



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

19897

Distr.
RESTRICTED

ODG/R.8
27 October 1992

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

ORIGINAL: English

3 p.
Tei46

**THE SETTING UP OF A RURAL SMALL
CAPACITY COCONUT PROCESSING MODEL SCHEME**

US/RAS/86/191

INDONESIA

Report of the ex-post evaluation mission*

Prepared in co-operation of
the Government of the Federal Republic of Germany and the
United Nations Industrial Development Organization

* This document has not been edited.

V.92-57905 c/rasrep

TABLE OF CONTENTS

	<u>Page</u>
Abbreviations	3
Explanatory notes	3
Summary of conclusions and recommendations	4
Preface	5
Introduction	6
I. PROJECT CONCEPT AND DESIGN	7
A. Socio-economic and institutional context of the project	7
B. Project document	11
II. PROJECT IMPLEMENTATION	14
A. Delivery of inputs	14
B. Implementation of activities	15
III. PROJECT RESULTS AND ACHIEVEMENT OF OBJECTIVES	16
A. Outputs	16
B. Achievement of the immediate objective	19
C. Contribution to the achievement of the development objective	19
IV. CONCLUSIONS	20
V. RECOMMENDATIONS	21
VI. LESSONS LEARNED	22

Annexes

1. Terms of reference of the in-depth evaluation mission
2. Organizations visited and persons met

Statistical tables

Table 1: Estimated Areas and Production from Coconuts in Important Producer Countries/Regions and World-Wide, 1986 - 1990

Table 2: Indonesia: Area and Production of Coconut by Province, 1990

Table 3: Indonesia: Area and Production of Coconut, 1986 - 1990

Table 4: Indonesia: Estimate Production of Coconut Products, 1986 - 1990

Table 5: Indonesia: Contributions from the Coconut Sector to Export Earnings, 1986 - 1990

Table 6: Indonesia: Number of Coconut Factories and Annual Capacity by Province, 1988

Table 7: International Prices of Selected Oils & Oilseeds, 1980 - 1992

ABBREVIATIONS

APCC	Asian and Pacific Coconut Community
BAPPENAS	Planning Agency of the GOI
BMZ	Federal Ministry for Economic Co-operation
CTA	Chief Technical Advisor
FFA	Free Fat Acids
GDP	Gross Domestic Product
GOI	Government of Indonesia
m/m	man-months
NPA	National Project Assistant
PKO	Palm Kernel Oil
UNDP	United Nations Development Programme
UNIDF	United Nations Industrial Development Fund
UNIDO	United Nations Industrial Development Organization
UNV	United Nations Volunteer

EXPLANATORY NOTES

Except when otherwise mentioned measures indicated in this report refer to the International System of Units (SI).

The monetary unit of the country is the Indonesian Rupee (Rps.) and its value in relation to the United States Dollar (U.N. operational rate of exchange) during the period covered by the report is as follows:

Jan. 87 - 1,643 Rps	Jul. 88 - 1,673 Rps	Jan. 90 - 1,790 Rps	July 91 - 1,950 Rps
July 87 - 1,643 Rps	Jan. 89 - 1,724 Rps	July 90 - 1,840 Rps	Jan. 92 - 1,980 Rps
Jan. 88 - 1,644 Rps	July 89 - 1,763 Rps	Jan. 91 - 1,890 Rps	July 92 - 2,030 Rps

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

The main conclusion of this ex-post evaluation is that the project had no impact and sustainability. This was mainly due to inadequate project design, where the real situation of rural coconut processors and market environment were not ascertained. The model concept was not defined neither the way the extension service was to operate. Therefore, there were no effects deriving from replicability. It was also found that the project operated in isolation from the regional institutions of the host country and was perceived solely as an APCC/UNIDO effort.

The small technical improvements in six factories are mostly in operation. The larger investment in the so-called "model plant" did not pay off and is only partially operational. The publication on model coconut processing has been of very limited use.

The future utilization of laboratory and workshop equipment should be reviewed by the Department of Trade. For the improvement of competitiveness of coconut processing a more comprehensive utilization of coconut meat and by-products has to be considered on the basis of financial feasibility.

PREFACE

The Government of Germany and UNIDO consider it important to assess project impact and sustainability as well as to draw lessons from projects which have been completed over at least one year. For this purpose an umbrella project for ex-post evaluations was approved. That umbrella project foresees a series of ex-post evaluations of which the third is covered by this report.

The two projects selected for the first mission are both related to the agriculture sector in so far as they are based on agricultural inputs and, in the case of one project, provide a product to the same sector. One of the projects (US/PHI/85/109) is a typical institution building project, whereas the other (US/GLO/87/125) aimed at the establishment of a demonstration plant including the transfer of technology developed by UNIDO under a previous, German financed project. The counterpart in the former project was a government institution, i.e. the project belongs to the traditional type of technical co-operation projects, whereas project US/GLO/87/125 was implemented in co-operation with a private company.

The third project, covered by this report, is also based on agricultural inputs, is located in a rural area and is an institution building project although this was not explicitly stated in the project document. The counterpart was dual, i.e. the APCC and the Indonesian Ministry of Trade which in turn is the counterpart government agency to APCC in Indonesia.

The three projects aimed at a global, regional, or sub-regional outreach and, according to their design, were not meant to be purely national projects.

The report follows the format for UNIDO in-depth evaluations. Since the project is completed and no follow-up assistance is recommended, the purpose of this report is to draw lessons for further use, in particular a possible review of the policies governing UNIDO execution of BMZ financed projects.

INTRODUCTION

The project US/RAS/86/191 "Setting up of a Rural Small Capacity Coconut Processing Model Scheme in Indonesia" originated from a request submitted in June 1986 by the Asian and Pacific Coconut Community (APCC) in June 1986 to the United Nations Industrial Development Organisation (UNIDO). The request followed the recommendations made by APCC-sessions in May and October 1986, where it was also decided that the Government of Indonesia would host the project and would appoint the Department of Trade as the National Counterpart in close co-operation with the APCC. According to the request and to its design, the project aimed at a regional outreach. The project was approved by UNIDO in 1987. Funding for an amount of up to US\$ 297,190 was provided by the Federal Ministry for Economic Co-operation (BMZ) of the Federal Republic of Germany via a "Special Purpose Contribution to the Industrial Development Fund" of UNIDO. The contribution agreement was signed in August 1987 followed by the issuing of the UNIDO "Project Allotment Document" in September 1987. The project was implemented in the province West-Sumatra between January 1988 to April 1990.

The purpose of evaluating the "Coconut Model Scheme" was to assess its results, development effectiveness, sustainability and model character and to draw lessons from the project experience.¹

The field visit of the mission to Indonesia took place from the 10th to 18th of September 1992. It was preceded by a desk review of background and project documentation as well as discussions with selected officers in UNIDO, Vienna. Parts of the report were prepared in the field and the document was finally completed in Germany and Austria. The evaluation team was composed as follows:

- ▶ Ms. Erika Giesen, Ministry for Economic Co-operation, Federal Republic of Germany,
- ▶ Mr. Oscar Gonzalez-Hernandez, Chief, UNIDO Evaluation Staff,
- ▶ Mr. Wolfgang Hannover, Independent Consultant, Federal Republic of Germany.

The mission consulted in Djakarta with representatives of the Indonesian Government in the Ministries of Trade, Industries as well as with the Head of the Bureau of Trade and Industry in the national planning institution BAPPENAS. Furthermore, discussions were held with the Executive Director of APCC, the Resident Representative of UNDP, the Minister-Counsellor of the German Embassy and the UNIDO Country Director. At provincial (West-Sumatra) and district (Pariaman) levels discussions were held with representatives of the Departments of Trade and of Industry. The field work in the project area included visits to the workshop and laboratory facilities, the seven processors supported under the project as well as to other processors who had not taken part in the project. Interviews were conducted with the managers of the factories as well as with traders and consumers of edible oil.²

The evaluation team would like to thank all contacted persons for their co-operation and support to the mission.

¹ The terms of reference for the mission are attached in annex 1.

² A detailed list of institutions and persons contacted is attached in annex 2.

I. PROJECT CONCEPT AND DESIGN

A. Socio-economic and institutional context of the project

The economy

1. The success of Indonesia's economic adjustment programme has led to a rapid growth in incomes. Despite a drought that strongly reduced growth in agriculture, total real Gross Domestic Product (GDP) continued to grow at about 6,8% during 1991. The impressive gains in diversification following a policy of emphasis on private sector development and deregulation is expressed especially also in the continued high growth of the manufacturing sector with more than 10% increasing its share to GDP to about 20%. The rapid rate of economic growth since the mid 1980s has begun to strain the existing infrastructural facilities while the high level of investment and consumption activities have increased demand pressures resulting in relatively high inflation rates and a growing current account deficit. The challenge of the next years for achieving the ambitious goals of the national development plan will be the further improvement of macroeconomic stability, the continuation of policies towards diversification, privatisation and deregulation in support of mobilizing domestic and external resources for investment as well as human resource and institutional development for improving quality and standards.

