**STATISTICS**

**DENMARK**

# Embedding social dimensions into economic and environmental accounting and indicator systems
### - some aspects to consider-

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**ABSTRACT and CONCLUSION**

Danish sustainable development (SD) indicator set presents extensive assortment of social indicators, which are describing several social themes. However, policy analysis of sustainable development requires instruments for further analysis of the underlying mechanisms and reasons for changes in indicators. The present indicator set can to a lesser extent be used for such a purpose. The primary reason for this is that the indicators are often based on data originating from different statistical frameworks. Therefore, a new indicator set should be derived from a statistical framework where individual indicators are embedded into an underlying database from which they can be derived by aggregation.

The System of Economic and Social Accounting matrices and Extensions (SESAME) is such an information system that integrates economic, social and environmental statistics. It is a statistical information system in matrix format, from which a set of core economic, environmental and social macro-indicators can be derived. The system is driven by the kind of information required for monitoring and policy-making at the macro-level. Every indicator derived from SESAME is computed from a single fully consistent statistical system and each indicator uses the most suitable measurement unit of the phenomenon it describes.

The social dimension in SESAME is presented within a Social Accounting Matrices (SAM), which is characterized by several constraints in connection to social topics. For that reason, all future work on social indicators in SESAME demands clear clarification of SD's social dimension and definition of essential indicators which will present this dimension. Many social topics cannot be incorporated into SAM. A possible solution will be to add a range of supplementary tables to SESAME that will contain social topics, which cannot be incorporated into SAM. However, addition of different social indicators to SESAME will imply the problems with an increasing amount of social indicators. The path forward must be clarification of SD's social dimension and delimitation of social headline indicators.

Delimitation of social headline indicators demands a clear definition of term indicator. The indicators are, on the first hand, a communication tool directed at the general public and the media. However, the meaning given to the term "indicator" seems to differ significantly through the different topics of official statistics. It results in a growing amount of low quality indicators, without clear message and theoretical background.

I want to emphasize that I do not advocate for special statistical frameworks or specific methods. Different kinds of statistics and inventories all serve their specific purposes. However, the point is that indicators calculated from elements originating from different statistical frameworks are a bad idea since they might be misleading.

# 1. Introduction

We live in world of information. There is more information than ever, but it doesn't necessarily mean that we get better information than before. There is unfortunately a lot of pointless information. Vast amounts of different information can easily seem confusing. Even though we are able to use computers and new media, such as the Internet, ways to good and trustworthy information are more and more difficult. For that reason more people and institutions try to squeeze statistical information into the indicators. SD indicators are not an exception. There is a range of different SD indicators, but not all of them can be considered to posses a good theoretical foundation or to be reliable and of acceptable quality. This paper discusses a term 'indicator' in connection to social dimension of SD. Issues with social dimension are also addressed. The so-called System of Economic and Social Accounting Matrices and Extensions (SESAME) is presented as a possible solution to problems in connection to SD indicators.

The following chapter presents the social dimension as it is embedded in the current set of the Danish SD indicator set. The third chapter evaluates accounting systems including social dimension. Discussion about indicator systems including social issues is presented in the fourth chapter.

# 2. Social dimensions

## 2.1. Some ideas about social dimensions

After the United Nations was founded, focus was set on the conditions of people's living standard around the world. This increased the requirements for social statistical data. As a result, a comprehensive list of social indicators was presented by a committee of experts of the United Nations in the 1954. The 1954 expert group identified 11 indicators as priority indicators, cf. table 1. Because of competition between economic indicators and social indicators and the limited budgets of statistical bureaus, these social indicators were more or less forgotten for 43 years. Not until 1997, the Statistical Commission developed a Minimum National Social Data Set (MNSDS). The purpose of MNSDS was to consider further the statistical implications of the World Summit for Social Development. Even though the 1954 report was not used as a basis for the MNSDS, the parallel is notable. At first, both groups identified main social themes. These included population and development, eradication of poverty, expansion of productive employment and reduction of unemployment. The only two indicators included in the MNSDS and not on the 1954 list are: population estimates by sex and age and contraceptive prevalence.

