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WORKPLAN FOR A BASELINE ANALYSIS
OF DEVELOPMENT RESOURCES
IN INDONESIA

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Need, Uses and Scope of a National Population and Environmental Profile

James D. Clarkson

As Indonesia enters the first year of Repelita IV she faces challenges of greater magnitude than ever before. Although population growth has shown an encouraging decline in recent years it remains at a discouragingly high level. Agricultural productivity must increase to feed the people, and agricultural diversification must continue to allow the use of new lands with soils and climatic regimes different from the ones that have traditionally fed most of the population. Urban areas and industries grow, seasonal and permanent migration, particularly rural to urban whether legal or illegal, increases each year. Forests and mangrove swamps are destroyed as the pressures for timber for export and fuelwood for local consumption grows greater. More and more poorer people push into more and more marginal areas, creating or exacerbating land degradation.

Yet Indonesia is a nation of great existing wealth and greater potential. Repelita IV is designed to mobilize her environment and population potential against these challenges and stabilize the one against the other, setting the base for further development and expansion under future Repelitas.

But to evaluate the success of a plan it is necessary to have a measure and to measure growth and development it is necessary to have a base-line from which to begin. In many ways Indonesia is fortunate because there exist statistics and measures of various sorts, as well as government bureaus and research institutes to analyze and evaluate them. In other respects the situation is less fortunate for the material remains scattered, the approaches varied, the results frequently inaccessible. While in many instances each office has sufficient data for its own

functions, although in many instances it does not, there is no overall synthesis or analysis which indicates the interrelations of population and environmental factors. In the world of real ecosystems you cannot discuss, for example, upland conservation without considering population density, food consumption patterns, forests, erosion, downstream siltation, reservoir destruction, and a host of other environmental and population related factors. Nor can you meaningfully discuss the future of mangroves without considering fuelwood needs, livelihood activities of subsistence fisherman, or the future impact of urban and industrial development.

While most recognize the reality of such interdependence the nature of governmental organization frequently discourages meaningful appraisal of its state. Data is gathered, goals set, reports made, each within the confines ~~XXX~~ of a single area of activity. Yet the nation works as a single system and development goals are set for the system as a whole. But how can progress toward a goal be measured if the starting point is unknown? The purpose of a population and environmental profile is to establish the starting point, the base-line, not just of each of the elements of the population and the environment but of the system as a whole, or at least of selected key indicators of the status of the system as a whole. Much of the data needed to set such a base already exists, but it is scattered throughout various government offices, buried in numerous government reports, or printed in advisory papers of highly limited distribution. The ecological analysis and synthesis of this fugative material, however, does not exist, or only exist for extremely limited topics.

The proposed population and environmental profile would serve three purposes:

- 1) It would provide ready access to base-line data on the current situation of Indonesia's population and environment.

- 2) It would creat new measures of the force and direction of population and environment interaction and change.
- 3) It would provide a model for the handling of additions to the data as well as for the preparation of future profiles. This would allow degrees of progress toward development goals to be measured and the status of the population and environment to be monitered at the same time.

No single research paper or report can pretend to identify and analyze the entire complex whole of the interaction between a nation's population and environment. What can be done, however, is to gather in one analytical report materials currently scattered throughout literally dozens of government offices, individual funding agencies, or research institutions and provide a concise, readily available statement of the status and trends of change of the national ecosystem.

Best Available Document

Request for Development Studies Funds

A. BASIC DATA

1. Project Title:
Development Resources Baseline Analysis
2. Project Duration:
 - a. Planned Starting Date: April 16, 1984
 - b. Planned Completion Date: March 1985
3. Proposal Authors:
Emil Salim and staff, State Ministry for Population and Environment (MNKLH)
Government of Indonesia Implementing Agencies MNKLH
4. Planned Budget:
 - a. GOI Contribution: Rp. 26,950,000
 - b. USAID Contribution: Rp. 107,212,000
 - c. Other Donors: (Other donors may be sought for supplemental components)
 - d. Total Rp. 134,162,000

B. DESCRIPTION

1. Background and/or Problem Statement

Upon its establishment in 1983, MNKLH was charged with developing national population and environmental programs that would support other sectors in the national development efforts under Repelita IV and succeeding national development plans. While statistical information of various kinds is available from the Central Bureau of Statistics and most national and provincial government agencies on various demographic aspects and a number of environmental and natural resource topics, the ministry has begun to find a serious lack of information in specific areas important to its policy and program development concerns, and a general lack of integrated information and comprehensive information-gathering efforts for demographic, socioeconomic, and natural resource data. These two lacks, both of analysis of available data, and the on-going collection and monitoring of carefully selected data sets are major obstacles to the policy and program concerns not only of MNKLH, but of other government agencies as well.