The agriculture sector

2. Agriculture in Indonesia accounts for almost a quarter of the country's GDP³, more than half of the employment of the labour force and nearly 50% of non-oil exports. The sector has grown by about 4% per annum over the last two decades. Advances in agricultural production and productivity have resulted in a substantial real income increase of farmers - also on the Outer Islands - with a major impact on poverty alleviation⁴. Tree crops, comprising rubber, oil and beverage crops, account for more than 40% of the cultivated area⁵, contribute 17% of the agricultural GDP and about 50% of the agricultural export earnings⁶ as well as employ some 30% of the labour force.

The coconut sector in the international context

3. Coconut trees in Indonesia occupy a cultivated area of 3,3 million ha and an annual production in copra equivalent of 2,3 million t being one of the important crops in the tree crop sector. They are nearly entirely (98%) cultivated by smallholders with relatively low standards of crop husbandry often in mixed cropping systems. In terms of share of the world production, Indonesia has meanwhile reached about the same importance as the Philippines. The two countries together contribute to more than 50% of world production, which is heavily concentrated in the tropical regions of south-east Asia. Member countries of the APCC contribute about 85% to world production⁷, which ranged during the last years between 8 to 9 million t of copra equivalent.

³ Sectoral GDP in 1990 = about Rps. 43,000 billion.

⁴ The proportion of the population living below the poverty line in rural areas declined rapidly from 50% in the mid-seventies to about 20% towards the end of the 1980's.

⁵ Total tree crops amount to about 7.6 million ha.

⁶ Export earnings from major tree crops 1989/90 = US\$ 1.9 billion.

⁷ Compare statistics in table 1.

4. A large number of products can be manufactured from coconuts. Most important has been coconut oil which is used as a major source of lauric acid (saturated fat acid) in the production of e.g. soaps and detergents but also as an edible oil for human consumption. In the world market it is - together with the increasing supplies of palm kernel oil - partly to be considered as a niche-product for further industrial use⁸ and partly it is integrated into the international edible oil market. The edible oils and fats world market is an highly integrated market characterized by substantial substitution possibilities in demand and diverse supply sources dominated by oil seeds from annual crops. Vegetable oil prices are correlated and most oilseeds are used in the joint production of vegetable oil for human consumption and the residues from processing (meal or cakes) are used for livestock feeding. Prices are volatile and on the long term - due to faster increasing supplies than demand - the trend in real terms has been strongly downward.⁹

5. The world trade of coconut oil is dominated by the Philippines with nearly 70% of the 1,7 million t exported world-wide in 1990. Due to the strong competition from other vegetable oils, prices and returns to growers have been fluctuating but are generally on the decline in all producer countries of coconuts. In order to maintain and improve the competitiveness of coconut production a more diversified and comprehensive utilization of coconut meat, by-products and residues has been attempted in most countries. Although many possibilities exist the limited markets for such developments and the very dispersed production base in many smallholdings have constrained major progress in this respect.

The coconut sector in the national context

6. Indonesia produces its edible oils almost entirely from tree crops. Related policies of the Government to the sub-sector are: (i) ensure adequate supply of edible oils to the domestic market at affordable prices; (ii) raise farmers' incomes and create rural employment; (iii) stimulate agro-industrial development in order to add value to domestically produced raw materials; (iv) contribute to more balanced regional development and the creation of a sound economic basis for settlement in the Outer Islands, where most of the tree crop development is located; (v) increase export earnings.

7. In 1970, coconut oil supplied 90% of the domestic vegetable oil requirements. Spurred on by growing incomes, a rapidly expanding population¹⁰ and declining real prices for oil, the national demand for vegetable oils grew at more than 6% per year. The annual rate of growth in coconut output has been in oil equivalent on average nearly 3% and could not satisfy the domestic demand. Since the mid-seventies the GOI has supported a massive programme especially of palm oil production¹¹, which resulted in production increases of more than 10% per year and production has now reached about 2,1 million t. This expansion programme was accompanied by regulatory measures aiming at protection of production and price stability. Since 1991 this intervention policy has been revoked and palm oil as well as coconut oil is now freely traded and marketed. Domestic prices depend strongly on developments on the world market.

8. The current consumption of edible oil is estimated at 13 kg per capita which is expected to increase by the year 2,000 to 20 kg. In the very competitive domestic market the relatively cheap palm oil had a yearly increasing market share which has reached meanwhile more than 60%. Substantial and increasing quantities are also exported¹². Correspondingly the market share of

⁸ Traditionally about 50% of offtake in both US and Europe.

⁹ Compare price statistics in table 7.

¹⁰ Currently about 180 million people with a growth rate of 2%.

¹¹ 1967 = 100,000 ha under oilpalms; 1990 = 1.2 million ha.

¹² 1990 = about 700,000 t.

coconuts has declined in relative terms to less than 40%; in absolute terms it has been largely stagnating during the last years at about 1 million t oil equivalent. Until 1985 only negligible amounts of coconut oil were exported. Since then the export volumes have been increased to about 0.2 million t (about 12% of world trade), which together with the export of copra cake (1990 = 0.45 million t), coconut shell charcoal and desiccated coconuts have contributed to yearly foreign exchange earnings¹³ between US\$ 114 to 158 million during the last years.

Coconut processing in the national context

9. From the coconut production in 1990¹⁴ of 2.3 million t copra equivalent, about 50 to 60% is dried to copra¹⁵ and then processed and refined to coconut oil. Total copra milling capacity was estimated 1988 at about 1.7 million t established in about 450 mainly medium-sized factories¹⁶. Capacity utilization ranges on average between 60 to 70%. About 35 to 45% of the annual production is consumed or processed to cooking oil directly by the rural households from fresh coconut meat.

10. Furthermore, fresh meat is processed in small-scale rural factories to so called "Klentik Oil". Reliable statistics do not exist on the number of factories and volume of production involved. The Department of Industry has estimated the number of small-scale Klentik Oil processors in 1989 to be in the region of 4,560 employing on average about three persons with an annual value of production of about Rps. 50 billion. At an ex-factory price of Rps. 1,000 per kg of Klentik Oil the annual production would have been in 1989 about 50,000 t of Klentik Oil using about 4% of the total national annual production of coconut meat. Due to urbanization, change of consumption habits also towards higher quality products and strong competition from cheap palm oil or also refined but more expensive coconut oil from copra, the use of Klentik Oil from small-scale processors is on the decline.

Aspects of coconut processing in the project area

11. The project was located in the Pariaman District of the West Sumatra Province¹⁷. In the province about 78,000 ha of coconuts are grown producing about 62,000 t of copra equivalent or 2.7% of the national production¹⁸. In the province there are four medium-sized coconut oil factories with a crushing capacity of about 40,000 t copra equivalent out of which one was recently closed due to difficulties with the supply of raw materials. The Pariaman District, which extends over 7,414 km² with a population of 0.5 million, is with 40,000 ha and an annual production of 35,000 t copra equivalent by far the leading production and the only significant Klentik Oil processing area in the province. According to district statistics there are 40 small-scale processors out of which about 30 are active. Processing capacities are estimated at 18,000 t of fresh coconut meat¹⁹. Capacity utilization is variable from year to year and is mainly influenced

¹³ Compare table 5.

¹⁴ Compare table 3.

¹⁵ Compare table 4.

¹⁶ Compare table 6.

¹⁷ The province consists of 14 districts and extends over 42,297 km². It is inhabited by 4 million people who are nearly entirely of the Minangkabau tribe. In the matrilinear and islamic society traditional customs and values are still of considerable importance.

¹⁸ Compare statistics in table 2.

¹⁹ Equals about 10,000 t copra equivalent.

by price and market forces. For example relatively high prices during 1989²⁰ supported a capacity utilization of 70%. When during 1990 world market and domestic prices dropped severely average capacity utilization was below 40%. Only after prices have recovered from the second half of 1991 onwards processing has again been intensified.

12. Within the Pariaman District in the area around Sungai Sarik in the Tujah Koto Sub-District seven processors were chosen as project participants. The factories have all been established during the last 10 to 20 years on private initiative of the owners copying existing plant designs of the region; most of the owners have been before smallholder farmers and supplement their income from coconut trade. There is no extension service for small-scale coconut processors.

13. Klentik Oil is produced by extracting coconut oil from cooked fresh coconut meat. The by-product is coconut cake which can be marketed without problems. Due to limited managerial capacities, markets and know-how, the production of other coconut products - except some production of charcoal from coconut shells - is not practised in the region. The plant capacities range between one to four tons of fresh meat intake per working day. Employed are besides the owner three to eight labourers per factory as well as in the larger plants a secretary. Often the simple factory buildings are very congested with processing facilities. They consist mainly of a diesel-generator, a weigh-scale, a hammer mill for chopping the meat, two to eight pans for cooking the chopped meat, two to four screw type small expellers for oil extraction, settling and storage tanks for the final product and some storage space for raw materials and by-products. Between the different processing steps, spreads and buckets are used to transport the material. For simple repairs local workshops and for more demanding technical services better equipped workshops in Pariaman or Padang are used, where also new machinery can be purchased.