It was not planned that the data should be used for international comparison. The MNSDS was also intended to be a minimum data set, and it was not planned that it could not be supplemented if necessary. By comparing the two sets of indicators it can be concluded that there has not been a significant change. According to Becker they both define indicators as a compromise between data availability and usefulness for analysis about which one can still find agreement internationally. However, computing social indicators, such as the MNSDS, is an important step in the right direction. On the other hand, a set of social indicators without an analytical framework lacks links to each other and to other important environmental and economic indicators. Becker wrote: *'The question, then, is the extent to which one can embed social indicators into a wider framework and analyze the relationship between social and economic phenomena,* (Becker 2000, p.404). Even though the purpose of these indicators is to highlight people's living standard, and not social dimension in connection to sustainable development, they can be used as starting point for future work with social indicators in connection to SD.

## 2.2 Social dimensions and sustainable development

Often SD has been recognized as an environmental issue, focusing on integration of environmental and economic dimension. Not until the past decade has the social dimension been generally recognised as the equal part of SD. One of the reasons for this is that a commonly accepted definition of the social dimension is not available because there is no consensus on what is to be understood by the 'social' in the first place.

Social dimension is clearly different from the environmental dimension. According to Lethonen, there exists two popular ways of addressing the social dimension of sustainability based on commonly conceptualisation of SD[1]: 'the capability approach' and the concept of social capital. However, according to the same author capabilities and

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[1] The Commonly conceptualisation of SD refers her to the Brundtlands commissions report, where three components of SD was highlighted: economic growth, environmental protection and social equity.

**Table 1: Comparison of social indicators 1954 and 1997**

| Indicators of highest priority according to the 1954 Report of a UN-Expert Group | Minimum National Data Set (MNSDS) of an UN Expert group and as adopted by the UN Statistical Commission 1997 |
|---|---|
| • Expectation of life at birth<br>• Average expectation of life ( at birth and) at various ages<br>• Infant morality rate | • Life expectancy at birth, by sex<br>• Infant morality rate, by sex<br>• Child mortality, by sex<br>• Maternal morality |
| • National average food supplies in terms of calories at the "retail level" compared with estimated calories requirements | • Monetary value of the basket of food needed for minimum nutritional requirement |
| • Proportion of children 5-14 years of age attending or enrolled in schools<br>• Percentage of population literate, above some appropriate age, total and by sex | • Average numbers of years of schooling completed, by urban/rural, sex and, where possible, by income classes |
| • Proportion of economically active population unemployed<br>• Percentage distribution of economically active where population by principal industrial and occupational categories | • Unemployment rate, by sex<br>• Employment-population ratio, by sex and, where appropriate, formal and informal sector |
| • Macroeconomic items related to national income<br>• Ratio of the index of change in national income (in constant prices) to the index of change in population | • GDP per capita<br>• Household income per capita (level and distribution) |
| • Area per occupant<br>• Number of persons per dwelling unit | • Number of people per room, excluding kitchen and bathroom |
| • Water supply - drinking water and for other purposes<br>• Toilet facilities and sewage disposal | • Access to safe water<br>• Access to sanitation |
| | • Population estimates by sex, age and where appropriate and feasible, ethnic group<br>• Contraceptive prevalence rate |

Source: Bercker, p. 405

social capital do not provide adequate tools for examining social dimension as part of SD. Therefore, the social dimension is difficult to analyse, and that is maybe why less attention has been paid to the linkages between the social dimension with the two other dimensions of SD, even if it can be argued that the core of SD is inherent in the trade-offs and interaction between incompatible goals of environmental protection and economic and social development. On the other hand, it doesn't mean that a suitable definition of social dimension is not available and that satisfactory ways of addressing the social dimension do not exist. It indicates that we need to focus even more on this issue, and draw social experts into future work.

A lack of a clear definition and delimitation of the 'social' caused that a large amount of social indicators was produced. The problem with this huge amount of social indicators is that it is impossible to draw an overall conclusion about the social part of SD.

