

PARIS21 Task Team on Statistical Capacity Building Indicators

*Seminar
on
The Framework for Statistical Capacity Building Indicators*

Statistics Department
International Monetary Fund

Washington, D.C.
April 29–30, 2002

The Framework for Determining Statistical Capacity Building Indicators

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The PARIS21 Consortium is a partnership of national, regional, and international statisticians, policymakers, development professionals, and other users of statistics. Launched in November 1999, it is a global forum and network whose purpose is to promote, influence, and facilitate statistical capacity-building activities and the better use of statistics. Its founding organizers are the UN, OECD, World Bank, IMF, and EC.

The Task Team on Statistical Capacity Building Indicators is chaired by the IMF. Its main purpose is to identify, validate and test indicators of statistical capacity building.

April 1, 2002

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EXECUTIVE SUMMARY

The paper explains the strategy adopted in developing the Statistical Capacity Building (SCB) indicators, provides a description of the main characteristics of statistical operations from which the SCB indicators are to be derived (using the structure of the Data Quality Assessment Framework, DQAF, introduced by the IMF), and explores how the results from applying the SCB indicators could be used for strategic planning in building statistical capacity.

The scope of the SCB indicators is set to measure the statistical capacity to meet a goal that is to be determined by countries. As such, the indicators are being designed as tools to be applied to a country's specific goal: producing specific statistics, or strengthening a data producing agency.

The SCB indicators are viewed as ways to track in a systematic and consistent manner how the capacity evolves in time in meeting the goal. As such, they are not intended as providing for an absolute measure of statistical capacity in terms of levels, but rather as changes through time in the levels of such capacity.

The SCB indicators are intended to provide a self-checking mechanism to be applied by the managers of statistical operations toward meeting goals set, and to be applied at periodic intervals to track changes in meeting the goals in question.

The results from applying the SCB indicators can help countries in planning strategically toward sustainable statistical operations. This entails meeting national needs with the cooperation of both national authorities and external providers.

The paper, which serves as background document for the SCB indicators (to be developed by October 2002), will be discussed at the *April 29-30, 2002 Seminar on Statistical Capacity Building Indicators* hosted by the IMF for the PARIS21 Task Team on Statistical Capacity Building Indicators.

A. Introduction

1. The mandate of the PARIS21 Task Team on Statistical Capacity Building (SCB) Indicators¹ is to develop by October 2002 indicators that will facilitate tracking progress in building statistical capacity.
2. Within the broader context of ongoing initiatives on capacity building for development and poverty reduction, the Task Team focused on statistical capacity building by making extensive use of the results of research efforts and existing practices. It views its role as an effort to gather in a systematic format the characteristics identified in other forums as important to statistical operations, and use them as platform from which to derive the statistical capacity building (SCB) indicators.
3. The SCB indicators could be of special interest to countries² that
 - have major deficiencies in available statistics and require sizeable statistical capacity building and fundamental changes to improve statistical operations; and
 - cannot develop their statistical capacity without external assistance because of limited domestic resources.
4. By providing common measuring rods to apprehend the statistical operations in countries, it is also hoped that the results obtained from applying the SCB indicators would help the donor community toward developing a common view of countries' statistical capacity needs. Working toward a more common understanding of countries' current status on statistical requirements could facilitate the communication and coordination among organizations that provide technical assistance, and could help the way toward a more systematic approach to accounting for such assistance.

Approach of the Task Team

5. The Task Team opted for a four-step approach to derive the SCB indicators:
 - First, building upon existing literature and experience, identify a frame of reference that provides an overview of statistical operations and is suitable to develop indicators that track progress made toward specific goals; [done]
 - Second, on the basis of the frame of reference, describe the statistical operations, validating them through a consultative process with countries, especially those that

¹ Set up in May 2001.

² Such as the Highly Indebted Poor Countries (HPIC), Poverty Reduction Strategy (PRS) countries, and others that require concessional loans and other forms of external assistance.

could make use of the SCB indicators. The objective is to identify potential candidates for SCB indicators; [in process]

- Third, review and validate the candidates for SCB indicators against the indicators used by donors involved in statistical capacity building. The objective is to identify SCB indicators; [in process]
- Fourth, test the indicators in a small sample of countries and fine-tune them accordingly. [to be done]

6. This paper is the result of the activities under the first and second steps, and leading to the third step.

7. Section B briefly explains the rationale for basing the Team's work on the methodology that underlies the Data Quality Assessment Framework (DQAF) introduced by the IMF (first step). Section C describes the statistical operations using the six-part DQAF structure of prerequisites and dimensions of integrity, methodological soundness, accuracy and reliability, serviceability, and accessibility (second step).³ Section D explains how the SCB indicators will be arrived at from this description (third and fourth steps). Looking beyond the Task Team mandate, section E explores how the SCB results could be used for strategic planning in describing, planning and monitoring the statistical operations. Section F concludes.

8. In preparation toward the third step (identification of SCB indicators), Annex 1 contains a list of potential candidates for SCB indicators that are presented against the characteristics derived from two other approaches that have been used to capture the essence of statistical operations. Annex 2 illustrates how the SCB indicators could be used for describing, planning and monitoring purposes.

B. Identifying a Methodology

Requirements for the statistical capacity indicators

9. The methodology underlying the SCB indicators needed to encompass the diversity in terms of scale and operations of data producing agencies and to provide for the following requirements in terms of the SCB indicators.

10. First, the SCB indicators should cover a sufficiently broad range to apply to a variety of circumstances, in preference to a narrower one that could provide solutions for specific circumstances (e.g., management, infrastructure, training of staff, survey methodology, etc.) but would not be applicable elsewhere. But a more general approach needs to be carefully

³ The paper is to serve as the background document to the April 29-30, 2002, PARIS21 Task Team Seminar hosted by the IMF where some 20 developing countries are being invited as part of the country consultative process.

applied as too wide of a range could create expectations that cannot be fulfilled, given the complexity and length of the statistical capacity building process. Thus the indicators are being designed to address questions such as What facts are relevant to finding solutions? What are the symptoms, and what are the causes? How can an organization take better advantage of its current strengths and make use of its weaknesses?

11. Second, in line with one of the PARIS21 goals—to generate better user-producer dialogue—the SCB indicators should be demand-driven, that is they should be geared toward statistical outputs that meet users’ needs. The Task Team did not attempt to identify the statistical products in demand, but rather relied on work conducted in other forums, such as the UN summit meetings by the Friends of the Chair⁴ and the GDDS where statistical frameworks and products indicative of statistical capacity are identified. Some of the demand aspects of the statistical systems are briefly reviewed in the Strategic Planning (section E).

12. Third, the SCB indicators should be applicable directly to the statistical products themselves, or indirectly to the agencies producing such statistical products. As such, while the SCB indicators can be applied to the full range of operations leading to a specific statistical output, a subset thereof should also be applicable to agencies (central statistical agencies, the statistical units of central banks and line ministries) that produce the statistical outputs in question.

13. Finally, the SCB indicators have to be amenable to some kind of measurement or comparison against best practices. They have to be easy to understand by those inside (staff and managers) and outside (resources providers and users). Recognizing that the exercise is in a pilot phase, at this time the parsimony of indicators can be only a secondary consideration with the SCB indicators initially to comprise more rather than less detailed measures of inputs, activities, outputs, etc. It is hoped that the information overload of too many indicators will gradually be reduced as the most representative indicators of capacity building and its main facets will emerge through usage.

The IMF Data Quality Assessment Framework (DQAF)

14. Since it fulfilled the criteria of being comprehensive, demand-driven, applicable to statistics as well as to data producing agencies, and also amenable to some measurement against best practices, the DQAF methodology was used as the foundation on which to build the work leading to SCB indicators.

15. In a nutshell, the DQAF is designed to assess the characteristics of relevant statistical outputs, systematically reviewing sources, processes, and institutional aspects, using to do so a set of prerequisites (institutional preconditions) and five dimensions (or key characteristics)

⁴ Report of the Friends of the Chair of the Statistical Commission—An assessment of the statistical indicators derived from United Nations summit meetings (E/CN.3/2002/26), presented at the 33rd Session of the U.N. Statistical Commission, March 2002.

to conduct the review. The DQAF framework provides a systematic approach to describe the statistical operations.

