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ASSISTANCE TO THE DEPARTMENT OF
INDUSTRIAL DEVELOPMENT
SI/PNG/85/801
PAPUA NEW GUINEA

Technical report: Design of an Industrial
Potential Survey for the Highlands Region*

Prepared for the Government of Papua New Guinea
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of J.W. Braeuniger, expert
in industrial surveys/regional industrial development

Backstopping officer: W.H. Eckert, Industrial Planning Branch

United Nations Industrial Development Organization
Vienna

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EXPLANATORY NOTES

Value of the local currency in terms of United States Dollars
on 23 November 1987
1 Kina = US\$ 1.1363
1 Kina = 100 Toea

ABBREVIATIONS

CFTC	Commonwealth Fund for Technical Cooperation
CHOGHM	Commonwealth Heads of Governments Regional Meeting
CID	Center for Industrial Development
DFP	Department of Finance and Planning
DME	Department of Minerals and Energy
DPI	Department of Primary Industry
DTI	Department of Trade and Industry
FAS	First Assistant Secretary
HIPS	Highlands Industrial Potential Survey
HR	Highlands Region
HRS	Highlands Regional Secretariat
NIDA	National Investment and Development Authority
NSO	National Statistical Office
PG	Provincial Government
PNG	Papua New Guinea

ABSTRACT

The project element "Design of an Industrial Potential Survey for the Highlands Region" forms part of the project SI/PNG/85/801 "Assistance to the Department of Industrial Development (DID) for Reorganization". Within the assistance to the Department, the Highlands Industrial Potential Survey (HIPS) is attached to the fields of:

- industrial policy analysis and planning;
- project identification, preparation, evaluation, promotion;
- small-scale industry development.

(comp. report DP/ID/SER.B/533, page 8, part I (3))

The mission took place from 16 October to 9 December 1987.

The PNG's highlands indicate for several reasons possibilities as well as necessities for an extension of manufacturing activities. The fundamental idea for that is to base first of all on natural resources offered in the highlands itself. Taking into consideration the obstacles for industrial development in PNG in general and particularly in the highlands, expressed in failed attempts for manufacturing in the past, an extended and lengthy survey, exceeding the feasibility of the next seven years, seems to be unsuitable.

A successful survey requires at the beginning a high-ranking arrangement among concerned departments in the government and between the national and the provincial governments, in order to overcome the parallelity and mutual non-information about the various current efforts for evaluations on resource-based activities. This arrangement has to consider the fields of survey, time, staff, responsibility, principles of approach. Therefore, the report offers several proposals.

The assistance of UNIDO cannot consist in data collecting and survey guidance only. The UNIDO experts of project DP/PNG/86/002 - Assistance to the Department of Trade and Industry - should be incorporated into economic evaluations on survey's basic data.

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INTRODUCTION

The five provinces - Western, Southern, Eastern Highlands Provinces, Enga and Chimbu - form the Highlands Region, which comprises common characteristics despite simultaneous differences in itself. For a better information and coordination, periodic meetings of the PG's heads - the "Premiers Conferences" - came into force. In 1984/85, a resolution was adopted by the Premiers Conference requesting the DTI to undertake the HIPS. The DTI applied for assistance through UNIDO. The assistance relates to a detailed project proposal and operational plan for the survey.

As the assignment period for the expert was limited to two months, the immediate presence of a Chief Technical Adviser (CTA) in follow-up project DP/PNG/86/002 was considered essential. After repeated failures to appoint a CTA, the HIPS-assistance mission was prepared by the concerned back-stopping officer. The mission started on 16 October 1987 (arrival of the expert Joachim W. Braeuniger in PNG) and terminated on 9 December 1987 by submitting the then already discussed proposal for the HIPS design to the DTI.

The expert's work included:

- the review of available studies and other information on PNG's economy and its Highlands Region;
- discussions in the governmental and other central institutions on the project and on the approach within the period of engagement (in connection with submitting the working programme);
- consultations with the PGs in the Highlands Region and with companies, banks etc. there on the survey (resources, manufacturing projects, economic circumstances);
- the elaboration of the HIPS design (project report) and the discussion on it in the DTI.

Design and scope of the HIPS have to deal with:

- the objectives and fields of the resource-based manufacturing in the highlands provinces;
- the principles of promoting economic development ;
- the various steps needed to be taken sequentially or/and simultaneously for the survey;
- the methods of data collecting and analysis;
- the timing ;
- staff, skills and expertises, including proposals for foreign assistance.

This mission report (guidelines for the HIPS) can serve:

- as a base for decision making for the HIPS;
- as starting information to all concerned institutions;
- as a guideline for participation in the HIPS itself,
- as an information for the UNIDO consultants in the DTI.

The job description cited the scope-defining of the HIPS only among other components of the work. But infact this relates to economic processes going on in PNG and its highlands and requires expenditures to enable concentrating the HIPS on the most important and most realistic fields. Under this respect, aspects of the forthcoming HIPS had to be considered now already. The second adjustment concerns the statistical part of the HIPS design which had to be concentrated on the description of economically usable resources and on acting firms.

It can be stated already that it was a useful approach of DTI not to start with the HIPS directly and under foreign assistance, but to place in front a design of HIPS, saving time and budget funds and reducing possibilities for contradictions in this way.

As mentioned above, the use of the projects output (HIPS design) will consist in:

- supporting to form view points and taking related decisions;
- supporting to implement the HIPS (relating to its foundation, aim and operation).

