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9. ABSTRACT

The major objective of this project was to evolve a methodology that could be used by developing countries to construct indicators of social development for monitoring progress of social development as each country defines it. The analysis in this report is based on a taxonomy of six indicator types (policy descriptive, non-manipulatable, output, output distribution, impact and response), and on specific conceptualizations of society, social development, and indicators of social development. Four sectors were specified -- agriculture, education, health, and public administration-- and the agriculture sector is discussed in this report. Working definitions for the following key concepts were constructed: indicator, social indicator, project achievement indicator, system, subsystem, society, institution and social development. The level of analysis of social development and indicators of social development was designated as the inter-institutional or societal level. An inter-institutional hypothetical model is presented which allows societal analysis through the study of the interchanges among various societal institutions.

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A METHODOLOGY FOR INDICATORS OF SOCIAL DEVELOPMENT

Report 2: An Analysis of Selected A.I.D. Operational Indicators and Concepts



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September, 1973

(This report does not necessarily
reflect the views of the
U.S. Agency for International Development.)

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INTRODUCTION: The A.I.D. - I.S.U. Project: Background and Goals

A. I.S.U. Project Objectives

1. Primary Goal

The three-year contract signed in June, 1971 (AID/csd-3642) between the Agency for International Development (A.I.D.) and Iowa State University (I.S.U.) has as its major objective to evolve a methodology that could be used by developing countries (LDCs) to construct indicators of social development for monitoring progress of social development as each country defines it.

2. Background of A.I.D. - I.S.U. Reports

The design and scope of the work contracted between A.I.D. and I.S.U. is based in part on "A.I.D.'s Concern for Indicators of Social Development" (TA/PM/M. 4/21/73), a document that evolved from A.I.D.'s recognition of the need to develop measures of the human dimensions of social change and the distributional problems of development. A.I.D. has placed special emphasis on the need to develop indicators capable of monitoring social changes that accompany development activities and that influence the social and human dimensions of national progress. Added to this is a concern that such social indicators should complement and parallel the already existing economic indicators of development.

Four general prerequisites are proposed in the A.I.D. report as steps toward realization of this ultimate purpose:

- 1) The inventory of operational indicators of social development: An analysis needs to be made of managerial, planning, and evaluative concepts and methods of measurement of progress currently used by A.I.D. as indicators of social development;
- 2) The availability of time-series data: An analysis needs to be made of types of time-series data now received by A.I.D. and the countries to which it gives assistance;

- 3) Analysis of sector specific indicators: A.I.D. is gradually moving away from country-level and project-level analysis, and moving toward emphasis on the sector as the primary level on which collaborative problem-solving takes place. The development of sectors implies appropriate tools for evaluation, distinct if not inherently different from evaluative tools appropriate to country-level analysis on the one hand and project-level analysis on the other;
- 4) The ultimate purpose of this project is to evolve a methodology that could be used by an LDC to devise and apply its own set of social indicators. Thus, the aforementioned steps appear to be prerequisite to this ultimate purpose.

The A.I.D. - I.S.U. contract includes each of the steps listed above as an integral part of the overall I.S.U. project.

To insure progress toward the ultimate purpose, the I.S.U. contract outlines a plan of study designed so that work on each of the prerequisite steps is a foundation for the work that follows. The results of each phase of study will be presented in a series of preliminary progress reports, culminating in a report detailing the final presentation of the methodology.

Report 1 (Iowa State University, 1972) set out first, a research framework for approaching the eventual development of indicators and sectoral models; and second, a methodology.

Report 2 analyzes the social indicator capabilities of A.I.D.'s "managerial, planning, and evaluative concepts and methods of measurement of progress" (Green-Hirsch, 1972:3). At the same time, Report 2 (see Part Three) is part of a larger I.S.U. attempt to isolate those concepts, models, data, and indicators available in the operational world of development. The present report is also, of course, only a part of A.I.D.'s effort to inventory its current state-of-the-art of social indicator usage. To accomplish a complete inventory, three substudies were initially planned:

- 1) Practical Concepts Incorporated contracted with A.I.D. to analyze the "state-of-the-art" of "indicator usage" expressed in A.I.D. documents, and to present a formal report of indicator concepts and data of project achievement indicators currently used by A.I.D. in its project and sector evaluation program. This task was completed November 15, 1972.
- 2) Iowa State University, as part of its contract with A.I.D., was charged with the task of analyzing, on the basis of information provided in the formal report prepared by Practical Concepts Incorporated, the degree to which current project achievement indicators, concepts and data of A.I.D. meet the criteria of indicators of social development. The analysis herein presents the results of the I.S.U. study.
- 3) Iowa State University was charged also with the task of making on-site observations in one or more LDCs: (a) to inventory the operational indicators of social development currently used by the host country, and (b) to assess the availability of time-series data. This third study is planned for the second year of I.S.U. Social Indicator Project activity. Report due January 31, 1974.

3. The Practical Concepts Incorporated Report

The assessment of the relevance of current operational tools (i.e., indicators, concepts, and data) was begun by Practical Concepts, Inc., (PCI), a management consultant firm contracted by A.I.D. to analyze the "state-of-the-art" of "Indicator usage" expressed in A.I.D. documents. The PCI report provides the primary data base on which we made the analysis (in Part Three).

To facilitate the inventory of A.I.D. indicators, concepts, and data, PCI was given the responsibility to analyze the state-of-the-art of A.I.D. indicator usage. Three factors made PCI potentially well equipped for this initial inventory: 1) PCI's Washington-based firm provides more convenient access to A.I.D. offices, documents, and personnel than is possible for I.S.U. personnel; 2) PCI's long-term contractual relationship with A.I.D., and its active involvement in A.I.D. project evaluation efforts provide PCI personnel with special insights and understanding of the Agency's operation; 3) PCI's extensive field experience with A.I.D. operational missions provides an unusually strong background relative to the range of indicators, concepts, and data currently in use in A.I.D. field activities.

To accomplish this inventory, PCI undertook a four-man month's study during the fall of 1972. The scope of PCI's inventory of A.I.D. indicators, concepts, and data is defined in its own statement of the scope of study:

This study. . .examines the usage by the Agency of these indicators in the context of A.I.D.'s project evaluation system. We believe that it is important to recognize that all of the indicators included in our study were taken from basic Agency working documents--PROPs and PARs. (Practical Concepts, Inc., 1972:Section 2, p. 1).

PCI's study of indicators included the Agricultural, Education, Health and Family Planning, and Public Administration sectors of A.I.D.'s noncapital project assistance program. . . .Although the study was not confined to indicators of social development, its major focus is social rather than economic or technological. In total, the study included examination of 204 PROPs and PARs which provided a data base of 494 Goal and Purpose level objectives, and 1,154 indicators. (Practical Concepts, Inc., 1972:Section 2, p. 1).

Analysis of the output level indicators in one of the four sectors suggested that little value would be added to the Agency's understanding of indicators by an extensive listing and analysis of the output. . . .Thus, for the most part, project outputs have not yielded any important development indicators, and they have been excluded from the study. (Practical Concepts, Inc., 1972:Section 2, pp. 1-2).

It is clear from these statements that PCI's analysis is generally limited to the A.I.D. evaluation system and to project Goals and Purposes Indicators drawn from a limited set of A.I.D. working documents--Noncapital Project Papers (PROPs) and Project Appraisal Reports (PARs). Further, the PCI report notably excludes project Output Level Indicators; the bulk of A.I.D. noncapital assistance projects; and indicators of an economic and technical nature (see Section 2, pp. 1-2). Input Level indicators were also generally excluded. The PCI study of indicators does, however, embrace most of the sectors of direct concern to the I.S.U. project, and includes the agricultural, education, health and family planning, and public administration

sectors of A.I.D. noncapital assistance programs. While the 204 PROPs and PARs cover all geographical regions and most of the countries in which A.I.D. is working, no attempt was made to develop a fully representative geographical sample (see Section 2, pp. 1-2).

B. Scope of I.S.U. Project Staff Activities

I.S.U. recognized its activities were neither as systematic or as complete as they could have been, but a brief analysis had to suffice under the constraints of limited time and personnel.

The activities carried out to increase understanding and uncover other potential data sources within A.I.D. were:

- 1) Direct interviews and correspondence with A.I.D. sector and country-desk personnel (Arthur J. Coutu, Agricultural Economics and Sector Planning Division Chief, Office of Agriculture, Bureau of Technical Assistance; Dr. Edwin J. Cohn, Office of Policy Development and Analysis, Bureau of Program and Policy Coordination; Dr. Jonathan Silverstone, Chief, Civic Participation Division, Bureau of Program and Policy Coordination; Mr. Herbert D. Turner, Deputy, Office of Program Methods and Evaluation, Bureau for Program and Policy Coordination; Dr. Joseph H. Davis, Office of Health, Bureau for Technical Assistance;
- 2) Visits to and use of the A.I.D. reference center and the State Department Library;
- 3) Consultations with Dr. James W. Green, Chief and Dr. Abraham M. Hirsch, Technical Assistance Methodology Division, Bureau for Technical Assistance; and Mr. Robert L. Hubbell, Coordinator, Office of Program Methods and Evaluation, Bureau for Program and Policy Coordination (July 26-27, 1972, and November 22, 1972, respectively);
- 4) Drawing on the experience of several project and nonproject personnel (W. Alex McIntosh, Gerald E. Klonglan, and Paul Maynard) who participated directly in A.I.D. data collection and evaluation studies in Malawi and Laos;
- 5) Review of reports of A.I.D. sectoral analyses and project activities of A.I.D. contractors (refer to Part III, Section C for the findings of this review);
- 6) Participation by one staff member, Dr. Leslie Wilcox, in the A.I.D. training seminar on A.I.D. evaluation system in Washington, D.C., September, 1972;

- 7) Interviews and correspondence with PCI personnel during the period of their study;
- 8) Very brief examinations of several hundred A.I.D. working documents, including both PROPs and PARs August, 1972 at the Office of Practical Concepts, Inc.
- 9) A discussion concerning data sources with Elmer Glaser, Economic Data Chief, Statistics and Reports Division, Bureau for Program and Management Services on June 7, 1973;
- 10) Discussions with Samuel G. Baum, H. Albert Green, and others in the International Demographic Statistics Center, Bureau of Census, U.S. Department of Commerce;
- 11) The receipt and analysis of reports from such agencies as the United Nations Educational, Scientific and Cultural Organization, the European Council of Statisticians, the World Bank, and the Organization for Economic Cooperation and Development.

These contacts with A.I.D. (or A.I.D. contractees) provided a limited perspective only of the overall program of this large, complex, and dynamic agency. They were helpful, however, in providing insights for the writing of this report.

A definitive inventory of A.I.D. concepts, data, and indicators, constituting a major research effort, would be best undertaken by persons within A.I.D. itself. However, a nonsystematic, highly impressionistic survey of a limited number of A.I.D. and United Nations documents is included in the final section of Part Three, p. 58.

Following completion of Report 2, we will try to determine the extent the LDCs make use of indicators of social development as they collect statistics concerning life in their societies. By means of field observation in one or more LDCs, an analysis will be made of the state-of-the-art of indicator usage and the availability of data necessary for the generation of indicators of social development. Specifically, I.S.U. will be reporting

on the availability of (1) operational indicators of social development and, (2) time-series data found in the LDCs observed. This report will be submitted January 31, 1974.

Under our charge to build upon the operational experience of both A.I.D. and the LDCs, we will undertake a second sequence of studies to develop sector specific social indicator models for societal sectors of direct interest to A.I.D. The first sector model will be reported in September, 1973, followed by other sector models tentatively scheduled to be reported in March, 1974.

At the end of the second year of the contract (June, 1974), we will report a general framework of indicators of social development based on the criteria assigned by development officials in both A.I.D. and the LDCs, and by social scientists doing similar work for the U.N. and other international agencies.

Finally, it is hoped a proposed methodology by which LDCs can generate their own models of indicators of social development will evolve from the third year's empirical evaluation. This evaluation will include refinement of the sector and societal models proposed, and the preliminary testing of these models on the basis of relevant statistical, mathematical, and operational criteria. A report on the resulting methodology will be presented to A.I.D. in June, 1975.

While progress toward the desired methodology will depend greatly upon the results of each step outlined above, it is clear also that several other factors will similarly influence the degree to which an operational set of indicators of social development can be constructed and implemented.

Two factors are especially critical. The first is the current state-of-the-art of scientific research on social indicators. It should be noted that the very thought of generating so-called "social indicators" was proposed less than a decade ago (Shonfield and Shaw, 1972:9); thus, the scientific development of social indicators is yet in its infancy. Systematic attempts to develop social indicators have only recently been undertaken even in the more developed countries. Thus, many difficult theoretical and methodological issues are yet to be overcome before operational indicators will be realized either for the more developed countries or the LDCs.