16. By their very nature, some of the capacity building will be very similar to quality indicators, but there will be also differences between the two sets of indicators. For instance, both sets of indicators are likely to be similar for certain aspects, such as legislative arrangements, but to differ in other, such for as resources requirements: a statistical output entirely financed and executed through external financing sources may be of high quality, but may reflect a poor measure of statistical capacity building in terms of domestic expertise and sustainability. (Once the SCB indicators have been identified and applied to a number of situations, a study of their relationship to the DQAF quality indicators could constitute the object of subsequent research).

C. Statistical Operations According to the Six-Part DQAF Structure

17. Understanding the needs that statistical products are designed to meet, as well as the processes and characteristics of data producing agencies, makes it possible to focus on the essential components of statistical operations. These can be divided into exogenous and endogenous components that shape the operations of data producing agencies.

18. Four major exogenous components are critical:

- users of statistical products (customers).
- financing (from domestic sources such as budgets, and/or external sources such as technical assistance from donor organizations).
- legislation that gives legitimacy to the statistical operations.
- data providers (respondents).

Three major endogenous components are at play:

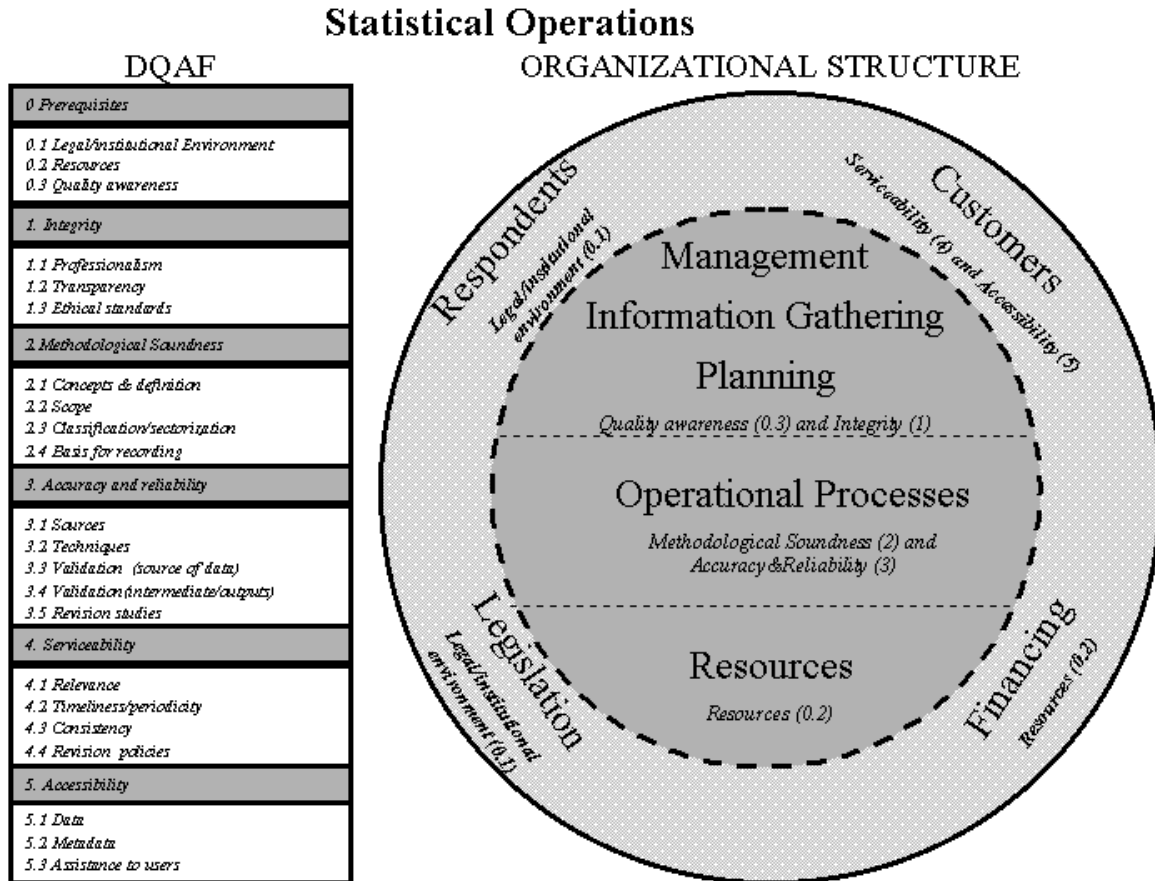
- management, which provides overall vision, direction, and planning.
- operational processes whereby data sources are transformed into statistical outputs.
- the human and other resources that underpin the processes.

19. The essential exogenous and endogenous components are part of an organizational structure, e.g., a unit environment/infrastructure, its inputs, throughputs in terms of processes and policies, and outputs. The diagram below illustrates how the organizational structure (circles on the right hand side) of statistical operations can be related to the DQAF structure (on the left hand side of the diagram).

20. The DQAF is organized in a cascading structure of five levels that progresses from the general to the specific levels. The first level defines the institutional preconditions required for quality and five dimensions of data quality: integrity, methodological soundness, accuracy and reliability, serviceability, and accessibility; these are further subdivided into elements and so on.⁵ The prerequisites and three of the dimensions are common and

⁵ Carson and Liuksila, 2001; Carson 2000.

applicable to statistical systems in general. The two dimensions of methodological soundness and of accuracy and reliability are specific to given statistical outputs, e.g., Gross Domestic Product, balance of payments, government finance statistics, flow of funds, employment statistics, social statistics, etc.



21. The links between the organizational structure and the DQAF have been emphasized by identifying how the exogenous and endogenous components map with the dimensions or elements of DQAF: For instance, exogenous components such as ‘Customers’ refers to two dimensions of DQAF, i.e. Serviceability (4.) and Accessibility (5.) and ‘Financing’ refers to the DQAF element Resources (0.3). The endogenous components of ‘Management, information management, planning’ refer to DQAF dimensions and elements of Integrity (1.) and Resources (0.3), and ‘Operational processes’ refer to the DQAF dimensions of Methodological Soundness (2.) and Accuracy and reliability (3.). The following explains the content of each of the dimensions, relating it when applicable to the UN’s *Fundamental Principle of Official Statistics*.

0. Prerequisites

This category identifies conditions within the agency in charge of producing statistics that have an impact on data quality. The elements within the category refer to the legal and institutional environment, resources, and quality awareness.

0.1 Legal and institutional environment

22. According to the UN principle 7 for official statistics, what is expected from the statistical system, the position of data producing agencies, including statutory rights, obligations, and enforcement provisions, should be codified in legislation. Countries have enacted statistical legislations that vary depending on the form of government, the kind of administrative arrangements in force, and legislative and administrative conventions. The following reviews the various areas generally covered by laws, regulations, or conventions.

- Largely as a result of history and administrative tradition, there may be various agencies involved in the statistical system (e.g., central statistical agency, central bank, and line ministries). The legal framework and protocols of a country should specify the main players within the statistical system, their mandates, legal enforcement powers, and obligations.
- Assignment of major areas of responsibility and arrangements for coordination of statistical activities among the different agencies (UN principle 12 on official statistics) is clear. While not necessarily required by law, where there is no central agency, arrangements for coordinating statistical activities of government could be devolved to a major data producing agency. On the other hand, the legal framework may allow data producing agencies to enter into agreements to jointly collect and share data, designating the main players, their mandate, and the legal enforcement powers in the statistical system.
- Other aspects of the legislation serve to ensure the integrity of the data, for example, by safeguarding the confidentiality of the information collected and the privacy of suppliers (UN principle 6 of official statistics). Maintaining confidentiality, in particular, precludes the use of individually identifiable information for any administrative, regulatory, or enforcement purposes, except in cases where a respondent has consented to its release. By ensuring appropriate confidentiality, the data producing agency also achieves more credibility with its providers. In surveys and other statistical inquiries, respondents are informed of their rights and obligations with regard to the provision of information, and they are informed that the information they provide will be used for statistical purposes only.
- Statistical legislation often has a compulsory aspect, which authorizes the data producing agencies to collect the relevant data. This helps the statistical legislation to be effective, that is enforceable (through penalties of staff providing confidential data, limiting access to selected staff, limited access to premises by outsiders, establishing data aggregation rules, etc.). Nevertheless, there are major advantages in treating data providers, either survey respondents or administrative ministries, especially those from whom information is regularly required, as partners. Establishing partner relationships (through regular meetings and workshops) entails ensuring that processes are in place to protect confidentiality, manage respondent burden, and

inform providers of the uses to which the data are put. Such partnerships may also include involving users in reviews of data collections and plans for new collections.