Denmark's dataset, which is used for the construction of indicators for SD[2], contains three dimensions:

> i) Economy
> ii) Environment
> iii) Social factors

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[2] Statistics Denmark's publication entitled "Indikatorer for bæredygtig udvikling" (Indicators for sustainable development), presented in 2003, summarizes the current Danish set of SD-indicators. These indicators are the result of the EU Commission's strategy, which is already passed, "Strategy for Sustainable Development". It is important to mention that work on these indicators is still ongoing. These indicators are produced annually in Statistic Denmark. The list of SD-indicators should be seen as the beginning of a much more general set of indicators, which will be developed in due course. SD indicators set can be accessed at www.statbank.dk

Eight subjects for measuring SD in Denmark are presented:
> 1) Economic development and employment
> 2) Poverty
> 3) Elderly society
> 4) Health
> 5) Change in climate and energy
> 6) Sustainable production and consumption patterns
> 7) Protection of natural resources
> 8) Traffic and use of area

Subjects number 1 (only part of 1 that describes employment), 2, 3 and 4 are presenting social dimension of SD. Indicators included in these three subjects are:[3]
> 1.2.1) frequency of occupation and employment
> 1.2.3) frequency of employment by men and women
> 1.2.3) unemployed men and women
> 1.2.4) frequency of employment by men and women >55 year
> 2.1) recipients of social benefits
> 2.2) recipients of pensions
> 2.3) development in social benefits
> 2.4) development in pensions
> 2.5) the occupational bread winner-burden
> 2.6) risk-of-poverty rate
> 3.1) the tree (populations pyramid)
> 4.1) premature mortality
> 4.2) life expectancy at birth by men and women
> 4.3) frequency of accidents at work
> 4.4) frequency of occupational diseases
> 4.5) fall-accidents for >64 by 1000 persons in the same age
> 4.6) daily smokers by men and women >14 years
> 4.7) number of deaths of asthma and bronchitis
> 4.8) removals to hospital with diabetes
> 4.9) removals to hospital with adverse health affect of chemical substances
> 4.10) number of tests with pesticide residues in fruit
> 4.11) number of tests with pesticide residues in vegetables[4]

It is not difficult to see that the social dimension of SD is described by means of a wide range of social indicators. However, a large number of indicators sets more focus on several specific socio-issues, and make overall consideration about social dimension not clear enough. For instance, indicators 2.3 and 2.4, or indicators 3.1, 4.1 and 4.2, can be joined together, without large consequences for indicators total information power. Another concern about this set of indicators can be other possible social themes that can be interesting for SD. Just to mention one, many are interested in leisure time. Indicator for leisure time can be very useful in many economic analyses of SD. Finally, we need to think about cultural differences if one set of SD indicators is expected to be implemented internationally. For instance, women who spend their time in the home are in some parts of the world defined as unemployed, while in other parts of world they are not. We need to bear this in mind, when an international set of SD indicators is discussed.


## 3. Accounting systems including social issues

Applied economic analyses of SD, and especially social dimension of SD, are often seriously troubled by the lack of a complete data framework. Even though, statistical institutions offer a wealth of different statistical information. A lack of data is not a problem as such. The main problem is the lack of integration of these statistics implying that all kinds of events, which are interrelated in reality, can only be studied in isolation. Solving this problem is the key for the construction of indicators for SD. The keyword is integration.

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[3] Statistics Denmark's publication entitled "Indikatorer for bæredygtig udvikling" (Indicators for sustainable development), presented in 2003 (can be accessed at www.statbank.dk).

[4] The first number in index refers to the number of earlier mentioned subjects, e.g. 2.1 refers to 'poverty'.

The Systems of National Accounts (SNA) is the basis for already existing and proven analytical tools that are related to the economical process. That is why SNA constitutes an excellent initial point. The SNA and its satellite systems Environmental-Economic Accounts (SEEA) and the Socio-Economic Accounts (SAM) form an extended accounting data set. As we know, the accounts provide the most complete and theoretically sound system for description of the stock and flows. Practically, the accounts are an effective tool for generating an underlying database by harmonising otherwise not fully coherent and incomplete data. It provides the basis for estimates which can close remaining data gaps.

