and was fully employing nearly half the producers in Trangsan on a full-time basis. Sari Rose continued to struggle and exhibited very limited growth in exports.

**The Saga of P.T. Sari Rose**

The start-up of operations at Sari Rose in Ungaran went well. Physical facilities were excellent, the management team worked closely with CJEDP and was

**TABLE 4**

**EXPORT OF RATTAN PRODUCTS FROM CJEDP CLIENT FIRMS, BY PROJECT YEAR**

| | Year 1 | Year 2 | Year 3 | Year 3 (5 months) | Total (Estimated) | (Actual) |
|---|---|---|---|---|---|---|
| Total exports | $ 54,055 | $ 58,083 | $73,890 | $177,336 | | |
| $186,028 | | | | | | |
| Monthly exports | $ 4,505 | $ 4,840 | $14,778 | $ 14,778 | | $ |
| 6,415 | | | | | | |
| Exports via Sari Rose | $ 41,982 | $ 22,522 | $11,308 | $ 27,139 | | $ |
| 75,812 | | | | | | |
| Exports via DUJ | $ 12,073 | $ 35,561 | $62,581 | $150,194 | | |
| $110,215 | | | | | | |

Notes: Year 1 = October 15, 1985 - October 14, 1986
Year 2 = October 15, 1986 - October 14, 1987

Year 3 = October 15, 1987 - March 15, 1988

Year 3 estimates are based on a straight-line projection of monthly averages.

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receptive to its technical and business assistance, working capital was slowly increased, and export orders were ahead of production capacity. Execution was a problem, but it was one that could be solved. The Sari Rose activity quickly came to be considered an early success by both the GOI and A.I.D. and earned CJEDP a great deal of credibility.

In spite of continuing project assistance and a high level of buyer interest and potential demand, the company was not able to improve its performance. All the ingredients needed for growth appeared to be present, but nothing happened. CJEDP focused a considerable amount of attention on the firm, became closely involved with the manger, and assuaged the growing discontent among the buyers, all without result. Just as the golfer destined to mediocrity is lured back to the links by the occasional brilliant shot, CJEDP continued to see potential where probably none existed.

What started out to be an easy success became a costly intervention on the verge of failure. The factors that contributed to the problems at Sari Rose were, and continue to be, complicated. In retrospect, the crux of the situation was that CJEDP erred in its judgment of the level of commitment of the Sari Rose management team to the program and the degree of support that its owner was willing to provide. CJEDP was deliberately misled by Sari Rose in matters of fact and intent, but the pressure to succeed blinded the project to the severity of the problems until the relationship became untenable.

One final attempt was made to fix Sari Rose by bringing in professional management under the direction of CJEDP. The CJEDP management effort attempted to reestablish the international reputation of Sari Rose and place the company back on its precrisis growth path. By this time, however, the owner was no longer willing or able to provide sufficient financial resources to allow for growth, electing instead to solve the financial problem by leasing the facility to a state-owned trading company, P.T. Mega Eltra. It is our understanding that under this agreement Mega Eltra assumes operational and managerial control of the company, investing its own capital to increase stocks of raw materials and market the products and paying

the owner a rent for its use of the facility. Already Mega Eltra has reportedly invested over Rp 40 mm (US$24,200) in the company in cash and raw materials.

CJEDP agreed to continue its marketing support of Sari Rose through the end of the project. While there are indications that the company will be able to survive under its new arrangement, it is far too early to tell how much the new operators will be able to accomplish. It would be remarkable if Sari Rose ever became an important player in the province's rattan industry.

**P.T. Djaka Utama Jaya**

There were perhaps more risks with Djaka Utama Jaya (DUJ) than with Sari Rose, but after a very slow, protracted start-up DUJ appears to have succeeded where Sari Rose could not. The program to launch P.T. Djaka Utama Jaya as Trangsan's intermediary did not take off as easily or as quickly as the program that involved Sari Rose. One difference was that DUJ did not have its own manufacturing facility, but was instead organizing and brokering for the large number of small producers in the Trangsan area.

Initial exports by Djaka Utama reflect these difficulties: Exports during year one were very low -- three twenty-foot containers with an f.o.b. value of $12,073 (average value $4,024); the majority of early exports were shipped to Australia, generally a lower-end market; and many of Djaka Utama's early exports were in fact procured outside Trangsan.

Early training and marketing efforts began to pay off. Seven containers, valued at $35,561 (average value $5,080) were exported. During the fourth quarter DUJ received orders valued at more than $97,000 from buyers from the United States, Australia, Belgium, France, the Netherlands, and Singapore. This represented the shipping of 27 twenty-foot containers between November 1987 and February 1988. These orders alone represent approximately 540 person-months of employment in Trangsan.

DUJ also announced its intention to establish a permanent location in the small industry estate outside Solo. The company began to add to its staff, increasing it from two to five persons, and to wean itself from CJEDP support. Confidence in the sustainability of its intermediary function continued to grow.

The nearly $100,000 backlog of orders at the end of year two translated into their best two consecutive quarters ever. The fourth quarter of 1987, with $34,043.43 in exports, was its best

ever. The first quarter of 1988 brought $51,194.30 in exports, its new best quarter ever.

The performance of DUJ continued to receive constructive criticism from CJEDP staff in an effort to get it into the best shape possible before the completion of CJEDP. Its two specific production problems during the past quarter included inconsistent finishing on a Holland-bound order and the use of inferior raw material on an order for Singapore. These problems were addressed in a series of discussions with the owner of DUJ. CJEDP assisted him in formulating a strategy for coping with the company's new level of business. Specifically, his plan puts additional resources into developing an in-house production and finishing capacity, financial and marketing management improvements, personnel specialization and the addition of management systems for scheduling and tracking flows of raw materials and production.

One noteworthy fact is that DUJ exports have become targeted at more specific market niches in 1988. While the destinations 1986-87 sales of $70,000 (in seven shipments to four buyers) were distributed fairly evenly among ASEAN, Australia, Europe, and the United States, the 1988 sales of nearly $60,000 (in ten shipments) were split almost evenly between ASEAN and Europe. While this shows a more sharply focused marketing effort, it also reflects larger, multiple-container orders to fewer buyers.