- Provisions can also be made for guarantee of independence from political interference through a clear listing of the agencies' functions, and of the nomination of higher level of management. Since the agency is generally dependent on discretionary funds, such independence may be better protected by law, a situation that may be even more critical where the statistical functions are carried out within a ministry. Statistical operations, from the selection of the population to be covered, the survey content, the questionnaire, the processing methods, through to the production and dissemination of the data, should be completely controlled by the data producing agency. The method of appointing and removing the highest level of managers should be transparent, with their role and authority well established, and widely recognized, especially in government circles. (To the extent that it affects professionalism, the independence of the data producing agency is also covered under the dimension Integrity (1.)).
- The data producing agency should have the responsibility and the authority to disseminate the information collected, which implies that the results of data that have been collected are to be published. The agency produces public goods; this means ensuring that the goods are made available to all users at the same time.
- The agency should also take responsibility for meeting major users' needs. A useful starting point can be users' advisory bodies. Such bodies might assist in providing an overview of major data needs and in setting priorities. While this requirement may not be provided under legislation, the data producing agencies should take various steps to ensure they have a good current understanding of major needs and then strive to satisfy those needs to the extent possible.
- The data producing agency has to be held accountable for its operations and activities. While the law may guarantee the independence of statistical operations, it could also require the organization to report on its activities and use of resources. The data producing agency may be required to make annual reports to parliament, or to an independent statistical commission or board. Adequate accounting will assist in costing specific activities, facilitating the planning and budgeting of strategic operations.

0.2 Resources

23. The capacity of a statistical system is determined to a large extent by the level and stability of the resources at its disposal. The resources used, as well as the sources of the financing of such resources, are important determinants of statistical capacity. The resources cover human resources and infrastructure defined here to cover basic infrastructure (buildings, power, etc.), information technology resources (availability of computers, communication network, databases) and other material resources, and they can be financed both domestically and externally. While benchmarking measures are not readily available,

assessment of the adequacy and the efficient use of resources should be carried out through various means. For instance, comparative inter-country measures such as numbers of statistical staff per thousand of population may be useful as a rough guide to the adequacy of funding.

24. An overall approximation of the budgeted financed resources, especially when compared over time, and to other measures, such as to the total statistical budget or to other countries in roughly the same situation, would be very useful in providing an idea of the adequacy of the resources. The share of total resources that are externally financed would help to evaluate the dependency of the system, and would provide some assessment of the efforts required for self-financing. External financing is difficult to measure, especially when it is provided in kind (e.g., technical assistance) and costing from both the statistical organization and the donors may provide a better approximation of the amounts involved.

Staff resources and other resources, and their financing

Staff

25. While the employees constitute by far the largest cost, they also represent the most valuable asset of any data producing agency. This makes it very important to understand how to attract and retain suitable employees and how employees may be encouraged in performing their work. This is heavily dependent on effective management, leadership and vision. The management of the organization must have the flexibility to deploy people according to overall statistical needs, and ideally should have flexibility in allocating funds across the organization. Only the quantifiable aspects of human resources are reviewed here under resources; motivational aspects, professional values, and culture are reviewed later under quality awareness, and also under integrity.

26. The statistical expertise of staff needs to be measured in terms of methodological capacity defined here to cover survey design, questionnaire design, survey operations, familiarity with methodological guidelines, analytical capacity, and the range and volume of dissemination. Such capacity is developed through a mixture of experience and training, which can be measured through quantitative measures such as years of experience, and types of training.

27. The number of staff and the levels of salaries, as measures of statistical capacity, need to be further identified between permanent and temporary staff, and between base salaries and honoraria/subsidies. Temporary staff and honoraria likely result from externally financed operations, e.g., a special one-off survey, and are not as important to statistical capacity as domestically-financed staff, because of the temporary nature of such activities.

28. The qualification and experience of staff largely reflect salary levels (which are often largely outside the control of the higher level of management), and human resources management practices, such as hiring, promoting, firing, rotation, training and career development. For instance, experience may reveal problems of staff retention, such as non-competitive salaries, or too aggressive rotation practices. All efforts should be made to alter

these practices, so that a core contingent of highly trained staff can be retained and maintained through regular recruitment and training.

Other resources

29. Statistical staff should be provided with facilities that enable them to perform their operations and that lead to productivity gains. The basic infrastructure in terms of buildings and other accommodation should be comparable to those used in other government agencies. Computing facilities include the availability, maintenance and updating of information technology infrastructure such as main computers, servers, communication network and personal computers, and of databases such as business and household registers (including access to administrative data sources, vital registration, etc.). The number of software applications and their updates are also measures of statistical capacity, along with the expertise in the use of the computing facilities (acquired through experience and/or formal training). The hardware and software assigned to staff should be commensurate with the task.

30. Another measure of adequate facilities is the share of funding allocated to capital investment as important aspect of sustainability. Since available facilities result not only from current past expenditures (financed either through national or external sources), a more representative picture of capacity would be provided by a physical inventory, such as the number of workstations and servers in operation, as well as an inventory of software. Account also needs to be taken of levels of computer expertise (both operators and computer support staff) and telecommunication and network equipment.

31. Other resources to perform statistical operations will include transportation and communication systems equipment, inclusive of operational support, printing equipment and material, office supplies and sundries, and other aspects of the office environment. The measurement of such resources may involve a mixture of physical and monetary measurements. This may be difficult to measure but rough approximations can be made.

32. Finally, if the objective is to strengthen the statistical capacity of a data producing agency, crude measures of volume activities can be monitored. The following could give rough measures of survey activities: number of surveys conducted in a year (broken down by household and business surveyed units) and by frequency; new or substantially redesigned questionnaires. The number of staff could provide rough measures along with person-days of development and training investment in human resources by. Statistical outputs could be measured by timeliness, number of publications and press releases over the last year. While these are very rough measures of activities that do not link inputs to outputs (efficiency), they shed light on critical mass of general statistical expertise.

Financing of statistical activities

33. The capacity of the statistical system, its flexibility and independence, are determined to a large extent by the level and stability of its sources of financing which, in turn, depends partly on the organization's ability to demonstrate wise and careful management of existing funds through various means.

34. Access to regular funding is a major factor in providing some guarantees of continuity that is so vital to statistical operations. Such continuity is generally assumed when statistics are viewed as public goods and, as such, are largely financed from the government budget. Continuity is also supported when forward plans are made to allocate budgetary resources to future statistical development based upon identified statistical needs for compiling the statistical series. Continuity is not necessarily guaranteed when a significant proportion of financing comes from external sources, which is often the case for countries that are in greater need of continuity for developing, monitoring and disseminating statistical information.

35. External financing is challenging on at least two counts: it needs to be balanced with other forms of budgetary funding, and it often entails needs that compete with the national ones. For instance, external financing may be provided for specific surveys, whose timing and coverage may not correspond to domestic policy requirements, and/or which would need to be conducted at shorter and more regular intervals to be truly useful. In the longer run, improvements to data for national policy decisions should tend to be largely financed nationally to ensure continuity and sustainability, and external financing should be mainly used for technical assistance in capacity building (such as strengthening the human resource), to conduct large survey or census, or to conduct specialized studies that are part of a national statistical development plans.

36. When a critical statistical mass of statistical activities has been established, budget-based financing is the preferred way to achieve and maintain sustainability. This can only be achieved if the capacity building provided by external financing assists some form of evidence-based policy as a basis for good governance and public administration. Such strategies are essential if external financing is to be gradually replaced with national governmental financial support.

Efficient use of resources

37. Processes and procedures are in place to ensure that resources are used efficiently. These would include the following. Managers in the data producing agency promote a vision and a direction that are shared with the staff. Efficiencies are sought e. g., by encouraging consistency in concepts and methodologies across the different units within the data producing agency. Data compilation procedures are managed to minimize processing errors such as coding, editing, and tabulation errors. Internal processes exist within the data producing agency to measure resources used to compile the statistical series and to compare the resource usage of the statistical program vis-à-vis other statistical programs. Periodic reviews of working processes are undertaken to ensure that they are improved upon. Periodic reviews of budgeting procedures are undertaken to ensure that scarce resources are best employed in addressing major data problems or meeting new data priorities. The data producing agency strives to make the best use of newly emerging opportunities, such as computing technology for data processing/dissemination, to effect resource savings. When necessary, the data producing agency seeks outside expert assistance to evaluate statistical methodologies and compilation systems.

0.3 Quality awareness

38. While the tendency is often to measure the capacity in terms of statistical products, a key element in the success of statistical operations is the way components leading to end products are managed and, as importantly, how such products are perceived by users. Statistical products will be used only if users have confidence in their quality, hence the importance of quality in managing the statistical process.