Thus it was with considerable interest that the Ministry reviewed, in early 1983, AID's experience in the preparation of "Country Environmental Profiles" in a number of countries around the world. These studies brought together within a single volume much of the information needed for an overview of environmental management situations in countries such as the Dominican Republic. Such a Country Environmental Profile had never been prepared for Indonesia, in part because of the availability of such reports as Robert Goodland's World Bank paper, "Indonesia's Environmental Progress in

Economic Development" (1981) and "The Quality of Human Environment of Indonesia: A Technical Report", edited by Emil Salim and Alwi Dahlan (1979). These reports, while not attempting to be detailed or comprehensive, were apparently viewed by AID as sufficient for its purpose of assessing the major environmental problems of Indonesia.

Rather than develop a similar "Profile" oriented towards the needs of AID, MNKLR saw greater value in a more analytical study involving information not just on environmental conditions and problems but also involving the population and socioeconomic situation. These three information sets could then be analyzed and utilized in the context of preparations for the fourth National Five Year Plan. Unfortunately AID was unable to provide funds for such a study at that time, and the Ministry staff turned their attention to an "Environmental Sector Review" sponsored primarily by UNDP, with the participation of AID and several other donors.

Under this Environmental Sector Review (ESR), a series of seven expert consultancies took place during the second half of 1983. The resulting Review focused on: Water quality management, waste management, locational policy, coastal zone management, forest resources management, and environmental program management.

Areas originally intended to be represented but for which no suitable consultants could be recruited within the time frame were: resource economics, human ecology, manpower development, and environmental monitoring systems. Some other major areas left out of the ESR include, health, agriculture, population/demography, transportation, and energy.

Subsequent to the ESR, Indonesia received a technical consultant team sponsored by the UN Environment Program's (UNEP) "Environmental Clearinghouse Project", with the purpose of identifying specific and integrated projects for addressing environmental management problems in the Jakarta-Puncak corridor.

When these activities were first conceived and approved, in early 1983, it was assumed that an "Environmental Profile" would precede them or at least be underway simultaneously. This would have the advantage of providing a broad baseline of natural resource and manpower information which could then be made use of in the specific topical studies and recommendations under the ESR, to provide a context for the UNEP Clearinghouse, and most importantly to provide a base-line for planning of the new Repelita.

By August 1983, USAID assistance for design of an Indonesian adaptation of the Country Environmental Profile concept became available. By this point, MNKLR recognized a preliminary need to develop a data and information management system, and requested that the Profile design consultancy be addressed to that goal. The result was a study by a two-expert team, "Design of a Population and Environment Information Management System for Indonesia, A study of the Information Needs and a Proposed System for Meeting Those Needs for the Government of Indonesia."

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This AID-sponsored consultancy highlighted many of the problems of existing information; The highly dispersed sources of data in various governmental agencies, the generally poor access of MNKLN (and other government agencies) to much of the data available, and particularly the lack of synthesis and analysis of key data sets. A series of recommendations for the establishment of an in-house information management and support system were proposed and these are being considered by MNKLN in designing its work plans in this area. Once in place this system will allow MNKLN to identify the location and contents of data sets and reports which touch upon its mandate. This will provide access quickly and effeciently not only for MNKLN but for all other appropriate government bodies.

This report on establishing an information management system also identified a "Profile" as being an effective means for establishing a data baseline and identifying the key data indicators and general sources of information for future work as well as immediate program planning. It was recognized that the best means of determining what data and information are needed for future monitoring, and what gaps exist that should be remedied for future national surveys and research, may best be identified through the practical experience of preparing an initial Baseline Situation Analysis.