For this purpose, a widespread advance distribution of the HIPS design among the Government (DTI, DPI, DFP, DME and NSO), to the PG's (at least to the Secretaries, Divisions of primary industries and to business arms/development or investment corporations) seems to be useful.

Whilst the use of the project's output exists anyway concerning its informative aspect, its real purpose can be fulfilled only by implementing the HIPS itself, which depends on budgetary considerations in PNG.

RECOMMENDATIONS

Those recommendations being exclusively concerned with the HIPS are included in the HIPS design, forming the substantive chapters of this report. The recommendations in the following are only those which refer to the HIPS and UNIDO's assistance as well.

1. The concerned institutions should be strengthened to carry out the necessary HIPS to contribute to the main objectives:
 - Manufacturing activities have to be increased in PNG for employment, skills, balance of payment, government's revenues and better nutrition of population.
 - The highlands require special attention in order to prevent a drop off from the national average.
 - The selection and preparation of projects cannot be done separately but require the frame of a comprehensive line for regional development. For that the HIPS is a necessary tool which will improve parallelly the cooperation between the National Government and the provinces.

Actually this cooperation and mutual information is insufficient. The same is true among the highlands provinces inspite of the establishment of the Highlands Regional Secretariat (HRS). The Eastern Highlands and Chimbu provinces, which advance the project's preparation, intend to save time towards others waiting for coordination but they risk to decide for unsuitable projects.

2. It has to be taken into consideration that the HIPS and its following materialization can succeed only if a high-level decision by the Government provides for patronage assignment. The DTI itself will hardly be able to overcome the existing situation of parallelity in information and responsibility. Other uncertainties for continuity are

coming from the budget of PNG, which leads (at the background of recent events in international financial affairs), to reductions for provinces. Consequently, even small and rather successfully on-going projects (e.g. cardamom production and processing in Chimbu) cannot be supported furthermore by the provinces.

3. The main problem will be the phase after carrying out the HIPS and the implementation of projects (i.e. the transition from the recognition to the implementation). Many projects have been evaluated already, in some cases feasibility studies are available, not only zero implementation followed, but the reports itself are not generally known. Lists of considered activities from different sources are showing since years the same projects.

The engagement of technologists and/or engineers with experience in management of feasibility studies would form an essential part to DTI and promote the attempts in the provinces. However, the definite decision can only be taken after the above mentioned preconditions are reached in the HIPS. In general, DTI cannot offer working conditions for too many experts simultaneously (location, counterpart, etc..).

With a view to the HIPS, N. Mohanty's advise for more co-ordination in consultancy (loc. cit. p. 30-31) must be underlined. Actually, experts from UNO institutions, CFTC, World Bank and other international and bilateral arrangements are considering potentials for processing activities at the same time, in the same region and for the same fields of economy without being aware of each other.

The co-ordinatory function of the Government should strive to increase efficiency of technical assistance and avoid duplication.

EXPLANATION OF THE REALIZATION OF THE WORKING PROGRAMME

16 - 27 October 1987

According to the duties outlined in the job description and the working programme:

- review of available studies
- discussion of preconditions of the HIPS with Government officials
- formulation of first outlines for the HIPS.

28 October - 19 November 1987

consultations with the PGs, private companies and banks in five provinces (see list of institutions in annex 1) on conditions, perspectives and projects for local-resource based manufacturing in order to:

- provide advance information to these institutions;
- obtain their views on the HIPS.

20 November - 9 December 1987

- elaboration of the technical report and of the HIPS design ¹⁾
- discussion about the latter in the DTI and with the UNIDO consultants in the field.

The expert worked in periodic coordination with the First Assistant Secretary of DTI, Mr. Kikereng Wargem.

1) The HIPS design performs the substantive chapters of the project's report. The conclusions and findings are included therein, as far as they are not components of the introduction and the recommendations. The division prevents repetitions and allows in advance the delivery of the HIPS design to the DTI.

DESIGN FOR AN INDUSTRIAL POTENTIAL SURVEY OF PNG'S HIGHLANDS
REGION

PREFACE

There is an overall opinion that manufacturing has to be extended in the Highlands Region (HR), especially for local-resources processing. The HR offers labour potential, mild climate, richness in water, minerals and resources by means of better use in agriculture, mining and forestry. The HR shows on the other hand necessities for employment by growing population (may be faster than in the country) and by the danger of falling behind the national development. Problems result from high transportation costs, lack of infrastructure outside the centres and/or beyond the highways and from the fact that sometimes manufacturing capacities exist already in other PNG regions and in some cases there is no need for another one in PNG.

Growing manufacturing provides raising technical and entrepreneurial skills, raising governmental revenues, improvements in the balance of payments and social improvements. Manufacturing development therefore cannot be evaluated under the actual market conditions only, on the contrary, the institutions and officials concerned with the HIPS must stress that actual fiscal circumstances shall be modified in favour of emerging projects - at least for the highlands and at least for the starting period.

(It should be considered e.g. whether the actual tax incentives for manufacturing are efficient enough to establish new capacities or whether they only improve the conditions for already established firms.

The HIPS therefore has to cover not only:

- the natural resources for manufacturing;
- the foreseen (and/or considered) projects;
- the operational plan for the survey-

but also the economic frame for establishing and operation of firms. The HIPS design makes proposals for these purposes.