Late in the project, CJEDP also renovated the government-owned showroom in Kartasura, just north of Solo. The project face-lift, inside and out, included rewiring the electrical system, painting and carpeting, installing appropriate lighting and curtains on windows, building dividers to create distinct display areas, and adding such supporting infrastructure as display pedestals, desks, and chairs. A formula for the management and upkeep of the showroom is being worked out between Djaka Utama Jaya, HIPMI, and the regional government.

**The Supplier Training Programs**

The training of suppliers in Trangsan and later in other villages was designed to assure a steady source of supply to Sari Rose and DUJ. Emphasis was placed on increasing the variety and quality of products manufactured in the village and teaching costing techniques in an effort to make the products internationally competitive. A total of eight formal courses was held in three villages for small- and microenterprises. The primary focus of the program, however, was on the village of Trangsan.

**The Trangsan Program**

Given the large number of craftsmen in Trangsan and their potential for producing at relatively low costs, export markets offer an attractive route to larger total village sales. There are a number of constraints, however, to direct exporting from Trangsan. These include the difficulty in obtaining export-quality materials, the low level of basic business skills, inadequate communication facilities (including the English language), the small size of each single firm, and problems of basic infrastructure. These problems are overcome through the assistance of an exporter who can bridge the wide gap between a small village in Central Java and the international marketplace.

CJEDP had been involved with Trangsan, in one way or another, since November 1985.

- During the first year of the project, CJEDP's consultant-buyer placed several orders with five of the largest manufacturers in the area. The producers received informal training in business and production skills.

- In July 1986 Djaka Utama Jaya entered the industry as the exporter and organizer for Trangsan. DUJ initially endowed its Central Java operation with Rp. 50,000,000 in working capital. This provided the backbone for an expanded Trangsan program.

- In August 1986 CJEDP undertook a detailed survey of each of the manufacturers in the area. The information collected in this survey was used to define the needs of the manufacturers further and will also serve as baseline data for the monitoring and evaluation of CJEDP assistance.

- In September 1986 CJEDP hired four highly skilled rattan craftsmen as full-time trainers. They were based in Trangsan for one month in order to assess the needs of the manufacturers further and to begin informal training at the five firms that had previously exported through CJEDP.

- In October 1986 CJEDP hired an experienced Philippine rattan manufacturer-exporter. The adviser spent one month training the CJEDP trainers and the coordinator of the CJEDP program in Trangsan.

- In November 1986 CJEDP's ongoing rattan training program was formally initiated and the craftsmen were based permanently in the village.

Between November 1986 and February 1988 CJEDP conducted five separate formal training

programs in the village, involving a total of 95 trainees. The training program had several unique features that deserve mention.

- **Selection and preparation of trainers**. CJEDP's rattan trainers were selected on the basis of their experience in the business. They were all former employees of a high-quality rattan furniture manufacturer in Semarang with demonstrated ability to live and work in village settings. All are Javanese and all were able to interact on an equal footing with the village producers. The high skill level of the trainers adds to the cost of the program, but it has paid off in the credibility they were able to gain quickly with the villagers. Education and classroom skills were not considered relevant to the selection process.

- **Selection of trainees**. One of the key findings of CJEDP's informal survey in Trangsan was the widely held perception that many of the village producers had not been given access to training programs. In order to avoid this problem CJEDP went to great lengths to avoid any claim of possible bias in the selection of program participants. The steps taken included publishing an open invitation to all rattan producers in the village to attend the organizing meeting, budgeting sufficient funds to allow all interested parties to participate in at least one stage of the program, and filling available training slots in each phase by random draw rather than by appointment.

- **Hands-on training**. Classroom training is divorced from practical production issues and problems. CJEDP's program was 100 percent hands-on, so that trainees could grasp innovative production techniques, the principles of quality control, good manufacturing practices, and costing methods in a well-defined setting. Direct and immediate feedback and instruction can be offered, tailored to the specific needs of each trainee as demonstrated by the results of actual attempts to manufacture the selected items.

- **Purchase of training output and follow-up orders**. CJEDP's close linkage with international markets allowed products to be included in the training on the assumption of substantial export sales. The project and DUJ were therefore able to place follow-up orders with those who completed the training. This cements the knowledge and skill gained in the program and provides immediate feedback through increased sales.

- **Strong program management and technical backstopping**. CJEDP's local hire staff member responsible for the program exhibited a high degree of commitment and has provided exceptional day-to-day management supervision. With the aid of the problem-solving expertise of CJEDP's expatriate rattan adviser, the CJEDP team was equipped to handle practically any situation that might develop without disrupting the

ongoing program.

From a technical point of view the training program was a large success. The rate of participation among local producers was high, the rate of attrition of trainees was low, there was obvious improvement in the quality of the products and the skill of the producers, the products of the training program were exported and manufacturers noted an increase in sales and incomes from domestic sales, and small-scale manufactures of leather and bamboo products who have observed the Trangsan program are asking that similar activities be carried out in their villages for their products.

**Other Training of Suppliers**

In addition to Trangsan, CJEDP conducted several additional programs around the province. These included:

- A general program with a newly established nonprofit organization in Salatiga to create opportunities for villagers to supply Sari Rose (10 trainees);
- A product-specific program to enable Sari Rose suppliers to manufacture mirror frames for a large DUJ order (10 trainees);
- Two separate programs in Jepara with a total of forty-seven trainees to introduce two products with strong market potential for DUJ, Sari Rose, and other new entrants into the industry.

A development of some significance that will discussed in further detail later was CJEDP's assistance to the Department of Industry to plan a program for the development of the rattan industry in small industry centers around Indonesia. The proposed approach is a clear reflection of the CJEDP model in which the assistance of larger firms (Bapak Angkat or "foster fathers") is used to enable small firms (Anak Angkat or "foster children") to penetrate export markets.

**A Note on Policy Change in the Rattan Industry**

Indonesia's rattan export potential was influenced by three significant policy changes that

were made during the course of the project. The first, a May 1986 package of reforms aimed at increasing competition in the freight industry and reducing bureaucratic constraints, significantly reduced international transport costs. Since freight can represent as much as 50 percent of the delivered cost of rattan products, this represented an important step in increasing the internal attractiveness of buying Indonesian.