These questions gain additional importance so far as MNKLN is concerned because of three needs; First, there is need for a document which will present and analyze the basic outline of Indonesia's present population and environmental situation, key trends, improvements, policies, programs, and problems, and give the most probable estimates of the human ecological situation for the immediate future. Now, at the beginning of Repelita IV, such an analysis would provide both a baseline from which to measure progress and a model on which to build future analysis.

Secondly this first Baseline Analysis will provide a working model for an on-going monitering of population and environmental information and problems. This "Model" function, spelled out in greater detail in "C. Project Implementation" below, is important because it sets the initial boundaries of the Analysis and incorporates the long-range implications of this project for Repelita IV with those of future Repelitas.

Finally, MNKLN has recieved approval from the DSP for funding of a "Seminar on Man and Society in Indonesia in the Year 2000". Included in this project are funds for a background paper that delimits the parameters of human and natural resources (population and environment) through the year 2000. The Baseline Analysis is logical continuation of the process involved in preparing such a parameters paper. Continuity of staff, data, and data gathering resouces will assure an immediate and smooth start of the Baseline Analysis project with little of the initial start-up time slippage found in most projects.

To summarize, a Development Resources Baseline Analysis would provide the ability to project a broad range of information for MNKLEH as well as various other ministeries. An appropriately designed Baseline Analysis will also serve as a model, or pilot profile, for future projections, as well as Annual Quality of Environment and population reports (a report updated annually on the basis of the model established by the Baseline Analysis) Finally, continuity with the staff, procedures, and content of the "Year 2000" Parameters paper will effect economies in the production of this Analysis which will otherwise be wasted.

B.2. Objectives

From the viewpoint of MNKLEH the Baseline Analysis is seen as an ongoing project rather than as a single product or report. It is meant to be part of a system of population and environmental monitoring, providing both inputs to, and receiving inputs from, various other government ministeries. This initial effort, furthermore, is seen as a model for future efforts, to be used both for its content and its form, and to be modified as experience and need dictate.

There are, in fact, three inter-related objectives:

- Baseline Paper on population/environment
- identification and analysis of the relationship between projections based on the population/environment data and the objectives of current development plans.
- determination of what data and information is required for ongoing analysis and the development of a model for gathering and storing such material.

The objective of the Baseline Analysis Paper has been described in some detail in Section B.1. above. Specifically with regard to Repelita IV and future National needs this analysis will:

- in one document provide data, measurements, and analysis for a starting point from which progress can be measured. It will combine and analyze data in a manner which will allow an overview of the inter-relations and mutual interactions of the various sectors of the nation as they relate to population and environment
- take population and environment projections and trends and match them with relevant development objectives as specified in Repelita IV. By analyzing known projections with ongoing plans an understanding, and some prediction, of the impact of specific development goals on future population and environmental conditions can be gained.
- by means of the two processes mentioned identify where better information is needed, where there are gaps in existing data, and how an ongoing information monitoring, reporting, and retrieval system can best be designed.

B.3 Priority and Nature of GOI Support

Assessment of available information is seen as a first, and perhaps most essential, task of the Ministry for Population and Environment in order to fulfill its policy and program development mandates. MNKLEH has been engaged in discussions with AID and has benefited from AID-sponsored consultancies on this general topic over the past year. The time is now right, and urgent, for the kind of model-establishment and baseline determination proposed here.

MNKLEH intends to use the Development Resources Baseline Analysis as a benchmark for its future work under the Fourth Repelita, and anticipates that other government agencies will find the conclusions of the study to be highly relevant and, hopefully, to provide a useful new management tool. At the minimum, the Baseline Analysis will refine future national, regional, and sectoral environmental and population reporting exercises. MNKLEH intends to make the revision of the Baseline Analysis, in the form of periodic "progress reports" a standard part of its on-going work.

The Development Resources Baseline Analysis takes on additional priority in view of the planning for the seminar on long-term development strategies ("Year 2000 Seminar"), also being sponsored through MNKLEH and the DSP.

C. PROJECT IMPLEMENTATION

1. Statement of Work

The Development Resources Baseline Analysis is intended to establish a base for an on-going, iterative management process. Appropriately, therefore, the baseline Analysis itself may be viewed as an iterative process. Three major activities are involved:

- I. development of a conceptual framework
- II. collation and analysis of data and information
- III. presentation and review of findings, and modification of conceptual framework.