14. The technical process is simple and labour intensive. Most of the machinery is old. Lack of investments in more efficient machinery or more mechanized processing techniques are due to cheap labour, limited profitability and scarcity and high cost of capital; if at all second-hand machinery is purchased. The quality of the product is mainly affected by the lack of cleanliness and poor hygienic conditions in the factories, the lack of effective oil filtering devices and especially by the supply system of raw materials. Normally fresh coconut meat already removed from the shell is delivered by traders or farmers to the factory site and is stored there in heaps. The share of immature nuts with oil contents of only 15 to 25% as against 34% of mature nuts is relatively high. Price incentives²¹ for raw material of the right quality are not sufficient to ensure that farmers harvest only mature nuts. Often it takes up to two days until the meat is processed. By then it is in an advanced stage of bacterial decomposition with high free fat acids (FFA) causing rancid smelling and a short shelf-life of the product. The hammer mills cut the meat into uneven pieces. Since larger pieces require longer cooking overcooking is common contributing to the dark colour of the oil.

15. The Klentik Oil produced retains its coconut aroma and has a yellowish to brownish colour with a special taste preferred especially by rural consumers. It is not further refined. Due to suspended fine matters it is cloudy in appearance and often moisture and impurity contents reach 0.4 to 0.8% (recommended < 0.3%). Due to high FFA contents of 0.8 to 4.0% (recommended less than 0.5% and ideally < 0.15%) the smell is acidic and sometimes rancid. Klentik Oil is mainly marketed in the vicinity of the factories to consumers in rural areas and via retailers in villages or small towns, either directly by the processors or by traders. For the retailers and finally the consumers the quality of the product is acceptable despite its shortcomings. Therefore, there exist limited incentives for the processors to seriously consider quality improvements.

²⁰ Ex-factory prices per kg Klentik Oil/coconut cake 1989 = Rps. 1,000/170; 1990 = Rps. 650/90; September 1992 = Rps. 950/170.

²¹ Currently the average prices per kg delivered fresh meat are: Grade A = Rps. 245; B = Rps. 235; C = Rps. 225, in accordance with its quality.

16. The major problems of the processors result from strong competition on the side of raw material supplies and from cheap palm oil on the side of the cooking oil market. They contribute to erratic and sometimes very low capacity utilization and overall to relatively low profitability of the established processing systems.

Institutional context of the project

17. The project idea and request originated from the APCC which was also to participate in the organization of the APCC/UNIDO extension service to small-scale coconut processors as well as to ensure the utilization of project experience in other member countries of the community. APCC is an intergovernmental organization of thirteen member countries from Asia and islands in the Pacific. Set up in 1969 its objectives are to promote, co-ordinate and harmonized activities of the coconut industry on the side of production as well as processing and marketing of coconut products. At policy level representatives of the member countries of the community meet about once per year. The technical arm of the community is the Permanent Panel on Coconut Technology (Cocotech) which also meets at least once a year as a forum for exchanging information as well as for setting guidelines for the community's work programme. The Secretariat is based in Djakarta and is headed by an Executive Director supported by technical staff and secretarial services. With its limited financial and personnel resources the Secretariat carries out mainly activities in the fields of information collection and publication, studies and organizing workshops.

18. The UNIDO coconut processing project was the first field project in which APCC participated directly. Due to lack of resources and experiences for such additional tasks, in reality its participation and contributions were very limited. According to the APCC Executive Director the major lesson for the Community to be learned from the project was, that with the existing budgetary and personal constraints, no further direct participation in development projects should be undertaken.

19. The Department of Trade represents the GOI in the APCC and became the counterpart agency to the project on national, provincial and district levels. The functions of the department are the promotion and control of domestic and international trade. The promotion of small-scale industrial development is the responsibility of the Department of Industry which was, however, neither at national nor regional levels involved in the project. Since the Department of Trade has no specialized staff or extension service on food processing, its role in support of the project was limited to limited administrative and liaison functions and the provision of transport to the UNIDO personnel.

20. The project operated at district level largely in isolation from local institutions. The extension service to coconut processors consisted of the UNIDO personnel, which included a National Project Assistant provided by the Department of Trade but paid from the project budget.

B. Project document

21. The project was designed on a very general and global basis and lacked an adequate demand and problem analysis. It was top-down and desk planning without knowledge about its adequacy and relevance to the development problems and potential of small-scale coconut processing in the Pariaman District.

22. In case the development of model concepts are to be meaningful they have to prove their viability and potential for replication and sustainability in all relevant socio-cultural, technical, financial, economic and institutional aspects. Close monitoring and evaluation and process oriented project management with sufficient flexibility is a pre-condition for the success of such project types in a rural environment. Sufficient time for the adoption process of improvements have to be allowed for which is in traditional societies essentially slow. Technical solutions have to be within the financial and managerial capacities and capabilities of the target group. Subsidization

of the cost of investments by project funds has to be kept at a minimum level. Relevant model components of this nature were neither analyzed nor included in the project design.

23. The technical approach as outlined in the project document centred around the establishment of an APCC/UNIDO extension service to small-scale processors. Since the real development problems and potential were not adequately known, the subjects to be covered were outlined in a broad way only. They included improvements on: product quality and diversification; optimum utilization of by-products and appropriate disposal of residues; organizational and managerial aspects; processing technologies; repair and maintenance aspects; product marketing and distribution. The development in the factories were to be supported by training of workers and staff.

24. Before entering into the further analysis of the project document, the special circumstances surrounding the project development/appraisal/approval process prevailing at UNIDO at the time of the project's approval (July 1986) will be briefly described here. UNIDO carried out a major re-organization during 1986 which affected its project development, approval and implementation process. In particular the development of project proposals was to be directed by the Area Programmes Division to ensure that the proposals are in line with the country's priorities and needs and an appraisal function was introduced to ensure that proposals were prepared in accordance with a certain format (in line with the logical framework approach) and were of a minimum standard. The re-organization was announced in end April 1986 but only took effect from August 1986 onwards. Between these two dates project approval was often done on a somewhat erratic basis since neither the old system was in full operation nor the new one enacted. It so happened, that the proposal for this project was submitted for financing under the German contribution to the UNIDF without appraisal and country programme verification.

25. The above mentioned transitional period contributed to an inadequate project design with unrealistic objectives, lack of problem orientation and logic between the different elements of the project. Outputs were not defined and the other elements were incorrectly stated or exaggerated.

26. The purpose of the project - which should have been directed towards institution building for improved extension services to small-scale coconut processors in a limited area - was not adequately defined. In the project document the development objective is stated as follows: "The techno-economic improvement of traditional small capacity coconut processing operations in predominantly rural areas in view of the optimum utilization of coconut raw material, by-products and residues for the organized production and marketing of coconut products". Considering the very limited size of the project especially also in terms of duration and available resources the development objective aiming at contributions to global small-scale coconut processing in its widest sense was unrealistic. In reality the project only managed to address some of the technical aspects of improved processing from fresh meat of coconuts (Klentik Oil) in a very limited area of Indonesia.

27. The immediate objective of the project was stated as follows: "Model coconut processing concept will be developed in a selected rural area in Indonesia by the organization of an APCC/UNIDO extension service to small capacity coconut producing and processing communities. The model coconut processing concept operations and results will be documented in the form of an UNIDO publication to be made available world-wide to all interested parties". Also in view of the above outlined limitations the establishment of a "model concept" and its diffusion - world-wide - to interested parties is an exaggerated statement. Both aspects were not clearly defined nor their relationship to the proposed extension service, which was stated to be an APCC/UNIDO service, when it should have been a service well integrated into Indonesian institutions; either into the existing structure of the competent government agency (Department of Industry) or as a private sector organization under, for example, an association of Klentik Oil producers. The project area had at the time of the preparation of the project document not been defined. Therefore, the technical and socio-economic structure of development problems of small-scale processors was not known. In this regard the project design has to be assessed as speculative and highly risky. The intended transfer of experiences from one locality to another in a country or

even world-wide is another critical aspect. Generally, there are limitations in replicating model concepts developed for a particular rural area to other areas, since small-scale processors with their individual socio-cultural backgrounds and resources face different conditions, limitations and opportunities. In this context, the international outreach becomes even more out of question. Finally, in view of the size of the project, the intended coverage of the project was too broad. To develop, test and introduce on a sustainable basis improved utilization and processing techniques of main products, by-products and residues from coconuts, improved product marketing and distribution systems including all questions related to technical, financial and management aspects exceeded the capacities planned for.

28. **Outputs** were not defined in the project document. Probably the immediate objective was understood to be the major project output. From the major activities of the project the following outputs could have been arrived at:

- improved extension contents developed for small-scale coconut processing,
- a functioning extension service for small-scale coconut processors established,
- technical, organizational, marketing and financial efficiency of participating small-scale processing units improved.