Second, the development of societal models demands a level of scientific rigor that may be unattainable in many areas of social development. Research on social indicators is only now beginning to gain the capacity to specify discrete sets of relationships in many social sectors, a capacity that is prerequisite to the delineation of larger explanatory networks. Much remains to be done on experimenting with models at the levels of health, work, education, and the like, prior to developing the linkages among them necessary for societal modeling. The research underway within the broad activities of social indicator research should prove especially helpful in revealing the nature of the relationships among elements of societal models.

Other factors of critical importance to the development of social indicators are the quantity of data (the problem of unavailability) and/or the quality of data (the problem of inadequacy). Lack of adequate social data has limited social indicator research even in the United States where ironically the collection of data has been one of the conspicuous features of United States development. It is expected that the quantity and quality of social data will be even yet more limited in most LDCs, thereby necessarily limiting the extent to which models can be developed and refined. Nonetheless, empirical data are of critical importance for it is through the analysis of

such data that the interrelationships among social phenomena will be determined.

C. Acknowledgements

The I.S.U. Project staff expresses its appreciation to the A.I.D. personnel with whom it has had opportunity to interact. Without several meetings with A.I.D. personnel in Washington and at Iowa State University, we could not have begun to develop the framework described.

Especially appropriate are thanks to the particular Agency officials already named and to various A.I.D. sector personnel.

The Practical Concepts Incorporated personnel who participated in the preparation of the PCI report are to be especially commended for their ingenuity in developing a framework in terms of which the concepts and data alluded to in A.I.D. PROPs and PARs might be better used in future program evaluation efforts. The PCI report provided us with valuable information on the kinds of approaches to social indicators A.I.D. has taken to incorporate the concepts and data contained in PROPs and PARs into an overall perspective which we hope may reveal where social indicators of social development, as well as program evaluation data, fit into development processes.

Finally, we thank our secretaries, Cathy Hendrick and Marcie Wassom, who processed our manuscripts with both patience and excellence.

PART ONE: SUMMARY

A. The Analysis1. Framework

The analysis in this report is based on a taxonomy of six indicator types (policy descriptive, nonmanipulatable, output, output distribution, impact, and response), and on specific conceptualizations of society, social development, and Indicators of social development. We undertook an extensive review of the social development literature and chose to construct working definitions of the following key concepts. Full definitions appear on pp. 13-16, 24, and 44, following.

Indicator
Social Indicator
Project Achievement Indicator
System
Subsystem
Society
Institution
Social Development

The level of analysis of social development and indicators of social development is designated as the interinstitutional or societal level. An interinstitutional hypothetical model is presented which allows societal analysis through the study of the interchanges among various societal institutions.

2. Subject Matter and Procedure

In 1972, PCI assembled an Indicator summary from 204 Agency PROPs and PARs. This inventory served as the main data base for this report. The indicators contained in the PCI report were predominantly of the project achievement type. The Social Indicator Project definitional and taxonomic framework of analysis was used to assess the potential of project achievement indicators contained in Agency working documents for the construction of a more comprehensive and integrated set of indicators requiring an holistic social development perspective.

B. Findings

The findings of this analysis are, briefly:

1. The unit, or level, of analysis referred to in Agency working documents differs completely from that of the holistic social development perspective. The project evaluation research in PROPs and PARs is concerned with the project level of analysis while the social development perspective takes as its level of analysis the society or nation-state.

2. The perspective of project evaluation research is more incremental in its approach to national development; the indicator of social development perspective is more nearly holistic. The latter perspective tries to capture the complexity of national development in its totality. Project evaluation centers generally on assessing the project level changes brought about by man's purposive intervention and assumes that project level changes contribute to the process of the overall development of a society. (This assumption is not always warranted in the eyes of a sociologist or anthropologist, particularly when such contributions are assessed by developed countries' values.)
3. The purpose of evaluative research is to assess the efficiency and effectiveness of specific projects and programs. Such an assessment allows the accentuation of actions found to be effective; the culling of action judged to be ineffective; and in certain instances, a general redirection of the program or project.

Indicators of social development, on the other hand, perform the function of monitoring societal change. The holistic nature of this perspective incorporates not only planned changes, but also the unintended and evolutionary changes that impinge on society.

4. Because the levels of analysis, as well as the purposes and perspectives of evaluative research differ from those in social indicator research, the indicators utilized by the two types of research also are dissimilar. Evaluative research, as conceptualized by A.I.D., judges Agency performance and project level change against a set of targets using objectively verifiable indicators. In contrast, indicators of social development are designed first, to monitor the macro-trends in society that affect human welfare and its distinction, and second, to facilitate the formulation of policies that will increase the capacity of society to provide and distribute that welfare.
5. The I.S.U. staff critically examined the project achievement indicators listed in the PCI inventory against our taxonomy of six indicator types, and found that these project indicators were mostly of the policy instrument (or input) type. Further, the indicators identified by PCI do not pertain to many of the important dimensions of social life with the exception of those in the economic and technical areas.
6. The I.S.U. staff made a limited, unsystematic review of Agency documents other than PROPs and PARs, as well as United Nations, World Bank, the Organization for Economic Co-operation and Development, and European Council of Statisticians reports. Within these documents there exists a wide range of potential indicators and indicator interests encompassing many dimensions of social life. These sources show promise toward a more adequate compilation of the variety of indicator types which our taxonomy identifies.

C. Implications

This review of a variety of A.I.D. materials, brief though it was, led us to believe that many potential sources of useful data pertaining to this project remain unexplored. A major research undertaking would be required to analyze and assemble this information. Such research would be carried out best by a Washington based agency or by personnel familiar with the objectives of the A.I.D. - I.S.U. project as well as with the procedures and criteria it has adopted.

PART TWO
THEORY AND METHODOLOGY

Part Two comprises a review and an extension of some of the criteria for indicators of social development discussed in I.S.U. Report 1 (Wilcox, et al., 1972). Since the I.S.U. project is still in its early steps, we continue to consider these criteria as tentative and subject to revision and refinement, and it would be premature to conclude that no better set of criteria for indicators of social development could be developed.

A. A Societal or Interinstitutional Model of Social Development

Kamrany and Christakis (1969:208) have noted that in economics the term indicator often is used synonymously with the term index, where an index normally is understood to be constructed by aggregation of individual economic data. "It represents some value, mathematically or otherwise, derived from some accepted standard or series of observation and is used as a measure of certain conditions." They note also that an economic indicator or index should be sensitive to change in general economic activities and should lend itself to empirical observation. Correspondingly, a dictionary definition of "indicate" as an "index, sign, or token of," also notes that this term carries the connotations "to imitate or show indirectly" and "to manifest by symptoms." Sheldon and Freeman (1970:98) also note these characteristics when they argue that "if you have a direct measure of a phenomenon, it is no longer aptly described by the term indicator." The term "reflector" is suggested by them as an acceptable synonym for "indicator."

Definitions are a basic way of answering the question: What does the word "indicator" mean? But a fallacy exists in the erroneous assumption that words in themselves have meaning whereas semantic meaning is found only in the way people use words. Yet it is clear that social indicator research would be

seriously handicapped if each researcher defined the term indicator solely on the basis of what he arbitrarily chose it to mean ignoring the contributions other researchers have made toward solution of a definitional problem. Further, if researchers cannot come to a common understanding and usage of concepts, it is unlikely their results will be comparable. It is crucially important, therefore, that we define concepts clearly so that usage facilitates rather than hinders scientific communication.

Four concepts--system, society, institution, and social development--will appear frequently in our discussions of development.

A system is a set of objects or elements and the interrelations among these objects. In turn, an object or element of a system may itself be further specified as a subsystem which itself also consists of a set of objects or elements and the interrelationships among these.

A society is a special type of social system in that it incorporates all the social institutions required to meet basic human needs but is unlikely to be completely self-sufficient in all of these areas. As a unit the society has a structure of interrelated roles the enactment of which is governed by an integrated set of norms. Society and nation-state are often used synonymously. However, the latter emphasizes the provision of autonomous political leadership and uses the criteria of people, territory, government, and independence to distinguish it from other political entities.

An institution, as a subsystem of society, is a set of activities (and the interrelations among these activities) which exist primarily to transform inputs of various kinds into social outcomes (outputs such as goods and services) which meet specific viability needs and social values that are indispensable to the survival over more than one generation of the society (i.e., the larger system) of which the institution is a part (i.e., a subsystem).

We can say further that our concept of social (national) development encompasses not only the concerns of the traditional concept of economic development (often measured solely by Gross National Product) but also, and most importantly, the qualitative dimension often referred to as "the quality of life" or "the social welfare" of a society's people. Current development policies in LDCs and in assistance contributing countries are largely based on Marshall plan thinking of western economists so that major emphases are given to industrialization, favorable balance of payments, savings and capital formation, and the need for larger amounts of foreign assistance. These concepts are only tangentially applicable to current problems in LDCs and in fact developments in these areas may be accompanied by intensified relative deprivation in the many aspects of human need for groups already deprived (Blaisdell, 1970:40).

The issue is not just a word definition of national development. Of more immediate concern is whether development theorists as well as the planners, programmers, and practitioners of development can comprehend and articulate more clearly what they are attempting to do.

The cultural biases inherent in the analytical categories used by western-trained observers and scientists from both more and less developed nations blind out the realities of specific LDC situations so that we may fail to appreciate the interacting characteristics of poverty, unemployment, sickness, ignorance, hunger, and the lack of access to services. In western studies there is a tendency to analyze each of these categories separately. For example, Dorner (1971, p. 9) points out that:

On some problems our theories and professional economic analyses are serving reasonably well in the United States and in other industrialized countries. The relevant questions are being asked and the data needed for analyses are being generated. But the categories in our census and other statistical series are not accidental. They too are products of the policy issues and the theoretical formulations developed through the interaction of problems and ideas.

On other important policy questions, however, present theories provide little insight even on U.S. issues: environmental quality, poverty, race relations, a more acceptable distribution of economic and political power, congested cities, rural development automation, and basic changes in the structure of resource ownership. Present theories do not seem to encompass these issues; they do not help us to formulate the right questions; hence, appropriate data are not available, and fundamental policy questions tend to fall outside the boundaries of traditional academic disciplines.

In light of these considerations social development may be defined as the continuing process whereby the people of a nation learn how to use effectively the available human and material resources in order to upgrade the capacity of the societies institutions to more equitably fulfill the viability needs and social values of persons throughout society.

Implicit in this definition of social development, of course, is the more limited concept of institutional development. It should be emphasized, however, that while institutional development (the development of a particular institutional subsystem) focuses on institution-specific needs and values, the overall development of each society's various institutions is not simply the development of an isolated subsystem within a much larger system (or entity) of society itself. To the contrary, overall development--social development--involves society as a whole and the interrelationships among society's institutional subsystems. Thus, social development is concerned not only with the total set of physical needs and social values of a society, but also with the interrelationships among the society's institutional subsystems with their respective needs, values, demands on scarce resources, and impact on one another. In this latter regard, analyses of social development must also be concerned with the crucially important fact that side effects (unintended consequences) of institutional development in one institutional subsystem may affect the desired outcomes in other institutional subsystems.

The planner who fails to deal with society as a system of interrelated and interdependent institutional subsystems runs the risk of committing what one economist has referred to as "social thalidomide" (Berliner, 1972:XIII). (As is generally known, thalidomide, a sedative which proved quite successful a few years ago in easing the travails of expectant mothers, was eventually banned for human use because it had the unfortunate, but previously unforeseen, side effect of increasing the birth rate of babies with serious congenital deformations). The scientific and operational construction of models of particular institutional subsystems over the years has given us a capability of affecting the course of specific institutional subsystems, the most notable example being evidenced by the various economic models developed to deal with the economy as an institutional subsystem of society. To apply such institutional-specific knowledge to the development of a particular institution, however, without a cautious awareness of the side effects of this development on other institutional subsystems could produce an obviously dangerous societal crippling parallel to the deformation experienced in the use of thalidomide.

In the short run, social development will no doubt continue in large part to be pursued on an institutional level. Nonetheless, the primary purpose of the I.S.U. project is to specify indicators that will help to strengthen and broaden institutional models to include a wider range and consideration of human (physical) needs and social values.