I. PRINCIPLES

1. The HIPS must be carried out under the condition that there is no detailed programme for industrial development determining what fields of manufacturing shall be developed and in which regions, succession and means.

A government decision is indispensable as the base for the

- HIPS. Among others, two reasons are outlined:

- The HIPS concerns the responsibility of the DTI, the DPI, the DME, the DFP, the NSO, the National Industrial Development Authority (NIDA), the Industrial Advisory Council. The cooperation of these institutions needs the authority of the government itself.

- Promoting the manufacturing activities affects the economic circumstances in the country. An industrial potential depends not only on the availability of a resource but also on the costs, prices, market, competition and aspects outside of economy in its closer sense.

Is there a government's readiness for import substitution, subsidies to growing employment, existing abilities to promote infrastructural facilities in the concerned provinces etc. The government's positions have to be taken into consideration to form a base for the HIPS.

2. The establishment of few projects in the highlands in the next years does not need a comprehensive survey on the potentials. Although the possibilities for implementation are indeed limited, the HIPS must lead to a comprehensive line for manufacturing development in the region. Therefore not only manufacturing of local resources has to be considered, but also the economic conditions in the region, covering e.g. the relations between primary industry and manufacturing, production,

infrastructure and services. The growing population in the urban centres represents a market for consumer-oriented activities (food, construction, repairs, etc..).

3. According to experiences, the question for priority of small-scale, rural manufacturing or activities with larger scale in the urban centres cannot be answered with "either-or". Activities in urban centres intensify the migration there which is always stronger than the ability to create jobs. Additionally, large-scale facilities are generally more costly. On the other hand, activities in rural scale are often fragile in their economic conditions facing marketing problems. Both ways have to work parallelly and have to be evaluated project by project.
4. The location of projects affects both economic and political aspects and requires a cooperative approach of provinces. For economic reasons, the further localization of activities in the centres or/and along the highways seems to be advisable. For social aspects, the promotion of the more underdeveloped areas is reasonable. Some processing activities can be located only once in the highlands region for reasons of economic scale of production, but actually more than one province is trying to establish the same or similar capacities. Therefore in the course of carrying out the HIPS, not only evaluations but also consultations have to take place.
5. The HIPS also has to answer on the land-use problems. In principle there is enough land in PNG but in nearly every case of projects location, non-availability of land creates a barrier for development due to prevailing ownership relations.
6. Special measures seem to be necessary for diversifying the production in coffee areas. It is too difficult to establish other plantations less profitable than coffee while at the same time there is a common opinion that a diversification should be strived for (danger of coffee rust, improvement of food production). The HIPS has to answer how to overcome this contradiction.

7. The attraction of foreign entrepreneurship preferably by joint ventures for assistance in capital and technical support was of limited success. The advice how to implement projects has to consider the conditions of foreign investments as well.
8. The economic situation of the already operating firms gives a view on the feasibility for other activities in the different fields of economy. The HIPS therefore has to include the consultation of acting firms concerning the perspectives for expansion.
9. Training facilities have to be developed for technical as well as entrepreneurial skills but in close relation to the real possibility for the following employment.
10. The HIPS should establish direct relations between the DTM and the provincial governments. The contacts via the Department of Provincial Affairs do not seem to be the most efficient in the fields of industrial development in general and projects preparation specifically.

II. SCOPE

A. Projects

1. Sources of Proposals

The main task of the HIPS must be to evaluate resource-based projects for manufacturing. The previously made proposals by UNIDO, CFTC, World Bank, ESCAP, CHOGRM Working Group on Industry, Centre for Industrial Development (CID) and other international organizations as well as by bilaterally arranged consultancies show a great variety of activities. Some of them have been named repeatedly in this way without succeeding implementation, others seem to hesitate after thorough consideration.

(The annexes 3 and 4 give detailed explanations on the projects which have been discussed up to now.)

2. Most Reasonable Activities

- bricks, based on red clay and/or limestone
- cement, based on limestone
- limestone processing (fertilizer, material for construction)
- pottery

- Livestock development and processing, especially:
 - . sheep farming in high altitude areas (Southern Highlands Province, Enga)
 - . cattle farming in grassland areas (Eastern Highlands)
 - . poultry (eggs and broiler)
 - . processing capacities for wool, hides, meat, bones

- vegetables plantation and:
 - . marketing
 - . canning
 - . tomato juice

- fruits production and processing:
 - . juice
 - . jam
- honey
- cardamom plantation and drying
- pyrethrum plantation and extraction
- furniture (based on wood and rattan cane, small-scale, oriented on market in urban centres)
- not resource-based, but market-oriented:
 - . beverages
 - . bakeries
 - . repairing activities (vehicles, tools, equipments)
- handicrafts/artifacts (increased production by better technical facilities, artificial value with practical use, for local market and tourists as well)

3. Pipeline projects

(see again annexes 3 and 4)

- instant coffee factory (perhaps better in areas where robusta coffee is planted, the main component of instant coffee)
- brewery (except water, all ingredients must be imported)
- extension of timber production (problems of transport, better to reserve for the needs of local market and for higher processing)
- trout farm (problems with expertises)
- plastic bags (useful, but not necessarily linked with highlands)

- goats farming (climate perhaps more suitable for goats than for sheeps but destructive effects for landscape)
- orchids planting and butterfly farming (limited number of jobs, international competition)

4. Mineral Resources

This actually concerns gold mining and oil exploration. Many prospective mineral deposits need detailed exploration. The importance for highlands provinces is given by development of infrastructure and skills and by compensation payments for land releases as well as by necessities for further development after exploitation period. But decisions on development are not depending on provincial governments and duration of exploitation or/and number of jobs are limited. Nevertheless, the HIPS has to take into consideration the effects.