The second was the September 1986 devaluation of 33 percent aimed at increasing foreign exchange earnings from dollar-denominated export goods. The effect of the devaluation was largely washed out by increased prices for rattan and other materials.

The third was a direct assault on exports of raw materials. In late 1986 the GOI took steps toward gradual reduction of the export of raw and semiprocessed rattan. As of October 8, 1986, the export of certain raw rattan materials was prohibited, while beginning in mid 1988 the export of half-processed rattan was prohibited. This policy had some far-reaching effects in the rattan industry, in particular in the new emerging class of manufacturers of finished rattan products. International buyers looked increasingly to Indonesia as a source of rattan products, since they saw that their sources elsewhere were suffering disadvantages in obtaining raw materials. In addition, investors began in growing numbers to establish new rattan production facilities.

**The Effects of the Rattan Program**

The rattan export development program has resulted in increased output and earnings for CJEDP's two primary client firms and their small-scale suppliers. The significance of these direct benefits will depend on the ability of DUJ and Sari Rose to sustain and improve their ability to perform in export markets. In addition, increased sales to other exporters or in the domestic market by the small firms trained by the project must also be counted in measuring direct benefits. In spite of the sound performance by DUJ and Trangsan, it is highly unlikely that the total of these benefits will, by themselves, justify the rattan program economically. The reasoning behind this judgment will be explored in a later section of the paper.

Nevertheless, there can be little question that the overall effectiveness of the rattan program has far outweighed its costs. The influence of the program on the development of the provincial rattan industry and on the character and quality of the national government's rattan promotion efforts easily justify the costs of the activity.

The most important factor in the widespread influence of the program was the relationship that developed between the Directorate General of Small Scale Industry (DJIK) and CJEDP. This link was completely outside any of the project's formal organizational channels and was not anticipated in any of CJEDP's plans. It was purely the result of the confluence of the GOI's growing interest in rattan, budget problems that dictated greater reliance on the private sector, and a coincidental exposure of the Director General to one of CJEDP's rattan clients. The CJEDP model that linked small-industry centers with private exporters offered a solution to a set of problems on the agenda of the Directorate. CJEDP's experience offered a concrete example of the way such a strategy could be implemented.

As the project drew to a close, DJIK established the CJEDP intermediary model in eight centers around the country. CJEDP's rattan team directed the start-up of the first training program, and CJEDP's rattan advisers were hired with funds provided by A.I.D. to organize and carry out seven additional courses. UNIDO is now planning to provide an additional US$1.5 million to continue and expand the program. The results of the program remain to be seen, but the approach represents a significant movement in the right direction by a government body that has direct links with hundreds of thousands of small firms.

The special relationship between the project and DJIK had further benefits. When the nation's policymakers were beginning to formulate restrictions on the export of raw rattan, CJEDP was called upon to advise DJIK on the issue. When the policy change caused supplies of rattan to small producers to be reduced, CJEDP was asked for advice about ways of overcoming the constraint. When it came time for the GOI to designate selected areas to receive investment promotion facilities for rattan, Central Java, to nearly everyone's surprise, made the list. When deliberations began on the formulation of the next five-year plan for Indonesia, DJIK turned to CJEDP and A.I.D. for a long-term adviser to assist in planning for the small industry program.[8]

Apart from this unplanned influence on the government, CJEDP also has stimulated the general level of development of the rattan industry in the province. Central Java is now known as a potential source of supply for international buyers. Not only did new buyers contract with

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[8] For reasons that have never been completely understood, A.I.D. elected not to respond to the DJIK request -- this in spite of the fact that the primary interest of the A.I.D. mission has moved in the direction of policy reform.

Djaka Utama Jaya for Trangsan products, but several international brokers have approached Trangsan producers directly for additional sales. Potential investors in new rattan product factories (some international joint ventures) are more frequently encountered in Central Java than ever before.

CJEDP was recognized in the province as having been influential in sharpening the profile of Central Java in the international marketplace and was called upon to advise KADIN (Chamber of Commerce and Industry) and HIPMI (the Young Professionals Association) in their efforts to move the Central Java rattan industry forward. Raw materials of adequate quantity and quality remained a matter of concern to Central Java producers. KADIN and HIPMI asked for and received project assistance in coordinating an approach to Kalimantan and Sulawesi to assure raw materials.

P.T. Sarana Alam, a newly established rattan furniture company, shipped some samples with the aid of the project to market prospects in Singapore and the United States. Another company, P.T. Bina Griya Indah, stepped up production of rattan furniture in June, when rattan machines were installed at their plant in Solo. Jepara, long known for its wooden crafts, is emerging as a rattan production center. PUSPETA-Klaten went forward with plans to construct a 4,600-square-meter rattan furniture factory.

While there can be no claim that CJEDP is entirely responsible for the development of the province's rattan industry, there can be little doubt that a large share of the credit goes to the project. The project's function illustrates well the complementarity between policy change and project support. Without CJEDP, the government's promotional efforts would have left the province untouched. Trangsan and Jepara firms would not be sharing in the benefits, nor would the tens of other new firms that employ hundreds of workers and contract with many other small suppliers be in a position to capture their share of a growing market.

**Other Export Development Support**

In addition to the rattan program, CJEDP provided several other types of general and product-specific support during the lifetime of the project. The majority of these efforts responded either to the inquiries of rattan buyers or to CJEDP's active U.S. market outreach program described earlier.

### Buyer Assistance

Most of the buyers attracted to Central Java by the project were specialized in one or two product lines. Representatives of buying offices or department store chains with more diverse interests are more inclined to buy off the shelf in substantial quantities than to take risks with untested suppliers. CJEDP's limited attempts at working with the larger buyers were moderately successful, but the project lacked the resources to backstop a sufficiently wide range of products to pursue this segment of the market aggressively.

CJEDP responded to the nonrattan inquiries in much the same manner that it supported the rattan buyers. The project organized their travel itineraries and arranged visits with local producers, offered one-shot transaction subsidies for shipping sample products made by Central Java producers to international markets, provided the advice of project staff and short-term consultants to local producers on new products or modifications that should be made in existing products in an effort to keep them abreast of the world market and more responsive to international demand, and helped maintain communication between buyers and potential suppliers.