Of course, macro-models of total social systems that specify such interrelations among institutional subsystems are at present not available nor can they be expected for some time. But, in the exploratory phase of research, some sort of conceptual or sensitizing framework must necessarily be employed in confronting the problem at hand; thus, an existing, albeit limited, social system model is discussed below. Though limited, this model incorporates some of the principal development concerns with which a set of integrated indicators of

social development should deal. Future I.S.U. reports will indicate other extant perspectives (e.g., A.I.D.'s "Key Problem Areas") which specify additional concerns.

1. Toward a Tentative Input-Output Model

a. The Berliner Model. Economist Joseph Berliner has suggested (Economy, Society, and Welfare, 1972) the beginnings of a social systems model which is an integration of economic and sociological theories that appear to have particular relevance to an interinstitutional analysis of those activities considered basic to the fulfillment of a society's human needs and social values. The model, as described by Berliner, is a "socio-economic model," since it combines the methodology of the economist's input-output analysis with the sociologist's social systems orientation (see Chapter 2).

The methodology of input-output analysis (for further discussion of this kind of analysis, see Meirmijh, 1965 and Leontief, 1965) is based on the assumption of interdependence through exchanges. More specifically, all the various types of firms within an economy are viewed as mutually interdependent. Thus, for example, in the U.S. economy the coal, electric power, steel, and metal container industries make up a mutually interdependent group of industries, each industry dependent for its viability upon the goods and services produced by the other industries. In other words, the outputs from each industry serve as inputs into each of the other industries; each industry requires the outputs of each of the other industries to use as inputs for the production of its own particular products or output. The producers of raw steel, for example, depend for their inputs upon the outputs of coal companies, iron ore producers, electricity producers, and so on.

Economists often refer to these necessary "outputs qua inputs" as "transfers" from one economic industry to another, with interdependence among

Industries varying directly with the number of transfers involved. Obviously, given a degree of interdependence among a particular set of industries, a change in the output of one of the industries will have ramifications for the other industries. Thus, a change in the output (i.e., goods and services) provided to steel companies by the coal industry will have a number of consequences for the efficiency, the output level, or the capacity to produce steel, with subsequent ramifications for other industries that depend upon steel as a raw material (or input).

Berliner suggests that this same sort of analysis be used to examine what sociologists have identified as the interrelated institutional subsystems (the economy, the polity, law, religion, the family) which make up society as a social system. The concept of a social system is a theoretical tool for keeping track of the numerous and complexly interrelated ways by which man seeks to organize himself to remain viable. A social system is thus a theoretical attempt to generalize the totality of man's experience into the form of an abstract model of that experience. A basic feature of the social system is its ability to perpetuate itself over time. A major factor affecting the ability of the social system to survive is the interdependence of its institutions. Indeed, it is the similarity between the sociologist's idea of the interdependence of institutions and the economist's idea of interdependent economic sectors that suggests an integration of the economic and the sociological at the societal level of analysis.

An example of the interdependence of the social system's institutional subsystems may be described in terms of a series of "double interchanges" on transfers between the institutions of the "family" and the "economy." A principal resource requirement of the economy is labor for the various pro-

cesses which generate the goods and services normally associated with the economy. Additionally, the economy needs a market to consume the goods and services that are produced. The family gets both capital and goods and services from the economy in exchange for the labor and the demand it provides. In this case, the two institutions are clearly interdependent and, furthermore, we could argue that all of the institutions thus far identified are equally interdependent.

b. Interinstitutional Matrix (see Figure 2.1). The matrix of institutions presented in Figure 2.1 emphasizes the input-output nature of the interrelations between the various institutions. Because of this emphasis on the interrelations among the various institutional subsystems of society, the study or analysis of the interdependence of society's institutions on one another may be referred to as societal or interinstitutional analysis. Each of the interdependent institutions is specified as a subsystem with the course of social change (social development) depending on the nature of the "transfers" or interchanges among subsystems. Without the exchange of outputs qua inputs, for example, each institutional subsystem and, ultimately, the society or social system itself could not survive.

2. Inputs-Outputs for Human Needs

A primary objective of interinstitutional analysis is to concentrate on those interrelationships by means of which inputs are transformed into the outputs necessary to fulfill the basic human needs (or basic viability needs) and social values of a society's people. We have defined these inputs-outputs as:

1. Output components
2. Output distribution components
3. Policy instrument components
4. Nonmanipulatable descriptive components
5. Impact components
6. Response components

Figure 2.1. Interinstitutional Input-Output Matrix*

		INPUTS								
		1. Economy	2. Family	3. Education	4. Health	5. Science	6. Arts	7. Polity	8. Law	9. Religion
OUTPUTS	1. Economy									
	2. Family									
	3. Education									
	4. Health									
	5. Science									
	6. Arts									
	7. Polity									
	8. Law									
	9. Religion									

*Adapted from Joseph S. Berliner, Economy, Society, and Welfare. 1972.

The outputs from the various institutional subsystems can be looked at in two ways. On the one hand are the outputs strictly necessary for the maintenance of the productive capacity of the other institutional subsystems. Such outputs are not final products for human consumption or satisfaction and thus may be referred to as strictly transfers or inputs into an institution subsystem. We might refer again to the transfers that take place between the family and the economy. The economy requires labor in order to produce its outputs of goods and services together with a market to consume these outputs. Thus the economy produces the goods and services while the family provides the labor and consumer market. Outputs of this kind are henceforth referred to as either policy instrument components (when these outputs are manipulatable by policy makers) or nonmanipulatable components (when these outputs are non-manipulatable by policy makers).

On the other hand, those outputs which contribute directly to fulfillment of human viability needs and social values are now defined within the context of a social systems or interinstitutional model of social development as the only legitimate outputs. In this case, the outputs are generated within the institutional subsystems and become inputs to the subsystem of human needs and social values. These are the final outputs that fulfill human needs and social values. These final outputs may be examined in two ways: output to fulfill viability needs and social values and output distribution among society's members.

Societal outputs which correspond directly to the fulfillment of human needs and social values include such outputs as food consumption, caloric intake, vitamin intake, inoculation against disease, shelter through adequate housing, clean water intake, clean air intake, physical rest intake, and so on. Disaggregation of these same outputs by relevant population characteristics (sex cate-

gories, ethnic groupings, age categories, and social class determinants) and other criteria would reveal the distribution of output among society's members. In other words, focusing on output components and output distribution components, in relation to policy instrument components and nonmanipulatable descriptive components provides a more objective informational basis on which to articulate policies to increase output and/or redirect distribution of output when the need for such alteration is perceived.

In addition to the inputs (policy instrument and nonmanipulatable components) to a particular institutional subsystem and the outputs (output and output distribution components) from the subsystem already specified above as part of the interinstitutional model, two additional components should also be included in the model: Impact components and response components. Manipulations of policy instrument and/or change in the outputs of one institutional subsystem may bring about intended and/or unintended consequences in other institutional subsystems. Knowledge of such impacts is important to an understanding of the interrelationships among the institutional subsystems. Furthermore, the response or reaction of the society's members to the social conditions in which they find themselves living is obviously a variable to take into consideration in any policy decision relating to the welfare of a society's members. Thus, both Impact components and response components are vitally important and must be included in an interinstitutional model of social development.

Since the relationships among society's institutional subsystems have been specified in the social scientific literature in only the most general sense, and since these relationships may take different forms within each society, we can specify only hypothetically at this time the interinstitutional model discussed. However, the I.S.U. staff will revise the present model in

light of such empirical data as can be obtained. In the meantime, the present heuristic interinstitutional model provides a means not only for identifying and classifying potentially relevant social indicator concepts and social indicators for a particular institutional subsystem, but also for specifying a preliminary set of integrated indicators of social development for analyses of institutional subsystems.

The interinstitutional model hypothesized above is used in the next section as a basis for identifying six types of social indicators that would be required to measure, monitor, and analyze, over time, the interrelationships among the various inputs and outputs of the I.S.U. hypothetical societal or interinstitutional model.

B. A Taxonomy of Social Indicators

On consideration of our definition of indicator (see p. 13), we believe few would seriously disagree with a general proposition that an indicator is a measurement of phenomena about which man is sufficiently curious to have created the "indicator" in the first place.

Disagreement arises, however, when the term social is introduced into the discussion. It can be said that a social indicator is an indicator characterized by a number of specific criteria. Andrews (1972:4-5), for example, lists several characteristics of an ideal set of social indicators:

1. It is a limited set for at least two reasons. We could not possibly understand what the indicators were indicating if we tried to measure all possible aspects of society. And, second, we probably do not need to measure everything.
2. The set is comprehensive in the sense that it includes indications of all the most salient or critical aspects of society.

3. That the set is a coherent one implies that the indicators have some relevance to each other and 'hang together.'
4. As for the significance of the indicator, there is a question as to what constitutes 'significance.' It may be significant if it has a 'direct normative interest,' . . .or it may have been shown to 'lead' (i.e., predict) other indicators.
5. The notion of monitoring over time is also central. Virtually nobody who is talking about social indicators is terribly interested in getting a measure at a point in time.
6. A final key characteristic of social indicators is that they can be disaggregated down to the level of some relevant social unit.

The attempt by Andrews to specify the characteristics of an ideal set of social indicators illustrates the difficulties of trying to develop measures of social change which are practical as well as theoretically and methodologically relevant. Characteristics 5 and 6 listed by Andrews, for example, are basically methodological concerns: the one relates to the measurement problem of obtaining longitudinal time-series data; the other relates to the measurement problem of obtaining data which can be aggregated and disaggregated. On the other hand, the first four characteristics are basically theoretical concerns, perhaps the most basic theoretical problem being that of significance (see 4 above).

The problem which significance poses for social indicator research is that of specifying exactly which of an infinity of social phenomena that might be monitored are indeed phenomena of both scientific and practical significance. Though this problem of specification is a rather complex one on which there is much work yet to be done, the societal interinstitutional model outlined in Section A provides a promising start toward solving the specification problem. The six types of components included in the model provide the basis

for specifying a taxonomy of six types of social indicators.

1. Goal Output Indicator

Inevitably, a society must choose among the various desired outcomes it is capable of generating. This choice necessarily entails the setting of priorities among various desired social outcomes or goals by a weighting of needs against values. For example, societies produce goods and services necessary to meet biological needs. They also produce social conditions designed to meet religious, psychological, and social needs. In view of the varying weights or priorities which can be or indeed are assigned to desired social outcomes, a social systems model of social development must include goal output indicators which measure the actual performance or goal output of a society relative to social goals defined as desirable by the society.

2. Goal Output Distribution Indicator

The "quality of life" in society depends not only on the quantity of social outcomes produced, but also on the distribution of those outcomes among the members of the society's population. In all known societies there is a tendency for the welfare (e.g., income) that is produced to be unequally shared by its membership. To account for the distribution of the costs and benefits of development, goal output indicators must be constructed in a way that permits them to be easily disaggregated (broken down) by relevant population characteristics (or other criteria) to reveal the relative degree to which desired social outcomes (e.g., goods and services) are shared by the society's population subgroups. While the particular criteria for disaggregation will vary from one social system to another, the criteria should minimally include disaggregation by such relevant population characteristics as age, sex, ethnicity; by such relevant political units as community, province, region; and by such geographical considerations or places of residence as are defined by rural-urban criteria.

It should be evident that output distribution indicators are disaggregated goal output indicators that measure the distribution of goal output among a society's members.

3. Policy Instrument Descriptive Indicator*

Usually many different strategies and techniques of varying degrees of efficiency can be implemented in pursuit of desired social goals, but the choice among these inevitably takes place within the context of a number of constraints that include not only a scarcity of resources, but also the qualitative standards or criteria that are defined by the values of a society. Considerable development effort in recent history has been directed toward easing some of these constraints by increasing the national resource base via development of physical, human, and social capital and by attempting to change human values believed to have an especially constraining effect on efforts to reach development goals. A social system analysis seeks, in part, to identify not only the most efficient means possible to transform inputs into the desired outcomes but also to identify those exogenous variables which constitute the range of constraints within which the system must operate.

For analytical purposes, an exogenous variable and its indicator can be classified into one of two subtypes, according to the degree to which the exogenous variable is itself manipulatable. On the one hand, a policy instrument descriptive indicator measures the quantity and distribution of variables (e.g., hospital beds) that are amenable to manipulation by decision makers and which define the inputs available in a particular institutional subsystem to service (i.e., fulfill) the physical needs and social values of that subsystem.

* Land. "Social Indicator Models: An Overview." 1972. For Policy Instrument Descriptive Indicator and Nonmanipulative Exogenous Descriptive Indicator I.S.U. has substituted Land's terminology for the terms it originally used in its November, 1972, report.

Indicators of such manipulatable exogenous variables include, for example, numbers of schools per capita, number of teachers trained, and expendable resources.