29. **Activities** were to be carried out in phases with a total duration of 18 months: preparatory (one month), operations (16 months), and evaluation and documentation (one month). To be meaningful for planning, the preparatory phase should have aimed at problem analysis as well as concept development and assessment. In the actual situation the project design was already approved and thus preparatory planning was limited to the identification of the project area and target group, as well as to the preparation of a work plan. Although activities were prepared in quite some detail already in the project document, it had to be questionable how relevant they would be in the real situation of the project area.

30. **UNIDO inputs** were well described and in sufficient detail. Especially the contribution of the Indonesian Government to the project - which is of high importance in projects of an institution building character - was not stated and those of APCC were provided in vague terms.

31. In general, no quantified **targets** or indicators were stated (e.g. number of people to be trained, dimensions and outreach of the extension service, etc.). A workplan (called plan of operations) was to be prepared at the beginning of the operations phase. Instead, the preparatory phase report taking the chosen approach for granted was more in line with work planning. Disregarding the appropriateness of the general concept and approach taken, then this document was acceptable and served the purpose.

32. No critical **assumptions** or risks were indicated in the project document, which was at the time of project preparation also not a requirement of the UNIDO planning system.

33. **Beneficiaries** were only generally stated in the project document and this is again a manifestation of the lack of adequate definition surrounding the approach - model and/or extension service - taken by the project. Whereas later in the report on the preparatory phase the number of processors participating directly in the project was limited to seven entrepreneurs, the project document emphasizes the organization of an APCC/UNIDO extension service to small capacity coconut producing and processing communities as the immediate target group. Due to the regional nature of the project, the project results were expected to benefit other coconut growing and processing communities in other parts of Indonesia as well as under the patronage of the APCC Secretariat in the Asian-Pacific Region and even world-wide with UNIDO assistance.

II. PROJECT IMPLEMENTATION

A. Delivery of inputs

UNIDO inputs

34. UNIDO inputs were by and large delivered as stated in the project document. The breakdown per budget line (in US Dollars) as planned in the project document and as actually executed are indicated below together with the reason for the main differences.

BUDGET LINE	ORIGINAL	ACTUAL	DIFFERENCE
19-99 Experts	158,500	166,984	8,484
14-99 Volunteers	23,000	24,266	1,266
15-00 Local Travel	4,000	9,292	5,292
17-99 National Experts	34,000	18,446	(15,554)
18-00 Adjustments	-	(1,101)	-
39-99 Fellowships	6,500	7,515	1,015
49-99 Equipment	35,000	30,902	(4,098)
59-99 Publications	2,000	6,696	4,696
99-99 Total	263,000	263,000	-
UNIDO Overheads	34,190	34,190	-
Grand Total	297,190	297,190	-

35. Explanations for major differences:

- the costs for experts increased by US\$ 8,484 to cover an additional 1.2 m/m of CTA services to prepare manuscripts for the UNIDO publication on the model concept,
- the expenses for the volunteer were increased by US\$ 1,266 to cover an additional 1.0 m/m of UNV services to complete the installation of equipment,
- travel expenses were increased by US\$ 5,292 to cover project travel by the back-stopping officer of UNIDO to the project site and local travel for a project review meeting,
- the actual cost of the national expert was only US\$ 18,446, resulting in a saving of US\$ 15,554. This saving was transferred to budget lines 14, 15, 19 and 59 to cover additional months of expert services, project travel, costs for printing, publication and translation of expert reports from English to Indonesian language.

36. Inputs were provided in general adequately. The only aspect which could be critical, is that in consideration of the level of expertise required most of the know-how, if not all, could have been found in Indonesia. The CTAs permanence in the project was staggered which was adequate

(total duration 10 m/m). Continuously at the project site was a technician from the UN Volunteer Service (16 m/m) as well as the National Project Assistant (19 m/m) who assisted especially in local work co-ordination and translation. This core team was supported by specialized consultants in the fields of coconut processing (6 m/m), quality control (3 m/m), coconut food processing (1 m/m) and coconut marketing (1 m/m).

Government and APCC inputs

37. Government and APCC inputs were only vaguely referred to in the project document without specification and quantification. The lack of a full-time national counterpart to the project - which could not be fulfilled by the National Project Co-ordinator - influenced the lack of sustainability of the project. The APCC Secretariat provided its Deputy Director as the liaison officer whose functions were not specified.

B. Implementation of activities

38. Activities were carried out in the intended sequence: preparatory phase, operations phase, and evaluation and documentation phase. Work planning as carried out during the preparatory phase was adequate. The detailed activities were, except for some time delays, by and large executed. The specifications and prices of equipment to be provided were carefully substantiated by company quotations. The evaluation and documentation phase refers in fact to a final meeting at the project site of the officials from UNIDO, APCC, GOI and the project and the preparation of the document on "small capacity coconut processing". The meeting could in no way serve the purpose of an evaluation since it was only attended by persons who had been closely involved in project implementation and was conducted in very laudatory terms. Furthermore, no detailed investigations of the effects or sustainability of project measures were carried out. The document on a model description on "small capacity coconut processing" was indeed prepared by the CTA of the project, however, the mission was not impressed with its level and contents. It consists essentially of a progress report on the project with little in-depth descriptions, analysis and assessment of technical, financial, economic and institutional parameters. Many publications on the subject of coconut processing exist already in the market. APCC does not list it as one of their own, probably because they do not regard it too highly. A citation analysis conducted in the Science Citation Index database in respect of this publication produced no results.

39. The project made provisions under training for individual fellowships in specific fields of coconut processing. This was utilized for (a) a study of four selected owners of processing units, the national project assistant and the UN volunteers mechanical engineer to Klentik oil producers in other parts of the country as well as manufacturers of plant equipment; and (b) a study tour of five Government officials to the Philippines, Thailand and Malaysia in order to widen their knowledge on policies and strategies in support of small-scale coconut processing operations.

40. The mission could not ascertain an impact from the first study tour. In what concerns the second study tour, it is felt not to be relevant to the context of the project which is essentially limited to a particular region of Indonesia. It should, however, be recognized that the mission, despite trials, could not interview any of the participants in the study tour.

III. PROJECT RESULTS AND ACHIEVEMENT OF OBJECTIVES

A. Outputs

Development of improved extension contents

41. The work on developing extension contents was carried out by the project staff. It was documented in the final reports of the consultants, in technical reports on factory processes and improvements thereof, and partly also in handouts or guidelines which were provided to the processors during training courses on various matters as listed below:

- Introduction to management;
- Job methods, instructions, "handling a problem" and job safety;
- Rules and regulations governing hours of work, leave, attendance and discipline;
- Banking/credit system;
- Cash flow and advantages of taking loan from banks;
- Cooperative systems and how it benefits small processors;
- Feasibility studies and new project evaluation, product unit cost and cost centres;
- Cost of raw materials and quality control;
- Plant maintenance and stock control.

42. The possibilities for product diversification were analyzed by the coconut food processing specialist. Out of ten possible coconut food products the production of "nata de coco", coconut chips, coconut cream and vinegar was more closely investigated. The final result of the assessment was that due to lack of market potential in the region and limited purchasing power commercial processing of new products could not be recommended. Therefore, on this important aspects of product diversification and improved utilization of coconut by-products - for the sustained competitiveness of the coconut industry - no tangible outputs were achieved.

43. All activities were therefore concentrated on the improvement of Klentik Oil processing. Detailed recommendations for improving the quality of raw materials and the end products, the marketing of products, organization and management in the factories and the maintenance of plant and equipment were worked out.

44. An investigation carried out by the project into the financial viability of establishing a new Klentik Oil processing plant came to negative results. Technical extension contents on partial factory improvements should also have been subject to financial analysis and assessment. This was not carried out. To judge the appropriateness of an innovation only from the technical viewpoint is not sufficient regarding the risks involved for the investor.

45. The design of technical improvements for factory development were dealt with in two steps. First, mostly appropriate low cost modifications on plant and equipment and the production flow between various processing steps were identified, analyzed and agreed upon with all participating entrepreneurs. Secondly, out of the seven factories one plant was chosen to become a demonstration coconut processing unit or the model plant. This factory was completely redesigned and equipped to a relatively high extent with new and additional machinery including a costly (about US\$ 7,000) plate filter device imported from Japan. Under due consideration of the already mentioned problems of profitability for investments into new plants, the equipping of the model plant with nearly a complete set of new machinery must be questioned. Especially the filter press, which is technically effective for removing impurities from the oil, is not a viable investment due to lack of additional financial benefits under present market conditions. The extension contents developed for the model plant cannot be regarded as appropriate and in fact were not replicated.

Establishment and operation of an extension service to coconut processors

46. The extension service to the seven coconut processors consisted of the personnel employed under UNIDO contract. Operations were organized from Sungai Sarik, where the project center was established within the premises of the local agricultural co-operative. Besides an office a small laboratory and a workshop was established.