## Other Product-Specific Activities

### Ornamental Brass Products

Ornamental brass was among those products considered to have strong export potential. There is a large and diverse international trade in brass products, and other countries with less apparent comparative advantage have succeeded in breaking into the market. There was a center of brass manufacturing in the province that consisted of more than 100 producers linked by an intricate network of subcontracting to three established suppliers of brass to the domestic market. Quality was excellent, but production costs were high, reflecting the high level of inefficiency tolerated by an inward-biased domestic market.

From the preimplementation stage of the project onward, CJEDP attempted to find the kind of buyer linkage that would justify developing a production-assistance program to improve

efficiency and reduce prices. In spite of several serious inquiries, the right buyer was never found. Prices were far too high, and the potential exporters were unwilling either to improve the efficiency of their subcontract procurement systems or to reduce margins.[9] Some success was achieved in linking the brass industry to exporters of other products, such as wooden and rattan furniture, as supplier of fittings and accessories. Late in the project, one of the large brass companies significantly expanded its own manufacturing capability, reduced production costs of some items, and succeeded in getting trial orders from Fiji and Japan. At present, one of the project-assisted buyers is considering a trial order for the U.S. market.

**Handcrafted Garments**

During the first year of the project, funds were provided to PUSPETA-Klaten to expand the garment training program initiated during the preimplementation stage of the project. As noted earlier, external developments cast some doubt on the likely success of the program, and expenditure was delayed until the garment export industry could adjust to the growing trade restrictions from the United States and the uncertainty caused by the GOI's quota allocation procedures.

After a delay of nearly a year, the program was restarted. The primary constraint on the ability of PUSPETA to export was the absence of a full-time manager of its garment activities. CJEDP agreed to allow the remaining funds to be used to pay the salary of a garment program manager for a two-month period. This subsidy gave PUSPETA sufficient time to generate enough production and sales to cover the costs of the manager from the returns on the activity.

The PUSPETA garment KUDs began to prosper. No further CJEDP funds were made available for training, but some marketing assistance was provided. A set of sample products was given to PUSPETA to help it develop its own line of products, and buyer assistance was offered to an Italian clothing buyer.

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[9] For one of the larger firms in the brass industry, the subcontract supply links were a serious impediment to increased efficiency. Even though he recognized that the prices paid to suppliers were clearly above market rates, the owner-manager felt that he could not negotiate the prices down because of the nature of the relationships between the firms. This was a clear case of a patron-client relationship in which maintenance of the loyalty of the

**Wood Products**

CJEDP worked with a U.S. importer to develop a line of innovative wood products in Central Java. Original samples received by the project were copied and improved by three companies; countersamples were shipped to the United States for test marketing. Unfortunately, no export sales resulted directly from these efforts.

**Leather**

A Singapore broker who had been marketing only rattan products for DUJ and Sari Rose informed us in year three that an Italian buyer with whom he is associated was seeking leather. We passed on to him several sources of leather products in Central Java and offered to facilitate the buyer's visit.

**Export Advisory Services**

The export team worked with a number of local companies and government bodies seeking both general and specialized information about exporting. The project staff developed considerable expertise in a wide range of export-related topics and became a resource center for a number of businessmen and officials. While CJEDP no longer exists, the director of the export development subproject has established a consulting firm in the province to continues to provide these types of service on a commercial basis.

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suppliers was more important than the business of moving into the export market.

# CHAPTER SIX

# WHAT CAN BE LEARNED FROM THE CJEDP EXPERIENCE?

## What Did the Project Accomplish?

The ultimate test of the success of the CJEDP approach lies in the effects of its activities and the sustainability of the flow of benefits in relation to the opportunity cost of the resources used in producing the benefits. The very nature of the project's work, however, precludes a careful counting of benefits and a detailed allocation of costs, for several reasons:

- Most of the measurable flow of benefits of conceptual significance depends on the future performance of client firms, assisted institutions, and the clients of those institutions. In the absence of careful follow-on evaluations, it will be difficult to measure the benefits of the project. During CJEDP's lifetime, only the subsidized start-up period of many of the project's activities could be observed.
- In a number of CJEDP activities, the contribution of the project was only supplemental. In almost every project activity the client made a considerable contribution to the endeavor. The total benefit must therefore be allocated across different inputs, and costs must include the contributions made by clients.
- Much of the overhead involved with the project was inefficiently allocated because of artificial constraints on the target industries and the circumscribed time frame of the project. The slow start-up of the project caused by delays in establishing a workable financial structure and the inability to initiate new activities during the last year of the project make attribution of overhead highly problematic.[10]

Even though it may be difficult to assess the effects of CJEDP empirically, there is a variety of lessons that have been learned from the experience that bear on the challenge of designing and implementing strategies for enterprise development. CJEDP has provided a first-hand

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[10] In spite of these conceptual issues, Stephen Davies of Colorado State University undertook to evaluate the effects of CJEDP's rattan export development activity on the village of Trangsan (Davies 1988). Davies concludes that the activity can generate a significant, positive internal rate of return to the extent that the level of export sales can be maintained. In view of the experimental character of the project, such encouraging results were unexpected.

opportunity to explore a variety of ways of working with clients in the private sector to achieve development objectives in three different subsectors of the Indonesian economy. This experience affords an excellent vantage point for exploring three of the fundamental challenges of practical enterprise development -- deciding what to do, establishing how it should be done, and doing it.

**The Challenge of Small Enterprise Development**

Cost-effective and sustainable promotion of small-scale enterprise is not a simple matter. The scores of attempts at enterprise development that have failed to achieve their objectives reflect the inherent difficulty of the task. While weaknesses in implementation offer a partial explanation of the high failure rate, the unique challenges posed by development of small enterprise undoubtedly magnify the sensitivity of programs to poor management or flawed structures. Three of these challenges deserve to be noted.