4. Nonmanipulatable Exogenous Descriptive Indicator

On the other hand, nonmanipulatable descriptive indicators measure variables which, while generally subject to change over time, are themselves not directly manipulatable--or are less manipulatable--by decision makers. In turn, indicators of such nonmanipulatable or less manipulatable exogenous variables may be classified as: population characteristics indicators (e.g., age, sex, race), social conditions indicators (e.g., deeply entrenched attitudes and values), and environmental conditions indicators (e.g., pollution conditions).

5. Impact Indicator

The output of one institutional subsystem is often an input to another institutional subsystem. Such interinstitutional transfers are, in many cases, not only desirable but planned. For example, improvements (e.g., manipulation of policy instruments) may be undertaken in the institutional subsystem of education for the expressed purpose of improving the quality of human capital output from the educational subsystem that, in turn, is invested in (i.e., is an input to) economic or political institutional subsystems. On the other hand, while a particular interinstitutional transfer from subsystem X to subsystem Y may be altogether desirable and planned, this same transfer may have undesirable and, perhaps, unforeseen side effects on other institutional subsystems A, B, C, etc. Indeed, the combined desirable results of planned interinstitutional transfers may be outweighed by the negative side effects of those same transfers on other institutional subsystems.

In order to specify a set of indicators of such potential side effects, an initial requirement is to identify the viability needs and social values fulfilled by the society's principal institutions and then to specify a set of

output indicators for each institutional subsystem. Thus, the goal output indicators of various institutional subsystems influenced by manipulations of policy instruments and/or alterations in goal outputs of a specific other institutional subsystem would serve as side-effect indicators in a model of this latter institutional subsystem. For instance, goal output indicators for the health institutional subsystem may be important side-effect indicators in a model of policy instrument manipulation and/or goal output change for the economic institutional subsystem. These side-effect indicators will be referred to as impact indicators and will include both intended and unintended (both positive and negative) side effects. Thus, impact indicators are those goal output indicators in various institutional subsystems A, B, C, etc. that are monitored as a basis for determining the intended and/or unintended side effects that may have been directly or indirectly caused or influenced by policy instrument manipulation and/or goal output change in a particular institutional subsystem X.

6. Response Indicator

One measure of whether social development is proceeding satisfactorily is, of course, human satisfaction. To a great extent, however, human satisfaction is a subjective phenomenon and difficult to measure. Indeed, work on developing measures of human satisfaction is only in its initial stages even in the more developed countries. Thus, we have little reason to believe that meaningful subjective indicators of human satisfaction for the less developed countries will be available in the near future. However, certain objective symptoms may be used as response indicators to measure the reaction of human beings to the social conditions surrounding them. Thus, response indicators measure the reaction of a society's members to the social conditions in which they find themselves living.

Moreover, response indicators can be subdivided into two types: overt and covert. Overt response indicators measure the direct and open responses of human beings to programs or social changes that accompany development and include such factors as cooperation or lack of cooperation, participation or lack of participation; involvement in voluntary associations; demonstrations; confrontations; riots and other forms of collective behavior such as social movements; etc. On the other hand, covert response indicators measure such factors as suicide rates, crime rates, rates of human aggression or violence. Interpretation of covert response indicators must be done with care, however, for social change itself normally produces some degree of social disorganization which may be accompanied by unrest that is more a function of the temporary disruptive effects of change than of any significant long-range trend.

Though at present we are lacking a fully operational societal model of social development and institutional development, the six social indicator types described are methodologically relevant because they provide a logical framework in terms of which social indicator data, once collected, can be utilized to monitor or follow the general trends that the social development of a nation-state takes. Ultimately, the data base generated can be analyzed over time to determine the actual empirical relationships among the various phenomena measured.

PART THREE

THE ANALYSIS

The thrust of this analysis is toward the applicability of the indicators and concepts currently in use in the A.I.D. evaluation system to an integrated set of indicators of social development.

A. Limitations of the Analysis

When this project was planned originally, it appeared that a logical point of entry to A.I.D.'s experience in the generation of indicators would be an assessment of the operational indicators currently in use in A.I.D. evaluation system's documents. The A.I.D. evaluation system represents an operational reporting system, embracing social as well as technical aspects of A.I.D.'s development efforts in which the PROPs and PARs act as feedback information devices (one of the key functions perceived as a necessary part of a system of "Indicators of social development"). In the course of the analysis leading to the preparation of this report, however, it became increasingly clear that the I.S.U. work focuses at a significantly different level of analysis (monitoring society) than the level of analysis (evaluating projects) for which the evaluation system was designed, and the difference in the level of analysis became increasingly apparent as our analysis proceeded.

The result was that the PCI analysis was not as contributing as had been originally hoped. It should be noted that PCI was well on its way towards completing its assigned task prior to the availability of the perspective of "Indicators of social development" at that time under development by I.S.U.

Project evaluation deals with an assessment of project effectiveness and efficiency, generally within the context of a single institutional setting.

Our "indicators of social development" project is working towards a societal level social systems model of indicators of social development. This kind of model emphasizes a societal monitoring perspective which deals with processes that cut across broad areas of society--processes not necessarily confined to the project level. Because of these differences in levels, I.S.U. avoided an assessment of the PCI analysis where it touched on project evaluation.

As a review of the PCI document indicates, the findings, conclusions, and recommendations therein center largely on A.I.D.'s use of PROPs and PARs as evaluation devices. It should be emphasized that the intent and focus of the I.S.U. project is not directly concerned with the A.I.D. project evaluation system, but rather with the utility of the indicators, concepts, and data presented in the PCI report, in the development of "indicators of social development." For this reason, no attempt will be made here or elsewhere to critically examine either the A.I.D. evaluation system or PCI's analysis of the use of that evaluation system in A.I.D. program design and operation. The evaluation system currently in use by A.I.D. is based upon a logical system that has proven useful for the purposes for which it was designed. This logical framework has, in turn, been successfully implemented into the operational process of project design and, therefore, should be assessed by operational criteria rather than the criteria presented in this report. PCI personnel have had long-term involvement with the development and implementation of this system and are far more capable analysts of the system than are the personnel at I.S.U. It is to be concluded that their assessment of the evaluation system should stand on its own merits.

B. Differences between Indicators of Social Development and Evaluation Research

1. Differences in Approaches to National Development

The basic difference between indicators of social development (societal monitoring) and evaluation research is one of holism vs. incrementalism. Neither perspective is inherently more inclusive or preferable than the other; rather, each is suited to meet a different set of uses. Furthermore, both perspectives should be considered by those intimately involved in national development if the overall progress of a nation is to be determined and if the contributions of human development efforts are to be accounted for.

a. Development as a Problem Area. Social development is primarily the progressive upgrading of the ability of a society to provide for the needs of its people; secondly, it is the capacity to upgrade the quality of life that accrues to those people. Development of itself has been an object of interest to us in our attempt to understand why societies change and how societies or nations can be changed through purposive action. We have developed numerous disciplines of social science that bear witness to our desire to understand, just as the budgets of our governments underline our attempts at planned change. The tasks of understanding and manipulating are not unrelated concerns, because, to bring about planned change, it is necessary to have an understanding of development. If it were possible that a society's development could ultimately be fully understood, the means of planned intervention could be fully determined, and the direction which the development of society might take would be within our grasp. The ability to comprehend to such a degree, however, is a goal yet to be achieved.

Two major problems must be resolved before full understanding of development can become even remotely conceivable. First, the complexity of society in the context of its potential for social development must be grappled with successfully; second, the unresolved problems of measurement of social phe-

nomena and estimation of the relationships among social phenomena must also be resolved.

b. Problems of Complexity. A nation-state is a complex organism. To begin with, its institutions are interrelated and interdependent in order to produce the general goods and services required by man to survive. Unfortunately, such interrelationships are complex enough to have foiled attempts to fully elaborate them.

Secondly, the barriers to rapid national development are highly interrelated and interdependent (Howard, 1970:9-10). Therefore, sectoral and programmatic actions to solve specific problems may have consequences for the other aspects of society. An unintended consequence of modernization, for example, has been "heavy and rising unemployment in town and countryside" (United Nations, 1970:6). Thus, national development of a nation-state is an admixture of such societal processes as increasing division of labor and the growth of new institutions in response to population growth and increasingly scarce resources; the changes brought about by the purposive actions of man; and the unintended consequences of man's intentional actions.

c. Problems of Measurement and Estimation. A second major problem related to that of complexity is the limited ability of social scientists to measure and interrelate social phenomena. To date, only a limited number of independent, discrete relationships have been isolated. No overall model (such as a systems model) has been devised to elaborate the intricate processes of development as they alter the institution and/or the interrelations among the institutions of society over time. Furthermore, many of the discrete relationships thought to exist have not been established empirically because of the inability to measure adequately the great variety of critical social concepts. The latter weakness is perhaps the most damaging because in order to develop models, empirical data must be analyzed to determine the nature of

relationships among the constituent elements. Data, however, depend on indicators, and indicators cannot be constructed unless the phenomena of concern are measurable. Because the measurement of such concepts as "rationality," "empathy" (the ability to mentally place oneself in more modern roles, Lerner, 1958), and "national cohesion" remain topics of incessant debate among social scientists, the progress made is not very encouraging.

2. Differences in Perspective

Granting the variety and immensity of the problems involved in comprehending social development, social scientists have nevertheless worked up a number of development perspectives that facilitate the structuring of less grandiose conceptualizations. Two of these approaches are "indicators of social development" and "program evaluation." Indicators of social development are an attempt to obtain a picture, however incomplete, of the total development at any given point in time of the whole society. Program evaluation does not try to capture the whole; rather it focuses on one specific increment of that development. Indicators of social development are concerned with the cumulative impact of evolutionary processes, planned change, and the unintended consequences of man's actions on society and its institutions and people. Program evaluation, on the other hand, is more concerned with looking at the effects of man's purposeful actions on the development of society.

a. Holism vs. Incrementalism. Models to assess national trends are often used to get an overall picture of economic change. Social indicators or "indicators of social development" are proposed by researchers to similarly extend this holistic or gestalt view to include not only the economic, but the political, sociological, anthropological, and psychological dimensions of national development. Such a macro-perspective tries to capture the broad trends accruing to the various dimensions with little consideration given to

gathering the minute details of project level trends. The changes occurring at the broad sectoral, institutional, and societal levels are all of primary interest.

If all variables having to do with development were sought, the task would be unending. To deal with social development at all, restrictions must be placed on the number of indicators used, yet the indicators must be comprehensive enough to encompass all the macro-relevant aspects of change.

Indicators of social development may also serve in a societal monitoring function. This perspective encompasses not only the planned changes, but also the unintended and evolutionary changes at the nation-state level. Many in society occur as by-products of man's actions. The increase in the specialization of institutions and the problems of pollution are two such changes. Unless such elements of change are subject to government supervision, they may not be taken into account as the "state of the nation" is assessed. Furthermore, those changes that come under the purview of governmental action programs have tended to be observed for only the time period that such programs are underway. Thus, an assessment of a trend over extended time periods may not be available because the data are limited to the time-expanse of the program.

Project and program evaluation, on the other hand, is more incremental than holistic in its scope. This mode of analysis attempts to isolate the specific changes brought about by particular projects and attempts to locate project change in a context of overall change, however tenuously, through a series of hypotheses (A.I.D., Office of Program Evaluation, 1972:18). Project and program evaluations are incremental in that the concern is with a series of projects and programs within institutional contexts.

Incrementalist approaches concentrate on the details of particular programs and projects in their particular settings during the life span of

these efforts. Such concentrated analysis of more micro phenomena makes it difficult for the analysis to cope with the totality of change in a nation. Given the complexity of the totality, the same scrutiny applied to project-level changes could not possibly be directed to national development as a process without the analysis becoming swamped by the details involved.

Program and project evaluation tries to isolate and separate the effects of specific man-induced change on a society from the evolutionary processes within society and from the other ongoing man-made change processes, both intended and unintended. Such evaluation is a useful tool insofar as it helps us to determine what steps we may take to solve developmental bottlenecks or to transform certain aspects of society in desirable ways. Professionals involved in the planned development of nations must know the most efficient and effective ways to transform society; they must recognize also the limitations that the structure of society places on their actions. Such evaluation provides a procedure by which we can determine which of our societal actions are the most utilitarian. In this context then, "program evaluation can be described as a systematic assessment of actions to improve planning or implementation of current and future activities" (A.I.D., Office of Program Evaluation, 1972:2).

b. Trend Analysis vs. Experimental Design. A desire to encompass the totality of change within a nation requires that significant trends be examined over time.