For the purpose of the Baseline Analysis, these three steps will be repeated in three rounds over a period of about one year. It is felt that this will provide sufficient depth to establish an acceptable final product, and set the on-going processes in motion.

Several groups of participants will be part of this process at appropriate stages. The core participants will be several MNKLEH staff, together with one or more technical advisors, and a working advisory committee. The second layer of participants will consist of specialist consultants, representatives of established Inter-agency Working Groups associated with MNKLEH, and the university-based Environmental Studies Centers and Population Institutes. The third layer would include the DSP Steering Committee itself, and other selected representatives of key agencies. This last layer of participants would be involved mainly in step III.

A very preliminary outline of topics to be addressed at the initial stage is presented. The detail of the outline does not necessarily reflect the detail of the analysis: e.g. Section III will be an integrative analysis and comprise a larger portion of the finished work than is apparant here.

I Population: Human Resources Base

Section I deals with population from two perspectives. First is a simple description of its characteristics and distribution. To this will be added the dynamics of birth, death and movement. This section will identify major trends in demographic development and relate them to specific goals of Repelita IV. Section C, Quality of Life, deals with the condition of the population in terms of health, education, and economic activity. Emphasis is on trends and future goals and needs.

A. Characteristics

1. age/sex pyramid
2. growth rates
3. distribution and density
4. ethnic groups

B. Dynamics

1. birth rate and projections
2. death rate and projections
3. mobility
 - a. transmigration
 - i. planned
 - ii. spontaneous
 - b. urbanization
 - c. seasonal mobility

C. Socio-Economic Indicators (Quality of Life)

1. Life expectancy
2. Infant Mortality
3. Literacy
4. Acces to Education
5. Access to Health Services
6. Nutrition (Protein and Calore intake)
7. Dependency Rate

II Environment/Natural Resource Base

Section II provides a description of the environmental base. This is then analyzed in terms of current and projected utilization. Particular concern is given to potential levels of sustainability under differing projections of population and economic activity. This is done for all major production systems. Current and projected urbanization and industrialization are dealth with according to planned developmena and in relation to existing ecosystems. The legal and institutional foundation for development is analyzed and future manpower needs presented.

- A. Topography, Climate, Soil and Vegetation, Life Zones,
- B. Human Ecology
 - 1. Land and Water Use: General
 - a. activity Type
 - b. correlation to Environment
 - c. sustainability
 - 2. Food Production Systems
 - a. agriculture
 - i land-utilization
 - ii holdings by type/size
 - iii productivity classification
 - class: Excellent, good, poor, critical
 - yield/area by major crop (possible common measure; energy, value)
 - sustainability
 - b Fisheries
 - i type: inland/marine
 - ii production inland/marine
 - iii sustainability
 - c Animal Husbandry
 - i. type
 - ii. sustainability
 - 3. Other Rural
 - a Plantation-nonfood
 - b Forestry
 - c Mining and Minerals
 - d Industry
 - e Protected Areas
 - 4. Urban Settlements
 - a size and distribution
 - b industry
 - i. scattered
 - ii. industrial estates
- III. Conservation and Resource Management: Specific Problems and Projects

Section III is an integration of all the foregoing on the basis of non-sectoral categories. This is a major analytical effort aimed at describing and measuring the inter-action between different components of the man-environmental system. This too will be done on the basis of current development plans. An attempt will be made to devise a simple measure of carrying-capacity for different modes and levels of economic activity and population growth.

- A. Watershed
- B. Forest
- C. Coastal and Marine
- D. Urban Areas
- E. Renewable Resources
- F. Ecosystem Carrying Capacity
- G. Legal and Institutional Infrastructure

Implementation Schedule: Baseline Analysis

- C.2
- April 16 - begin work; establish Working Team; develop initial conceptual frameworks assign tasks
 - May - initial round of data collation and analysis
 - June - First specialist workshop; modification of framework
- Review Session also for parameters Paper; can begin incorporating work from Parameters Paper
- First Progress Report to DSP Steering Committee
 - July - Second Round of Information Collation and analysis
 - August - Reproduce and distribute available draft to participants in Year 2000 Seminar
- second specialists workshop; modifications
- Second Progress Report to DSP Steering Committee
 - September - begin final round of information collation and analysis
 - October - final, intensive review of drafts
 - November - final specialist workshop
- final drafting
- Third Progress Report to DSP Steering Committee
 - December - translating, editorial
 - January - work, printing
 - February - distribution to government agencies
 - March - Review Sessions
- Final Progress Report to DSP