**Business is not easy**. The terms "small enterprise" and "small-scale industry" immediately distract from the fact that we are talking about businesses. Those claiming expertise in this field have rarely had the opportunity to experience, at first hand, the difficulty of succeeding in a commercial endeavor. The failure rates among new businesses or businesses attempting to graduate to the next level of size or complexity are extraordinarily high. With very few exceptions, the easier it is to succeed in a line of business, the lower the return. The demands placed on the entrepreneurial and managerial talent rise along with the prospects of larger size or higher earnings. At the level of the firm, therefore, the deck is immediately stacked against any promotional effort.

**Logistics are costly.** A second aspect of this challenge is the large number, the geographical dispersion, and sometimes, the elusive nature of small firms. The delivery of any type of service to a target population of this character poses logistical and administrative costs that immediately cast shadows on all but the most substantial benefit streams.

**Needs are diverse.** The term "small enterprise" captures a tremendous amount of

heterogeneity in both products sold and industry functions performed. Opportunities and constraints, whether internal or external to the firm, vary right along with this diversity. While there is little concrete evidence on the subject, it is probably true that many attempts to promote small enterprise have failed through their inability to cope adequately with the diverse needs of small business. And in those instances in which assistance has been appropriately tailored, either the costs per unit of benefit have become prohibitive or the reach of the intervention has been extremely limited.

## Applying the Principle of Leverage to the Development of Small Enterprise

CJEDP attempted to answer these challenges by seeking out opportunities for enterprise development in which relatively large numbers of firms could be influenced through narrowly focused interventions. While the project was not always successful in achieving its objectives, there were a number of cases in which this "principle of leverage" demonstrated considerable potential as a cost-effective means of reaching the targeted small firms.

### Types of Levers

Leverage can be achieved through a variety of mechanisms. Those used in the course of CJEDP can be grouped into the following categories:

**Leverage through commercial-led linkages**. Commercial-led linkages are closely related to the familiar notions of backward and forward linkages and to vertical integration or disintegration. Opportunities for small enterprise can be created by making them suppliers of intermediate products to other firms or users, sellers, or transformers of the products of other firms. Subcontracting is one example of this type of linkage. Generation of these linkages often requires intervention at multiple levels of a transaction and may include transaction-cost subsidies, technical assistance and training, and other specific types of assistance. Examples include the buyer support activities in the export subproject, Sari Rose and DUJ rattan activities (including the training of suppliers), supplier-induced linkages in the metal subproject, and other forward and backward linkages in the shrimp industry. Once they have been successfully

established, these linkages can be sustained commercially and can expand by demonstration and emulation.

**Leverage through development of self-sustaining service programs**. Service programs can be self-sustaining through fees, other innovative revenue-sharing agreements, or cross-subsidization from related commercial ventures. CJEDP worked closely with a nonprofit organization in the hatchery program and the pond development program to find ways of combining commercial enterprise with outreach and training. Profits from the sale of fry and graduated fees for service will be used to subsidize the model hatchery's outreach and training efforts. Revenue and risk sharing will finance the outgrower service program. The development of such commercial service programs is highly dependent on the quality of the client.

**Leverage through pump priming**. Pump priming is defined at the temporary assumption of an industry function in order to facilitate development of commercial relationships. In the export subproject, for example, CJEDP assumed the function of an export trading service, thereby reducing the high transaction costs constraining export sales. This can be an intermediary step in the generation of commercial-led leverage or can serve as a point of leverage in and of itself. At the firm level, pump priming is illustrated by the handholding provided to potential innovators.

**Leverage through demonstration and leadership**. Demonstration and industry leadership can have strong positive externalities. Follow-the-leader entrepreneurship characterizes many industries in both developing and developed economies. An effective demonstration effort can, when properly directed, influence large numbers of intermediaries or beneficiaries.

**Leverage through research and development**. The development or adaptation of technology, new products, and information can, in selected instances, foster significant benefits. CJEDP undertook an active research and development function in the shrimp feed program to lower the cost of entry of feed manufacturers into a product line that would benefit small-scale pond producers. Some of the technology development under the metal subproject may have significant benefits for the users of the new equipment. An innovative pond gate, developed under the shrimp subproject, is now commercially available.

**Leverage through policy change**. Policy, by definition, affects broad groups of firms and is therefore a particularly potent leverage point. Unfortunately, this is among the most difficult levers to influence. As the CJEDP rattan program demonstrated, given the right confluence of circumstances a project can earn a seat at the policy table. This important spin-off benefit of projects is often overlooked. Effective enterprise development, moreover, can occasionally strengthen the position of groups of entrepreneurs sufficiently to have their interests noted in political debates.

**Finding Levers through the Analysis of Subsectors**

In almost every situation, levers are industry-specific or subsector-specific and involve considerations that go beyond the small-enterprise target group. They involve the relations between small firms and larger firms, relations between firms specialized in different functional areas within an industry, and relations between the "environment for enterprise development" and enterprises. Identification of leverage points requires a thorough understanding of the situations in which small firms operate.

CJEDP was designed and implemented on the basis of the subsector approach to enterprise development. The subsector approach adopts a systems view of the economic universe that emphasizes the interdependence of economic actors, particularly those involved in the production and distribution process. Subsectors are collections of actors bound together by their participation in the production-distribution system for similar -- that is, competitive -- products. The subsector approach highlights issues involved with vertical integration and disintegration, system coordination, competition between and within production-distribution systems, and the organization and performance of production-distribution systems from raw materials through consumption.[11]

The most important implications of the subsector approach for small enterprise development are:

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[11] The most thorough discussion of the subsector approach as it relates to enterprise development can be found in J. Boomgard, S. Davies, S. Haggblade, and D. Mead, Subsector Analysis: Its Nature, Conduct and Potential Contribution to Small Enterprise Development, MSU International Development Working Paper no. 26, Department of Agricultural Economics, Michigan State University, East Lansing, 1986.

- That small enterprises -- as a group or as individual firms -- are participants in production-distribution systems and subsectors;
- That many of the dynamic elements that influence the development of small enterprises arise from their competitive position within a production-distribution system or on the competitive strength of a given production-distribution system within a subsector; and,
- That opportunities for the development of small enterprise depend on either strengthening the firms' position in a given production-distribution system or in enhancing the overall competitive strength of the system within its subsector.