Trend analysis is predicated on three strictures. First, societal development occurs slowly over time, and macro-variables which have a potential use in the monitoring process do not begin to reflect significant changes until a considerable amount of time has passed. Long time periods may elapse before significant changes in birth rates, in political participation rates, or in value structure are reflected in data comparisons. Similarly, alter-

ations in the Institutions that provide outputs for human consumption and changes in the relationships between these institutions can be monitored only in a long-range context.

Trend analysis would not be particularly useful in monitoring change during the limited time period projects and programs evaluation usually cover and would appear to be more fitting for the longer time periods involved in societal development.

A second stricture imposed by the types of change dealt with at the macro- (societal) level is that of complexity. As was noted, the kinds of changes embodied in national development are so complexly tangled that a grand scheme of analysis with elaborate controls would have to be developed in order to determine the causal factors involved. A spectacular form of analysis of variance would be needed to separate changes caused by evolutionary forces, changes imposed by planned efforts; and the accidental side effects of man's action (and inaction). Moreover, to pinpoint changes, controls would have to be placed on subgroups or on entire nations in order to meet the strict criteria of experimental design. Contemplation of such steps are obviously absurd, but the above discussion serves to underline the difficulty identifying the countervailing forces of national development. There are, of course, such methods as factor analysis, regression analysis, and other linear techniques currently in use in the social and physical sciences. All these techniques have many limitations which in effect detract from their general ability to determine the causes of national development but the need to monitor national development is not diminished.

Third, before it can be determined that a change in a phenomenon has occurred, that phenomenon must be quantified. As the quantitative values representing states of the phenomenon change over time, then and then only can the determination that the phenomenon itself is indeed changing be made.

Program evaluation, in contrast, is largely a matter of experimental design and as such is a highly useful means of isolating the causes of change. The effects of a single project may be determined through the use of sampling techniques, control groups, baseline data, and comparative statistics (A.I.D., Office of Program Evaluation, 1972:35). However, as the scope of the program approaches macro-levels, such controls are not easy to institute, and the rigor of the design is compromised. Thus, program evaluation is more effective at the project (micro) levels.

3. Differences in Purpose

As noted, indicators of social development reflect the direction and amount of national development as well as elucidating changes in the structure of society and the values of its people. Program evaluation, on the other hand, performs a more managerial function, enabling an agency to assess its performance in instituting national and local development.

a. Management Functions. Program evaluation in a specific managerial function generates information to help an agency to plan, replan, and implement projects and programs. It is a key tool for improving planning and implementing new and ongoing activities. "Evaluation. . . questions the relevance of the project, challenges all aspects of the project design, examines performance of inputs and implementing agents, measures progress toward targets and may well result in redesign and replanning of actions" (A.I.D., Office of Program Evaluation, 1972:3). With such information, ongoing projects may be improved upon and new information may be brought to light which suggests new departures.

Indicators of social development are not intended as a supplementary means of upgrading agency project-program performance. Nor can they generate the explicit information that performance determination requires. We must carefully restrict their intended use because of our inability at the present

time to isolate fully the effects of planned development from the overall process of social development, and to discriminate the individual effects of single projects or programs from the effects of the intertwined totality of the social, economic, educational, health, nutritional, and population programs underway in a society. We are aware the information will not provide clearcut answers as to efficiency, effectiveness, and significance. A macro-system of indicators cannot ferret out the contribution of a project or program to national development. Social indicators can, however, give evidence indirectly as to the success of man's intervention. A lowered crime rate such as "number of armed assaults" may indicate to policymakers that their programs have contributed to a downswing in the number of assaults per 100,000 citizens. At best, however, a policymaker will be able to state only that the trend is in the direction desired. Unfortunately, he will not be able to state which of his programs, "no knock," "police-community relations," "inclusion of college graduates on police forces," or "increase in the amount of illegal drug interception by the authorities" has contributed to this improved state of affairs.

b. Concerns with Scope. (i. societal change). We suggest that indicators of social development be used over long time periods (5, 10, 20 year intervals) in order to determine the rate of change of economic, ecological, and political viability of society as well as the rates of change in the components that make up human welfare. At this level, trends that cut across institutional areas and the concerns expressed as A.I.D.'s key problem areas could come under scrutiny.

Program evaluation, intentionally narrow in scope in order to isolate the causal sequences at the project level, involves a perspective that assesses one project at a time on its own merits. This particularism often excludes the interrelationships between phenomena that cut across projects. Furthermore,

time periods during which evaluative research is conducted are as a rule too short to uncover the large-scale transformations monitored in societal change.

(ii. alterations of basic structure). An indicator set is a means of determining the development of the basic structure of society, including social structure and values. Some structural components identified as worthy of monitoring over time are: "(1) the demographic basis, including population magnitudes and geographic distribution; (2) major structural components, including the production of goods and services, the labor forces, knowledge and technology, the family and kinship, religion, and the polity; (3) distributive features, including consumption; (4) aggregative features, including social stratification and mobility, and cultural homogeneity and diversity" (Land, 1972:14).

Evaluative research can uncover increments of change in the basic structure of society, but significant changes in basic structure are generally reflected only in major fluctuations of macro-indicators over time. Changes in value structure, for instance, occur slowly and are elusive enough as to be nearly undetectable until the alteration has been sufficiently widespread to have affected areas of human behavior.

An integrated set of indicators of social development can be used also to determine the impact of national development, both in its planned and unplanned aspects, on the institutions of society. Mass urban migration, for example, tends to weaken the family institution unless adequate steps are taken to provide for jobs and housing.

(iii. upgrading human welfare). The level and distribution of such vital concerns to human viability as income; housing and other protection from the elements; food; health care; a healthy environment; and a certain degree of longevity, are also of major interest. Indicators used in evaluation

research will not necessarily reflect the concern for levels and distribution of welfare, unless the programs or projects involved deal specifically with changes in the quality of life. Societal monitoring, however, is specifically designed to take account of the effects, both positive and negative, of national development on the lives of citizens.

(iv. prediction of future conditions). Possibly the concerns reflected in the indicators used in societal monitoring may help to uncover some crucial concerns of national development which either have not yet been taken into account or have not yet been anticipated by government programs. For example, the problems associated with environmental pollution might have been avoided had these problems been predicted by trends reflected in a system of indicators. Given such a predictive mechanism, perhaps the reorientation of industry and the means of transporting people to and from work could have been slowly adjusted over time before pollution problems grew so critical. Rapid urbanization without accompanying rapid growth in housing and job opportunities may forecast future higher crime rates, suicide rates, increase in slum conditions, and other such urban-associated problems. Had these social ills been anticipated prior to their occurrence, perhaps policies that emphasize rural development would have been instituted along with urban development rather than after it.

Evaluative research plays a different role in forecasting. The development hypotheses that link project outputs to overall development can be used to predict the pluses and minuses of progress, and correctives may be included in project design.

c. A More Integrated Approach. We have outlined, in essence, the need for a variety of types of indicators integrated into a systematic set to deal with the various dimensions of the complex process of national development. An

integrated set of societal level indicators is required to perform the function of monitoring changes in social structure, changes in values, changes in institution, and impacts on people and institutions (United Nations, 1970:3). The set of indicators must be so organized as to reflect the interrelationships that cut across sectoral and institutional boundaries, and the development of indicators must be approached with this fact in mind. One approach to the measurement of interrelated changes is to view society as a system of inter-related problems. This is the basis of a procedure which has been supported by the U.N. Economic and Social Council as the best means to approach national development (1970:3). A systems perspective forces those concerned with indicators of social development to begin to integrate economic, political, cultural, educational, demographic, and sociological indicators. These indicators are then utilized to monitor and predict the significant changes in social structure and the development-effects on the lives of people.

Program evaluation is also interested in an integrated system of indicators, although it appears that in past practice programs and projects have tended to be evaluated along particular sectoral concerns rather than across them.

4. Indicator Criteria

Indicators are direct or indirect (in the case of nonmeasurable phenomena) measures of concepts while concepts are the building blocks of the perspective of those who wish to make use of the information that indicators help generate. Indicators are often quite specific to the context in which they are used so they may prove to be of limited utility in other contexts (A.I.D., Office of Program Evaluation, 1972:50; D'Agostino, 1971:2). Not surprisingly, the project achievement indicators generally associated with the evaluative research carried

out by A.I.D. are thus not the same kinds of indicators called for in the perspectives useful to indicators of social development.

a. Types. Two subtypes of project achievement indicators, objectively verifiable indicators and targets, are relevant for project evaluation. A target is defined as ". . . an indicator with a magnitude to be realized at a specific date; an explicit and objectively verifiable measure of results expected" (A.I.D. Office of Program Evaluation, 1972:65 and PCI Report, 1972, Section 2:15). The target is in turn linked to a higher development goal assumed to be intrinsically supportive of the overall development process.

An objectively verifiable indicator is a statistical mechanism for determining the amount of progress being made, if any, toward achieving the desired states specified by target indicators. Such indicators are objectively verifiable in the sense that ". . . evidence can be gathered that would satisfy both proponents and informed skeptics" (A.I.D., Office of Program Evaluation, 1972:67). Thus, the qualitative observations made by Agency personnel may serve as indicators.

The effectiveness of a project is determined by comparing data generated by objectively verifiable indicators with targets. If a large discrepancy exists between actual and expected measures, the project under scrutiny is judged to be less successful than if such discrepancy had been of smaller magnitude.

In contrast, the types of indicators used in societal monitoring are not concerned with the output of specific projects, but the overall impact of trends. For example, what impacts do the fertility and mortality of a populace have on its ability to meet its basic needs? The indicators of social development that track the more cumulative aspects of the outputs of various societal institutions are what have been referred to as goal output indicators.

In addition, output distribution indicators monitor the distribution of institutional outputs among societal members. As policies are enacted to enhance societal development, the means by which such policies are introduced and the outputs they generate will have certain consequences for many different areas of society. Such effects are measured by means of impact indicators while the reactions which policies elicit are monitored by response indicators.

b. Characteristics. Program evaluative research is generally flexible enough to allow for both quantitative and nonquantitative indicators to play important roles in assessing project effectiveness. Thus, objectively verifiable indicators can consist of the objective statements of both interested and disinterested parties. Granted, planners dealing with problems at the nation-state level often must rely heavily on qualitative judgement in their decision making; there is a need to provide planners with a means of coping with societal complexity. This complexity, in turn, cannot be captured adequately through qualitative observations. To encompass the variety and interrelatedness of national development processes, quantitative data analyzed by programming and other statistical techniques are a prerequisite.

A definitive criterion for an indicator is that it be a statistic or quantified term. Such a statistic may be an indirect measure of some concept or generalized condition not directly observable or such measurable conditions or states, as "development," "level of health," or "quality of life," that are not directly observable or measurable. In such cases, indicators are based on directly observable phenomena which, theoretically and empirically, are closely akin to and will serve as proxies for the state of, or changes in the state of, the phenomena of interest. For example, "urbanization rate" is often used as a proxy for "development" (Breese, 1966 and Goldscheider, 1971).

The generalized conditions implied by many concepts are abstract and multidimensional. The concept of "health" or "level of health," for example, may be analyzed along dimensions of "longevity" and "psycho-physical well-being" which, in turn, may be broken down into dimensions of "mortality," "morbidity," "level of mental health," and so on. There is no direct way to measure "health," and neither can "longevity" or "psycho-physical well-being" be directly observed. However, it is possible to use proxies of these conditions such as "mortality rates," "rate of hospitalization for mental illness," and "infant mortality rates." "Morbidity rate" would appear to have considerable intuitive appeal, but there has been little success in its development as an indicator. Furthermore, researchers disagree as to the validity of mental health rate measures available in even the more developed nations (Yap, 1969:35).

Because some indicators are used as proxies, their specification is critical. It is not enough to specify other concepts of less abstraction that imply direct observation. To be classifiable as an indicator, the term must be expressed as a statistic. If infant mortality is used as an indicator, for example, it should be in the form "number of infant deaths per 1,000 infants" over a given time span.

Differentiation between concepts and indicators then is much more than a semantic exercise. Specifying that an indicator of the generalized condition "level of health" be represented on one of its dimensions by "number of infant deaths per 1,000 infants" implies that an unmeasurable phenomenon--level of health--may be measured indirectly. By determining the number of infants that have died within a specified population over a given time period, an aspect or dimension of "level of health," however indirectly, has been measured.

The identification of phenomena that are observable and quantifiable is critical if the monitoring of such abstractions as "development," "deviance," "level of health," or "national unity" is to occur. The abstractness and subtlety of many social science concepts requires that agreement among experts--including theoreticians, empiricists, and practitioners--be reached as to legitimate means of quantification.