47. The laboratory was sufficiently equipped to carry out quality control from the raw material stage to the finished product especially in what concerns, moisture and FFA contents of the oil produced. The laboratory provided services to the processors mainly during the period of the assignment of the quality control chemist. An officer from the district office of the Department of Trade was supposed to continue the services. However, due to lack of support by the department, these services were discontinued soon after the departure of the international consultant. Continued quality control services are also only meaningful if the processors would actively demand them and aim at improving and maintaining high quality standards. Since this was in reality not the case the justification for the establishment of the laboratory was not sufficient in view of the lack of an institutional concept for continuing the services. Occasional analysis of samples can be carried out cheaper in provincial laboratories in Padang.

48. The establishment of a small workshop enabled the project personnel to carry out some of the technical improvements, modifications and repair work in the factories themselves. Furthermore, some training of labourers of the processors in repair and plant maintenance work was facilitated. Again the question of justification for such a facility has to be asked. For the small number of participants training on maintenance and repair could have been organized in many different ways using e.g. private workshops.

49. Due to the limited number of project participants with their factories all located in the vicinity of Sungai Sarik the processors were visited frequently by the project personnel. Besides advise, on the job training and to some extent also direct assistance in technical improvements training courses were organized as the instruments for disseminating extension contents as indicated under para.41.

50. The training programme was mainly conducted by the project staff. It consisted of: (i) one ten days course on repair and plant maintenance work; (ii) one five days course on organization and financial management; (iii) one ten days course on quality aspects; (iv) three processors were sent for a familiarization tour to technically advanced Klentik Oil processing units in Medan (two) and Surabaya (one). The courses were attended (5 - 17 participants) by the processors or factory personnel and partly also by other processors from the region. The training contents were mostly appropriate for the situation of the small-scale processors. An exception was the course on organization and financial management which covered to a high extent topics of an academic nature (e.g. feasibility studies, cost center accounting, cash flow analysis) instead of concentrating for example on the introduction of a simple book-keeping system. Due to the concentration of the courses during a very short period, the coverage of a wide range of subjects and the insufficient follow-up, the participants with their low educational background had limited benefits from the courses. Nevertheless, the training created more awareness and better understanding of the various aspects involved in the processing of fresh coconut meat and the factors responsible for the quality of end products.

51. With the termination of the project the extension service to the processors ceased to exist.

Improvements in the processing plants

52. The technical improvements carried out in the factories were mainly financed from the project budget and provided as grants to the processors. The contributions by the beneficiaries were mostly limited to the provision of labour for the installation. Under such arrangements co-operation between the project and beneficiaries and acceptance of the granted physical

improvements can be expected in a relatively short time. However, for replicating innovations in other plants this procedure cannot be regarded as a model since in the normal situation processors would have to finance the improvements themselves. Adoption processes would be slow. To convince the target group will require more efforts by an extension service as well as substantial visible benefits from each innovation.

53. In the technical development programme for all factories one processor did not participate since for most of the time of the project duration no processing activities took place in the plant. The major technical improvements in the six factories can be summarized as follows:

(i) In all factories the fireplaces for the cookers were equipped with chimneys. Also the fireplaces were redesigned and in three factories two fireplaces were combined into one for heating of two pans. These measures contributed to improved combustion of firewood, better heating efficiency and disposal of flue gas into the air. The use of firewood was reduced; improved working conditions were created due to less polluted air in the factories.

(ii) One to two cooking pans were installed using semi-cylindrical pans which increased the effectiveness of stirring and reduced overheating; both are contributing to improved cooking processes.

(iii) For improved filtering of the Klentik Oil coming from the cooking pans new filtering devices consisting of a screen with 10 mm to 1 mm slots (before wire mesh with 3 mm to 6 mm mesh size was used) were installed. With this measures coarser particles were more effectively separated from the oil before entering the settling tank; finer particles are, however, not affected by this measure and remain in the final product.

(iv) For the reduction of oil spillage and losses when handled and transported manually with buckets in most factories the following improvements were installed: a tank for expelled oil equipped with pumps and pipelines to the cooking pans; pipelines from the filtering device to the settling tank; a pump with pipelines to the elevated storage tank which in a few cases was also provided.

(v) Furthermore, spare parts were provided for replacing worn out machinery parts.

(vi) The total cost of the plant and equipment improvements amounted on average per factory to about Rps. 2 million (about US\$ 1,100).

54. The model plant received in addition to the above modifications the following equipment and improvements (total cost more than US\$ 12,000): one chopper, two expellers, three cooking tanks with mechanized stirrers, one filter press. Furthermore screw conveyors were installed to transfer: fresh meat to the chopper; cut meat into a tank where it is mixed with expelled oil into a slurry and transported from there to the cooking tanks using a pump and pipelines; brown cake coming from the cooking tanks (after oil separation) to the first expeller.

55. With the new and additional machinery and more mechanized flow of production the potential of this plant for processing of fresh coconut meat with minimum losses in the production process and an improved cleanliness of the oil was increased.

56. On the other extension contents of the project, which were more on the organizational and managerial side of activities, hardly any adoption occurred. That means essentially the hardware financed by the project was accepted to the level expected in the project plan; however, the software aiming e.g. at quality improvements, better hygiene in the factories, improved maintenance of plant and equipment, adequate financial management etc. was not adopted. The situation remained as it used to be before the project. To change traditional attitudes and habits, particularly in rural areas, is a long process and cannot be expected to be achieved in a relatively short time. This is especially the case when the target group does not see major problems with the

way how they conduct their business and there is limited financial incentives for change.

57. When looking more than two years after project termination at the production history of the plants, there were according to the processors only minor or no production increases due to the project. Production is continuing to be erratic and heavily influenced by raw material supplies and price levels for raw materials and Klentik Oil. Low utilization of processing capacities continued to be a major problem during 1990 and 1991 when all plants even stopped activities for long periods. This situation applied especially to the model plant. In financial terms minor advantages resulted from lesser use of firewood and some decrease of oil losses within the production process. Since a monitoring system was not established precise figures are not available. On the side of oil quality, the improvements are marginal since the deciding factors of prevention of decomposition of raw materials and ensuring sufficient cleanliness in the factories were not adopted.

B. Achievement of the immediate objective

58. The immediate objective of the project was not achieved. A more diversified product development and the optimum utilization of by-products from coconuts was due to lack of market potential not undertaken. In what concerns Klentik Oil processing, improved extension contents were defined. Satisfactory adoption only occurred on those aspects which were funded by project grants, which cannot be regarded as a basis for replication. Furthermore, due to the low returns in Klentik Oil processing, the relatively high investments into the model plant are questionable on the basis of their financial viability. The publication on the model coconut processing concept due to lack of an in depth analysis of "the model" and critical assessment is of very limited value for further use by other interested parties, particularly abroad.

59. On the side of institution building no sustainability was aimed at and achieved. For the laboratory and the workshop no concept was worked out for the time after project termination, and how the equipment and chemicals could be used in future (total value nearly US\$ 10,000). The laboratory is not used; the equipment and chemicals are still available. The workshop equipment is meanwhile partly being used by the workshop of the local co-operative. This is done without authorization by the Department of Trade which is, according to government and U.N. regulations, still responsible for the equipment.

60. On factory level the physical improvements installed in all six factories are mostly still operational and used. As already mentioned other recommendations of the project were hardly accepted. In the model plant hygienic conditions were especially poor. This processor has also since nearly one year stopped to use some of the equipment installed by the project. It is the case with the three cooking tanks with stirrers and the screw conveyors for mechanized transport of materials between different processing steps. The owner found it more convenient to go back to the old processing system instead of repairing or using the equipment. The lack of sustainability supports one of the major findings of the evaluation mission, that in this project a model coconut processing concept was also not developed for the production of Klentik Oil.

C. Contribution to the achievement of the development objective

61. Since the immediate objective of the project was not reached the contributions to the development objective can also be regarded as negligible. Even within the project area neither the project participants nor other processors from the region have shown interest of copying examples of improved techniques or of the model plant introduced by the project. The publication on the model concept was reportedly produced in 400 copies. According to the APCC Executive Director one copy was made available to each member country. Until now there were no responses to the publication or further inquiries. On the further use of the publication no information was available from UNIDO. As mentioned in para.38, there is no mention in the Science Citation Index.

IV. CONCLUSIONS

62. The principal problem of this project has been the inadequate project design with unrealistic objectives and lack of problem analysis and knowledge about the relevance and potential of the concept for the real situation of rural coconut processors. The establishment of a viable coconut processing model concept and its diffusion world-wide was especially in comparison to the size and duration of the project an over ambitious goal. For the intended transfer of experiences from one region to another there are limitations, since small-scale processors face with their specific backgrounds and resources different conditions, limitations and opportunities according to the areas where they live. If the development of a model concept is to be meaningful it would have to prove its viability and potential for sustainability and replication in all relevant socio-cultural, technical, financial, economic and institutional aspects. Monitoring, evaluation and process oriented project management are essential instruments for the success of such projects. Model components and instruments were not included in the design of this project.