CJEDP was influenced by the subsector approach in two ways. First, the project approached enterprise development on an industry-specific problem-solving basis rather than on the cross-sectoral policy or credit tack commonly employed in donor-assisted efforts. The subsector approach suggests that such cross-industry programs be based on induction from the analysis of a variety of industries and be tailored to their varying needs.

Second, potential activities were identified within subsectors by looking up and down the production-distribution systems, from raw materials to final consumers, in order to identify constraints and opportunities for small enterprise. This admits the legitimacy of distinguishing between target clients and beneficiaries, a distinction unpopular in certain circles today. Not every businessman or woman needs to be an entrepreneur, and the functional disaggregation of the subsector approach can indicate a workable distribution of entrepreneurship as a guide to program design.

**CJEDP's Project Strategy**

Table 5 illustrates the classification of CJEDP's activities by client, beneficiary, leverage type, and CJEDP tools. It should be noted that levers can be found among the project's set of tools as well as in the relations between clients and beneficiaries.

**Intervening at Leverage Points: Some Considerations**

CJEDP was placed between the state and the potential target intermediaries and beneficiaries. The project unit itself was empowered to undertake activities that would ordinarily be considered to be within the domain of the intermediary group. In addition, CJEDP was also able to intervene directly with the beneficiary group --XXXXXXXXXXX INSERT TABLE 5

**TABLE 5**
**CLASSIFICATION OF CJEDP ACTIVITIES -- CLIENT, BENEFICIARY, LEVERAGE TYPE, AND PROJECT TOOLS**

| ACTIVITY | TARGET CLIENT | BENEFICIARY | "LEVERAGE" TYPE | CJEDP TOOLS |
|---|---|---|---|---|
| **SHRIMP SUBPROJECT** | | | | |
| Hatchery Program | Nonprofit Organization | Hatcheries | Demonstration<br>Direct Subsidy | |
| | | Pond Producers | | |
| Service Program | Technical Assistance | | | |
| Research and Development | | | | |
| Commercial Linkage | | | | |
| Pond Program | Nonprofit Organization | Pond Producers | Demonstration<br>Pump-priming | |
| Service Program | Technical Assistance | | | |
| Research and Development | | | | |
| Feed Program | Industry Segment | Pond Producers | Commercial Linkage | Research and Development |
| **METAL SUBPROJECT** | Innovative Firms | Innovative Firms | Research and | |

| | | | |
|---|---|---|---|
| Development | Subsidy | | |
| Commercial Linkage | Pump-priming | Small Suppliers<br>Technical Users | |
| | Nonprofit Organization | Manufacturers | Research and Development |
| Technical Assistance | | | |
| Commercial Linkage | Subsidy | Small Suppliers<br>Technology Users | |

**EXPORT SUBPROJECT**

| | | | |
|---|---|---|---|
| Buyer Assistance | Industry Segment<br>Transaction Subsidy | Exporters | Commercial Linkage<br>Small Producers |
| | Pump-priming | | |
| Rattan Program | State<br>Information | Exporters | Policy<br>Small Producers |
| Sari Rose and DW<br>Technical Assistance | Private Intermediary | Small Producers | Commercial Linkage |
| raining | | | |
| Supplier Training<br>Training | Small Producers | Small Producers | Commercial Linkage |
| PUSPETA Furniture | Private Intermediary | Small Producers | Commercial Linkage |

| | | | |
|---|---|---|---|
| Technical Assistance | | | |
| PUSPETA Garments | Private Intermediary | Small Producers | Commercial Linkage |
| Technical Assistance | | | |

small enterprises -- as required. Intermediary organizations, private companies, and nonprofit organizations were used in order to reach a broader clientele than would have been possible through CJEDP alone and to serve as an institutional base for sustaining the flow of benefits of the project upon the withdrawal of project assistance.

**Choosing Client Intermediaries**

The choice of clients is perhaps the most important step in implementing leveraged enterprise development. Assistance to nongovernmental intermediaries -- nonprofit organizations and private companies -- can offer an effective means of supporting small enterprise, and it is possible to identify clients that are capable of absorbing project assistance and willing to continue to assist or provide opportunities to target beneficiaries after completion of a project without further assistance from the public sector.

In the early stages of a project there is likely to be an excess demand for clients. Private and independent actors can be highly skeptical about participating in a government-sponsored development program, and allegiance is slow to emerge. A large share of the project's early efforts, across all the subprojects, was given to the development of credibility with potential clients and enlistment of their genuine cooperation with the project. A corollary of this lesson was the finding that the more eager a potential client was to participate, the greater were the odds against development of a productive relationship.

CJEDP's most successful relationships were developed through a long incubation period. This allowed the formation of personal trust between the members of the project team and the client. A long-term relationship, moreover, permits a clearer understanding of the objectives and capabilities of a potential client, thereby enabling a better matching of project support with a client's needs.

**The Project-Client Relationship**

The first principle of project-client relationships is that the leverage of the project with client

intermediaries is limited. A private client is free to accept or reject project advice and may be more inclined to follow its own agenda rather than that of the project. It is this independence, however, that makes such intermediaries attractive; they will resist dependence on the project, thereby opening a window to development and amplifying the benefits of the project. The project must take into account the risks associated with limited control over the clients' programs. The independence of private clients implies that the project must induce rather than coerce them; it must not program, blueprint, or plan their actions. It may be necessary to search for innovative ways to increase project leverage, such as equity participation, tied-credit, project charges, and so on.

**Sharing the Risk of Participation**

Development implies change and change involves risk. Cooperation with a development project almost always involves the assumption of risk on the part of the client. An important part of CJEDP's early discussions with clients was focused on the way risk would be shared. Much of the CJEDP strategy was based on inducements to private actors, moreover, through reduction of the risks of certain courses of action. It was CJEDP's experience that none of its technical assistance efforts would have succeeded without complementary provisions for risk sharing.

**Maintenance of a Credible Relationship**

It is possible to lose credibility and thereby the cooperation of a client if the project fails to maintain its commitments. Once a decision has been made to proceed with an activity, work must proceed without delay or disruptions until the next decision point. Expenditure constraints on essential project inputs, such as personnel, transportation and travel, or equipment procurement, can cripple a relationship. Similarly, diversion of staff members to unrelated activities or spreading key staff time too thin can interrupt a focused program.