**Table 2 Review of accounting systems**

|  | Reference | Characteristics | Economics facts | Environmental facts | Social facts |
|---|---|---|---|---|---|
| **SAM** | SNA | Presentation of interrelationships between structural futures of an economy and the distribution of income expenditure among household groups | National accounts incorporated into a matrix accountancy framework |  | Labour accounts by industry, by type of labour (male/female, skill level, etc.) and by household sub-sector |
| **NAMEA** | SEEA | Integrated environmental-economic accounts | Supply-use tables, IO tables, environment protection expenditures, stock values, etc. | Consumption of natural resources and pollution, stock of resources, etc, |  |
| **SESAME** | SNA, Keuning 2000 | Describe economic, social and environ mental aspects of human activities in an integrated framework | National accounts | NAMEA-types | SAM-types plus supplementary tables: labour accounts, time accounts, socio-demographic accounts, etc. |

## 3.1 Social Accounting Matrices (SAM)

The desire for more integration of economic and social policies requires improved integration of social and economic statistics. For that reason, European Commissions' leadership group SAM prepared in 2003 'Handbook on social accounting matrices and labour accounts', with the purpose of helping the statistical offices to compile SAM.

SAM extends national accounts data with more detailed statistics on the compensation of employees, classified by the type of employees (e.g. educational skill, gender) and income distribution related transactions at the level of different household groups. SAM integrates labour market and income distribution statistics within national accounts framework. An overall simplified description of SAM is the national accounts incorporated into a matrix accountancy framework. SNA defines SAM as the presentation of SNA accounts in a matrix form which elaborates the linkages between a supply and use table and institutional sector accounts. SAM is a matrix presentation of five types of accounts for the total economy: supply and use of goods and services, production, distribution of income, use of income, and capital transactions (UN 1993, SNA, chapter 20). Each account is represented by a row and column pair. Incomings are shown in the rows and outgoings are shown in the columns. By definition, the sum of incomings is equal to the sum of outgoings. However, some of these totals are not economically meaningful. Their main function in SAM, as matrix accounting form, is to ensure that all accounts presented are balanced, also that total incomings (rows) equal total outgoings (columns). For all categories of transactions distinguished in SAM it is clear which group of paying units has exchanged what with which group of receiving units. In addition, SAM contains broad-spectrum properties of a matrix presentation of accounts. Some of them are: an aggregate matrix presents 'bird's eye' view of an economy as whole, a detailed matrix presentation give us a possibility to apply multiple actoring and multiple sectoring in a matrix, its functional form offers good possibilities for experiments with alternative representations of transactions, its matrix form is suitable for mathematical treatment using matrix algebra, etc.

In many practical examples, SAM has been related to an analysis of interrelationships between structural features of an economy and the distribution of income expenditure among household groups. In addition, SAM has been associated with an institutional rather than functional breakdown of final use. The design and construction method of SAM is not yet internationally standardized.

However, the social dimension, which is elaborated in SAM, contains one not recommended characteristic. In many SD empirical analysis it is a priori assumed that the social themes incorporated into SAM are those which are central for SD. It implies that those themes represent the essential characters of the social dimension. That is a serious assumption about social dimension. However, a wide range of social themes can be interesting in the examination of social dimension. It is likely that some of these social themes cannot be incorporated into SAM. If we, for example, look at the Danish SD indicator set (cf. section 2), there are several social indicators which cannot be incorporated into SAM, e.g. mortality, life expectancy, etc. Until now only labour accounts by industry, by type of labour (male/female, skill level, etc.) and by household sub-sector have been embedded in SAM. Nevertheless, SAM gives an excellent opportunity for further extending. Another possible solution to present social themes, which cannot be incorporated into SAM, would be to add a range of supplementary tables to SD accounting system, which will present these social themes. However, we still need clarification of head indicators which will present the social dimension. It can be concluded that future work on social indicators demands a clear clarification of the social dimension of SD and definition of essential indicators which will present this dimension.