63. A replicable model coconut processing concept was not achieved. Due to lack of an adequate institution building concept the project operated in isolation from the regional institutions of the host country. A sustainable extension service for coconut processors was neither attempted nor achieved. The lack of market potential for the intended product diversification and optimum utilization of by-products prevented activities and outputs on this important aspect of the project concept. Extension contents on a wide range of aspects for Klentik Oil processing were formulated which were, however, only adopted on the side of plant and equipment improvements provided as grants by the project. The relatively high investments into the "model plant" were risky and lacked financial viability. They were only accepted by the processor due to the high level of subsidization, which cannot be the basis for a replicable model. Extension contents aiming at management and especially quality improvements were not accepted by the beneficiaries since for the rural consumers the quality of this edible oil is despite its shortcomings on impurities and high FFA contents still acceptable. Therefore limited incentives exist for the processors to seriously consider quality improvements.

64. The impact of the project on institution building, production, productivity and incomes, product quality and generally on the strengthening of the competitiveness of the small-scale processors has been marginal. Erratic and often low capacity utilization due to strong competition on the side of raw material supplies and the edible oil market continue to be the main problems of the Klentik Oil producers. Sustainability of project innovations was on the side of a continuing extension service including workshop and laboratory services not achieved. The more appropriate smaller technical improvements in six factories continue to be mostly operational. Within the model plant parts of the installed machinery is already out of operation indicating insufficient absorption and financial viability. The publication on the model coconut processing concept is due to lack of an in depth analysis of the "model" and critical assessment of very limited value for the use by other interested parties. Even within the project area neither the project participants nor other processors from the region have shown interest in copying examples of improved processing techniques or of the model plant introduced by the project.

V. RECOMMENDATIONS

65. The Department of Trade should review the future utilization of laboratory and workshop equipment and materials provided under the project. Since it is unlikely that in the short and medium term laboratory services will find sufficient acceptance by the processors the alternative use of the equipment and chemicals e.g. in provincial laboratories of the government should be investigated. The workshop equipment is already partly utilized by the local co-operative in Sungai Sarik, which is also providing repair services to some of the small-scale processors. The handing over of the equipment to this organization would strengthen their capacities and capabilities for improved repair services.

66. For the improvement of competitiveness of coconut processing a more diversified and comprehensive utilization of coconut meat and by-products remains an important aspect for the sub-sector. For more rational decision making product and market studies should be the first step for guiding the design of appropriate intervention measures.

VI. LESSONS LEARNED

Planning (preparatory phase) of a project

67. Projects with high risk or where the feasibility has to be verified need preparatory assistance. However, such preparatory work should not be regarded as simple work planning but rather to verify the hypothesis, approach and feasibility of the intervention. Based on positive findings, only then the project should be prepared with the corresponding budget. This should not be done before the preparatory assistance takes place. If the findings of the preparatory phase are negative, the project should be modified or abandoned, for obvious reasons.

68. An appraisal before this project's approval would have detected many of the faults identified by this ex-post evaluation. This demonstrates the need for the appraisal function.

69. Reporting and evaluation requirements are often, as in the case under review, expressed in the project document in vague terms. Such requirements and who is to undertake them should be clearly spelled out in accordance with the particular characteristics and size of the project. Appraisal is to check on this matter.

Rural development projects

70. Rural communities are normally conservative and slow to change. Projects having such groups as beneficiaries tend to be long-term and costly in order to generate a significant development impact and ensure a minimum amount of sustainability. Such projects need to conform to changing conditions according to their location and to experiences gained and therefore design and implementation cannot be so fixed as in other project types. Flexibility in design and implementation is needed. The target groups should be closely associated with the project development and implementation process. Such flexibility is not so easy to achieve for UNIDO executed projects and this reason allied to the need of deep know-how on how rural communities function made the mission wonder whether this type of project is suitable for an UN type of organization like UNiDO.

Regional outreach

71. One of the priority areas of BMZ for UNIDO executed projects refers to regional or sub-regional projects. Although the project under evaluation had its origin in a sub-regional grouping - the APCC - the mission verified that the project could never have had a regional outreach since it was in reality focused on the specific conditions prevailing in one sub-district of West-Sumatra. Even the outreach to other parts of Indonesia can be questionable. It could be that national projects are sometimes turned into regional ones in order to satisfy the above mentioned BMZ priority. The mission recommends that this priority be reviewed in the light of the ex-post evaluations being carried out.

Model/pilot plants - Replicability

72. Another priority awarded by BMZ refers to the model or pilot nature of a particular industrial process covered by the project. This nature should be clearly spelled out from the outset. It should be demonstrated that a pilot or model plant is the solution to the problem addressed by the project. During project preparation alternative solutions and adjoining problems should be investigated - using, for example the problem analysis (tree) approach.

73. The model/pilot approach leads us to think immediately of replicability. It is important to determine at the outset in which conditions the model or pilot plant is replicated. This involves not only the geographical area with its market peculiarities but as well as other considerations such as production scale, type of raw materials and level of manpower development.

Sustainability

74. It is obvious that institution building projects should ensure that the development efforts continue after the project is terminated. This should be clearly spelled out in the project design using the model concept. However, this was not the case in the project under evaluation.

Expertise utilized by projects

75. Expertise, particularly short-term, should be employed locally as much as possible especially in countries where such expertise already exists and circumstances allow. This is for instance the case in Indonesia for most aspects of coconut oil processing.

76. The deployment of long-term national experts should be regarded with caution since conflicts may result from differences of pay-scale between such experts and the national counterparts. At any rate, long-term national experts should never substitute for national counterparts who in the end, are the ones who will have to ensure the sustainability of the project.

Approach taken in project evaluations

77. The present evaluation shows the potential for learning lessons from this type of exercise, both to donors and UNIDO. Evaluations of on-going, or about to terminate projects have the additional advantage of advising independently and objectively on the course of the project or on its possible extension or follow-up. These evaluations should comprise nominees of donors (in this case BMZ), of the executing agency and, whenever possible, of the recipient government. The evaluation team should comprise knowledge of the technical field covered, of the country where the project is executed and of development effectiveness and evaluation methods. Due to the specific interest of BMZ in development issues (impact) BMZ should preferably supply the development specialist while UNIDO should supply the technologist required.

78. Final reports often called evaluation reports, such as in the present case, are written by the project and/or UNIDO project personnel are not reliable, being too optimistic and with very little information on effectiveness and expected impact, which are BMZ's main interests. Annual reports as stipulated in the agreement with BMZ were not even prepared at all. It goes without saying that this is an unsatisfactory situation. Reporting and evaluation requirements for BMZ funded projects should be reviewed and specified contractual obligations should be adhered to.

Annex 1

GOVERNMENT OF GERMANY
UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Ex-post Evaluation - US/GLO/90/265

US/RAS/86/191 The setting up of a rural small capacity
coconut processing model scheme
US/CPR/85/130 Assistance to the Leather Technology
Centre, Shanghai

TERMS OF REFERENCE

1. Background

The umbrella project US/GLO/90/265 was approved to enable the Government of Germany and UNIDO to undertake ex-post evaluations of German-financed projects executed by UNIDO to assess their impact and sustainability and to draw lessons for future use in similar projects. Heretofore, ex-post evaluations of projects were not undertaken regularly since no financial provisions had been allocated for this purpose under the respective projects.

It was decided there would be two evaluation rounds of two projects each. The first mission, in addition to evaluating two projects¹, also provided feedback on the approach for undertaking ex-post evaluations. These findings were used in the preparation of the second ex-post evaluation round of two additional projects. Specific guidelines for ex-post evaluations will be developed if these two exercises indicate a necessity.

The evaluation missions governed by these terms of reference will cover US/RAS/86/191 "The setting up of a rural small capacity coconut processing model scheme" and US/CPR/85/130 "Assistance to the Leather Technology Centre, Shanghai".

The US/CPR/85/130 project aimed at developing in the Shanghai Leather Corporation a centre able to fulfil an important role in the network of leather and leather products centres of the South-East and Pacific Region. The project was operationally concluded in April 1990. In particular, at the end of the project, the centre was to be capable of offering and carrying out services in the following areas:

- Systematization and supply of information concerned with fashion, design, marketing, R&D, manufacturing methods, plant organization and management, work studies, problems of environmental protection, application of micro-electronics, economic aspects and trends of development in the leather tanning, footwear, leather goods, gloves, leather garment and sports goods industries;
- Training of managers, supervisors, instructors and technical staff (e.g., time study engineers, quality controllers);

¹ US/GLO/87/125 Castor meal detoxification technology and US/PHI/85/109 Footwear and Leather Goods Industry Centre.

- Quality control (extended laboratory experiments, sample checks, assessment of product or material quality) and elaboration of guidelines and standards for quality control and for subcontracting the supply of leather and leather products (including substitutes);
- Applied R&D assignments focused on problems related to the specific characteristics of raw materials available, working conditions and techno-economic infrastructure of the region;
- Extension services to companies and/or governments upon request through contractual agreements.

This project is a follow-up and overlaps to a certain extent with the UNDP financed projects DP/CPR/80/007 and DP/CPR/83/004. The first one, under the title "Assistance to the establishment of a central laboratory in Shanghai", started in 1981, installed modern laboratories and introduced testing and quality control methods. The second one, under the title "Leather Technology Centre" established small pilot plants for leather processing, research in footwear technology, development of prefabricated footwear components, leather products development and research on effluent treatment of tanneries.