Effective delivery of assistance depends on the ability to respond with determination to perceived opportunities. Long or excessively burdensome decisionmaking or uncertain

commitments can cause missed opportunities or a loss of credibility with clients. This implies that those closest to the action must be both competent and trusted, so that information can be processed without the need for time-consuming verification. Furthermore, it is necessary that project resources be available in a form that enables commitment in a time frame consistent with an efficient decisionmaking process.

## Implementing "Leveraged" Enterprise Development

### Operational Structure

The most important implication of the foregoing discussion is that flexibility, adaptability, and autonomy in choice of clients and mix and level of assistance are essential ingredients in the development of enterprise. To be successful, project efforts should incorporate the following ingredients:

- Client choice decisions that are based on technical and developmental considerations, including the leveraging of effects to achieve cost-effectiveness;
- The capacity to develop a sound, credible working relationship with the client, which includes establishment of a balance between responsiveness to the client's needs and strong technical and business advisory capacity;
- The ability to direct clients toward self-sufficiency rather than dependency on continued project assistance; and
- The capacity to implement the program without excessive bureaucratic constraint and emphasis on flexibility and on approaches tailored to the needs of particular clients and situations, to draw on the proper mix of resources as needed, and to respond to changes caused by improved information, time, or changed circumstances.

Both the basic approach of CJEDP and its implied operational requirements went very much against the grain of the Indonesian state culture and established bureaucratic procedures. The standard technical assistance model favored by donors and host governments, in which advisers

attempt to transfer technology to existing institutions in the public sector is not, in general, compatible with these conditions.

The alien philosophical approach of CJEDP was manifest most clearly when contrasted with the government's view of small enterprise as residual rather than dynamic and the protective paternalism which followed. Furthermore, the idea of spinning off activities to the private sector, or of phasing out an assistance effort, was as strange to Indonesian public servants as to bureaucrats anywhere. Even in the absence of the philosophical rift, the structure of the bureaucratic environment was inconsistent with the operational requirements of CJEDP. The problems most clearly apparent were related to inflexibility in programming; the narrow and parochial focus of individual line agencies, which limited the kinds of assistance that could be applied to any given project; the structural inability to employ expatriate technical advisers; the inability to pay for professional program managers; and the inability to provide sufficient vehicles, gasoline, and travel money.

**Small Interventions**

A serious challenge to donors lies in the inherently small size of many CJEDP-type interventions. It is highly inefficient for a donor to fund individual activities that may be called for in a selected subsector. Furthermore, activities at different stages in an industry may call for an array of skills not generally possessed by single organizations. CJEDP served an important intermediary function for both A.I.D. and the GOI by providing an efficient structure for implementing small activities that required varied mixes of skills.

**Tolerance of Failure**

The CJEDP approach to enterprise development is bound to fail in certain situations and with certain clients. A variety of factors can contribute to failure -- shifts in demand, price changes, project-client difficulties, and so on. Just as businesses regularly fail, a project designed to support business must know when a challenge is lost, an opportunity has passed, and it is time to

cut losses and move on.

Unfortunately, as CJEDP discovered, failure is difficult to tolerate in the political environment of donor-recipient relations. After a half dozen ranking officials of the donor agency visit a nearby project site and it is written up as a significant example of a successful intervention, it is difficult to explain to the donor that the client is on the skids. Psychologically, it is easy to "give it a little more time" rather than make the difficult decision to stop assisting a particular client.

### Allowing Sufficient Time

A substantial amount of time is required to accomplish many of the critical tasks in enterprise development. The most important time-dependent tasks are: (a) identifying and selecting clients; (b) building mutual trust; (c) training project staff -- particularly those with primary responsibility for transfer of technology; (d) establishing operational technical systems; (e) providing on-going problem-solving assistance to clients as their operations develop; and (f) gradual phasing-out of project assistance. Promising too much too soon can be a political disaster for a project.

## Concluding Comments

The Central Java Enterprise Development Project has ended, but the opportunity to capitalize on its experience is just beginning. CJEDP was barely able to scratch the surface of an approach to small enterprise development that appears to offer considerable potential in a broad range of circumstances.

- In Ecuador, an approach similar to CJEDP's has been successfully used to stimulate development of private enterprise in the wood products subsector.
- In several recent reviews of successful microenterprise projects, the conclusion has been reached that the greatest effects have been achieved when credit, technical assistance, or both were applied in the setting of particular industries rather than

across a variety of subsectors. Likewise, the absence of detailed knowledge about opportunities in particular industries has been blamed for limiting the effectiveness of lending programs.

- In India, a PVO (PRADAN) has claimed remarkable success in leveraging the growth of rural industries through commercially viable nucleus ventures.

There are undoubtedly other examples of the potential usefulness of this type of approach to enterprise development.

# APPENDIX A

# CJEDP COST SUMMARY

**Table A1: CJEDP Cost Summary -- Implementation Team (U.S. dollars)**

| Item of Cost | US A.I.D. | GOI | TOTAL |
|---|---|---|---|
| **Implementation Team Management** | | | |
| Project Management | 321,689 | 5,040 | 326,729 |
| Contract Administration | 41,107 | 0 | 41,107 |
| Operations 82,515 | 86,297 | 168,812 | |
| **Total Management** | **445,311** | **91,337** | **536,648** |
| **Subproject Implementation** | | | |
| **Shrimp Subproject** | | | |
| **Hatchery Development Program** | | | |
| Hatchery Construction Grant | 88,763 | 0 | 88,763 |
| General Assistance | 0 | 1,542 | 1,542 |
| Research and Development | 0 | 39,967 | 39,967 |
| Training Equipment and Materials | | 21,236 | 21,236 |
| Short-term Technical Assistance | 15,954 | 18,533 | 34,487 |
| Long-term Technical Assistance | 64,879 | 0 | 64,879 |
| Subproject Overhead | 32,575 | 21,574 | 54,150 |
| **Total Hatchery Program** | **202,171** | **102,853** | **305,024** |
| **Feed Development Program** | | | |

| | | | |
|---|---|---|---|
| Facility, Equipment and Operations | 2,542 | 18,989 | 21,531 |
| Feed Staff | 875 | 13,899 | 14,774 |
| Long-term Technical Assistance | 77,554 | 0 | 77,554 |
| Subproject Overhead | 27,922 | 18,492 | 46,414 |
| **Total Feed Program** | **108,893** | **51,380** | **160,273** |
| **Pond Development Program** | | | |
| Pond Rental and Equipment | 0 | 27,767 | 27,767 |
| Pond Operations | 2,863 | 34,792 | 37,655 |
| Pond Staff Costs | 0 | 26,394 | 26,394 |
| Short-term Technical Assistance | 16,447 | 1,234 | 17,681 |
| Long-term Technical Assistance | 104,583 | 0 | 104,583 |
| Subproject Overhead | 32,575 | 21,574 | 54,150 |
| **Total Pond Program** | **156,468** | **111,761** | **268,230** |
| **Total Shrimp Subproject** | **467,533** | **265,994** | **733,527** |