39. Quality awareness concerns the extent to which managers give attention to quality by providing a vision with a clear orientation in meeting users' needs and in directing the statistical operations accordingly. Such leadership, or lack of it, affects how the organization learns and grows (human resource management), how it manages its finance and results (management accounting), the extent of efficiency in conducting the statistical operations (operations management), and the dealing with external stakeholders, notably data users and data suppliers (marketing management). Leadership is critical in explaining how these various management aspects are integrated and carried out with a sense of direction. Leadership can take various forms (task oriented, relationship oriented, etc.), and the impact on data quality will depend on the specific situations, that is the staff, the tasks and the organization. Which works the best depends on the personal characteristics of the staff and the environmental factors, such as the formal authority system in the organization and the extent to which group dynamics allow staff to receive desired rewards.

40. Management is reviewed here under three headings: focus on quality issues, monitoring the evolution of such issues, and dealing with quality issues, including periodic evaluation. These aspects apply equally to central statistical office and statistical units in ministries, though there may be variations in the scope of their mandatory statutes and in the way processes are organized for human resources, financial management, and in technical areas such as survey management, statistical analysis and dissemination practices and channels.

Focus on quality issues

41. A first aspect of quality awareness is that management needs to clearly communicate to staff a strong focus on the need for quality information to be produced. This can be done in various ways including: introduction and training courses; policy manuals; operational manuals; and subject analyses. A vision needs to be provided, goals set, and resources made available to ensure that the goals can be met. The vision should take account of users' needs so that it promotes users' confidence in the trustworthiness and relevance of the statistical products. Organization goals that have users as the main driving force promote a culture and values amenable to delivering products that meet users' requirements.

Monitoring quality issues

42. A second aspect of quality awareness is for management to put in place processes to monitor the quality of the collection, processing, and dissemination of statistics. At a broad level there are various ways this can be done. Some data producing agencies adopt a system of Total Quality Management; others aim at certification along the lines of the ISO-9000

system. Whichever broad approach is used, it is necessary for line managers to document a range of procedures that are to be undertaken to ensure the quality of collection, processing, and dissemination. These would include, for example, sampling procedures, access to framework lists, detailed editing procedures, estimation of non-response, imputation of missing information, etc. Periodic surveys with users should be carried out, in order to determine their perception of data quality. These and other activities of monitoring data quality should be carried out by a unit in the data producing agency that is distinct from the data producing units.

Dealing with quality issues

43. A third aspect of quality awareness is for management to establish processes that enable judgments to be made about tradeoffs within quality, and processes that facilitate evaluation of statistical programs. In terms of tradeoffs a number of fine judgments are often required. For instance, in a central statistical organization, the leaders may put emphasis on the dissemination aspects of the statistics, which may leave little time for checking the accuracy and reliability of the data. In a ministry, the leaders may put emphasis in getting the statistics for their own use, caring less about the data being disseminated to the public at large. In other instances, there may be tradeoffs between accuracy and timeliness; if it is determined that particular survey results need to be finalized within two weeks of the end of the month it will be necessary to impose tight deadlines for collection, editing and processing of data. This may require acceptance of a lower response rate and/or less rigorous editing. To extend this example further, there may need to be a tradeoff between cost (or cost-effectiveness) and relevance. If the budget for the survey has to be reduced by say 20 percent to allow for additional statistical work, it may be necessary to reduce sample size or restrict the scope of the survey in some way. These kinds of judgments may be required at short notice in response to changes in user requirements, or because of reduced availability of funds. The same kinds of principles are involved in a more formal evaluation of a statistical program.

44. The existence of development plans/programs constitutes a measure of the priorities setting of the organization. They need to be part of the whole statistical operations with the goals clearly defined in terms of feasible targets that are well delineated inclusive of resources requirements and a timetable for future work on data quality improvement. The goals and targets should include measures of performance that provide signals, both qualitative and quantitative, that are easy to understand and that are accessible. The performance measures should encompass various viewpoints such as those of users, funding agencies, respondents as well as employees. Finally, the monitoring measures should be known, shared and well understood by both management and the staff since they should provide the facts on which to assess the extent to which the objectives and targets are achieved.

1. Integrity

This dimension identifies features that support firm adherence to objectivity in the collection, compilation, and dissemination of statistics so as to maintain users' confidence. Elements

refer to the professionalism and ethical standards that should guide policies and practices, which should be reinforced by their transparency.

45. Integrity⁶ refers to the extent that the culture and values promoted in the statistical system embody the principle of objectivity in the collection, processing, and dissemination of statistics. It requires concern for both the reality and appearance of impartiality, and of independence from political influence. It is essential that the statistical system maintains complete integrity of its processes and products.

46. This is greatly facilitated if the independence of the statistical system is provided for by legislation (see Legal and institutional environment, 0.1). A widely acknowledged position of independence is necessary for the statistical system to have credibility and to carry out its function of providing an unhindered flow of useful, high-quality information for the users. Without such assurance, users may lose trust in the objectivity of the products of the statistical system, as they are often not in a position to verify the completeness and accuracy of statistical information. In the same way, data providers also may become less willing to cooperate with requests for the provision of data. In other words, not only integrity but also a widely held perception that the statistical system/agency is free of political interference and policy advocacy are essential conditions for an adequate working of a statistical system.

1.1 Professionalism

47. Professionalism requires impartiality in the choice of statistical ‘inputs’ (such as definitions or methodology) and ‘outputs’ (such as release of data). According to the UN principle 2 of official statistics, a data producing agency must be impartial and avoid even the appearance that its collection, analysis, and reporting processes might be manipulated for political purposes or that individually identifiable data might be turned over for administrative or other purposes. Choices about data sources and statistical methodology must be made solely on the basis of statistical considerations and those statistical considerations should be made public through published documents and other means.

48. The circumstances of different agencies may govern the form that independence takes. In some cases, as noted earlier, legislation may establish specific rules for the appointment of the higher level of management. In other cases, additional safeguards may be required such as giving authority to the data producing agencies for professional decisions over the scope, content, and frequency of data compiled and disseminated.

49. Professionalism requires involving competent and motivated people as vital elements of the statistical process. Professionalism should be promoted in the data producing agencies through appropriate training, analytical work, preparation and dissemination of

⁶ Also important for integrity are dissemination practices, provision of metadata, commitment to quality and fair treatment of data providers. These issues are addressed separately in other dimensions.

methodological papers and organization of conferences, seminars, meetings with other professional groups, etc. By increasing their competency, knowledge and experience, and by sharing their know-how and experience in such activities through internal reviews, statistical staff is in a better position to review and improve statistical processes. Professionalism underlines the organization's responsibility to ensure that statistical knowledge is acquired/accumulated both through formal training and practical experience.

50. Professionalism also requires that the data producing agency follows closely the use of statistics in the financial press and other media, in order to detect misuses of statistics (UN principle 4 of official statistics). The agency is free to make comment on any erroneous interpretation and misuse of statistics. These situations are often unintentional and can arise through an incomplete understanding of the data or of the underlying statistical methodologies. Comment by the statisticians can assist in preserving an image of professionalism and integrity, and at the same time play a role in user education. Extensive use of explanatory material and briefings may avoid some of the misuses of statistics.

1.2 Transparency

51. Transparency requires that the terms and conditions under which the statistical processes are conducted are available to the public. This is achieved through a variety of means. They include the wide dissemination through agency publications and/or websites of materials about the terms and conditions under which official statistics are compiled and disseminated (e.g., the statistical law, the Fundamental Principles of Official Statistics, mission statements, and codes of conduct under which official statistics are compiled and disseminated) or references to where such information can be found. Other means are the extensive use of explanatory notes on questionnaires (for the benefit of respondents) and the publication of manuals on concepts, sources and methods (for the benefit of users). Internal access by governments prior to the release should also be publicly identified. Furthermore, products of data producing agencies should be clearly identified as originating from such agencies. Finally, advance notice should be given about major changes in methodology, data sources, and statistical techniques so that users can make contingency plans when the data become available.

1.3 Ethical standards

52. In order to develop a culture that respects ethical standards, guidelines for staff behavior are in place and are well known to the staff. They include clear guidelines outlining correct behavior when the agency or its staff is confronted with potential conflict of interest situations, or establish the connection between ethics and staff work (e.g., with respect to guarding against misuse and misrepresentation of statistics) These guidelines need to be given appropriate emphasis in induction and training courses and, where necessary, by managers in the course of day-to-day operations. Furthermore, management acknowledges its status as role model and is vigilant in following the guidelines. It also assures autonomy from political interference.