## 3.2 System of Economic and Social Accounting matrices and Extensions (SESAME)

SNA's paragraph 20.29 says: '*in many cases, it is expedient to reconcile the SAM-figures and related data available from all kinds of dispersed resources…Such an extended set of tables (i.e. a "core" SAM and its various satellite tables) may be called: a System of Economic and Social Accounting matrices and Extensions, SESAME* .' Great support for developing and implementation of SESAME was given by Steven Keuning and his team at Statistic Netherlands. They presented the concept and some numerical examples of SESAME (Stahmer 2002, p.3).

SESAME is a statistical information system in matrix format. The system is driven by the kind of information required for monitoring and policy-making at the macro-level. SESAME yields a framework for an integrated analysis and modelling of social, economic and environmental issues. It is achieved with coupling of SAM and NAMEA. SESAME registers both value and its distribution among socio-economic household groups and categories of employed persons. SESAME implies the basic idea of present-day national accounts to a wider set of data. SESAME is extending this principle to a wider set of statistics, notably social and environmental accounts. In order to achieve a linkage between monetary and non-monetary data, the values are broken down into monetary changes and volume changes. The linkage with other data is typically established in non-monetary units as hours, calories, and joule and volume changes. In this way, the necessary connections are made without distorting the essential monetary SNA. Another important characteristic of SESAME is the possibility for its expansion with a range of supplementary tables. These additional tables contain series that are not incorporated into SAM and NAMEA, e.g. time accounts, labour accounts, socio-demographic accounts, etc.

## 3.3 Example of SESAME-type information

Table 3 shows as example on information derived from a system which has similar characteristics as SESAME. Part of the system, which is presented here, contains statistical framework adding social dimension to selected series derived from NAMEA framework. This framework is an outcome of cooperation between Statistics Denmark and the Institute of Local Government Studies.

Table 3 shows evaluation of environmental performance across different household types. An integrated modelling framework was set up here by combining family budget statistics, input-output tables, energy flow matrices, various types of emissions and associated environmental effects. Using this modelling framework, it was possible to relate differences in household types to differences in household consumption pattern and again to differences in environmental performance. Environmental performances were valuated by weighting different types of emissions into environmental effects for various pressure types. Here, focus is set on the greenhouse effect. Using DEA (Data Envelopment Analysis), these weighted environmental index effects were used to form one environmental performance score for various household types. It is necessary to make clear that derived indicators are not analogous to indicators which can be derived from complete developed SESAME statistical framework, because SESAME contains only statistics, while these indicators are modelling results. However, it is possible to analyse the interdependence between different topics and the simultaneous achievement of different goals, which is one of the crucial characteristics of SESAME.

**Table 3: Greenhouse effect score by family types, 1997**

| | | | kg per DKK 1,000 private consumption | Ranking |
|---|---|---|---|---|
| Low income | Young | Urban flat | 83 | (5) |
| | | Urban house | 91 | (14) |
| | | Rural house | 96 | (16) |
| | Middle-aged | Urban flat | 87 | (8) |
| | | Urban house | 94 | (15) |
| | | Rural house | 110 | (23) |
| | Elderly | Urban flat | 91 | (12) |
| | | Urban house | 109 | (22) |
| | | Rural house | 126 | (27) |
| Middle income | Young | Urban flat | 83 | (4) |
| | | Urban house | 90 | (11) |
| | | Rural house | 110 | (24) |
| | Middle-aged | Urban flat | 84 | (6) |
| | | Urban house | 98 | (20) |
| | | Rural house | 106 | (21) |
| | Elderly | Urban flat | 88 | (9) |
| | | Urban house | 98 | (19) |
| | | Rural house | 113 | (25) |
| High income | Young | Urban flat | 66 | (1) |
| | | Urban house | 97 | (17) |
| | | Rural house | 85 | (7) |
| | Middle-aged | Urban flat | 81 | (3) |
| | | Urban house | 91 | (13) |
| | | Rural house | 98 | (18) |
| | Elderly | Urban flat | 79 | (2) |
| | | Urban house | 90 | (10) |
| | | Rural house | 113 | (26) |

Source: Modelling results by M. Wier and L.B. Christoffersen, AKF, Institute of Local Government Studies

Table 3 shows the greenhouse effect (columns) distributed among different households (rows). Households are grouped according to income, age and housing. The consumption of each households group is evaluated with respect to their contribution to the greenhouse effect.