**Table A1 continued: CJEDP Cost Summary -- Implementation Team (U.S. dollars)**

| Item of Cost | US A.I.D. | GOI | TOTAL |
|---|---|---|---|
| **Metal Subproject** | | | |
| Components Research | 0 | 15,121 | 15,121 |
| Prototyping Unit | 0 | 17,543 | 17,543 |
| Prototype Costs | 0 | 180,962 | 180,962 |
| Biomass Prototype Cost | 45,975 | 0 | 45,975 |
| Producer Training | 0 | 10,788 | 10,788 |
| Marketing and Commercialization | 0 | 13,495 | 13,495 |
| Long-term Technical Assistance | 101,264 | 0 | 101,264 |
| Short-term Technical Assistance | 8,034 | 0 | 8,034 |
| Subproject Overhead | 57,303 | 37,553 | 94,856 |
| **Total Metal Subproject** | **212,577** | **275,463** | **488,040** |
| **Export Subproject** | | | |
| **General Export Support** | | | |
| General Support Expenses | 0 | 1,371 | 1,371 |
| Export Inventory | 0 | 4,432 | 4,432 |
| Short-term Technical Assistance | 36,784 | 0 | 36,784 |
| Long-term Technical Assistance | 7,233 | 0 | 7,233 |
| Subproject Overhead | 20,408 | 6,534 | 26,942 |
| **Total General Export Support** | **64,424** | **12,337** | **76,761** |

| | | | |
|---|---|---|---|
| **Rattan Export Development Program** | | | |
| General Assistance Expenses | 35 | 11,795 | 11,830 |
| Marketing Assistance | 12,602 | 12,023 | 24,625 |
| Short-term Technical Assistance | 40,860 | 11,686 | 52,546 |
| Long-term Technical Assistance | 16,335 | 0 | 16,335 |
| Subproject Overhead | 46,090 | 14,757 | 60,847 |
| **Sari Rose Support Program** | | | |
| General Assistance and Training | 0 | 21,039 | 21,039 |
| Marketing Assistance | 1,612 | 8,425 | 10,037 |
| Short-term Technical Assistance | 34,956 | 5,997 | 40,953 |
| Long-term Technical Assistance | 14,974 | 0 | 14,974 |
| Subproject Overhead | 42,250 | 13,527 | 55,777 |
| **Total Sari Rose Support** | **93,792** | **48,988** | **142,780** |

**Table A1 continued: CJEDP Cost Summary -- Implementation Team (U.S. dollars)**

| **Item of Cost** | **US A.I.D.** | **GOI** | **TOTAL** |
|---|---|---|---|
| DUJ Support Program | | | |
| General Assistance and Training | 27 | 86,525 | 6,803 |
| Marketing Assistance | 3,735 | 3,344 | 7,079 |
| Short-term Technical Assistance | 25,415 | 2,685 | 28,100 |
| Long-term Technical Assistance | 10,890 | 0 | 10,890 |
| Subproject Overhead | 30,727 | 9,838 | 40,565 |

| | | | |
|---|---|---|---|
| **Total DUJ Support** | **71,045** | **22,392** | **93,437** |
| **Trangsan Training Program** | | | |
| Training Expenses | 638 | 11,650 | 12,288 |
| Trainer Salaries and Equipment | 7,180 | 13,770 | 20,951 |
| Short-term Technical Assistance | 66,637 | 4,006 | 70,644 |
| Long-term Technical Assistance | 10,890 | 0 | 10,890 |
| Subproject Overhead | 30,727 | 9,838 | 40,565 |
| **Total Trangsan Training** | **116,073** | **39,264** | **155,337** |
| **Other Training Programs** | | | |
| Salatiga 0 | 1,094 | 1,094 | |
| Jepara 1,743 | 0 | 1,743 | |
| Medan | 5,202 | 575 | 5,776 |
| Long-term Technical Assistance | 1,361 | 0 | 1,361 |
| Subproject Overhead | 3,841 | 1,230 | 5,071 |
| **Total Other Training** | **12,147** | **2,899** | **15,046** |
| **Total Rattan Program** | **408,979** | **163,804** | **572,782** |
| **Other Product Support** | | | |
| Garments - Workshop and TA | 14,160 | 0 | 14,160 |
| Garments - PUSPETA Tr'ng & Mrketng | 823 | 8,586 | 9,409 |
| Wood Products - PUSPETA Furniture | 12,000 | 0 | 12,000 |
| Wood Products - Marketing | 0 | 2,465 | 2,465 |

| | | | |
|---|---|---|---|
| Brass - Marketing | 0 | 566 | 566 |
| Long-term Technical Assistance | 6,550 | 0 | 6,550 |
| Subproject Overhead | 18,482 | 5,917 | 24,400 |
| **Total Other Product Support** | **52,016** | **17,535** | **69,551** |
| **Total Export Subproject** | **525,419** | **193,675** | **719,094** |

**Table A1: CJEDP Cost Summary -- Implementation Team (U.S. dollars)**

| **Item of Cost** | **US A.I.D.** | **GOI** | **TOTAL** |
|---|---|---|---|
| **Total Subprojects** | **1,205,528** | **735,133** | **1,940,661** |
| **Total Implementation Team** | **1,650,839** | **826,470** | **2,477,309** |

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