2. Methodological soundness

This dimension refers to the application of international standards, guidelines, and agreed practices. Application of such standards, which are specific to the dataset, is indicative of the soundness of the data and fosters international comparability. Elements refer to the basic building blocks of concepts and definitions, scope, classification and sectorization, and basis for recording.

2.1 Concepts and definitions

53. A number of reasons call for adopting internationally accepted methodologies (UN principle 9 of official statistics). First, as countries are increasingly integrated to other economies, the use of common methodologies enhances the international comparability of statistics given the interdependence of economies, and the universality of many social and economic problems. Second, by providing venues and platforms for comparisons, international guidelines are more likely to influence the behavior of government. Third, they facilitate a greater coordination of statistics across different fields by providing incentives for standardization of concepts and definitions; this is equally relevant where data, e.g., socio-demographic and economic are compiled by the same agency as when the responsibility is shared among different agencies within the same country.

54. However, international guidelines are not always achievable in the socio-demographic field as they may mean changing definitions and methods, creating a dilemma between maintaining consistency with countries' own data or enhancing comparability with other countries' data. In practice, it may be possible to meet both national and international user needs through, for example, the adoption of classifications and lists of data items that are constructed in such a way that dual purposes are met without providing outcomes that are mutually exclusive. Moreover, it should be noted that even where definitions are the same, collecting the same information from different sources may give different results; for example, employment estimates obtained from data provided by employers are likely to differ from those obtained from households. While the ideal may be to maintain both methodologies, limited resources often force a choice which means in the long run keeping under continuous deviations from international standards.

55. The following provides examples of datasets where international guidelines exist and are consistent with one another, and these are examined under scope, classification, and basis for recording.

2.2 Scope

56. It is important that the scope of data collections accords with that prescribed in internationally accepted standards, guidelines, and good practices. For example, the *System of National Accounts 1993 (1993 SNA)* specifies a production boundary in terms of goods and services production, to which the scope of GDP should adhere. Similarly, the BOP specifies what should be included in imports and exports of goods and services. Countries may not only adhere to conceptual international guidelines, but also adopt international

compilation practices. For instance, in the field of national accounting, priorities have been assigned to the compilation of GDP and related concepts.

2.3 Classification/sectorization

57. Similarly, it is important that internationally accepted classifications are used as far as possible. This means that international comparisons of statistics of exports of automobiles, or gross product of chemicals industries, to take some examples, are not affected by differences in classifications. While the use of international classifications is highly desirable, it is quite common for countries to use adaptations (national versions) of international classifications. For example, national versions of the International Standard Industrial Classification (ISIC) or Central Product Classification (CPC) would take account of particularly important economic activities/ products that exist in that country; for example a more detailed dissection of the clothing industry. This enables more useful national data to be compiled while still facilitating comparisons between countries.

2.4 Basis for recording

58. A specific kind of conceptual consideration relates to the basis for recording particular items. For example, in the most recent international guidelines of the *1993 SNA*, the 5th edition of the *BOP Manual (BPM5)* and the latest revision of the *GFS*, it is required that production of goods and services, consumption and capital outlays, taxes, as well as exports and imports of goods and services be recorded on an accrual basis rather than on a cash basis. Similarly, valuations of production in the *1993 SNA* would not include specified product taxes, nor would imports valued cif include import duties in line with the *1993 SNA* or the *BPM5*. Significant differences can occur if cash basis is used in the valuation of some of the above flows, if product taxes or import duties would be included in the value of output respectively imports, or would be caused by non-adherence to other international standards, not only on economic but also social and environmental statistics. It is therefore important that internationally accepted recording bases be used as far as possible.

3. Accuracy and reliability

This dimension identifies features that contribute to the goal that data portray reality. Elements refer to identified features of the source data, statistical techniques, and supporting assessments and validation.

59. The tasks of collecting data, processing them (applying techniques to adjust and estimate) and analyzing statistical data (assessing and validation) may be organized in different ways (or processes) in each data producing agency. The organization of the processes will have an impact on the approaches to strengthen capacity.

60. The various tasks of collecting data sources, applying statistical techniques and assessment and validation of data can be spread across various units, that may or not be undertaken by the same data producing agency. If the data producing agency is a statistical organization with sufficient resources, the work is likely to be spread across units organized along functional lines where the tasks are grouped into specialized functions, with jobs

organized by skills (e.g., survey interviewer, editor) or processes (e.g., survey collection). The more spread are the tasks the more importance is to be given to integration and coordination functions within the statistical process. However, the possibilities of specialization may be very limited in the statistical units of poorer countries, with the staff conducting all the statistical operations from data collection up to data dissemination. This would be also the case where the data producing agency is a ministry involved in administrative and policy functions; the tasks related to accuracy and reliability would be generally integrated in a single unit (divisional organization) organized on the basis of the statistical outputs.

61. Whatever the form of organization, there is no a priori reason for several data producing agencies to be involved in the collection and processing of the same data; legal and/or administrative arrangements may have to be amended to prevent such a duplication in responsibilities. This being said, the fact is that the statistical unit in a line ministry may have to produce financial accounting of the work of the ministry, not just in terms of expenditures but also in terms of inputs and outputs. For example, in a Ministry of education, the statistical unit may collect data on enrollment by age, grade, sex, school, etc., to be included in the annual statistical report of the ministry. At the same time, the central statistical office will also ask data about school enrollment, often along with other variables such as income. The result of these arrangements is often a set of national enrollment estimates that probably will produce different results.

3.1 Source data

62. The availability of soundly-based source data is of critical importance in the quest for accurate and reliable statistics. There are two basic kinds of source data: directly collected statistics and data obtained from administrative sources (e.g. data on government records, or data on enterprises obtained from taxation authorities, or data on exports and imports of merchandise obtained from customs authorities). Directly collected statistics normally have certain advantages, such as the statistician's ability to control the scope of the collection, use questionnaires that specify the desired statistical concepts, and so on. Administrative data are usually much less expensive than directly collected statistics, and for this reason are important data source for data producing agencies with limited resources despite the data's limit in terms of units definitions, concepts, classifications, etc. Investing in a better administrative data collection mechanism is, therefore, critical for those agencies, especially in poorer countries where the survey resources are very limited, but where also there are incomplete, often uncomputerized, untimely record systems that need significant investment to be useful.

63. Directly collected data can be divided in turn into censuses and sample surveys, using scientifically selected samples to represent the whole population. Examples of censuses are: population and housing censuses, and agricultural censuses. These are often very large-scale operations with the capability of obtaining detailed statistics. Examples of sample surveys are: economic or establishment surveys, household budget surveys, labor force surveys, and surveys of retail prices paid by households. Some sample surveys concentrate on a small number of data items, while others are very detailed. Another approach is to conduct a

programmed of multiple surveys, each addressing different or overlapping sub samples of entities. Most surveys are periodic, i.e., each year, quarter or month, others are carried out during longer intervals (censuses are generally conducted each 5 or 10 years), while some other surveys are conducted ad hoc, in order to fill data gaps. Unlike economic and financial statistics that need to be produced at frequent intervals as they describe rapidly changing situations, social statistics describe more slowly changing phenomena, and the need for greater frequency may be unjustified.

64. A national statistical organization produces a wide range of statistical outputs involving the collection and processing of a huge volume of data. Some basic source data serve a wide variety of purposes. For example, population census data may be used in poverty studies, assessment of demand for public facilities, and estimates of elements of the GDP, to name just a few examples. Important source data may not only originate in data producing agencies, but may also come from specific line agencies such as the central bank that is concerned with BOP statistics, or specialized ministries that are for instance concerned with health and education.

65. Data included in surveys and administrative data sources should satisfy the detail that is required for particular type of statistics. Thus, household surveys should satisfy the needs of measuring prices for a detailed basket of goods and services, and at the same time satisfy the needs of *SNA* compilation in covering the household sector accounts. Similarly, direct foreign investment surveys conducted by the central bank should satisfy the BOP and *SNA* requirements for the rest of the world account. Surveys and administrative data sources should also have a scope (in terms of units covered) that is sufficient to support detailed analysis for a large number sub-groups of economic agents that are required by the classifications used. Finally, data sources should have the required frequency, which depends on the type of statistical output. For example, quarterly and even monthly compilation of statistics could be supported for economics and financial statistics, and less frequency would be more appropriate for social statistics, which tend to capture more slowly changing situations.

