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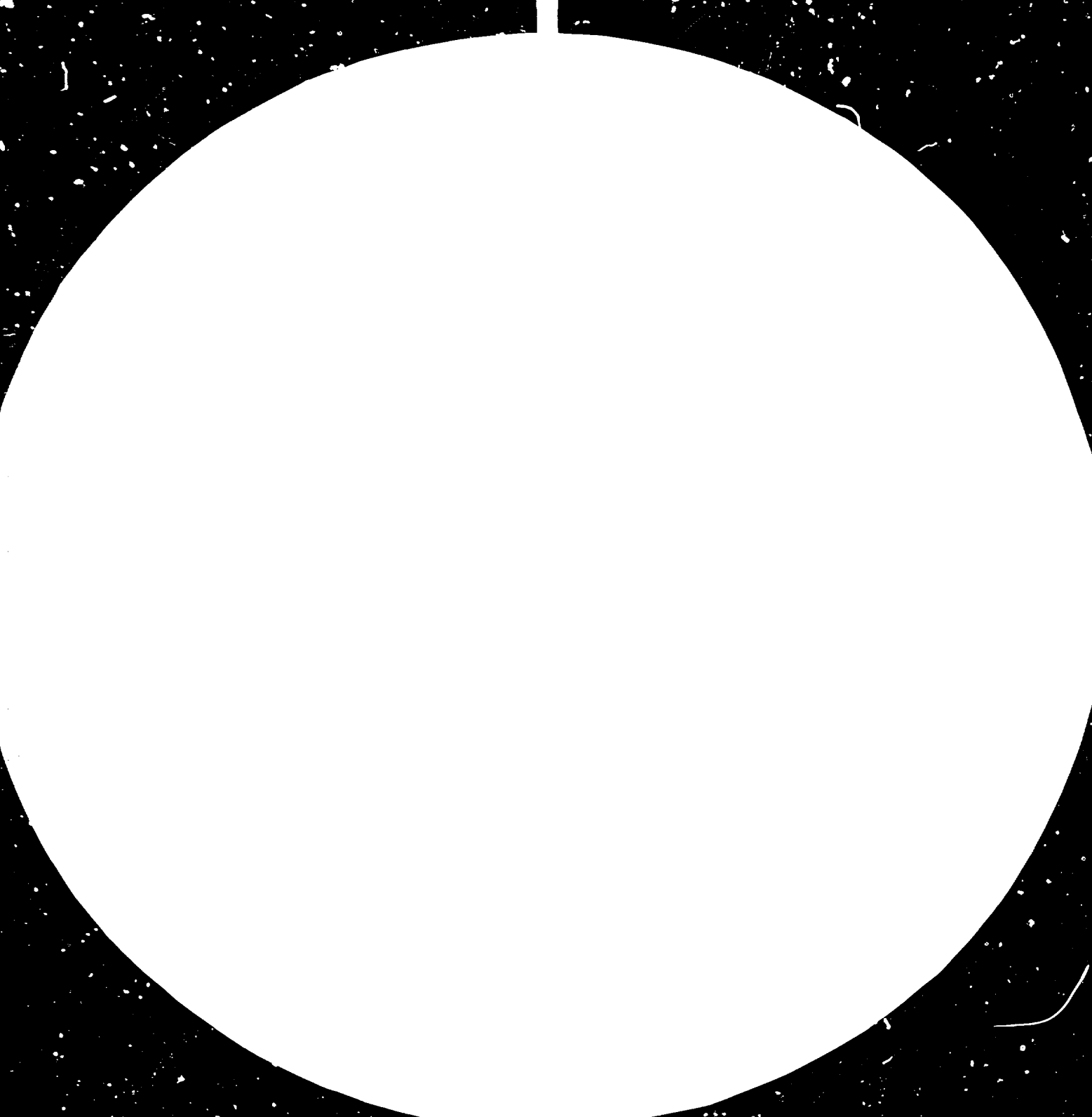
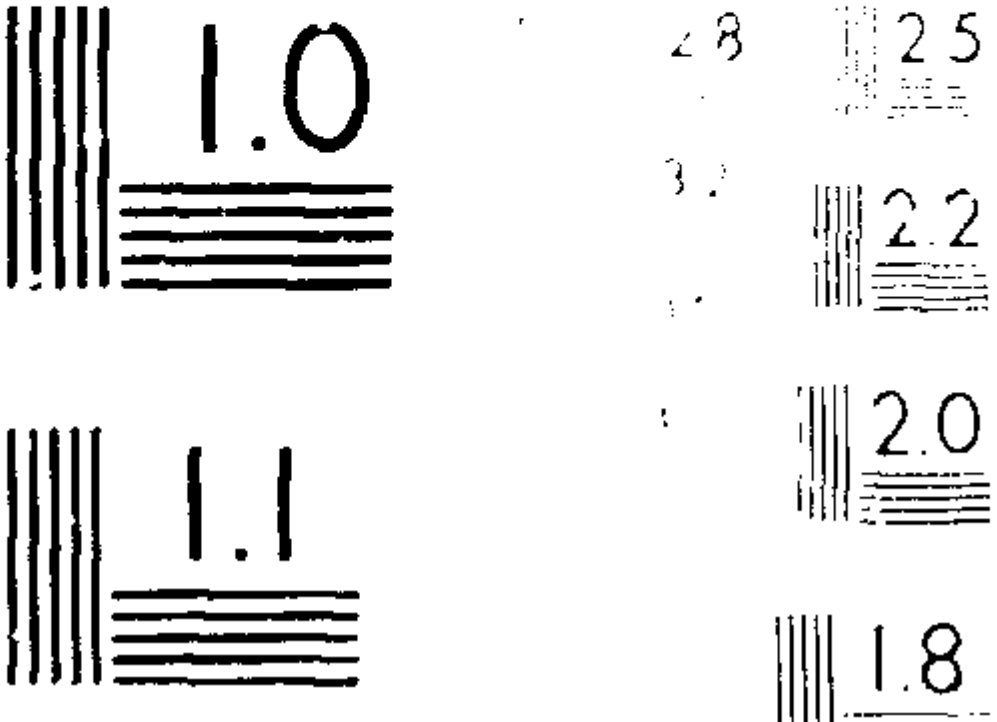
UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