APR MAY JUN JUL SEP OCT NOV DEC JAN FEB MAR

Staff mtng; est. guide-
lines; assign tasks;
ident. sources

XXX

Data Collection and
Analysis I

XXXXXXXXXXXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXXXXXXXXXXX

Workshop, project mod.
Rpt to DSP St. Comm I

XXXXX

5 June World Day

X

Data Co& A II

XXXXXXXXXXXXXXXXXXXXXXXXXXXX

Year 2000 Symposium

XX

Workshop, project mod.
Rpt to DSP St Comm II

XX

Data C & A III

XXXXXXXXXXXXXXXXXXXX

Intensive Review and
Analysis

XXXXXXXX

Final Workshop and
Seminar III

XXX

Final Drafting and
Rpt to DSP SC III

XXXXXX

Translating/Editing

XXXXXXXX

Printing/Proofing

XXXXXXXX

Distribution

XXXXXXXX

Review Session and
Final Rpt to DSP

XXXXXXXX

C.3 Product and Dissemination

The product of this activity will have two major components. The first will be an analytical baseline report on Indonesia's population and environment resources. This report will appraise the current situation, analyze this information as well as projections based upon it in the context of the national goals established in Repelita IV, and help identify potential paths toward, and obstacles to, the implementation of development plans. It will provide information and analysis on population and environmental questions to relevant implementing agencies and assist in coordination plans for a productive and sustainable future. The finished volume will be in both Indonesian and English. It will be distributed to appropriate ministries, educational and research institutions and individuals. A total of 3,000 copies has been budgeted for.

The second major component is the very process of data gathering itself. This project will be the first stage, and thus provide a model, of an ongoing population and environmental monitoring system which will allow MNKLEH and other ministries to maintain an overview of the development process and thus make more knowledgeable, integrated, and environmentally sound inputs into early stages of future planning. It will provide an initial framework for the gathering and processing of information. This information will then be readily accessible to both MNKLEH and other ministries as needed.

	<u>GOI</u>	<u>USAID</u>	<u>TOTAL</u>
C.4. Brakdown of Budget			
A.1. Indonesian Technical Consultants			
-56 man-months Rp150,000/mo	1,350,000	7,050,000	8,400,000
-Sec'ty/Exec Asst. Rp 300,000 x 12 mo	--	3,600,000	3,600,000
-Med. Allowance	--	360,000	360,000
2. Office Expenditures (x 12 mo)			
-Misc. supplies Rp 100,000/mo	1,200,000	--	1,200,000
-Duplicating Rp 300,000/mo	3,000,000	--	3,000,000
-Furniture and Equip.; desks, chairs, filing cabinets, etc Rp 500,000/mo	6,000,000	--	6,000,000
-Office Rental Rp 1,000,000/mo	12,000,000	--	12,000,000
-Telephone; Rp 100,000	1,200,000	--	1,200,000
3. Transportation and liaison with technical contributors at Bandung and Yogyakarta -per diem 25,000/day x 2p x 4 trips of 3 days ea.	--	10,200,000	10,200,000
	--	600,000	600,000
4. Technical Reviews and Workshops: 3 of 2 days each + honorarium	--	10,500,000	10,500,000
5. Translation	500,000	500,000	1,000,000
6. Graphics and Layout	500,000	2,000,000	2,500,000
7. Editing	600,000	500,000	1,100,000
8. Printing -3,000 @ Rp 5,000 ea.	--	15,000,000	15,000,000
	26,950,000	50,310,000	77,260,000