(Questions on projects to be answered by the HIPS are apparent from the questionnaires.)

B. Economic Evaluation

1. Conditions in PNG for Projects Development

- The constraints have to be estimated quantitatively e.g. additional costs for management, for land use, training, to ensure the continuity of products quality, for construction.
- The influences of minimum wages, interest rates of bank loans and transport have to be considered - at least roughly.

2. The Regional Situation

- The existing and forthcoming situation in infrastructure (transport, energy, water, services)
- The ability of provinces for promotion of viable projects (capital, land, management, training)
- The situation of acting firms (economic result, conditions and readiness for extension, degree of market supply)

C. Proposals for Implementation

- Promotional effects of better conditions (land, training, capital, transport)
- Market situation (support by governmental regulations)
- Administrative cooperation between national and provincial levels

III. OPERATIONAL PLAN

A. Steps and Timing

1. Discussion of the Design = Months 1 - 2

- DTI submits the design to DPI, DME, DPP, NSO, NIDA, to the five PGs and to other concerned institutions.
- The submission is linked with the demand to prepare an official answer of the institution for the government within 4 - 6 weeks.

2. Preparation of a Submission for the Government = Months 3 - 4

DTI receives (collects) answers from the above-mentioned institutions, takes them into consideration and prepares the submission for the government.

3. Government's Decision = Months 4 - 5

- The decision obliges the above mentioned institutions for cooperation in carrying out the HIPS.
- A steering committee of authorized representatives from DTI, DPI, DME, DPP, NSO and NIDA is to be formed.
- DTI is ordered for coordination.
- The government decision is submitted to Departments and PGs.

4. Conferences of Departments = Month 5

to specify steps and interactions

5. Starting Conferences in the Provinces = Month 6

Meetings of representatives of the above mentioned government institutions with the provincial representatives:

- . specify explanations on the work;
- . handing over questionnaires and advices on the methods;
- . answering questions from the provincial representatives;
- . training for data collection and evaluation.

6. Data Collecting and Evaluation = Months 6 - 10

- Successive submission of collected data and prepared evaluations to DTI

- Establishment of a computer based data base for the HIPS (in co-ordination between the DTI and the NSO according to the specific demand for information)

- work in following directions:
 - . resources: PG with DPI and DME
 - . acting firms: PG with NSO
 - . projects: PG with DTI
 - . regional economic conditions: DTI with PGs, research institutes and foreign consultants in the government's Departments
 - . national aspects for new manufacturing activities: DFP with foreign consultants and research institutes

7. Elaboration of the Survey = Months 11 - 12

DTI composes the informations and evaluations to the survey in consultations with the other departments and with the provinces including:

- . choice of projects to be promoted;
- . conclusions for Government's policy;
- . directives for provinces.

8. Confirmation of the Survey by the Government = Month 13

9. Elaboration of Project Profiles = Months 13 -16

- The request for required technologists/engineers has to be carried out during months 8-9;
- The project profiles are to be pre-selected and prepared considering economic and strategic priorities;
- The participation of the Government guarantees that provinces do not prepare similar projects parallely which can only once be established in the Highlands Region or in PNG.

10. The Follow-up of the Survey

- Closer cooperation of the provices with the Government on projects implementation, e.g. by using the Highlands Regional Secretariat, annual meetings, etc...
- Periodical updating of the survey in computer-aided exercise;
- The representatives of the Government departments should be nominated for regional economic development, in order to:
 - . obtain experienced staff;
 - . have the possibility to repeat a survey in other regions with shorter working periods.

B. STAFF, SKILLS, INTERNATIONAL ASSISTANCE

1. Staff from the government

The responsibility for the HIPS should be given to the First Assistant Secretary (FAS) in DTI as all divisions of DTI will be involved. Specific tasks will be given to staff members in DTI's divisions like projects consideration and small-scale industries aspects, but coordination must be guaranteed by the FAS.

The other government institutions (DPI, DME, DFP, HSO, NIDA) - according to their cooperation in the steering committee - maintain the responsibility for their share of work.

2. Staff from the Provincial Governments (PGs)

In the PGs, the Secretaries should take over the responsibility. The work itself will have to be carried out by the Division of Policy and Planning. This division takes care of the integration of the Divisions for Primary Industry and Commerce as well as the business arms of the PGs (Development- or Investment Corporations). The Secretary has to be regularly informed on the work progress.

The Secretaries have to guarantee that staff members with experience in economy are employed.

3. Other Participation in the Provinces

The firms/companies operating in the provinces in the fields of resource-based manufacturing will be integrated by data collecting on the economic conditions and perspectives of their firms. Additionally, they should be called upon to give further information and evaluations on economic circumstances in the provinces as far as this concerns their business.

The research institutions in the Highlands (like the Cook Institute for Vegetables near Mount Hagen and the Livestock Institute near Kainantu) should be encouraged to elaborate comprehensive evaluations on the perspectives of production's increase. These evaluations should include the economic aspects as well and can be used as additional estimations for the PG's.