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UNITED NATIONS INDUSTRIAL
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# THE USE OF SOCIO-ECONOMIC INDICATORS TO MONITOR THE PROCESS OF INDUSTRIALIZATION *

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for the ACC Task Force on Long-term Development Objectives
New York, November 1981

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# FOREWORD

As a contribution to the discussion at the ACC Task Force on Long-term Development Objectives scheduled for November 1981 UNIDO prepared and submitted a paper on "Monitoring Industrialization in the Third Development Decade". The present paper was prepared as an additional contribution to the discussions of the ACC Task Force and is a comment on the background documentation "Some Considerations on Indicators" and the accompanying "Annex" presented for discussion by the ILO.

The use of social indicators (or socio economic indicators, SEIs) as a means of focusing on the satisfaction of the needs for basic goods and essential services has gained increasing prominence in work of the international organizations in recent years, and the provision of a set of basic goods and services is increasingly taken as an important consideration in the process of industrialization.

The use of SEIs for purposes of comparing macro-level socio-economic development requires, however, paying careful attention to the relevant methodology. This document expands on the ILO's contribution to Agenda item 1,2, presents a brief review of several major problem areas, and then gives suggestions for the operational use of SEIs. This allows the selection of an acceptable set of SEIs, and a procedure is then suggested for reducing the acceptable set of indicators to a smaller set that can be used for purposes of analysis and evaluation. The paper then concludes with a number of specific comments on the ILO documents.

## Selecting socio-economic indicators

The fundamental problem in using socio-economic indicators for policy analysis is the choice of indicators - a problem caused by the fact that both the quality and the quantity of data in general are markedly inferior to that available in national income accounting, as well as by the fact that there exists no one unique and widely accepted set of indicators or aggregate indicator which addresses the issue in its entirety.

A flowchart of the procedure for selecting indicators is illustrated below, the key stage being the a priori determination of the "goal areas", an a priori delineation based on economic theory and the practice of economic development of what one conceives of as the sphere of activities one is attempting to compare. Casting the net for specific indicators as wide as possible, given certain reservations on similarity of quality, etc., is a very reasonable procedure; but it does not discount the arguments for a priori choice following a procedure such as that illustrated.

It is not uncommon that the social indicators that are used in a study are arranged ex post by facets of development covered. The point being presented here is that this should be an ex ante rather than an ex post process; it should come at the start of the methodology and the desired pattern of balance among socio-economic areas should be imposed before specific indicators are chosen. This would then (a) insure that an attempt had been made from the outset to cover all facets of development and (b) point out just those areas in which further work must be directed to cope with the inadequacies of the existing "short-term" indicators discussed at the end of the ILO paper.