Table 3 shows that different types of households have different environmental performances. It is not difficult to see that the households living in urban flats account for the smallest contributions to the greenhouse effect in Denmark. Another interesting thing is that higher income households contribute less per DKK 1,000 spent. This is partly related to the fact that the share of energy consumption out of total consumption decreases with increasing income.

In addition, table 3 can be used to understand problems connected to the greenhouse effect. Another useful characteristic of table 3 is that it makes it possible to analyse the interdependence between social and environmental topics, since the core of SD is inherent in the trade-offs and interaction between incompatible goals of environmental protection and economic and social development.

## 4. Indicator systems including social issues

### 4.1 General points regarding indicators

The meaning given to the term "indicator" seems to differ significantly through the different topics of official statistics. Discussions and different presentations at the 23rd Nordic Statistical Conference in August 2004 made it evident that common consensus about definition of concept of an indicator does not exist, and that we need to address this issue on all levels as soon as possible. Proof for such a conclusion was several indicators build on more

or less different definitions of the term indicator that was presented at the 23rd Nordic Statistical Conference. Alenko presented a composite indicator (CI) which describes a country's status. CI is a linear combination of different variables. Many of those variables are also defined as indicators, e.g. indicators for welfare, environment, etc. Blöndal's approach to indicator issue was a distinction between quality and quantity. He pointed out that the demand for new indicators from international organisations is driving national statistical offices to collect even more data. However, because of limited resources the focus should be on the quality of the indicators rather than quantity.

What solution is the way forward? When we discuss indicators, we need to bear in mind that the indicators are often used to describe important problems in connection with policy issues (for example, SD) and that they can serve as an instrument for control of political measures. One can look at different elements when the criteria for establishing a good indicator is under loop, see Keuning (2003). Some of these elements are:

        i) Sensitivity to the change indicators are intended to measure
        ii) Capability of being updated on a regular basis
        iii) Scientific quality
        iv) Easily understandable

Those elements can also cause problems. On the one hand, one indicator should be easily understandable, and on the other hand, it should be part of a system which includes a limited set of indicators with satisfactorily scientific quality. It can cause that indicators become either not understandable, because many are not familiar with their terminology and theoretic foundation, or their amount gets too large. Sauli and Simpura call these phenomena for 'indicator-paradox'. However, these four elements can be used as starting point in the process of establishing a good indicator.

As a conclusion, it is proposed that clear definition and delimitation of term indicator are taken as starting point. Otherwise a huge amount of low quality indicators, without clear message and theoretical background, will be produced. This can seriously injure the quality of indicators.

## 4.2 Specific issues regarding sustainable development indicators

Several issues in connection to the current set of SD-indicators can be identified. The two most important one are:
1)   too large number of indicators, and
2)   lack of linkages between the three dimensions of SD.

We need to ask, will the current SD indicators set serve their purpose? According to Keuning (2003), the results in the EU member countries are so far only a disjointed shopping basket with numbers. It is almost impossible to make a meaningful synthesis of these indicators. The extremely wide range of measures causes a problem with the understanding of what is central for SD. The comparison between very large numbers of opposite signs makes an overall view about SD impossible. It holds especially for social indicators.

Problem in connection with a current set of indicators is also various indicators combining different information derived from different dimension of SD, which are not linked correctly, also which are not a part of the same statistical framework. A good example here is indicators which have GDP in the denominator, while the numerator is not consistent with the national accounts data. Some of the proposed Danish SD-indicators suffer from this problem. This brings us to the issue of missing links between the three dimensions of SD. It can be concluded that the key challenges of SD are inherent in trade-offs between its various dimensions. Links between the three dimensions of SD had to be established, otherwise trade-offs between SD dimensions will be lost. The problem is that much of the intellectual work so far has focused on individual dimensions. The trade-offs between dimensions have been more or less absent from analysis. However, there exist investigations of interaction between environment and economic dimension. Many had tried to find correlation between economical growth and environmental problems. NAMEA is an example of empirical analysis of linkages between these to dimensions. The least developed in this contest is the interaction between the social and environmental dimensions.