4. Assistance from International Agencies

The UNIDO-team of DP/PNG/86/002, actually working in DTI could participate in the preparation of the submission to the Government (see step 2).

For the elaboration of the survey (see step 7), it has to be assessed both by FAS of DTI and the UNIDO experts whether an additional consultant is necessary or whether the already fielded experts could assist in the required degree.

The elaboration of feasibility studies will depend partially on foreign experts, but the main workload should be met by the staff of the involved institutions and other local professional expertise, e.g. for fruit and vegetable processing (juice, jam, canning), the assistance of the University of Technology in Lae (Department of Food Technology) can be used.

It has to be stressed that all experts called in for feasibility studies must be experienced, not only in technology and engineering, but also in economics and management under the conditions prevailing in PNG.

C. Methodical considerations

1. The authority of the government in decision making and monitoring is especially necessary as the HIPS presents a first survey for a regional industrial development in PEG. Perhaps repetitions for other regions will be possible with less efforts.
2. Authorized representatives of DTI, DPI, DME, DFP, NSO and FIDA should form a steering committee, which supervises and monitors the operations of HIPS on the basis of a detailed timetable and a plan of action.
3. All particulars of participants as well as their specific duties in the survey must be known (responsibility of the steering committee) in order to enable a team work with close interaction.
4. Benefits for the survey can derive from a good coordination in consultancy. Most of the various consultants, working in DTI, other government institutions and private bodies can contribute according to their specialization.
5. Collection of data must be concentrated on the most necessary information. It is to be taken into consideration in advance that the collected data has to be checked and crosschecked before compilation. Already available information should not be repeatedly requested. The regional situation e.g. is generally known as far as fundamentals (population, migration, skills, role of urban centres) are concerned.
6. Special attention must be paid to the most realistic projects, as the financial funds are limited, and a successful start of these projects will stimulate infrastructure, skills and the readiness for further investments. This approach includes the support to already ongoing productions like honey and cardamom.

7. Available feasibility studies should be used as much as possible and only an adaptation to the actual conditions seems to be needed in most cases.
8. The application of Personal Computers (PC) for the HIPS should be prepared
 - by appropriate forms (computerized shapes) for data collecting
 - by forming a PC basis for the report on the HIPS.

The cooperation between DTI, DPI, DME and NSO in this field should include a division of data compilation (e.g. DTI for projects
DPI and DME for resources
NSO - for acting firms).
9. The Directory of Business should be included for data collecting (especially for operating firms).

IV. QUESTIONNAIRES

A. RESOURCES

1. Renewable Resources

- This concerns the output of forestry, agriculture, horticulture (including livestock, orchids, honey).
- The products for subsistence economy are to be excluded from the survey.
- The arable land and pastures are to be taken into consideration.
- The wood potential of the forestry areas should be estimated roughly.
- The Division of Primary Industry in the PGs is responsible for data collection of renewable resources. They should be assisted by companies research institutes and consultancy bodies in their provinces.
- It is important that the opportunities of processing resources in future are considered as well.

Form 1/Page 1

Renewable Resources

- 1.1 Province :
- 1.2 District :
- 1.3 Area :

2 Potential output by

<u>kind</u>	<u>hectar</u>	<u>volume</u>
a		
b		
c		
.		
.		
n		

(use additional sheets if necessary)

3 Actual output per year

<u>kind</u>	<u>hectar</u>	<u>volume</u>	<u>value</u>
a			
b			
c			
.			
.			
n			

4 Deliveries

<u>kind</u>	<u>volume</u> (if possible)	<u>destination</u>
a		
b		
c		
.		
.		
n		

5 Labour force
(persons engaged in area)

Form 1 / Page 2

6.1 Share in output

6.1.1 Small holders:

6.1.2 Large holders:

6.2 Extension of actual output:

6.2.1 Is an extension of the resource's output intended?

by kind

and volume
(if possible)

a

b

c

.

.

.

n

6.2.2 By which measures ?

6.2.2.1 Extension of productive area (ha)

6.2.2.2 Increase of quality (value)

6.2.2.3 Reduction of losses (value)

6.2.2.4 Others

6.2.3 Proposed period of implementation

6.2.4 Indicate financial funding

sources

amount

a

b

c

.

.

.

n

2. Non-Renewable Resources

This concerns gold, copper and other minerals, oil, natural gas, soil-bound resources like clay and limestone.

The DME should be in charge of the information on non-renewable resources.

A separate form for each resource and each place is to be used.

Form 2 Non-renewable Resources

1.1 Province:

1.2 District:

1.3 Area :

2 Geological Deposits

	<u>kind</u>	<u>volume</u>
a		
b		
c		
.		
.		
.		
n		

3 Exploration per year (if available)

	<u>kind</u>	<u>volume</u>
a		
b		
c		
.		
.		
.		
n		

4 Possible Production per year

	<u>kind</u>	<u>volume</u>
a		
b		
c		
.		
.		
.		
n		

Form 2 / Page 2

- 5 Expected Number of Employees
 - 5.1 Preparatory Work
 - 5.2 Exploitation

- 6 Please add information on:
 - 6.1 Requirements for exploitation
 - 6.2 Expected duration of preparatory work
 - 6.3 Estimated financial requirements
 - 6.4 Expected duration of exploitation

3. Hydro Power

The DME should be in charge of information.

Actually working (W), being under construction (C) and planned (P) electric power stations are to be included.