EXAMINATION of prevailing
social, political and
economic development theory

↓

DETERMINATION of goal areas

↓

SELECTION of specific goals

↓

DECISION on a set of specific
indicators chosen from the
acceptable set

Selecting socio-economic indicators to analyze socio-economic development

The first step in attempting to answer the question of "what will be monitored?" posed in the first section of the ILO paper is to specify a set of "goal areas", or areas of hightened concern, for the process of socio-economic development. The Annex to the paper "Some Considerations on Indicators" suggested five such goal areas: employment, income, human resource development training, conditions of work, and participation.

The set of five goal areas set out in the Annex to the ILO paper clearly falls short of encompassing the totality of socio-economic development. But it is not proposed to decide upon the determination of the appropriate set of goal areas (and of an allied set of indicators) here, though it clearly is a very relevant item for consideration by

international bodies and national authorities. What is being proposed, however, is a set of methodological considerations that must be examined if the international community is to move towards some agreed list of goal areas, refined as "specific goals" and "specific indicators", for use in the examination of the development process. Any one specific representation of the multi-faceted development process could clearly be questioned, and therefore there must be a process of international discussion and consideration of the appropriate goal areas.

The goal areas chosen should be broad enough to stay constant as development proceeds over a fairly broad range, while the "specific goal" that is most relevant may change more frequently. "Specific indicators" will in turn change with changes in the availability of data, developments in its measurement, and the overcoming of problems of economic and statistical interpretation.

Specific goals and specific indicators represent a translation from the generic commodity requirements of planners and decision-makers to characteristic requirements. Since commodity needs are mainly determined by characteristic requirements, it is desirable to specify indicators whereever possible in terms of characteristics (e.g., calories and proteins) rather than commodities (e.g., rice, fish and meat).

Moreover, a serious attempt should also be made to express all indicators in non-monetary terms. The problems that would be added to any analysis by including monetary considerations are numerous, and one could only mention that any expenditure indicator is at least partially a function of the efficiency of the market (if it is privately produced), of the pricing policies of public enterprises (if it is publicly produced), and of the State's policy on deficit spending and subsidisation, as well as of the satisfaction of the given goal area per se (This point has, however, not been reflected in the lists of indicators given by the ILO in the Annex paper.)

## Selecting an acceptable set of indicators

Having, on the basis of international discussion, singled out goal areas, the analysis next requires that these goal areas be specified in more detail according to their main characteristics. The prime consideration in moving to the selection of the core bundles of specific goals, and then on to specific indicators, is that the specific goals reflect the concept contained in the goal area.

As the ILO paper clearly stated, the reality of the data situation is that there are a number of specific goals that would meet this and other requirements, but for which data simply are not available. Thus, the goal area of social amenities is almost always omitted from any attempt at policy analysis using social indicators simply because of the lack of widely available data.

A key point which this paper wishes to make, however, is that the data problems associated with social indicators extend well beyond the question of data availability discussed in 'Some Consideration on Indicators'; and that problems of the measurability of specific indicators, when at least minimally acceptable data are available, also extend appreciably beyond straightforward problems in data handling. They may include the fact that different measures are used for a specific indicator to reflect the same goal area and specific goal (television licences and television receivers). A more difficult problem is that the social, cultural and historical development of a given country as well as its geographical and topological specifities may mean that a concept like, for example, urban area, basic to a number of socio-economic indicators, does not have a univerally agreed definition.

Another problem is the question of measuring efforts or results. In the discussion on acceptable indications, the ILO background documentation (p.2) argues strongly that only output indicators - and not input indicators - would be employed. Thus for the goal area of education, one would consider including the literacy rate, but would not consider the primary education enrollment ratio.

Focusing exclusively on output indicators has the distinct advantage that it does not require the assumption that there exists an universal relationship between the impact of efforts (inputs) on desired results (outputs). That is, for example, that an increase in the number of medical doctors per thousand of the population necessarily contributes to an improvement in the health of a given community. Having said this, one must clearly note that the exclusive use of output indicators is no better than the use of input indicators in dealing with the crucial questions of the distribution of this increased health care among income groups of the population; or with the equally important question of the degree of access of the (rural) population to the service.