66. Some countries make extensive use of administrative records. While legislation can provide for access by data producing agencies to administrative data sources, it is also important that custodians have a positive attitude towards statistical requirements, agreeing to modify and supplement the data, and to provide data on a timely basis. Close cooperation between the statistician and the custodian of administrative data can result in continuing improvements to the data base and may well lead to concepts and classifications that are brought into closer accord with national and international standards.

3.2 Statistical techniques

67. Statistical techniques are used to correct data and to transform source data into intermediate and output data.

68. A range of techniques can be employed to correct data. An example is the editing of data reported by each respondent to ensure internal comparability, historical comparability and comparability with data obtained from other data sources. This type of editing is usually

conducted using the computer to calculate a number of ratios (e.g., purchases to value added, price per unit) and to identify outlier observations that need to be queried back to the respondent for confirmation or correction, or estimated on the basis of alternative data sources. This requires skills, in-depth knowledge and critical judgment. Statistical techniques may involve the use of counterpart data to derive measures such as for final consumption which may be estimated with help of data on production and imports of consumption goods. Similarly, the payment of taxes by households and enterprises may be derived from government tax records. Furthermore use may be made of ratios from benchmark data for earlier periods to arrive at breakdowns of information not available in the present period, growth rates of e.g. production of selected goods and services to extrapolate production of all goods and services and deflation of aggregates at current prices to derive estimates at constant prices, through to complex synthetic estimations using modeling such as the derivation of investments and depreciation from production data. Some statistical techniques may involve the adjustment of measures based on concepts in administrative and survey data to arrive at the estimation of data relating to specific statistical concepts. Benchmarking and seasonal adjustment techniques may be used to make quarterly data compatible with annual estimates. In all cases this dimension of quality requires that sound statistical techniques are employed..

3.3 Assessment and validation of source data

69. Assessment and validation studies aim at ensuring that the source data are adequate in terms of coverage, sampling and non-sampling errors, response rate, etc. Assessments are made of the correctness and adequacy of coverage (e.g., in the light of new developments in the economy), the reliability of the register of units used to conduct the collection, the adequacy of the sample design and sample estimation procedures, the adequacy of the procedures for estimating non-response cases, etc. The extent of data revisions in the past may also be taken into account when validating the source data (see below under 3.5). Similar assessments and validations of administrative source data need to be conducted. The development of a research and analytical capability within the statistical organization contributes to improving the capability for assessment and validation of source data. Findings in the data assessment and validation may be used to adjust data collection procedures, for instance when non-sampling errors become too large.

3.4 Assessment and validation of intermediate data and statistical outputs⁷

70. This dimension involves assessing the adequacy and reliability of both the statistical outputs (whether disseminated or simply used internally) and the intermediate data (which will usually be treated akin to “work in progress” and not released outside the statistical organization). In many cases the initial focus will be on the outputs and then, where necessary, on the intermediate data. Using a “top down” approach it may be that a reasonable proportion of the output data appear reliable but some components (e.g., some commodities within a dataset on exports) require further examination and validation. In such cases it

⁷ Laliberté and Carson, 2002, p. 6.

would be necessary to examine the relevant intermediate data. Assessment and validation may include comparison of data from different data sources, comparing data from the same source in different periods or comparing statistical outputs for official release with unofficial estimates made elsewhere. For instance, to ensure consistency between quarterly and annual data a common practice is to reconcile the two sources (at aggregate levels and ideally, as a first stage, at individual record level) and then revise quarterly data where necessary. When inconsistencies arise, there may be opportunities to take corrective action with one or more of the data sources, or, alternatively, discrepancies may be explicitly presented when publishing the official statistical outputs. As with 3.3 above, the development of a research and analytical capability will assist in this dimension.

3.5 Revision studies⁸

71. The existence of revision studies is indicative of the continuous improvement process that should permeate the statistical work. Revisions occur when previously published observations are modified for various reasons: the response on which the estimates are based has increased since the last estimates were published, the respondent has provided more accurate data following finalization of annual accounts, the data producing agency has discovered an error at some stage of the collection and processing of data that was previously not detected, or the data producing agency has made improvements in the estimation techniques. Revision studies should identify the causes of errors, and differences from earlier series, with a view to explaining the differences and identifying opportunities for improvement of intermediate data and final statistical outputs. The outcomes of such an assessment may include, for example, adjusting the timetables for submission of statistics questionnaires, clarifying concepts and requirements on questionnaires, modifying the editing system and or the statistical techniques, and reviewing estimations procedures of intermediate outputs. Revision studies effectively provide information after the statistical process is completed and consist in using lessons learned for continuous improvements in processes.

4. Serviceability

This dimension focuses on practical aspects of how well a dataset meet users' needs. Elements refer to the extent to which data are relevant, produced and disseminated in a timely fashion with appropriate periodicity, are consistent internally and with other datasets, and follow a predictable revisions policy.

4.1 Relevance

72. Relevance concerns whether or not the statistics cover information relevant to major user needs for current decision making, program monitoring, analysis, etc. as well as attempting to anticipate future data needs. This is a vital requirement of the UN principle 1 of official statistics. The statistical system must have processes that encourage and enable

⁸ Idem.

statisticians to be knowledgeable about the issues and concerns of users, and to determine statistical implications and the consequent user requirements (where these have not been clearly articulated by the users). This entails, among other things, analysis of results, interpreting the statistical outputs and presenting them in an easily comprehensible form for the benefits of data users. This would help pave the way for statisticians to remain abreast of new developments and to be in a better position to develop and provide objective, relevant information in response to major user requirements.

73. Relevance requires determining whether the statistics produced are useful for diverse types of users. Determining the current and potential needs of users and translating them into information needs can be achieved through some form of national statistical advisory board of statistical producers and users. However, the main issue is whether the statistical offices make sufficient effort to find out what their users need and whether they are flexible enough to adapt their statistical programs to address emerging demands. In establishing priorities for statistical programs for this purpose, the data producing agencies must work closely with the users of such information in the government and interested non-government parties.

74. Data producing agencies, unlike commercial units, do not have the price mechanism to help them monitor the demand of statistical products. While prices may be charged for many of the statistical products and services they are generally nominal prices rather than market prices. However, analysis of demand for statistical products and services is a good indication of relevance. Data producing agencies have to establish processes to determine how users evaluate and select statistical products, and to measure clients' current and expected needs. National policy makers, users generally, and, ultimately, the public must have confidence in the data producing agency, and they must perceive that the statistical products are useful and meet their expectations. Apart from advisory committees and analyses of user demand, other ways of assessing relevance include formal surveys of users to ascertain their views on aspects of statistical products and data dissemination; and the simple logging of comments received by statistical staff throughout the organization, in order to identify improvement opportunities. Participation in international and regional meetings may also help statistical staff to become more aware of user's needs and the ways statisticians in other countries respond to particular needs.

4.2 Timeliness and periodicity

75. Users usually require up to date information, either from benchmark surveys or from repeated surveys, in order to carry out analyses or to track specific developments. Timeliness, or the time between the reference date to which the data relate and their availability to users, is therefore an important aspect of quality. Users often have a need for frequent (e.g., monthly or quarterly) observations in order to effectively monitor trends in a characteristic. The frequency with which the survey is conducted and the processing time taken to finalize the survey results may need to be modified to meet users' requirements in terms of timeliness. Akin to this is the periodicity, or frequency, of data collection and production. (Announcing the release dates well in advance, covered in 5.1 below, should help among other things to provide for internal operational discipline.). Timeliness and periodicity can be

compared to international guidelines as provided in the GDDS and the SDDS to identify instances of tardiness.

4.3 Consistency

76. Consistency encompasses consistency within the dataset, over time, and with other major datasets.

77. An example of consistency within datasets is the requirement that totals are compatible with the sum of the details, or that other accounting identities are observed. In the national accounts, for example, it is necessary to ensure that GDP according to the production approach is equal to GDP according to the expenditure approach. These two measures are conceptually identical but in practice they usually generate different results. The convention followed by some countries is to publish both aggregates and express the difference as a statistical discrepancy, while other countries eliminate the discrepancy in the data reconciliation. Other examples are the identity between balancing items such as current external surplus, government deficits, saving or net lending in the GFS, BOP or *SNA* and component resource and use items that define these balancing items (external surplus of goods and services = exports less imports; government surplus = government taxes less government current expenditures; or household saving = household disposable income less consumption). Another example of consistency within datasets is the need for quarterly and annual data to be consistent, since quarterly data may be compiled from source data different from, and less reliable than, the annual data.