Sub-Total A (USAID) Rp 50,310,000

	GOI	USAID	TOTAL
C.4. Cont.			
B. Foreign Associate Technical Coordinator			
1. Compensation			
2/3 time for 2 mo			
1/2 time for 4 mo			
full time for 3 mo			
=\$805 wk x 25 wks		\$20,125	
2. Transportation			
- International		3,200	
- local and in-country		1,450	
3. Per diem 2/3 x \$112/day x 60 days			
1/2 x 112/day x 120 days			
full x 112/day x 90 days			
= \$112 day x 190 days		21,280	
4. Misc		<u>1,100</u>	
Sub-Total B.		\$47,155	
Sub-Total C (A + B)			
A. 50,310 = Rp 50,310,000			
B. 47,155 = Rp 47,155,000			
Sub-Total C		\$97,465	Rp 97,465,000
Contingency 10% of Sub-Total C		<u>9,747</u>	9,747,000
TOTAL		<u>\$107,212</u>	Rp 107,212,000

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PROJECT
DEVELOPMENT RESOURCES BASELINE ANALYSIS
ADMINISTRATIVE PROCEDURES

James D. Clarkson
21 March 1984

1. SECTOR PRIORITIES

1.1. The amount of time and staff available do not allow an analysis covering every possible facet of questions relating to population and environment. It is necessary to establish firm priorities regarding not only what is to be covered but a rank-ordering of importance and determination of the degree of detail necessary, desirable, and possible (these are three distinct classes).

1.2. These priorities should be established on the basis of carefully defined and explicitly stated criteria. The following are suggestions for this purpose. The final list should be clear, limited, and fully understood, as should the rationale behind their selection.

1. The sector should be of significant economic or social importance in Indonesia today.
2. It should be identified with specific sections of Repelita IV.
3. If 1. or 2 do not apply, its inclusion must be justifiable on compelling arguments of its future importance (perhaps with reference to 2 above).
4. It should be justifiable on the grounds that it is a unique, new measure, combining data and information in a way that provides new, valuable, and operationally usable information.
5. There are overriding national or extra-national concerns

1.2.1 Examples of 1 and 2 are rather straightforward. Basic demographic information, agricultural data, nutrition statistics, would be some examples. The degree of detail finally presented should be determined after a sifting and prioritizing process similar to this one takes place.

1.2.2. Examples of 3 would include most questions of industrial pollution, solid waste disposal, urban blight, etc. These are issues which most scenarios for the future, be they intuitive or empirical, would include as integral elements.

1.2.3. Examples of 4 may prove to be the most difficult to define and justify and the most important to present. The class would include critical lands management, coastal resource development (involving an analysis of the interaction between future upland agriculture, watershed management, forestry, industrialization, urbanization, migration, and fisheries, just to mention a few), off-shore mineral and fisheries development, etc.

1.2.4. In the final group 5 must be included a number of tangible and intangible cases, but it is not merely a residual category for ill-defined measures. It would give priority to the inclusion of measures of the value (however determined, so long as it can be forcefully argued) of a tropical ecosystem for a gene-pool; wild-life and forest preserves, historical areas, etc.

1.3. The purpose of determining priorities is to make maximum use of limited resources. The temptation to touch on everything, no matter how lightly, should be avoided. Among other things this Analysis is to be a model of how data is gathered, analyzed, presented, and stored. Future analyses can be modified and expanded but this one should be an example of excellence, not breadth.

2. POSSIBLE MEASURES

2.1. For some portions measures will be fairly clear and directly transferable from their traditional sectoral background. Again, the example of demographic data comes to mind. It is important, however, to be aware of the need for additional information that may be available but that is not usually presented. In the statistical year-book, for example, the only figures given for female participation in the labor force are in the plantation labor section. Do more comprehensive figures exist? If so where? If not, can a reasonable estimate be derived from what does exist? It is obvious that this is a major element in current Indonesian economic activity and will, if examples from other developing, urbanizing, and industrializing nations hold, become of even greater importance. It also has considerable importance on acceptance of family planning, age of marriage, etc.

2.2. A rather traditional list of sectoral measures should be established. This list should then be modified in accordance with any factors unique to Indonesia. It should then be reduced to only the most critical variables, with particular reference to the mandate of MNKLR and Repelita IV.

2.3. Of even greater importance should be the development of new measures. This should be given a great deal of thought by all staff and such measures should be adopted only with great caution. A few considerations are paramount.

- the data must exist in sufficient quantity and quality
- the measure must provide clarification not gained through pre-existing ones
- it should be, at least in the form finally presented, readily understood by the average intelligent reader.