Form 3 Electric Hydro Power Station

- 1.1 Province :
- 1.2 District :
- 1.3 Area :

- 2 Name of Power Station:

- 3 Category (W-C-P) :

- 4 Capacity (KW) :
- 4.1 Installed (KW):
- 4.2 Used (KW):

- 5 Production (MWh):
- 5.1 possible (MWh):
- 5.2 actual (MWh):

6. Construction Cocts:

7. Start of Operation:

8. Employees:

B. Manufacturing Projects

Data collection on planned manufacturing projects is mainly a matter of combined efforts of PGs and DTI.

Form 4 Planned Manufacturing Projects

I. General Information

- 1.1 Province:
- 1.2 District:
- 1.3 Area :

- 2 Activity (product):

- 3 Output

 - 3.1 capacity:
 - 3.2 planned annual output:

- 4 Direct Employment:
- 5 Total Capital Investment:
- 6 Source of Financing:

- 7 Financial Structure of output:
(if possible: annual costs of:)

 - 7.1 material:
 - 7.2 wages and salaries:
 - 7.3 fuel and electricity:
 - 7.4 repayments (incl. capital service):
 - 7.5 other expenses:
 - 7.6 amortization:
 - 7.7 net profit:

- 8.1 Company for Operation:
- 8.2 Joint-Venture envisaged:

Form 4 / page 2

II. Market Situation

- 1 Foreseen delivery of output:
 - 1.1 export (shares):
 - 1.2 PNG market ("):
 - 1.3 highlands ("):
market
- 2 Capacities in PNG for similar products:
 - 2.1 yes / no :
 - 2.2 if yes :
 - 2.2.1 - capacity:
 - 2.2.2 - output :
 - 2.2.3 - location:
 - 2.2.4 - company :
 - 2.2.5 - share in PNG market:
(of this product)
- 3 Share of similar imported products
in PNG market :
- 4 Perspective of the new project for competition:
 - 4.1 on PNG market
 - 4.1.1 - quality (higher/lower):
 - 4.1.2 - costs (higher/lower):
 - 4.1.3 - volume of production (more/less):
 - 4.2 export (similar information)

III. Conditions of Location

- 1 Availability of Land (yes/no)
- 2 Origin of Material
 - 2.1 from small holders (shares): distances of delivery km:
 - 2.2 from large holders (shares): " " " :
 - 2.3 imported (shares): " " " :
- 3 Constancy of delivery:
- 4 Mode of delivery (e.g. material collected
by the firm) :
- 5 Possibilities of vocational training
within the firm itself ? :

IV. Project Preparation

- 1 Feasibility Study
 - 1.1 available (yes / no):
 - 1.2 ordered (yes / no):
- 2 Decisions made
 - 2.1 by company (yes / no):
 - 2.2 by PG (yes / no):
- 3 Coordination with other province
 - 3.1 necessary (yes / no):
 - 3.2 started (yes / no):

V. Economic Evaluation

- 1 Payback period (years):
- 2 Interest rate (%):
- 3 Deductions of taxes (yes / no):
 - 3.1 for training (yes / no):
 - 3.2 as export incentives (yes / no):
 - 3.3 for other reasons (yes / no):
- 4 Depreciation deduction (yes/no):
- 5 Subsidies (yes / no):

C. Acting Firms

1. The data collection concerns all manufacturing firms in the Highlands Region.
2. Basis for this part of the survey are the latest NSO questionnaires on manufacturing firms.
3. In addition, the following questions should be answered:

Form 5 Acting Firms

- 1 Degree of capacity's utilization (5):
- 2 Extension of Capacity
- 2.1 foreseen (yes / no):
- 2.2 if yes:
 - costs
 - how to fund
 - construction period
 - planned annual output
 - which limitations exist
(e.g. land, capital, market,
raw material, taxes, ...)

D. Economic Conditions and Regional Issues

1. The data collection of the HIPS should be added by estimations on conditions in PNG's national economy for new manufacturing activities and on regional issues in the highlands.
2. Specialists (local and foreign experts in Government institutions, scientists at universities, private consultants) should work on these issues and add the results to the HIPS in its final stage.
3. The following short list includes proposals for these issues.

Short List

- 1 Conditions promoting an increase of the value added to national resources
 - 1.1 Training subsidies
 - 1.2 Job-creating opportunities
 - 1.3 Supports for import substitution
 - 1.4 Land-use improvements
 - 1.5 Minimum-wages subsidies
 - 1.6 Possibilities for reduction of management costs

(The exceptions and specifications of the concerned juridical and monetary regulations should be assessed as well.)

(The DFP should participate in the elaboration of the concerned evaluations.)