In the "indicators" used in PROPs and PARs, there appear to be four distinct groupings identifiable in terms of measurement or quantification potential:

- (1) a group of the type listed in the appendices of the PCI report containing statistical concepts that represent established or standardized measures, e.g., enrollment rate, birth rate, crude death rate, crime index, mortality rate, etc.;
- (2) a group composed of concepts that could have potential for measurement by direct observation, e.g., number of bookstores, library facilities, number of staff, number of schools, contraceptives distributed, etc.;
- (3) another group of somewhat more abstract concepts which, while difficult to measure, are of such a nature that scales, indices, and measurement techniques have been developed to quantify them using complex observational procedures (examples would include participation of women in the political processes, quality of training, attitudes, and quality of staff);
- (4) in contrast to the "indicators" falling into group 3, many working document "indicators" are highly abstract concepts which cannot be quantified or measured with any degree of precision at the present time, e.g., increased number of staff able to function professionally as a result of reduced teacher-pupil ratio; improved rapport between civil population and police; increase in additional assessment as a result of audit procedures; effective development program; adequate physical plant; Training Centers efficiently organized and operationally qualified (emphasis added).

The "indicators" represented by groups 3 and 4 are complex concepts and hypotheses that have not been directly or indirectly measured by a single indicator. Such a concept as "quality of training" could easily require multiple measures based on some standard that defines what "quality of training" really is. Such a concept as "increase in additional assessment as a result of audit procedures" is actually an hypothesis that must be tested through research. No single indicator could be used to test this statement. A meaningful assessment of an hypothesis of this type would require a controlled experiment designed to measure or demonstrate that additional assessment occurred because of the audit procedure and not because of other phenomena (i.e., uncontrolled conditions).

Thus, the "indicators" of the type listed in the appendices are less useful to the social indicator project work than was originally hoped by the I.S.U. team because many of them are inclined toward high levels of abstraction and complexity and are not measurable without experimental research or the construction of scales, indices, or other measurement procedures. This state of affairs appears to be a function of the type of documents originally planned as the basic data from which inventories would be drawn. PROPs and PARs were not intended to pioneer in the solution of quantification problems.

5. Analysis and Classification of the PCI Summary of A.I.D. Indicators

Since the determination of what will serve as an indicator is often predicated on the perspective and needs of the user, a good set of indicators in one context will be less useful in another situation. For example, while some of the A.I.D. working document indicators listed in the appendices of the PCI report are useful in the context of the I.S.U. "indicators of social development" scheme, these PROPs and PARs indicators do not lend themselves to class-

ification under the six indicator types previously outlined.

The analysis carried out here is an attempt to determine the extent to which A.I.D. project achievement indicators may be potentially adapted to the types of "indicators of social development" useful for an integrated approach at the societal (nation-state) or interinstitutional level. We have reclassified the nonredundant (unique) and potentially quantifiable indicators from Agency working documents into the six "indicators of social development" types proposed by I.S.U.

The six types of social indicators of importance at the societal level were discussed in Part Two of this report. Based on these six types, a breakdown of the four sectors examined by PCI follows. The agriculture sector is examined in greater depth to demonstrate to the reader the process of analysis undertaken by I.S.U. The analysis of the other three sectors is summarized in Table 3.1 of this section.

b. Analysis of the Agriculture Sector Indicators. The agricultural sector "Indicator summary" made up of PROPs and PARs indicators and organized by means of PCI's "composite taxonomy" is reviewed here in terms of I.S.U.'s six types of "indicators of social development." This reclassification of 205 A.I.D. indicators resulted in the elimination of 155, leaving the new list of 50 indicators presented in Table 3.2. This elimination was based on two criteria: uniqueness (or nonrepetition) and measurability. Thus, those indicators that in effect designated the same phenomenon were reduced to one representative empirical referent. For instance, all indicators pertaining to the number of farmers obtaining credit were reduced to the "number of farmers using the credit program." Other indicators were eliminated because they were not conforming to the criterion of measurability. Thus, "better quality farm products at lower prices", "self-sufficiency in planning and

Table 3.1. A Summary of PCI's "Indicators from I.S.U.'s Perspective.
(See PCI Report, November, 1972: Appendix 1)

SECTOR	NO. OF INDICATORS IDENTIFIED BY PCI	NO. OF NON-REDUNDANT, MEASURABLE INDICATORS IDENTIFIED BY I.S.U.	INDICATOR TYPES (I.S.U.)*					
			Policy Instrument	Non-Manipulatable	Outputs	Distribution	Impact	Response
Agriculture	205	50	39	0	10	0	0	1
Education	69	31	31	0	0	2	1	0
Health	93	40	38	2	6	2	1	0
Public Administration	158	41	38	0	0	1	0	3

* The numbers summed across the rows of indicator types may exceed the number found in column 3 (No. of Non-Redundant, Measurable Indicators) since some of the indicators classified are potentially of more than one type.

carrying out research and development and extension activities," and "influence of institutions" were not included in the classification (A.I.D., Office of Program Evaluation, 1972:4).

Of the 50 indicators (24%) judged sufficiently unique and potentially measurable indicators of social development, 39 might be classified as inputs or policy instruments for the Agricultural Sector, while only 10 appeared to have the characteristics of "output indicators." Many of the indicators ("foreign exchange earnings," "number of small farmers receiving loans," or "changes in farm animal disease rates") normally considered as inputs from an institutional perspective are classified by I.S.U. as either outputs at the institutional level or policy instruments (inputs) at the societal or inter-institutional level.

In terms of the distribution of outputs critical to human viability, none of the project achievement indicators in the original list could be classified as distribution indicators. Had any of the 10 indicators under the output column been disaggregated by such categories as rural-urban, male-female age levels, ethnicity, or social classes, then they could have been described as output distribution indicators. In this way, it is possible to analyze outputs from the agricultural sector in terms of their distribution for consumption among the varying groups of society.

The A.I.D. "indicators" designated as inputs by I.S.U. are potentially of two types. The first type, policy instrument descriptive indicators, are those inputs that may be manipulated by policymakers through programs, projects and policies. Thus, such inputs from the education sector to the agricultural sector as "number of trained agriculturists" is something that may be influenced by policymakers, depending on the needs of the agricultural sector and the availability of such personnel.

Not found in the appendices are those indicators which often act as constraints on the development process. Age differentials, sex ratios, and strongly held values are all indicators of nonmanipulatable factors that often impinge on efforts to direct the course of national and community development. Age factors often are cited as the reason why a particular program failed. Community development projects sometimes have failed because of the pace-setting intransigence of the older elements of the population in accepting a new organization in their village, the use of fertilizer, or the need to keep children in school, to mention a few examples. Other projects, directed toward upgrading local leadership skills by training younger men to fill leadership roles, have failed because the older leaders were ignored. Still other programs, directed partially at generating increased innovative behavior in general by making new high-yielding grain varieties available to the farmer, have failed in many areas because the social structure was such that the already more well-to-do farmers were the only ones who could afford to take the risk involved in switching to the new varieties (Warriner, Land Reform in Principle and Practice, 1969, has a documented study of such an occurrence in northern India; also Ladejinsky, "Ironies of India's Green Revolution," [1970] contains a relevant discussion).

Potential obstacles to programs of development can be partially anticipated and controlled as empirical data become available on indicators of the nonmanipulatable type. None of the indicators gleaned from A.I.D.'s experience appears to fit the nonmanipulatable descriptive indicator criteria.

Other important types of indicators of social development that did not appear to be represented in the list of A.I.D.'s indicators are of the side-effect type. We refer to the positive and negative consequences of projects or programs in one institution on other institutions and individuals. Two

Table 3.2. A Classification of A.I.D.'s Agriculture Sector Indicators by I.S.U.'s Six Indicator Types. (See PCI Report, November, 1972: Appendix 1, pp. 1-12)

Policy Instruments (Input) or Activities	Non-Manipulatables	Output	Distribution	Impact	Responses
1. No. of equipment making establishments		1. Prices of farm products			1. No. of farmers using new techniques
2. Investment rates-crop specific		2. Per capita income			
3. No. of farmers using credit program		3. Net income rates			
4. Amount of credit extended across relevant groups		4. Malnutrition rates among animals			
5. No. of small farmers obtaining loans		5. Employment rates			
6. Prices of farm products		6. Employment needs being met			
7. Local interest rate		7. Import distribution to sectors			
8. Employment rates		8. Credit rates			
9. Employment opportunities		9. Livestock disease rates			
10. Manpower supply		10. Agricultural settlement			
11. Median growth rate					

Table 3.2. (continued)

Policy Instruments (Input) or Activities	Non-Manipulatables	Output	Distribution	Impact	Responses
12. Number employed as a percent of numbers graduated					
13. Export rates					
14. Foreign exchange earnings as a percent of total national income					
15. Import rates					
16. Malnutrition rates among animals					
17. Mortality and morbidity for livestock					
18. Disease rates for livestock					
19. Agricultural settlement					
20. Enrollment rates					
21. Production rates					
22. Input availability rates					
23. Cattle production rates					
24. No. of agricultural students trained					
25. Graduation rates					
26. Reproduction rates					

Table 3.2. (continued)

Policy Instruments (Input) or Activities	Non-Manipulatables	Output	Distribution	Impact	Responses
27. Crop diversification					
28. Productivity per hectare					
29. No. of farmer-owned fish production ponds					
30. Acreage planted					
31. Market information					
32. Production information dissemination					
33. Dissemination of new varieties					
34. Application of new techniques					
35. No. of farmers receiving advice					
36. Animal protein consumption					
37. No. of vaccines administered					
38. Budgetary allocations					
39. No. of cooperatives organized					

types of side-effects indicators, those of impact and response, have previously been defined and described.

Programs, projects, and policies in the agriculture sector can have the kinds of impacts that include negative effects on the family, on the environment, and on the urban sector. For instance, the mechanization of agriculture and the growth in size of land holdings in some LDCs has been a contributing factor in the influx of poorer farmers to the cities, often into conditions even more undesirable than those from which they came. The negative side effects of a large migration stream of the rural populace into cities include overcrowding, increased unemployment, and increased crime rates. At the same time, rural areas of LDCs also have borne many negative consequences of drastic outmigration in that families are broken up and rural communities often disappear (Eisenstadt, 1966:20). (These consequences, and others, also have been observed in the more developed countries.)

Actions pursued by policymakers often fail to take into account adequately the values held by the members of society in general or the values unique to various subgroups within a society. When these values are disregarded, a negative reaction by some individuals and groups is often discernible. For example, the Meo in northern Thailand have reacted in a violent manner to governmental attempts to force them to grow corn instead of opium poppies. A number of whites in the United States have responded to enforced bussing to achieve racial balance by boycotting the services of schools, picketing, petitioning, and in some cases, burning the buses. Sizeable numbers of those driven to the cities by the modernization of agriculture have turned to drugs or crime as a reaction to the loss of their old way of life (Weinberg, 1970:62-63; 484). And, as a final example of many that could be cited, where the ability of the agriculture sector to produce adequate

quantities (outputs) of food has broken down, as in India and Cambodia, the urban areas have reacted by engaging in "food riots."

It should be possible to identify many response and impact indicators, and judging from Tables 3.1 and 3.2, more effort will have to be expended by I.S.U. in locating and cataloging these.

b. Summary of PCI Indicators

In summary, the above analysis indicates the A.I.D. working documents are primarily concerned with project evaluation rather than the analysis of the impact of projects across institutions or on the larger society. Further resources must now be drawn upon in efforts to generate "indicators of social development."

6. Other Comments on the A.I.D. Materials in the PCI Report

It was originally intended that the analyses carried out by I.S.U. and PCI would identify and present the data within A.I.D. working documents. These data were to be utilized to build and test models of social development. Further, it was anticipated that these data could be used to evaluate the utility of the indicators used to generate them. It subsequently became apparent that the A.I.D. working documents in most cases do not serve as data generating devices. The outcome of this mishap is that data materials were not included as a part of this analysis. It has been determined, through discussions with Agency personnel and through other Agency documents, that there exists sources of data within the Agency that may prove to serve the data needs of building indicators of social development.

The major contribution to the I.S.U. project, of the information brought to light by PCI, is conceptual in nature. Although the inventory of project targets and objectives provides limited insight into the way in which A.I.D. project managers conceptualize the notion of development, many of the ideas listed do contain important development concepts that we believe can be

quantified into social indicators of value.