Moreover, there are a number of reasons to feel that input indicators should also be included in the set of indicators used to measure, analyze and evaluate the results of the development process. The first is that output indicators may simply not be available to capture all of the required dimensions of development; or at least may be judged inferior in quality to the available input indicators. One example here is the key goal area of health, where measurement of the output of health is very difficult. In this case one may well prefer a precise and well defined input measure to an output measure that is statistically (and conceptually) weak and much less precise.

Allied to the question of availability is the fact that some output indicators - e.g., literacy - are only available at very irregular intervals on the basis of nation-wide surveys, where the corresponding input indicators are available on a regular basis. The exclusive reliance on the use of output indicators would mean being forced to use the results of surveys of often very different years in comparative international studies, whereas input data would have been available for the same year for all countries. Further, given that what one is attempting to assess is the very long-term process of industrialization and development, input indicators have the advantage that their use allows a forecast of the effect that the current process of industrialization will have on a given dimension of socio-economic development several years in the future, as opposed to the picture of the current state of development that an output indicator would deliver.

The use of input indicators - which could also be called policy indicators - also has the distinct advantage of focusing much more directly on the composition of production, and therefore more clearly highlighting imbalances and inadequacies in specific socio-economic spheres. This is particularly relevant in policy-oriented analysis, since evaluations employing such policy indicators give the policy maker direct information in which specific areas social and economic policy must be oriented.

A more general point is that the use of output indicators implies a demand-oriented approach to the question of the satisfaciton of basic social and economic needs, whereas in a number of areas the relevant consideration may be the supply side. Thus, a given level of income or employment cannot, in a shortage economy, be taken as necessarily saying anything about the relative degree of satisfaction of basic social needs in the area of nutrition, health, housing or clothing, for example, whereas doctors per thousand of the population or square meters of dwelling space per inhabitant would.

As a general proposition, the nature of the measurement problems encountered for all types of indicators is such as to counsel against giving excessive importance to small changes in specific indicators, since international programmes of collecting and processing data on social and economic indicators are mere infants when compared with similar programmes for national accounts statistics. And these imprecisions exist even without the introduction of the ILO's proposals for 'quick monitoring', 'impressionistic views', and 'informers'.

Even when a given specific indicator belongs to the set of available, measurable, and socially desirable indicators, its inclusion in policy analyses may be questionable both on grounds of its economic interpretation and its statistical reliability. Thus when a variable can assume a rather broad range of values in the cross-section analysis being undertaken, equal marginal increases in the specific indicator may well have a different interpretation in terms of the goal area depending on the absolute level of the specific indicator. Thus, in the case of the per capita daily caloric intake, increases in the value of the indicator are sometimes more a reflection of the (lack of) availability of sufficient quantities of protein-rich foods than it is of an increase in the degree of satisfaction of the nutritional requirements of society.

A further problem with specific indicators from the set of available, measurable, and socially desirable indicators, is that countries with higher income level may well exhibit actual decreases in the level of consumption, and hence in the value of the indicator, because the good comes to be seen as inferior. Such indicators must therefore be excluded form the analysis since beyond a given point they lose their validity as mirrors of socio-economic welfare.

If one were to include indicators such as income distribution, the fact that the relationship between increasing equality in income distribution and increases in socio-economic welfare is not a monitonically increasing one, and that income distribution most probably has a global optimum, means that such an indicator must also be excluded from the analysis.

The second basis for reservations on specific indicators which are available, measurable, and socially desirable relates to possible problems in their statistical interpretation: e.g., a comparison of the value of specific indicators between countries may fail to correctly reflect differences in attainment in this goal area between countries because of the overriding importance of some third variable, the value of which varies considerably between countries. If it is accepted that a basic principle governing the inclusion of specific indicators is the degree to which they reflect the corresponding goal area, then any indicators which appear to be subject to such third variable influence should be excluded.

## Selecting a reduced set of indicators

For purposes of comparing and analyzing social and economic development, one requires that a subset of the socially desirable, available, measurable, and economically and socially acceptable indicators be chosen that is large enough to capture the different facets of the process of socio-economic development and its goals at a given time, while small enough to allow one to readily comprehend the totality of the development picture.