- 2 Comparison between the Highlands Region and other PNG regions
 - 2.1 Transport costs (Kina per m³ or ton)
 - by kind of transportation
 - by kind of goods
 - combined assessments on both
 - 2.2 Energy costs
 - 2.3 Wages and Salaries
 - 2.4 Construction costs

3 Estimations on foreseeable developments in each highlands province concerning:

3.1 Perspectives for stable energy supply

3.2 Repair / maintenance services (by kind)

3.3 Production within existing capacities (increase of capacity utilization):

	<u>-small holders:</u>	<u>large holders:</u>
-agriculture:		
-livestock :		

3.4 Possibilities for land allocation
(conditions/location/deadline/costs)

ANNEX 1

LIST OF INSTITUTIONS (PERSONS) CONSULTED BY THE EXPERT
DURING PREPARATION OF THE HIPS DESIGN

(Institutions marked with X) are proposed
for further contacts in the survey)

1. Department of Minerals and Energy, Mr. John Reed X)
2. Bank of Agriculture, Manager, Mr. Roger Steel X)
3. PG of Western Highlands Province X)
 - Premier
 - Secretary
 - Planner
4. Western Highlands Development Corporation, Manager,
Mr. Nelson Mou X)
5. Cook Research Institute X)
6. Touche Ross Chartered Accountants, Mt.Hagen Branch,
Mr. Marcus Egan X)
7. Bank of Agriculture, Mt.Hagen Branch, Manager,
Mr. Keith Schirmer X)
8. South Pacific Bank, Mt.Hagen Branch, Manager, Mr. Philipp
Nutt X)
9. Highlands Regional Secretariat, Mr. F. Braun X)
10. PG of Enga Province X)
 - Premier
 - Secretary
 - Deputy Secretary
11. Cash Crops in Enga PG, Mr. A. McLaren X)
12. Division of Primary Industry, Enga PG, Mr. V. Gepp X)
13. PG of Southern Highlands X)
 - Premier
 - Secretary

- Assistant Secretary Forestry
- Assistant Secretary Trade and Commerce
- Division of Primary Industry (Livestock)
- 14. Southern Highlands Development Corporation X)
- 15. PG of Eastern Highlands Province X)
 - Secretary
 - Division of Primary Industry
 - Assistant Secretary, Policy and Planning
 - Assistant Secretary, Forestry
- 16. Nokondi Investment Corporation, Goroka, General Manager, Mr. D.P. Powley X)
- 17. Agriculture Bank, Goroka
- 18. Kabiufa High School (vegetable production) X)
- 19. Sheep Research Centre, Mr. T. Ryan X)
- 20. Livestock Development Corporation
 - Cattle Farming)
 -) Eastern Highlands
 - Piggery)
- 21. Agricultural Research Institute, Aiyura X)
- 22. Honey Producers Pty Ltd, Advisor, Mr. B. Wedenig, Goroka, X)
- 23. PNG Coffee Industry Board, Economist, Mr. Ph. M. Bodman, Goroka X)
- 24. PG of Chimbu Province X)
 - Forestry)
 - Cash Crops) Division of Primary Industry
 - Food Crops/Vegetables)
 - Division of Policy and Planning
 - Division of Commerce
- 25. Cardamom Production Unit, Kundiawa, Engineer Mr. K. Kals X)
- 26. Livestock Development Corp. Lae, Manager Dr. A. Mininga X)
- 27. University of Technology Lae, Dep. of Food Technology, Mr. M. Vloeberg X)
- 28. Lae Harbour, Manager, Mr. Robin X)
- 29. Hagen Hauliers, Lae Branch, Manager, Mr. M. Dye
Mr. A. Linus

ANNEX 2

INSTITUTIONS PROPOSED FOR ADDITIONAL CONTACTS

1. Electricity Commission of PNG
2. Department of Transport (Land Transport Division)
3. Department of Works (Construction)
4. Kagamuga Natural Products
5. Cocoa Board (Port Moresby)
6. National Forest Products (Port Moresby)
7. National Plantation Manager Agency (Goroka)
8. Parago Earthmoving
9. Pangia Construction (Mt. Hagen)
10. Lama Sawmilling (Mt. Hagen)
11. Southern Highlands Tea Company (Mendi)

ANNEX 3

ADDITIONAL REMARKS ON CONSIDERED ECONOMIC ACTIVITIES

1. Bricks - the only production without any objections
 - no problems with: market, import competition, raw material,
 - simple technology for small capacities available, with ability for competition
 - more than one project in the highlands possible
 - useful by itself and supporting other developments by decreasing construction costs
2. Cement - Feasibility study by Taiwanese company for Nokondi Investment Corporation, basing on cheap night electricity (?) from hydro power station (East Kainantu) and limestone there.
3. Prefabricated Concrete Blocks
 - useful at several places, but in relation to bricks
4. Pottery- for both: household utensils and artifacts, still good market situation, small and medium capacities possible
5. Simple Hand Tools
 - especially for agriculture, manufactured in urban centres, where expertises in mechanics are advanced
6. Plastic Bags
 - intended by Nokondi Investment Corporation, basing on imported pellets, useful as a contribution for employment, but limited number of jobs
7. Furniture
 - one of the most promising manufacturing activity,
 - processing of everywhere available local raw material, high value added, multiplier effect in skills, all sizes of capacity and several workshops possible, good competitiveness
8. Honey and Cardamom
 - hopeful start, relative small amount necessary for extension over Highlands Region (see Annex 5, Study 4)

9. Pyrethrum - problems of Kagamuga Natural Products, continuation essential for preservation of planting and small holder income.
10. Instant Coffee
 - export difficult, national market limited (tradition of coffee consumption in PNG not for instant coffee), location in highlands open to question - see Annex 5, Study 2 C.
11. Cattle Farming
 - necessary from national economy point of view, success of Jimi Valley Project performs an indicator for other attempts
12. Dairy Products, Eggs
 - depending on progress in cattle farming, important for import substitution and nutrition improvements, transport aspect in favour of local manufacturing, long starting period to be expected
13. Sheep Farming
 - especially for Southern Highlands and Enga (high altitude, limitations for other activities, sheep farming to be one of few possibilities)
14. Leather, Tanning
 - depending on increased output from livestock, in the future, extended possibilities (raw material, market), start questionable, risky problems at the beginning
15. Vegetables / Fruits
 - even under the conditions of assistance from Kabiufa High School: problems to keep production level of small holders (influence of coffee planting), support of small holders by marketing essential everywhere, concentration on delivery to local markets (Mt. Hagen, Goroka) important during the initial period.