78. Consistency over time requires that users are in a position to make valid comparisons over time. This means that the statisticians would have attempted to build a comparability bridge when there has been some need to introduce a change to a definition, collection system, etc (e.g., to meet new demands of users). An example of such bridge is to publish data on both the “old” and “new” bases for a particular period so that users can empirically compare the effects of the changes for each year, quarter or month within the period of overlap.

79. Consistency, or reconcilability, with other data sources means to ensure that data from different sources are comparable. One example is a comparison of net lending from national accounts and the equivalent concept in the balance of payments, or between the national accounts and flow-of-funds statistics. Another example, perhaps less conclusive, is the comparison of unemployment data from a labor force survey with unemployment as measured by registrations for benefits, or the difference between employment as measured in a labor force survey and employment as measured in censuses/ surveys of enterprises, government and non-profit institutions.

4.4 Revision policy and practice

80. It is vital that the data producing agency has a regular, well established, and well-publicized schedule for issuing revised data as statistics often undergo a cycle of preliminary/revised/final releases. In business statistics, for example, quarterly data may be based on broadly based surveys that collect a small number of data items from a limited

number of enterprises, whereas annual data are compiled with help of detailed annual questionnaires that are sent to a much larger number of enterprises. As noted earlier, it is quite usual to revise the short-term data in the light of experience with the longer-term data. In the national accounts, depending as they do on a large number of data sources, it is quite usual to issue first preliminary, second preliminary and final data, so that initial data may be revised at least twice.

81. A well publicized revision policy assists users to take proper account of the various “editions” of statistics released and to make effective use of all data released. The revised data should furthermore be published in the same detail as the previously published data, so that users can identify the elements where major revisions took place. Transparency in publicizing revision practices helps users to understand the reasons why revisions occur and assists in maintaining the credibility of the statistical service.

82. The publication of revision studies further assists in achieving these objectives. While the responsibility to use all kinds of methods to validate the data rests upon the statisticians (as covered in dimension “Accuracy and reliability”, 3.), the results obtained from validating data are also useful to users as they seek to understand the data and their limitations. For this reason, a transparent approach for statisticians in publishing the results of their validation methods and revision studies is relevant to users. It is also important that preliminary data are clearly identified in publications, etc. so that users are aware that revised data may well be released at a later date.

5. Accessibility

This dimension deals with the availability of information to users. Elements refer to the extent to which data and metadata are clear and easily available and to which assistance to the user is adequate to help them find and use the data.

5.1 Data accessibility

83. The statistical system should strive for the widest possible dissemination of the data it compiles. Data dissemination should be clear and understandable. Measures should be taken to ensure that historical data series are maintained and accessible to users at any time. It is also important that a variety of data dissemination avenues should be exploited to reach as broad an audience as reasonably possible, and to recognize that users have varying facilities, skills, and needs.

84. Data dissemination possibilities include: publications, data on diskettes and CD-ROM, websites, government depository libraries and news releases (allowing the media to regularly publish statistical data and to make comment based on data released). It is important to maintain good relations with the media, provide free access to basic information in libraries and provide information by telephone or by electronic means. Regardless of which dissemination format is used, clear tables, charts and text are vital.

85. Equally important for accessibility is the release of statistics according to a pre-announced schedule. An essential element of an effective dissemination program is an

established publications policy and a comprehensive catalog that describes the data products and services available, and the frequency of release. While this information is useful to users it also ensures the integrity of statistics by preventing external manipulation of data releases, through political interference for example. However, it is a custom in several countries to give pre-release access to ministers and certain officials, which may be an hour to several days and the list of recipients of pre-release statistics may be extensive. It is good practice to restrict both the list and the amount of time in advance of the normal release, and to inform users about this practice.

86. Good practice in accessibility is based on the general principle of ensuring that all users are treated equally. This means not only that access to new statistics is provided at the same time to all users but also that all users pay the same prices for the same statistical products. The speed at which data may be located and obtained is a vital element of quality

87. There are many potential audiences for data dissemination, each with different needs and priorities. Policy makers constitute an important class of user; statistics can help them in making informed decisions, in assessing the effectiveness of their policies, as well as in helping reorient their actions if the policies are not leading to the desired outcomes. Other users include: business organizations; political and labor organizations; interest groups in fields such as welfare, education, and the environment; and the general public. It is important that the data producing agency is proactive in its relations with users, ensuring that they are fully aware of relevant data available, the most suitable dissemination formats, the strengths and weaknesses of the data, and the relevant metadata (see 5.2 below).

88. Finally, there may well be data that is unpublished but not confidential. The availability of such data needs to be publicized so that users are in a position to make use of relevant data.

5.2 Metadata accessibility

89. The UN Principle of Official Statistics emphasizes the presentation of information about the concepts, sources, and methods used to produce the statistics; i.e., metadata. Data producing agencies should ensure that users have access to metadata so that they have a proper understanding of what the statistics represent. The extent to which the description of the underlying structure of the data is made available to the public will enable users to understand and interpret the data properly. Descriptions of methodology should be provided for all statistical products and should be presented in user-friendly form. For some general users short non-technical descriptions are sufficient and appropriate. For other users a more detailed technical description is warranted. For major series, for example the consumer price index, both “short” and “long” descriptions are produced in many countries. Metadata provide useful insights about the quality of statistical products and in some cases need to include information about sampling errors, non-response and its treatment, the nature of imputations, etc.

90. The statistical system should be transparent about the products that it releases to the public. The metadata should include comment on the main strengths and weaknesses of the statistical techniques employed. It is not sufficient simply to promote access to data; it is also

necessary to encourage a greater knowledge and understanding of statistical information among users. For this purpose it is important to prepare and regularly update documentation (e.g., brochures) and extensive sources and methods documents, to inform analysts and other users, produce comprehensive metadata and to make it accessible to as wide an audience as possible.

5.3 Assistance to users

91. The data producing agency should publicize its contact officers for the various products and services and ensure that catalogs of products and services and related information are widely available and should be regularly updated. The prices of the statistical products and services are clearly disclosed and assistance is provided in placing orders. Catalogs should be placed in libraries and made readily available at special briefings for data users, notably to journalists and others in the media. Assistance to users is monitored through periodic surveys of users.

92. To the extent that the above steps are taken, they will help in dealing with concerns such as: What are the selling and ordering processes? Are they simple and user-friendly and what are clients' preferences? Are catalogs and sales literature easy to understand? Are the products affordable? Is there a single point of access for statistical information, whatever the clients' needs are?

D. Identifying Statistical Capacity Indicators

93. The DQAF structure proved useful to describe the statistical operations for several reasons:

- The structure is well grounded both conceptually and pragmatically, since it conforms to the official principles of data producing agencies, takes countries' best practices into account, and embodies the extensive experience of the IMF and other international organizations in providing technical assistance.
- It tests users' confidence in the quality of statistics, a factor that can determine how effective are the statistics.
- The structure is robust, having been successfully tested in a number of countries, with statistical systems at various stages of development, and with various organizational arrangements.
- It gives guidance on sequencing the statistical tasks by taking into account the interdependencies of the statistical operations and the actual circumstances of the data producing agencies.

94. From the description of the statistical operations, candidate indicators of statistical capacity building have been identified. These candidates are presented in the first column of Annex 1 along with indicators that have been culled from the work of Willem. De Vries in an exercise to link statistical operations to the UN principles (second column), and that of

Ivan Fellegi in discussing performance measurements of data producing agencies (third column).

95. Parallel work is also underway to compare and supplement the candidate indicators with indicators that are used by other international donors, such as the World Bank, the United Nations Statistical Division (UNSD), the UN Economic Commission for Europe (UNECE), the OECD and Eurostat. The intent of these comparative exercises is to ensure that the essential characteristics of statistical operations are covered.

96. The next challenge is to distill these candidates into SCB indicators which can be subject to very specific and concrete measurements (step three). Arriving at specific measurable yardsticks may entail grouping some of the candidates and/or devising proxies when direct measures are not readily available. In other words, as rough as they may be, the SCB indicators need to be measurable instruments to monitor changes. The testing phase (step 4) should help to assess the measures in terms of ease or difficulty of measurement and of the usefulness of responses. Taking all of these considerations into account, the list could then be refined and reduced. In the longer run, it is expected that this first series of SCB indicators will evolve, through usage, into fewer but still salient SCB indicators representative of statistical capacity building.