## 4.3 Specific issues regarding social indicators

Many issues regarding social indicators are connected to the lack of commonly accepted definition of the social dimension. Lack of clear definition caused a large amount of social indicators. The problem with this huge amount of social indicators is that it is impossible to draw an overall conclusion about the social part of SD. However, there

exists a possibility that social dimension demands a large number of indicators. Still, a commonly accepted definition of the social dimension will be desirable, because any kind of conclusion regarding social dimension had to have its origin in a clear definition and delimitation of social dimension.

Social indicators are extremely sensitive to cultural differences. Cultural differences are reflected in many different sociological themes, because definitions of several terms can differ between countries. These definitions had to be evaluated carefully, and always kept in mind when an international set of social indicators are discussed. Definitions of sociologic terms, which cannot be harmonised internationally, can be, as far as possible, avoided from headline indicators. Help from experts on this field will be very useful here.

Finally, social indicators depend also on politics. Changes in politics during the past decade have shown that politics have a large impact on headline social indicators. Different social indicators are in focus, depending on the political situation. Focus can be set on employment, social benefits, mortality, etc. We need to bear this in mind in connection to selecting social indicators. However, the possibility to derive different indicators from SESAME by aggregation can be very useful here, because it gives us an opportunity to change headline indicators very cost-efficient and without distorting the character of the SD's statistical frameworks.

All future work on social indicators depends on our effort to clarify social dimension of SD and definition of essential indicators which will present this dimension. Since statisticians and economists don't posses the necessary knowledge about social issue, development of those indicators demands help of experts on social field. With sociologists' expertise on social field, and statistician knowledge about data (most on availability of data, but also estimation theory) development of social indicators, which would have the same quality as economic indicators, would be possible.

## 4.4 The link between accounting systems and indicator systems

Change in one SD issue influences the other goals of the overall strategy for SD. For that reason the SD policy analysis requires a possibility of further analysis of the underlying mechanisms and reasons for change. That is why the individual indicators should be embedded into an underlying database from which they can be derived by aggregation. Another important point is that the underlying data for the individual indicators should be part of a comprehensive framework that integrates all relevant topics. There are various advantages by using national account and its satellite accounting systems for SD statistical data system. The SNA and its satellite systems SEEA and the SAM form a most complete and theoretically sound system description of the stock and flows. Data from all three systems can be combined into logical and coherent accounting system called SESAME. A range of summary indicators can be derived from such a data set (e.g. GDP, population size, inflation, income inequality, environmental indicators, social indicators, socio-economic indicators, etc.). Whatever set of aggregates is preferred; they would all share two crucial features (Keuning 2000):

        i) Every indicator is computed from a single, fully consistent statistical system
        ii) Each indicator uses the most suitable measurement unit of the phenomenon it describes

The indicators derived from SESAME can be disaggregated in order to get an insight into the reasons for the development of the specific indicator and the interrelationships to other topics of the set. Indicators derived from SESAME are a useful tool for monitoring, because if some indicators show improvements and others show deteriorations, it is necessary to measure the trade-off between aims.

The problem with SESAME is that it doesn't tell us anything about goals of sustainability, or whether one country is on the sustainable path or not. Another issue is the possibility that some of the social topics, which will be included in the essential social indicators, cannot be incorporated into SAM. These topics will be added as supplementary tables to SD accounting system. It can cause that we get a growing range of different indicators which will result in a problem with the understanding of what is central for SD. In that case, we will face the same problems as those which we are facing today. For that reason clear clarification of the social dimension of SD and definition of essential indicators, which will present this dimension, had to be made, before any further work with social indicators in connection with SD can take place.

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