Within a given goal area a precise statement as to which is the correct specific goal and specific indicator is impossible, and is, among other things, a function of the general level of development of the country. Thus, the primary education enrolment ratio may well be deemed appropriate for Bangladesh, while in southern Europe the primary plus secondary enrolment ratio may well be the most

appropriate input indicator. Both because it is broader in its coverage and because it is an output indicator it may be deemed preferable to use the literacy rate as the specific indicator in this area. But it would also be relevant to include some measure of the appropriate educational structure as well as enrollment figures to give a longer-term perspective. Clearly no one given indicator will capture all the dimensions of a given goal area.

In selecting specific indicators for inclusion in the evaluation criterion it must be realized that attainment of a high value on any one indicator is often the consequence of the interaction of a number of social and economic forces (including other specific goals). Myrdal spoke of a 'cumulative social causation' among different aspects of the goal area health. For social indicators generally, one could speak of a cumulative social and economic causation typified by the interdependent causation between poverty, malnutrition, sickness and education. Recognition of this interdependence of goal areas and of specific indicators is in turn the basis for the following proposals for selecting the most appropriate specific indicators.

One could propose to select the one specific indicator for each goal area for which acceptable indicators are available that best captures the goal area and the specific goal. Given that several alternative specific indicators are available for the given goal area and specific goal and that all are a priori acceptable, the specific indicator chosen should be the one with the highest degree of correlation with all of the available indicators for the given specific goal. It is not acceptable, however, to apply this or any similar statistical technique to the choice of the goal areas to be used to evaluate the development process. In other words, one does not wish to use as a basis for inclusion those indicators that have the highest correlation coefficient with all indicators from all goal areas. Nor does one wish to include all those indicators which have a minimal degree of correlation with the per capita GDP as measured by national accounts statistics. The first militates against a comprehensive view of socio-economic development and the second represents a U-turn in the direction of the identification of growth with development.

As a simple example of the kind of problem that can arise, one notes that the first indicator suggested for the goal area of income in the ILO Annex is 'the amount of resources devoted to measures for raising the productivity of workers in low-productivity sectors', while the first indicator given for the goal area of human resources development and training is 'the gross government expenditure on training programmes'. Although it need not be the case, it is very possible that these two magnitudes will be very highly correlated; and that therefore it will not be clear which dimension of the process of socio-economic development is being measured and evaluated when either of these specific indicators are included.

For the purpose of analysis, the goal areas are given and statistical techniques are applied to data for all the countries taken together only to determine the best measure for each goal to be used in the analysis. The reliance of the statistical analysis on past development in the countries to choose the best measure for a given goal area is acceptable, whereas in choosing the goal areas themselves it is inherent in the nature of the evaluation process that the objectives on which the evaluation is to be based may well differ from the objectives that have been pursued in previous years.

Following this procedure, one can generate a reduced set of indicators that capture something approaching the totality of the development process. But it is crucial to note that it has been shown here the process by which this reduced set of indicators was derived is appreciably more complicated than simply asking whether or not data on the indicator are available.

## Comments on the ILO Paper

The considerations discussed above have been of a general methodological nature and have related to questions posed in the ILO's contribution to Agenda item 1,2. In this final section the discussion will now turn to comments of a more specific nature stimulated directly by the paper "Some Considerations on Indicators" and its Annex.

One major problem in the use of social and economic indicators is the inclusion in the basic needs approach, as adopted at the 1976 World Employment Conference, of non-material needs such as basic human rights, social justice, and equity. No matter how basic these needs or rights may be, it is arguable that restricting the purview to only material goods and services would allow one to contain the analysis within the framework of positive economics. Excluding non-material needs would have the not unimportant implication that the choice of indicators could be based on more or less objective data, something that is very difficult with indicators for non-material needs. In this respect we must question the extent to which a socio-political objective such as "participation" (Annex pages viii-ix) properly belongs to a set of socio-economic indicators designed to evaluate the end of the process of industrialization and development.

It is inherent in the concept of using a set of indicators such as those presented in the Annex to the paper to mirror the development process that the indicators should be conceived of as a unified whole, since they are, by definition, to represent the entirety of the socio-economic development process. This fact must be kept in mind when considering the indicators presented in the Annex, since they are said to have been 'formulated independently' ("Some considerations on Indicators", page 3, paragraph 3, lines 8-9) and therefore cannot be taken as encapsulating the entire process of socio-economic development.