C. Impressions Based on a Brief Overview of Other A.I.D. Activities

1. A.I.D. Documents Containing Indicators and Data

The overall nature of the data and indicators included in A.I.D. documents and contract reports is technical and economic and the data tend to exclude the many social dimensions relevant to "indicators of social development." This conclusion was reached on the basis of the content of A.I.D. reports such as those contained in Table 3.3.

Less concern has been exhibited for health, nutrition, crime, leisure-recreation, social mobility, and other important social dimensions. It is obvious that documents whose content expressly addresses the problems of conceptualization and measurement facing the social indicator movement are those we must consult if we are to bring together a set of integrated indicators of social development.

A similar emphasis on the economic and technical aspects of human life is found to pervade A.I.D.'s project assessment indicators listed in the appendices of the PCI report. Those referents that can justifiably be called indicators are standardized economic and technical statistics. These, of course, are useful and would be included in a set of indicators of social development. However, as the social indicator movement itself partially grew out of the realization that the totality of human life could not be adequately approximated by economic and technical indicators (Duncan, 1969:7), a major motivation for examining recent development experiences was to uncover innovations in the measurement of other social dimensions. Some of these dimensions are addressed and are represented by concepts, but, unfortunately, no direction is given regarding appropriate empirical phenomena that might be used in measurement.

Table 3.3. Agency and Contract Documents

Name of Document	Nature of Contents
1. (37)* The Sectoral Analysis Series on Agriculture in Colombia (over 50 documents in this series). (Bureau for Latin America).	Indicators such as economic (shadow prices, income, input prices, market prices, employment, etc.) and agricultural (yields).
2. (21) "A Generalized Simulation Approach to Agricultural Sector Analysis with Special Reference to Nigeria"	Concerned with economic and agricultural data used in the simulation of the Nigerian Agricultural Sector.
3. (38) "East Asia: Economic Growth Trends"	Trends in main economic indicators, population trends, national product data, production, consumer price indexes, trade school enrollment, and so on.
4. (22) Evaluation Study of the Muong Phiang Cluster Area.	Emphasis is mostly of <u>technical input</u> type (e.g., number of wells constructed, number of dispensaries built).
5. (1) Some Evaluations of ARD Program Impact in Four Amphoe.	Emphasis on agricultural, infrastructural, and contact with government data.
6. (24) Seminar on Small Farmer Development Strategies.	Concerned with the adoption of new agricultural techniques by low income farmers.

* Bibliographic reference.

2. A.I.D. and Other Agency Activities

It should not be concluded from this analysis that A.I.D. is disinterested or uninvolved in the task of developing social indicators. Indeed, a number of activities are underway within A.I.D. and agencies contracted by A.I.D. which indicate a growing interest in this area. Among some of the more interesting efforts are those proposed or described in such documents as are presented in Table 3.4.

These documents discuss the need for broadening developmental concern to include political, cultural, and social factors. The areas of health, leisure, housing, working conditions, diet and nutrition, safety of life and property, population trends, land reform, dependency rates, and communications media access are also considered. In addition, some of these documents represent attempts at developing relative development profiles, fertility trends, and projection models of population.

Other national and international development agencies have, like A.I.D., expressed a concern for a broadening of the scope of national development approaches. According to the Commission for Social Development, U.N. Economic and Social Council, "it is most necessary to view the development process as a complex whole, comprising economic elements census stricto, but also other social as well as political and administrative elements. Any design for a development strategy, national or international, has to cover all the above-mentioned fields if it is to be meaningful, internally consistent and capable of effective implementation" (1969:4-5). This expansion of concern is evident in the sample of reports presented in Table 3.5.

The work outlined in these documents represents some significant steps toward solving problems of measurement and data which are useful for the delineation of an integrated set of social indicators as well as models and

Table 3.4. Other A.I.D. and Contract Documents

Name of Document	Contents
1. (14)* "Key Problems Impeding Modernization of the Developing Countries"	Need for integrated approach to problems of the LDCs; an indicator of health is also presented.
2. (8) "Suggested Health Sector Indicators"	A list of health indicators and indicators from other sectors which affect health.
3. (40) "LRPM2: A System of Perspective Planning Submodels"	Projection models of population growth; family planning response; use of family, economic and health variables.
4. (36) "Summary Economic Indicators, 18 Latin American Countries"	Contains indicators and data concerning education, health, housing, and electricity as inputs to development.
5. (39) "Profiles of Relative Development"	Contains summary data of 41 wide-ranging indicators of social development in order to compare over 50 countries.
6. (6) Social Criteria for Project and Sector Lending	Notes the need for determining "socio-cultural preconditions" which affect economic programs, and for determining the effect of loans on the distribution of power, status, and wealth.

* Bibliographic reference.

Table 3.5. Development Agency Reports

Name of Document	Contents
1. (27)* Social Areas, Social Concerns, and Social Indicators.	An unpublished list of social concerns and related social indicators.
2. (33) Contents and Measurement of Socio-Economic Development.	Indicators of development, such as health, demographic, nutrition, education, housing, communications, transportation service, agricultural, industry, trade, and general economic, are listed. Indexes for comparing relative development are constructed using data from above indicators.
3. (34) Report of the Twentieth Plenary Session (Conference of European Statisticians).	Concern for integrating social, demographic, environmental, and economic statistics into a unified accounting system.
4. (18) An Inventory of Social Indicators.	A twenty-four page list of indicators under such headings as culture, economic, education, employment, environment, health, housing, legal justice, public safety, recreation, social security, and transportation.
5. (37) Trends in Developing Countries. (Bureau for Latin America Working Document Series).	Along with economic and international trade, population and socio-economic indicators are used to show trends in these areas for many of the LDCs.
6. (32) The Selection of a Set of "Core" Indicators of Socio-Economic Development.	Delineation of education, employment, manpower stock, health and nutrition, and other national development indicators are listed. Discussion of composites, models, and criteria for a "compact set" of indicators are listed.
7. (31) A System of Demographic and Social Statistics and Its Links with the System of National Economic Accounts.	Concerned with developing an integrated system of various types of indicators in order to monitor what is happening to relevant categories of people in nations over time. Such a reporting system will include income, consumption

* Bibliographic reference

Name of Document	Contents
8. (29)* Social Policy and Planning in National Development.	and accumulation distribution, social security and welfare services, health and health services, public order and safety and delinquency, population, learning activities and education services, housing, leisure, and social mobility indicators. The beginnings of the specification of such a set of indicators are also presented. Need for an integrated approach and new types of data in order to make this approach to planning more integrated.

* Bibliographic reference.

taxonomies by which to organize the information generated by such indicators into a dynamic representation of society.

An assessment of the content of documents like those represented in the above tables would have provided a more useful data base for indicators of social development than the summaries of indicators and concepts found in the PROPs and PARs. However, this conclusion is drawn with the aid of hindsight as the perceptions of the data-indicator needs of I.S.U. have become clarified over the past year.

3. Suggested Future Projects

To bring together the information contained in A.I.D. and other agency reports, a major investment of time and resources by A.I.D. or a contractor would be required. Such an investment would be profitable only if the inventory was undertaken in such a way as to produce a central data bank in which data would be stored for retrieval by personnel requiring "hard" information on particular areas of concern.

In light of the discrepancy between A.I.D. social indicator potential and the current knowledge about a small segment of A.I.D.'s data and indicator capabilities, A.I.D. should consider activating a research team to examine a greater number of A.I.D. documents, both in Washington, D.C., and the field. This project would give A.I.D. a better picture of whether the data and concepts currently being used and reported in documents other than PROPs and PARs meet the criteria of indicators of social development. The recommended research team preferably should locate its base of operations in the Washington, D.C., area.

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APPENDIX

This is a list of indicators we believe to be currently in use by researchers and governmental agencies and thus capable of generating data. (This list comes from Laughlin and Penny, "An Inventory of Social Indicators", 1971). The indicators were selected on the basis of the criteria for indicators in Part Two, Section C. The indicators were not, however, classified in terms of the minimum six types of indicators listed. The indicators are not necessarily those that will ultimately make a complete set of indicators of social development, but the list is representative of the kinds of indicators we believe to be potential elements in such a system.

"Potential Indicators of Social Development by A.I.D. Sector"

I. Population Sector

A. Fertility Indicators

1. Crude birth rate = $\frac{\text{total births}}{(\text{total}) \text{ midyear population}} \times 1,000$
2. Age specific birth rate = $\frac{\text{births to women of age } x}{\text{midyear female population of age } x} \times 1,000$
3. General fertility rate = $\frac{\text{births to women 15-49 (all childbearing ages)}}{\text{midyear female population aged 15-49}} \times 1,000$
4. Marital fertility rate = $\frac{\text{legitimate births}}{\text{midyear married female population aged 15-49}} \times 1,000$
5. Cumulative fertility rate = Number of children a cohort of 1,000 would bear from the time they begin child bearing until they reach a specific age, if they were exposed to the schedule of ASFR in effect at a given time.
6. Completed family size = Number of children ever born to married women aged over 49.
7. Total fertility rate = (age specific birth rates of women aged 15-49) $\times 5^*$
 (*Five-year age)
 (This rate is an estimate of the number of children a cohort of 1,000 women would bear if they all went through their reproductive years exposed to the age specific fertility rates in effect at a particular time.)
8. Gross reproduction rate = Total fertility rate $\times .487^*$
 (* .487 is the proportion of girl babies at birth)
9. Net reproduction rate = (age specific birth rate of females aged 15-49 \times proportion surviving from birth to mid-point of age group**) $\times 5^* \times .487^*$
 (**Obtained from life table)
10. Intrinsic birth rate = The birth rate of a stable population (a population whose growth is at a constant rate be it negative, zero, or positive)
11. Fertility ratio (child-woman ratio) = $\frac{\text{Children under 5 years of age}}{\text{Women aged 15-49}} \times 1,000$

12. Standardized birth rate =

$$\frac{(\text{Age specific birth rate of women aged 15-49} \times \text{number of persons in each age group of standard population**})}{1,000,000} \times 1,000$$

(** Any population chosen by the researcher to standardize two or more populations which he is comparing)

13. Illegitimacy rate = $\frac{\text{Illegitimate live births}}{\text{Midyear unmarried women 15-49}} \times 1,000$

14. Age specific illegitimacy rate = $\frac{\text{Illegitimate live births to women of age x}}{\text{Unmarried women of age x}} \times 1,000$

15. Ratio of illegitimacy = $\frac{\text{Illegitimate live births}}{\text{Live births}} \times 1,000$

B. Mortality

1. Crude death rate = $\frac{\text{Total deaths}}{\text{Midyear population}} \times 1,000$

2. Age specific death rate = $\frac{\text{Deaths to persons of age x}}{\text{Midyear population of age x}} \times 1,000$

3. Cause specific death rate = $\frac{\text{Death due to a particular cause}}{\text{Midyear total population}} \times 1,000$

4. Infant mortality rate = $\frac{\text{Deaths of infants before attaining first birthday}}{\text{Total live births}} \times 1000$

5. Neo-natal death rate = $\frac{\text{Infant deaths under 28 days after birth}}{\text{Live births}} \times 1,000$

6. Perinatal death = mortality occurring between the 20th week of gestation and the first week after birth

7. Amanatal death = mortality occurring during the first week after birth

8. Standardized death rate = $\frac{(\text{Age specific death rate of all age groups of both sexes} \times \text{number of persons in each age group of standard population})}{1,000,000*} \times 1,000$

(* standard million)

9. Intrinsic (true) death rate = the death rate of a stable population

10. Expectation of life at birth = The average number of years of life a newborn infant may be expected to live under the age specific mortality currently in effect. (This figure can be obtained from a life table.)
11. Expectation of life = The average number of years of life a person of any age may be expected to live.
12. Life table death rate =
$$\frac{1,000,000*}{\text{Total number of years to be lived by cohort survivors}} \times 1,000$$

C. Migration

1. Crude in-migration rate =
$$\frac{\text{Total in-migrants}}{\text{Midyear population}} \times 1,000$$
2. Crude out-migration rate =
$$\frac{\text{Total out-migrants}}{\text{Midyear population}} \times 1,000$$
3. Net migration = In-migrants - Out migrants
4. Gross migration = In-migrants + Out-migrants
5. Net migration rate =
$$\frac{\text{In-migrants} - \text{Out-migrants}}{\text{Midyear population}} \times 1,000$$
6. Gross migration rate =
$$\frac{\text{In-migrants} + \text{out-migrants}}{\text{Midyear population}} \times 1,000$$
7. Effectiveness of migration =
$$\frac{\text{Net migration}}{\text{Gross migration}}$$
8. Crude rate of emigration =
$$\frac{\text{Number of emigrants}}{\text{Midyear population of sending country}} \times 1,000$$
9. Crude rate of immigration =
$$\frac{\text{Number of immigrants}}{\text{Midyear population receiving country}} \times 1,000$$
10. Net International migration rate =
$$\frac{\text{Net international migration}}{\text{Midyear population}} \times 1,000$$