The second project to be evaluated, namely US/RAS/86/191, consists of the setting up of a rural capacity coconut processing model scheme, started in September 1987 and was completed in August 1990.

The objective of the project was the development of a model coconut processing concept in a selected rural coconut production area in Indonesia by the organization and implementation of an UNIDO/Asian and Pacific Coconut Community (APCC) extension service to small capacity coconut producing and processing communities. The service was to cover all technical, organizational and economic aspects involved. The model coconut processing concept, the implementation methodology and results obtained were to be documented for the information and guidance of the small-scale coconut processing industry worldwide.

Both projects were active in the development of the agro-industry subsector, which is awarded high priority by UNIDO policy-making organs and its major donors. They were chosen for ex-post evaluation since they seem to represent good examples of technology development, of dissemination and of building up national capabilities. Moreover, in the first ex-post evaluation mission projects in similar areas (leather) or of similar nature (establish and/or strengthen national/regional institutions and develop technologies and/or methodologies) or aim at a similar (regional) outreach have been examined and it is believed that comparable lessons may be learned. Both projects have been operationally completed for at least 12 months, hence they qualify for ex-post evaluations.

2. Scope, purpose and methods of the evaluations

The primary purposes of the in-depth ex-post evaluations are as follows:

- (a) To assess whether the achievement of the projects' objectives have led or are likely to lead to a significant contribution to the projects' development objective.
- (b) To assess the relevance of the project and whether the problems that were to be addressed by the project were solved.
- (c) To assess the achievements of the projects against its objectives, including the utilization of outputs produced or results achieved, and the re-examination of the projects' design.

- (d) To identify and assess the factors that have facilitated the achievements of the projects' objectives as well as factors that have impeded the fulfilment of these objectives.
- (e) As part of the above-mentioned tasks, the mission will also review whether the approaches utilized by the projects have led to optimum results as or whether other approaches could have improved the results.
- (f) To identify internal factors which may have influenced the projects' objective achievement or non-achievement. For example, such factors could include project design, quality of expertise provided, adequacy of training, etc.
- (g) To identify external factors which may have influenced the projects' objective achievement or non-achievement. For example, such factors could include unexpected changes in government priorities, changed economic conditions, or new developments in technology.
- (h) To assess the extent to which the projects' results and any impact achieved continue to contribute to project and development objectives after its termination.
- (i) To record the effects the projects have had on their surroundings (institutional, technical, economic, social).

3. Project design

In ex-post evaluations the question of project design should be reviewed since the quality of adequacy of project design not only influences its management, implementation, efficiency and effectiveness but also a good design will help ensure a project's sustainability. To assess these aspects the following issues should be addressed:

- Was the project concept relevant to the needs of the country and appropriate to the country's socio-economic and technical content?
- Were the critical assumptions required for successful project completion and for sustainability adequately considered? To what extent did these prove correct?
- Were success criteria and milestones included in the project design by which project performance and impact of the project could be monitored and evaluated?
- Did the pre- and end-of-project status' descriptions prove correct?

4. Sustainability

Beyond the production of outputs and the achievement of objectives, the evaluation should address the following aspects to help determine whether the positive results of the project are likely to be sustained:

- ◆ Were the project achievements sufficient and of adequate quality to meet the needs of end users? Were the needs correctly identified and adequately translated into services to be produced by a strengthened counterpart institution?
- ◆ Did the demand forecasted for project-strengthened service capabilities and/or technologies developed materialize?
- ◆ Will the project assisted institutions be capable to continue meeting future demands?

- ◆ To what extent is the project's sustainability dependent on external factors which are beyond the immediate control of project management? How, if at all, have these factors affected sustainability?
- ◆ How is the counterpart institution integrated into its institutional framework? Does it co-operate with other similar national and/or international organizations to maximize project results?
- ◆ Were measures envisaged which would help ensure sustainability taken up by project and counterpart personnel?
- ◆ Were management systems and financial arrangements developed which would allow the continuation of activities previously supported by the project? Are government subsidies required? Examine the financing of the institutions assisted.
- ◆ Are linkages with industry well established? Is industry benefitting from the project? Should the project assisted organization market its services better? (Examine the report of the previous ex-post evaluation under private sector co-operation.)

5. Project specific issues

(a) US/CPR/85/130 Assistance to the Leather Technology Centre, Shanghai

- Examine and analyze the pilot nature of the plants for leather and leather products processing established under the project.
- Analyze the services and training being provided by the information processing unit.
- Determine the quality and quantity of training provided by the centre including training materials developed under the project.
- Analyze the regional outreach capabilities of the centre (define "regional") and assess the centre's role (potential or actual) in the context of a regional network. Its relation to the Manila-based leather centre (US/PHI/85/109), evaluated during the previous round of ex-post evaluations, should be considered as well.

(b) US/RAS/86/191 The setting up of a rural small capacity coconut processing model scheme

- Involvement of the Asia and Pacific Coconut Community (Jakarta) in the project and follow-up.
- Analyze the operations of the extension services established under the project.
- Quality and outreach of the UNIDO publication on model coconut processing concept operations prepared by the project.
- Determine the regional (ASEAN) nature of the project, particularly in the participating countries and assess whether adequate and sufficient measures were taken for disseminating the model scheme to other countries.

An assessment of these specific issues will require interviews with the counterpart institutions, other institutions in the countries covering the same subjects, applicable Government officials, trainees, industry representatives and generally end-users of the project.

6. Composition of the mission

The mission will be composed of:

- ✱ one representative of the Government of Germany;
- ✱ one representative of UNIDO;
- ✱ one expert for each project to join the evaluation for their respective parts of the mission.

These representatives should not have been directly involved in the design, appraisal or implementation of the projects.

7. Consultations in the field

The mission will maintain a close liaison with the UNIDO Country Director in each country who will be requested to assist the mission in arranging visits to and interviews with the groups identified above for each project.

Although the mission should feel free to discuss with the authorities concerned all matters relevant to its assignment, it is not authorized to make any commitment on behalf of the Government of Germany or UNIDO.

8. Timetable and report of the mission

A time table for the mission is attached. The evaluation team will stay in China for one week, and in Indonesia for two weeks. Individual appointments will be arranged by the respective office of the UNIDO Country Director. The mission will attempt to complete its work within the given time frame and, upon completion of the mission in each country, brief the authorities concerned on initial findings and conclusions. The technical experts will prepare their respective reports one week after the termination of this mission. The final version of the report will be prepared by the representatives of the Government of Germany and of UNIDO in Vienna and will be submitted to UNIDO, the Government of Germany and the recipient country within three weeks after completion of the assignment.

Annex 2

Organisations visited and persons met *

Government of Indonesia

BAPPENAS/Jakarta

- Mr. Anwar Wardhani, Head of Bureau of Trade and Industry

Ministry of Trade/Jakarta

- Ms. Lily Rosyana, Senior Advisor to the Minister, Head of Foreign Cooperation Division
- Mr. P. Soemarsono, Director Commodity Trading
- Mr. Henry Kuku, staff member

Ministry of Trade/Padang

- Mr. A. Marbsen, Head, Trade Licensing
- Mr. Mawardi, staff member

Ministry of Trade/Pariaman

- Mr. Syahrir Wahab, Director
- Ms. Syafrina, staff member (former laboratory assistant in the project)

Ministry of Industry/Jakarta

- Mrs. Ainsjah Taufik, Head of Bureau for International Relations
- Mr. Ansari, Food Specialist
- Mr. Adib Boesro, Food Technologist
- Mr. Andarto, Chemical Engineer
- Mr. Jusri, Food Technologist
- Mr. Hidayar Suwandi, Head Bilateral Cooperation Relations
- Mr. Ratna, staff member

Ministry of Industry/Padang

- Mr. Syafri Abad, Director
- Mr. Syafri Sarin, Deputy Director

Ministry of Industry/Pariaman

- Mr. Abdul Latif, Deputy Director

* In Indonesia some people have only one name.

Asian and Pacific Coconut Community (APCC)

- Mr. P. G. Punchihewa, Executive Director

German Embassy in Jakarta

- Mr. Albrecht von der Heyden, Minister-Counsellor

German Agency for Technical Cooperation

- Mr. K. D. Peters, Ophir Palmoil Project, GTZ Advisory Team

Organizations of the United NationsUNDP/Jakarta

- Mr. Caspar Jan Kamp, Resident Representative UNDP/FAO/UNFPA

UNIDO/Jakarta

- Mr. Fernando Z. Vicente, UNIDO Country Director
- Mr. Nahruddu Ali, Programme Officer

Coconut processing enterprises visited in Pariaman District

a) Factories assisted by the project

- KSM, Mr. Ali Umar
- Tunas Mekar, Mr. Bujang Latif
- C.V. Abadi, Mr. J. Basri
- USP, Mr. Katiah
- Harapan, Mr. Amin Doren
- Muda Warna, Mr. Buyung Kara
- Kaya Baru, Mr. Hadji Sydiali

b) other factories

- IKS
- Munir

UNIDO/Vienna

- Mr. Horst König, former (retired) Senior Industrial Development Officer
- Mr. A. Sabater de Sabates, Senior Industrial Development Officer, Agro-Industries Branch
- Mr. A. de Faria, Chief, Appraisal Section.