- The previous failures are hardly to understand, especially with passion-fruits, citrus and pineapples, it requires common efforts to change the situation qualitatively (see Annex 5, Study 6)

16. Fruit Juice/Tomato Juice

- parallel start with small rural and advanced urban capacity perhaps useful (in different provinces), orientation on immediate consumption advisable at the beginning, problems with hygiene, but this should not be an obstruction forever

17. Services in Urban Centres

- important to reduce expenditures of population, increase of skills, special attention to maintenance/repair activities.

ANNEX 4

INFORMATION ON FAILED PROJECTS

The following activities failed during past years; they either started in the highlands itself or they adapted adequately to HIPS.

- Pharmaceutical (bought and closed by foreign company)
- Peanut Planting (unable to compete with foreign producers)
- Peanut Butter (closed after hygienic problems, basically management problem)
- Trout Farm Goroka (closed)
- Soft Drinks Mt. Hagen (closed)
- Small Silk Industry
- Coffee Roasting and Packaging Kundiawa (closed, mismanagement)
- Coffee Re-establishment Programme Southern Highlands (not working)
- Passion Fruits Product (closed)
- Piggery Goroka (near closing, cost of feed, general problems of Livestock Development Corporation)
- Mushrooms Mt. Hagen (considered without results)
- Walkabout Sawmill (closed, despite initial success)

Although the list and the attached information are not complete, it serves as an indicator for the problems which have to be tackled within HIPS. The obstacles show the following range:

- lack of skills and management
- transport problems for collection from small holders, for access to the biggest markets and high costs
- high costs of energy, spare parts, repairing services
- high wages

- problems with power supply, water quality;
- high costs for imported feed (poultry, piggery);
- the economically required minimum capacity is larger than:
 - . the market or
 - . the available land or
 - . the available capital.
- The above mentioned circumstances lead to an inability to compete with imports from abroad.
- Most of projects fail in the first five years when the quality of products have not yet reached the standards.

While these obstacles are common with other countries, some other are more specific:

- dominance of coffee planting in Eastern Highlands in relation to other crops
- land-use problems
- traditions in nutrition are in some cases against food production
- problems with plantation safety in some areas.

Under these conditions, the Development- or Investment Corporations of the provinces are engaged to a large extent with trade, construction, repair services in urban centres and less with processing of commodities.

ANNEX 5

AVAILABLE STUDIES (related to HIPS)

1. Bricks Japan Consulting Institute and Marubeni PNG Pty Ltd
1984 (Library of DTI)
2. Coffee a) Queensland Dept. of Primary Industry,
PNG Dept. of Agriculture and Livestock,
PNG Coffee Industry Board
"PNG Export Tree Crop Study"
- Vol. 1 - Large Holder Coffee, 1987
- Large Holder Coffee Summary Report
(handed over to the FAS of DTI)

b) PNG Coffee Industry Board, P.H. Bodman
- Coffee Report 1985
- Coffee Report 1987
(handed over to the FAS of DTI)

c) PNG Coffee Industry Board
- Instant Coffee Factories in PNG
(handed over to the FAS of DTI)

d) London Tropical Products Institute, J. Kamath
- The small-scale manufacture of soluble coffee
1973
(handed over to the FAS of DTI)
3. Forestry Dept. of Eastern Highlands, Division of Forests
- Proposed Five Year Programme 1988 - 93
(handed over to the FAS of DTI)
4. Honey Honey Producers Pty Ltd, Goroka
- Highlands Regional Beekeeping Development Programme, Project Documentation, 1987
(handed over to the FAS of DTI)

5. Regional Development

- a) Eastern Highlands PG, Goroka
 - Marawaka Area Study, 1985
(handed over to the FAS of DTI)
- b) McGowan International Pty Ltd and Touche Ross Service Pty
 - Jimi Kambia Less Developed Area Study,
Western Highlands Province, 1986
(HRS, Mt.Hagen)

6. Vegetables

- Fintrac Consulting Ltd, London, for the
Asean Development Bank
"Agricultural Marketing Support Services Project
in PNG" , Summary Report, 1987
(handed over to the FAS of DTI)

ANNEX 6

REFERENCES

(The following list includes only studies which are not already named in Annex 5)

1. Mohanty, F. "Assistance to the Department of Trade and Industry"
Project SI/PNG/85/801
Report DP/ID/SER.B/533/Oct.1986
2. Wagem, K. "Industrial Development Policy Guidelines"
(Briefing Paper to the 8th Highlands
Premiers Conference, 1985)
3. SPATF (South Pacific Appropriate Technology Foundation)
" A Brief on SPATF Activities"
4. EIU (The Economist Intelligence Unit)
Country Profile Papua New Guinea
- 1986-87
- 1987-88
5. Fergie, R.W. "PNG Central Register of Employers and Businesses"
for National Statistical Office, PNG, 1985
6. National Statistical Office, Annual Census
- Secondary Industries, -1983
-1984
- Methodological Instruction
for the Annual Census 1986