D. Others

1. Natural increase = Number of births - Number of deaths

2. Rate of natural increase = $\frac{\text{Total births} - \text{total deaths}}{\text{Midyear population}} \times 1,000$
= Crude birth rate - crude death rate
3. Intrinsic (true) rate of natural increase = intrinsic birth rate -
Intrinsic death rate
Annual rate of population increase = Rate of natural increase + rate
of net migration + net inter-
national migration rate.
4. Sex ratio = $\frac{\text{Males}}{\text{Females}} \times 1,000$
5. Youth dependency ratio = $\frac{\text{Persons under 15 years of age}}{\text{Persons 15-65}} \times 1,000$
6. Aged dependency ratio = $\frac{\text{Persons over 65 years of age}}{\text{Persons 15-65}} \times 1,000$
7. Total dependency ratio = $\frac{\text{Persons under 15} + \text{Persons over 65}}{\text{Persons 15-65}} \times 1,000$
8. Crude marriage rate = $\frac{\text{Number of marriages within one year}}{\text{Midyear total population}} \times 1,000$
9. Net marriage rate = $\frac{\text{Number of marriages within one year}}{\text{Number of single} + \text{widowed} + \text{divorced 15}} \times 1,000$
years and over at midyear
- (This rate should be computed separately for each sex and race.)
10. First marriage rate = $\frac{\text{Number of first marriages to (Males) (Females) within one year}}{\text{Number of single (never married) (females) (Males) 15 years of age or over}} \times 1,000$
11. Remarriage rate = $\frac{\text{Number of marriages of persons previously married}}{\text{Number of widowed} + \text{divorced}} \times 1,000$
12. General marital dissolution rate = $\frac{\text{Number of marriages dissolved within one year}}{\text{Number of marriages spouse present, midyear}} \times 1,000$
13. Crude divorce rate = $\frac{\text{Number of divorces during one year}}{\text{Midyear total population}} \times 1,000$
14. General divorce rate (refined) = $\frac{\text{Number of divorces during the year}}{\text{Midyear number of married couples}} \times 1,000$

15. General widowhood rate = $\frac{\text{Number of marriages dissolved by death of one spouse during the year}}{\text{Midyear number of married couples}} \times 1,000$
16. Index of aging = $\frac{\text{Number of persons 65 and over}}{\text{Number of persons under 15}} \times 1,000$
17. Inter-censal percent change = $\frac{\text{Later census count} - \text{earlier census count}}{\text{earlier census count}} \times 1,000$
18. Effectiveness of contra-ceptives = $\frac{\text{Number of accidental pregnancies}}{\text{Total months used}} \times 1,200^*$

(* 100 years)

Urban-Rural SectorsHousing

1. Ratio of house units to households.
2. Measure of housing discrimination.
3. Absence of infestation (as rates).
4. Presence of adequate fire prevention materials (as rates).
5. Presence of urban renewal programs (as rates).
6. Average number of families per house (congestion).
7. Number of rooms per inhabitant.
8. Square meters of floor space per inhabitant.
9. Increase in low income housing.
10. Year of house build (age of housing).
11. Number of rooms in the house.
12. Cost of housing for a moderate income family of four.
13. Number of building permits for houses issued 1 year.
14. Characteristics of the housing inventory by tenure, value, rent, and substandard status, and race, income, and family size of occupants.
15. Net additions to the housing stock related to the change in consumer units.
16. Sales price of new one-family homes as a ratio to income.
17. Percentage of low income renters who pay 25% or more of their income for rent.
18. Rent/income ratios for white and negro renters.
19. Proportion of persons living in good neighborhoods, i.e., in areas not characterized by certain percentages of substandard dwellings.
20. Percentage of dwelling units sound, with all plumbing facilities.
21. Number of bathrooms per house and/or household.
22. Dwellings with piped water as percent of all dwellings.
23. Dwellings with electricity as percent of all dwellings.
24. Percent population living in towns over 20,000 inhabitants.
25. Percent population living in towns over 40,000 inhabitants.

Legal Justice

1. Delinquency index.
2. Crime index.
3. Number of divorces.
4. The average length of time between arrest and trial.
5. Time interval between arrest for serious crime and date of trial (excluding dismissals and guilty pleas), by race.

6. Proportion of arrestees for serious crime brought to trial with private or with court-assigned defender, by type of plea, by race.
7. Proportion of arrestees for serious crime accorded bail, by race.
8. Level of crime in prisons and other institutions.
9. Arrest and clearance rates.
10. Access to legal aid (as rates).

Communication

1. Telephones per adult population.
2. Passenger cars per total population.
3. Commercial vehicles per total population.
4. Circulation of written communications per adult population.

Urban SectorEmployment

1. Work injury rates in selected injuries.
2. Percentage of families and unrelated individuals who do not have a member in the labor force due to mental or physical disability by type of disability.
3. Degree of job satisfaction per 1,000 workers.
4. Percentage of people who feel that their job is important and vital and fits their talents and abilities per 1,000 workers.
5. Percentage distribution of labor force by status (employees, employers, etc.)
6. Ratio of male labor force in agriculture to total male labor force.
7. Minimum age eligibility for employment.
8. Ratio of females to males employed.
9. Proportion of total population in the labor force.
10. Employment status of noninstitutionalized population 16 years and over.
11. Labor force participation rate of married women under 35, by presence and age of children.
12. Number of men 20-64 working part year by major reason.
13. Number of mothers in the labor force with husband present and with children under 6 years per 1,000 mothers.
14. Unemployment rates of male high school dropouts and graduation for selected age groups.
15. Number of migratory workers per 1,000 workers and days worked at wage work per year by farm-nonfarm.
16. Employment trends among major occupational categories.
17. Percentage of full-time, year-round workers who were heads of 4-person families with no other earners below BLS Budget.
18. Percentage of full-time, year-round workers with earnings below minimum wage selected occupational groups and educational levels.
19. Estimated percentage of full-time, year-round workers with earnings below minimum wage - sex, race, family size.
20. Percentage of workers experiencing some unemployment, by longest job and by sex.
21. Percentage of families and unrelated individuals who have at least one member part-time in the labor force working less than 1,575 hours/year.
22. Employment trends among major occupational categories 1950-1970 and 1980 (projected for a services economy with 3% unemployment).
23. Number of families who have 2 or more members employed full-time in the labor force.

24. Percentage of families and unrelated individuals who have at least 1 member employed full-time in the labor force: 35 hrs/week, 45 weeks/year, 1,575 hrs/year.
25. Ratio of females to males employed.
26. Minimum age ability for employed.
27. Average work week of families and individuals by occupation and industry.
28. Percentage of families and unrelated individuals receiving public assistance.
29. Ratio of male labor force in agriculture to total male labor force.
30. Percentage distribution of labor force by principal occupational categories.
31. Proportion of persons under 15 and over 65 in the labor force.
32. Percentage distribution of labor force by principal industrial category.
33. Percentage distribution of labor force by status (employees, employers and workers).
34. Unemployment rates by race, age, sex, marital status, education, occupation, residential location and by industry last employed.
35. Number of people age 18-19, not high school graduate -- employed, unemployed, not in labor force.
36. Labor force participation by age, educational attainment, race, sex, occupation, marital status, income, head of household.
37. Percentage of labor force unemployed.
38. Number of man-hours worked during reference period.
39. Income levels of families by intervals of \$500 who are receiving some form of public assistance.
40. Number of families who have 2 or more members employed full-time in the labor force.
41. Percentage of families and unrelated individuals who have at least 1 member employed full-time in the labor force but whose earnings are below the current poverty level.
42. Adult male labor force in agriculture as percentage of total male work force.

II. Education

1. Dropout rates across educational institutions.
2. Measures of student alienation expressed as rates.
3. Scores on achievement tests.
4. Number of guidance counsellors per 1,000 students (disaggregatable across differing student classifications).
5. Enrollment rates over time, disaggregatable for groups, per 1,000.
6. Ratio teaching staff to school enrollment.
7. Number of people with at least 5 years of schooling per 1,000.
8. Ratio teachers with advanced degrees.
9. Adult literacy rates (over differing groups).
10. Illiteracy rates among currently enrolled students (over differing groups).
11. Participation rates in adult education activities (across differing programs; across differing groups).
12. Absenteeism/truancy index per 1,000.
13. Highest year of education attained by head of household per 1,000.
14. Student reading achievement scores per 1,000.
15. Percentage of students receiving Bachelor's degrees who were enrolled in degree credit programs (across differing groups).
16. Percentage of students receiving Master's degrees who were enrolled in degree credit programs (across differing groups).
17. Percentage of students receiving Ph.D. degrees who were enrolled in degree credit programs (across differing groups).
18. Percentage high school graduates attending college by educational ability and socio-economic status.
19. Ratio of number of students attending universities to those attending community college.
20. Percentage of persons 25-29 and 25 and over with 4 years of high school.
21. Percentage of persons 25-29 and 25 and over with less than 5 years of school.
22. Percentage of 18-year-olds graduating from high school.
23. School retention rates from 5th grade on (for selected years).
24. Percentage of persons enrolled in school by age, sex, and race (and by other groups).
25. Number enrolled in elementary and secondary schools, public and private as a percentage of appropriate age range per 1,000.
26. Percentage of teachers possessing teaching certificates.

27. Number of schools with libraries per 1,000 schools.
28. Ratios of high school students in academic, vocational and technical programs (over groups).
29. Average number of persons per room (classroom), per 1,000 schools.
30. Potential earnings of graduates per 1,000 students.
31. Expenditures per pupil.
32. Hours of educational TV as a percentage of all television hours transmitted.
33. The percentage of total school expenditures that are used for instructional purposes (teachers' salaries, etc.) as compared to administration, maintenance and operation, interest on debt.
34. Percentage of qualified population taking advantage of educational opportunities.
35. Current expenditure on research in universities and colleges.
36. Number of college presidents, professors, and instructors per 1,000 population.
37. Number of people in post graduate education.
38. Daily newspaper circulation per adult population.
39. Radios and TVs per adult population.

Impact IndicatorEnvironment

1. Percentage of people exposed to bothersome and hazardous pollution.
2. Park lands per capita - subjective feeling about adequacy of parks.
3. Subjective feeling about the beauty and character of the community.
4. Population in localities of 20,000 and over as percent of total population.
5. Percentage of population having facilities for proper disposal of excreta.
6. Public open space utility.
7. Miles of sidewalks
8. Data amount of litter: number of billboards and visible dumps and junkyards.
9. Amount of property damaged by pollution annually.
10. Garbage and solid waste disposal - pounds per capita per year.
11. No. of felled trees during the year in forests in use (per 1,000 acres of trees).
12. Nitrogen oxide emission rates from power plants, autos.
13. Sulfur oxide emission rates from combustions of power plants.
14. Aggregate measure of fuel used weighted by emission factors which express sulfur content of the fuel.
15. Number of petroleum, metal ore, nonferrous smelting refineries without pollution controls (per 100 refineries).
16. Air pollutants per set volume of air.
17. Measurements of sulfate and nitrate components of suspended particles taken by the National Air Sampling Network (as rates).
18. Air pollution - composite index of pollutants.
19. Air pollution - regional contamination index.
20. Air free of benzene soluble organic matter by geometric mean.
21. Air free of benzene soluble organic matter minimum concentration found 90% of time.
22. Air free of particular matter minimum concentration found 90% of time.
23. Percentage of population receiving protected water supply.
24. Fuel emission index.
25. Fuel emission density.
26. Estimated fuel emissions from power generation and industrial activity.
27. Nitrate concentration (average).
28. Average sulfate concentration.

29. Sulfur oxide and nitrogen oxide emissions from industrial, domestic and commercial sources (as rates).
30. Energy output of various fuels (as rates).
31. Climatological records.
32. Significant changes in plant life - man-made deserts (as rates).
33. Sources of major pollutants.
34. Absolute levels of major pollutants; water, air, solid waste, noise.
35. The number and output during the year of fish hatcheries.
36. Composite index of pollutants.
37. Local pollution index and regional contamination index.
38. Biochemical oxygen demand (BOD) (pollution).
39. Amounts of solid wastes developed as by-products of society.
 1. inorganic chemical industry wastes
 2. organic chemical industry wastes
 3. nonferrous metal industry wastes
 4. iron industry wastes
 5. power production industry wastes (fly ash)
 6. general public
 7. junkyards