Table 1: Estimated Areas and Production from Coconuts in Important Producer Countries/Regions and World-Wide 1986 to 1990

Items	1986		1988		1990	
	Quant.	in %	Quant.	in %	Quant.	in %
a) Areas under Coconut in Mio. ha:						
Indonesia	3,1	30	3,2	30	3,3	31
Philippines	3,3	32	3,2	30	3,1	29
All APCC-Countries	9,5	92	9,8	92	10,0	93
Total World	10,3	100	10,6	100	10,8	100
b) Production in Mio. t Copra Equivalent						
Indonesia	1,975	23	2,144	27	2,293	25
Philippines	2,690	32	1,894	24	2,472	27
All APCC-Countries	7,217	85	6,493	81	7,791	85
Total World	8,491	100	8,031	100	9,157	100
c) Production of Copra in Mio. t						
Indonesia	1,1	20	1,2	27	1,4	26
Philippines	2,7	50	1,8	40	2,2	41
All APCC-Countries	4,9	91	3,9	87	4,8	89
Total World	5,4	100	4,5	100	5,4	100

Note: Figures are rounded

Source: APCC, Coconut Statistical Yearbook 1990

Table 2: **INDONESIA: Area and Production of Coconut by Province, 1990**

Province	A r e a		P r o d u c t i o n	
	Ha	% Share	MT	% Share
<u>Sumatera</u>	<u>1023840</u>	<u>30.71</u>	<u>682097</u>	<u>29.75</u>
Aceh	102991	3.09	58758	2.56
North Sumatra	151926	4.56	118341	5.16
West Sumatra	77923	2.34	62335	2.72
Riau	317654	9.53	194838	8.50
Jambi	119500	3.58	103935	4.53
South Sumatra	56745	1.70	21450	0.94
Lampung	177691	5.33	114890	5.01
Bengkulu	19410	0.58	7550	0.33
<u>Java</u>	<u>878643</u>	<u>26.35</u>	<u>531754</u>	<u>23.19</u>
West Java	280553	8.41	139260	6.07
Central Java	291907	8.75	167610	7.31
East Java	252901	7.58	180846	7.89
D.I. Jogjakarta	53282	1.60	44038	1.92
<u>Bali</u>	<u>74510</u>	<u>2.23</u>	<u>65403</u>	<u>2.85</u>
<u>Kalimantan</u>	<u>234661</u>	<u>7.04</u>	<u>130704</u>	<u>5.70</u>
West Kalimantan	79443	2.38	43565	1.90
South Kalimantan	55690	1.67	45169	1.97
Central Kalimantan	40066	1.20	19077	0.83
East Kalimantan	59462	1.78	22893	0.99
<u>Sulawesi</u>	<u>643167</u>	<u>19.29</u>	<u>570932</u>	<u>24.90</u>
North Sulawesi	272351	8.17	275000	11.99
Central Sulawesi	163510	4.90	152317	6.64
South Sulawesi	156693	4.70	110865	4.83
South East Sulawesi	50613	1.52	32750	1.43
<u>Nusa Tenggara</u>	<u>210225</u>	<u>6.30</u>	<u>98071</u>	<u>4.27</u>
West Nusa Tenggara	65299	1.96	34458	1.50
East Nusa Tenggara	144926	4.35	63613	2.77
<u>Maluku</u>	<u>188942</u>	<u>5.67</u>	<u>197101</u>	<u>8.60</u>
<u>Irian Jaya</u>	<u>29365</u>	<u>0.88</u>	<u>8470</u>	<u>0.37</u>
<u>Timor Timur</u>	<u>50961</u>	<u>1.53</u>	<u>8500</u>	<u>0.37</u>
T O T A L	3334314	100.00	2293033	100.00

Source: Directorate General of Estates, Ministry of Agriculture.

Table 3: **INDONESIA: Area and Production of Coconut, 1986 - 1990**

Year	Area 1000 Ha	Production of Coconut	
		Million Nuts	Copra Equivalent 1000 MT
1986	3113	9873	1975
1987	3153	10493	2098
1988	3225	10720	2144
1989	3287	11335	2267
1990 ^e	3334	11465	2293

e: estimate

Source: Directorate General of Estate
Ministry of Agriculture.

Table 4: **INDONESIA: Estimate Production of Coconut Products, 1986 - 1990 In MT**

	Copra	Coconut oil	Copra meal	Desiccated ¹⁾ coconut
1986	1141404	645907	422776	303
1987	1145420	647470	423863	2440
1988	1194806	675065	430130	3812
1989	1020477	561984	367844	501
1990	1381419	759780	497311	2774

Note: 1) Export figure only.

Table 5: **INDONESIA: Contribution from the Coconut Sector to Exports Earnings, 1986 - 1990**

Year	Total Exports US\$ 1000 FOB	Coconut Exports US\$ 1000 FOB	Z
1986	14805000	37219	0.25
1987	17237200	91804	0.53
1988	19218502	158747	0.83
1989	22158866	139531	0.63
1990	25675331	114278	0.44

Source: Central Bureau of Statistics.

Table 6: INDONESIA: Number of Coconut Oil Factories and Annual Capacity by Province, 1988 (In MT Copra Equivalent)

Province	1 9 7 7		1 9 8 8	
	No of mills	Capacity	No of mills	Capacity
<u>Sumatra</u>	<u>85</u>	<u>208984</u>	<u>224</u>	<u>455390</u>
Aceh	7	8506	26	10636
North Sumatra	15	43152	82	74680
Riau	15	54879	79	254744
West Sumatra	11	20000	4	39454
Jambi	17	28342	26	53160
Lampung	20	54105	7	22716
<u>Java</u>	<u>132</u>	<u>859695</u>	<u>124</u>	<u>621769</u>
Jakarta	14	256616	5	88218
West Java	16	145593	21	74640
Central Java	19	119460	24	129580
Jogyakarta	1	10800	1	11782
East Java	82	327226	73	317549
<u>Kalimantan</u>	<u>34</u>	<u>36671</u>	<u>15</u>	<u>16500</u>
West Kalimantan	20	26730	15	16500
Central Kalimantan	6	333	-	-
South Kalimantan	3	2700	-	-
East Kalimantan	5	6908	-	-
<u>Sulawesi</u>	<u>121</u>	<u>477334</u>	<u>16</u>	<u>397827</u>
North Sulawesi	44	329310	10	341445
Central Sulawesi	54	39316	6	56382
South Sulawesi	21	103725	-	-
South East Sulawesi	2	4983	-	-
<u>Others</u>	<u>43</u>	<u>79438</u>	<u>70</u>	<u>168529</u>
Bali	8	30300	16	95274
West Nusa Tenggara	3	25810	4	27545
East Nusa Tenggara	9	728	21	2318
Maluku	23	13600	9	41425
Irian Jaya	-	-	20	1967
T O T A L	415	1653122	449	1660015

Source: Ministry of Industry.

Table 7: International Prices of Selected Oils & Oilseeds, 1980-1992
(US\$/Tonnes)

YEAR	Coco.oil Phil/Indo CIF Rott.	Soybean Oil Dutch FOB ex-mill	Palm Oil Malaysian CIF Eur.	P K O CIF Rott	Sunflower Oil a. o Ex-tank	Copra CIF Eur.	Soybean U. S. Rott.
1980	674	598	584	698	633	453	296
1981	570	507	571	580	639	379	288
1982	464	447	445	458	529	314	244
1983	730	527	502	709	558	496	282
1984	1,155	724	729	1,037	767	710	282
1985	590	572	501	551	602	386	224
1986	297	342	257	288	366	197	208
1987	442	334	343	426	360	309	216
1988	565	463	437	539	479	398	304
1989	517	432	350	472	482	348	275
1990	337	447	290	334	489	231	247
1991	433	454	339	417	474	286	240
Jan	340	455	349	353	493	233	239
Feb.	330	445	338	345	467	226	241
March	344	453	349	350	465	236	244
April	323	460	319	317	466	224	245
May	330	441	320	327	454	225	241
June	367	430	310	352	477	245	241
July	465	431	341	452	467	303	229
August	460	457	339	450	460	299	241
Sept.	455	468	323	419	489	296	246
Oct.	546	485	345	485	498	353	237
Nov.	595	479	362	546	487	385	237
Dec.	636	442	376	607	457	411	234
1992							
Jan.	738	429	383	699	438	488	236
Feb.	705	413	382	653	428	471	237
Mar.	644	444	396	620	463	429	240
Apr.	647	425	402	651	459	425	235
May	638	439	390	617	453	413	247
June	589	456	404	589	471	390	253
July	528	429	382	532	460	352	237
Aug.*	494	424	385	508	435	317	N.A.

*) Reuter

SOURCE: Oil World and Reuter