In opening the discussion on the question of 'are appropriate indicators available?', the discussion document lamented the fact that there were often very long delays between the time of the collection and the effective availability of the data. We would like to second this

concern expressed here, and add mention of an article in the July number of World Development* where the implications of the lack of comparability of data (in terms of the year in which it was collected) across countries on the literacy rate used in the calculation of the Physical Quality of Life Index (PQLI) were investigated, and the conclusion drawn that in a number of cases the differences that were originally found in PQLIs for different countries did not represent a fundamental difference in levels of development at all, but merely a lack of comparability in the data employed.

Given the fact that "short-term" indicators are not available for the majority of countries for a number of the indicators one would wish to investigate, as well as data problems such as those discussed in the ILO discussion paper, in the companion UNIDO paper and in the paragraph above, it is our view that there is little ground for expecting that there will exist possibilities for the "quick monitoring of recent development" as discussed in the ILO paper (page 3, last paragraph). Such developments would require a very major international undertaking in the statistical area and the expenditure that would be required to develop the facility for "quick monitoring" at the international level would be very large. For the present the relevant frame of reference for social and economic indicators is rather for the analysis of medium- and long-term trends in socio-economic development.

Given the view that the relevant time frame for the use of the indicators that are readily available today is for the analysis of medium- and long-term trends in socio-economic development, this does not mean that one would automatically endorse the view put forward in the paper for the international community to begin to use "impressionistic views" from the media as an aid in short-term analyses. It is absolutely crucial that the international organizations, if they are to function effectively, maintain a solid reputation for the analytical and intellectual quality of their output. Given the discussion both

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* Brodsky, David A. /UNCTAD/ and Dani Rodrik, "Indicators of Development and Data Availability: The Case of the PQLI", World Development IX/7 (July 1981), 695-699.

in the ILO discussion document and in the companion UNIDO paper on methodological and data problems and on the effects of employing methodologically inconsistent data or data that is not strictly comparable in analyses using social and economic indicators, such a proposal (of using "impressionistic views") should not be seriously entertained.

The same judgement would have to be made of the suggestion in the following paragraph of the paper (i.e., page last paragraph) that use be made of a series of "informers" to provide data on the current values of such indicators. Given the need to make large samples to get accurate results, and given the fact that the typical annual change in a given indicator will normally be a very small number (which ad hoc observation would certainally not be able to detect), then such a suggestion would run totally counter to attempts to maintain a standard of respected quantitative analyses.

There is absolutely no question that more methodological work must be done in the area of social and economic indicators and that every effort should be made to have ready access to the most recent possible data, consistent with the standards of quality of statistical data that were discussed in points 5 and 6 above. This is particularly true with regard to output indicators, which the ILO - quite rightly - considers very important. But there is also the pressing need to USE socio-economic indicators in analyses of the development process. Take for example the World Development Report of the World Bank. When we examine the Annex on World Development Indicators, we find, for example, that the ranking of countries used throughout the Annex is on per capita GNP (page 132). As a first step in introducing more appropriate aggregate measures one could suggest making use of the work of Kravis et al. on re-pricing, this presumably being part of the work referred to on the first page of the ILO paper when mention is made of 'adjustment of GNP'.

But a further development that one would very much wish to propose, and which is directly relevant to our discussions here, would be the much greater use of social and economic indicators as key elements in the analysis and evaluation of national economic policies (and not merely as secondary or tertiary considerations stuck on at the end of a traditional national accounts analysis).

A final point concerns the relationship between industrialization and basic needs, a question which takes on a particular importance because a recent article in the ILO's International Labour Review* suggests that there was no correlation between industrialization and a selection of basic needs in developing countries. Examination of this study suggests that there are three methodological aspects which, were they altered, might well generate positive results as to the relationship between industrialization and socio-economic development.

First, instead of comparing manufacturing output and basic needs for the same time period, a time lag could be introduced to take account of the time needed for the benefits of the industrialization process to work their way through the society. Secondly, the sample of developing countries used by the ILO could be replaced by the population of all countries, and then by the population of developing countries; and, thirdly, the examination could be done using the value of manufacturing and the value of specific indicators, rather than in terms of growth rates of these magnitudes.

Making these methodological alterations, and particularly introducing the time dimension of the process of socio-economic development into the analysis, the acceleration of industrialization may well be seen to be a means, at the international level, for attaining the objective of improving the provision of basic needs at the national level.

* Van der Hoeven, Rolph /ILO/, "Employment, Basic Needs and Industrialization: some Reflections on the Lima Target", International Labour Review CXIX/4 (July-August 1981), 439-453.