Other, equally important, considerations may very likely come out of staff discussion

2.4. Any discussion of what measures it is desirable to use should also include a discussion of the manner in which the information is to be eventually presented. This is more than a cosmetic argument. Tables, charts, graphs, maps, photographs, text, or what have you, all require different production schedules and, in some instances, different personnel. In addition there can be a subtle difference in the type and detail of information needed for different forms of presentation. Finally, for maximum impact and use it is necessary to have a balance in the manner and form of presentation. Wherever possible the emphasis should be on visual presentation with accompanying textual explanation. This should not, however, be allowed to become flashy at the expense of presenting solid information or data.

3. SOURCE IDENTIFICATION

3.1. One of the principle sources to exploit is the listing by BPS of all available statistics. After that each sector identified earlier should have major sources listed, their physical location in as much detail as possible, and the names and telephone number of persons to be contacted. The process of source identification may well proceed in two stages. First this preliminary stage where the entire staff can interact and secondly at a later stage when sector responsibilities have been assigned.

3.2. At stage one, if possible, and certainly at stage two, sources should be specified in great detail with full title, date, location down to the office and name of person who can provide access. Just the name of a Ministry or Institute is not sufficient. A form should be devised, perhaps modified from the suggested form in the Tarrant/Reed report, to allow uniform records regarding location. When it gets to the Task Assignments it should be made clear that uniform, complete, and precise records are an integral part of the project. Every record form so kept will have the initials of the staff member responsible as well as date filled in. They should be reviewed and, where necessary, up-dated at frequent intervals. Weekly or bi-weekly staff meetings might provide this opportunity.

3.3. In the early stages, and possibly throughout, the names of individuals who know the material will be as important as the sources themselves. Careful records must be kept of them as well; name, position, office and telephone number, and area of expertise.

4. STAFF ASSIGNMENTS

4.1. How tasks are allocated obviously depends on the size and background of the staff. Assignments should be made on the basis of training, experience, and ability. Job assignments and areas of responsibility should be very specific. This will involve a fairly detailed breakdown of research procedure. This should initially be done prior to the first meeting. Procedures should be revised at that meeting and at frequent intervals thereafter. All modifications and additions should be clarified in writing and circulated to all staff.

4.2. A reporting procedure should be established as early as possible. If the staff remains small this could be an informal meeting once a week with the discussions written up and circulated soon after. If there is a large and dispersed staff this procedure should be frequent, formal, and concise. It is of greatest importance that progress be constantly monitored, aid given where necessary, additional work assigned where possible and a general progress chart kept up to date and in plain view.

4.3. In general assignments in the first phase should be by sector. One person will of necessity be responsible for more than one sector and some attention should be given to assignments that take into account both analytical similarity, urban with industrial, for example,

and the geographic location of the most probable sources of information. Having one person responsible for repeated visits to three widely scattered locations, for example, should be avoided so far as is compatible with research needs. Reassignment, perhaps even on a totally different basis, may be necessary or desirable and may need to be done more than once. Incompatibility, inability, or logical reordering should all be taken into account.

5. SCHEDULING

5.1. A schedule should be drawn up in accordance with the general schedule submitted in the proposal. This should be broken into much greater detail with particular reference to the intermediate products due for World Environment Day on 5 June and the Parameters paper for the Year 2000 symposium in late August. Ample time should be scheduled for the actual production of those two papers and that production should be monitored constantly.

5.2. It is very likely that numerous revisions of detail will be necessary in the schedule but major intermediate production dates should be met, even if it requires modifications in the scope of the Analysis. This is particularly true of the two intermediate papers: if they are not ready on time they may as well never have been started. It might prove possible to restore cuts made early on and re-incorporate them into the final Analysis, but a slipshod, hurried job in June or August would be unfortunate and uncorrectable.

5.3. The schedule and task assignments should be prominently displayed and referred to frequently by everybody. Potential bottle necks or data gaps should be identified while there is still time to reorganize or seek alternate sources of information. Great care should be taken to keep this record current (it will, at course, be supplemented by permanent, written records).

5.4. Minor schedule revisions will be necessary from time to time. Any major scheduling changes should be done in concert with the entire staff and care should be taken to assure that everyone knows what the changes are and why they have been made.