E. Strategic Planning of Statistical Activities

97. The wide range and number of desirable features that will emerge from applying the SCB indicators to a given objective are likely to be daunting. Setting priorities as to where to put the greatest and earliest efforts will be required as it will be inefficient to attempt to move forward along all fronts at the same time. The priority setting process will need to take into account the longer term requirements of the statistical managers as well as those of the other major stakeholders who have a vested interest in statistical capacity building. Data users, both national and international users, have numerous and diverse statistical needs, with their needs evolving over time as the reality under measurement and their concerns change. However, statistical resources are scarce, especially the nationally funded resources in developing countries, and they often need to be supplemented by external funding, extending the scope of stakeholders to external assistance providers.

98. Coordinated efforts between producers, users, and other stakeholders will be critical to planning strategically, that is to ensure that the statistical capacity being built is fit for the purposes, fit for the means available, and fit for the longer term sustainability of statistical operations. Fit for the purposes entails determining the specific concerns to be addressed, which means managing the demand. Fit for the means available entails managing the supply. Fit for the longer-term sustainability of statistical operations includes managing for the external funding to be gradually superseded with national funding.

Demand management

99. Applying the indicators to statistics that are considered relevant helps to focus on building statistical capacity in specific areas. The need to produce relevant statistics has increased in recent years with the growing emphasis on policy-making based on concrete

facts and policy monitoring based on measurable results. This in turn has enhanced the importance of producing quality statistical outputs.

100. As part of this growing awareness for evidence-based decision taking and monitoring, questions to be addressed are: What are the criteria that are used for selecting the data? Are they relevant to major current issues? Which products to choose and why? What results are expected and why? Are these products within the manageable limits of countries' circumstances? These questions have been dealt with in other forums, more particularly the "Friends of the Chair" of the UN Statistical Commission and through statistics recommended in the GDDS as introduced by the IMF.

101. The "Friends of the Chair" identified economic and social statistics that can represent a core set of relevant statistics, while recognizing that countries need to establish their own national needs. The framework that has been developed is intended to enable countries to assess their statistical priorities and to reconcile the statistics that are needed for national purposes with the global requirements. It groups the statistics in seven domains, with each domain comprising statistics classified according to three levels of priority. The first level covers statistics for all countries to compile with the highest priority, either immediately or with statistical assistance, since they are viewed as sufficiently suitable for a broad monitoring purpose. It was also proposed that countries carried out a systematic inquiry of the availability of the second and third levels to obtain a progressively more coherent and comprehensive statistical picture of any domain or policy area that had sufficient depth to support national policy initiatives or more extensive needs of international agencies.

102. The GDDS also identified a number of macroeconomic and socio-demographic statistics that can be indicative of statistical capacity.

103. Also, as part of the international effort to promote common guidelines, the IMF has undertaken over the last few years an initiative in which the DQAF is being used to assess the capacity of countries to produce macroeconomic datasets of quality.⁹ The results for countries assessed are reported in the data module on the Report on Observance of Standards and Codes (ROSC). The data module assesses the characteristics of serviceability and accessibility that users can relate to, as found in the GDDS and SDDS, as well as other aspects of data quality, such as the characteristics of the producing agencies, the methodological soundness of the statistics, as well as their accuracy and reliability.

Supply management

104. Fit for the means available (current capacity) entails that the development of statistical capacity should start and build gradually from the existing circumstances of

⁹ To date, data specific DQAF have been developed for national accounts, balance of payments, consumer price index, producer price index, government statistics, monetary statistics, merchandise trade and household revenues and expenditures statistics for poverty purposes. Other in prospect include the education statistics.

countries. The experience reflects that attempting to do too much and too rapidly may often exceed the absorbing capacity of countries, especially as statistical activities span over the long term.

105. The application of the SCB indicators should satisfy three interrelated functions: (i) providing a snapshot reading of the current status of statistical operations (describing); (ii) providing a framework for planning statistical development (planning); and (iii) providing a framework for monitoring capacity building (monitoring) and evaluation. How the SCB indicators can be applied to fulfill these three functions is illustrated here using the IMF experience in monitoring the DQAF quality indicators.¹⁰

106. The combination and interrelationship of these three functions are presented in a summary form in Table Statistical Capacity Matrix of Annex 2, applied here for illustrative purposes to national accounts. The first column lists areas of activities (to be filled by the SCB indicators when available). The second column “status at start” shows the current conditions by using here a 4-level scale: practice not observed (NO), largely not observed (LNO), largely observed (LO), and observed (O), work under progress (U), and non applicability or non availability of the information (NA).

107. With this reading of the current situation on the capacity to produce the national accounts, the measures required to improve the situation along with their sequencing (prioritization) are much easier to establish. For instance, there would be little point in trying to improve the accessibility of statistics until the situation improves in regard to the availability of resources to process the statistics. The second and third columns provide a synopsis of milestones along with target dates to reach these milestones. Underpinning these milestones would be an action plan that could be developed with the authorities when external assistance is involved. The priorities obviously will vary from country to country. For instance, meeting some of the prerequisite statistical conditions may take precedence over, say methodological soundness, in countries that face acutely insufficient material resources. For some countries the initial emphasis may be on establishing more suitable statistical legislation or stronger staffing and organizational structure. In other countries the focus may be on developing an improved classification or aligning statistical concepts more closely with international standards.

108. The plans having been developed with the same framework as that used for describing the statistical system makes it much easier to assess the outcomes achieved; a second reading of the situation constitutes effectively a monitoring on how the plans proceeded. For the example used here, a new reading of the situation shows that by 1999 there was some improvements, although they were not numerous or, on the face of it, striking (column 5). The reading shows marked improvements in two areas, serviceability and methodological soundness, where the country was by then “largely observing” good practices. Some improvements were noted in some aspects of accuracy and reliability. Where

¹⁰ Paragraphs 106 to 109 are extracted from Carson, Laliberté and Khawaja, 2001; Morrison and Khawaja 2001.

targets were set, they were not met. However, it is also noted that there is some deterioration in one aspect of accuracy and reliability. A snapshot reading in 2002 (column 6) will show to what extent the country is still lagging not only in the areas where technical assistance was provided but also elsewhere in the statistical system.

109. For each goal, the data producing agencies could decide the resources required, the time frame, the responsible party, and the evaluation method (how will they know they have accomplished a particular step?). The plans could take a results-oriented or tasks-oriented approach and take full account of relevant factors such as costs, human resources, the financing sources.

Sustainable capacity

110. Statistics constitute an important part of the information system for national governments and the data producing agencies need to respond to both national and international needs for data. Countries whose statistical systems are not sustainable, as evidenced by them relying extensively on external assistance, need to work toward developing a core statistical infrastructure and a critical mass of professional and technical skills, so that they are in a better position to meet both national and international needs. Some of the challenges toward sustainability are as follows.

111. First, the path to sustainable statistical development can be facilitated by priorities being set to meet national needs. The priority setting should be done in a way that promotes a climate where the statistical information becomes an essential support for national policies and good governance. To the extent that national authorities view statistics as part of their best interests, they are more likely to increase the funding to statistical activities

112. Second, such priorities should provide the goals upon which the statistical development plans of countries are made. Communication with external providers will be greatly facilitated if the plans are devised in a systematic format. The six-part format provided by the capacity indicators can provide such a format as it covers the full gamut of statistical operations.

113. Third, coordination of the various external assistance efforts will be enhanced by posting the national plans where they can also be shared with external providers such as the GDDS platform for countries that participate to that system. A more coordinated approach to technical assistance is in line with the PARIS21 initiatives.

114. The realization of these three steps should help to pave the way toward building the core statistical capacity referred to by the “Friends of the Chair.”

Without this core capacity and the ongoing resources to support it, neither the statistical needs of the country itself nor those of the international community will be reliably served. Where this core capacity is fragile the sporadic provision of additional funds to satisfy a particular statistical need will be much less effective and is no substitute for what one might term ‘statistical sustainability.’

F. Summary

115. The role of the statistical capacity indicators is to improve the availability of relevant statistical products by helping to better discern:

- the legal, environmental and resource conditions needed to perform statistical operations, obtain cooperation of respondents and administrative authorities, and manage statistical operations;
- the professional environment in which the statistical operations are conducted;
- the methodological expertise for establishing data sources and their links to the statistical products;
- the population to be covered, and the surveys, survey questionnaires, and administrative data sources;
- the skills and techniques to assess and transform data sources into statistical products, and to validate them;
- the relevance of the statistics to social and economic concerns, including the analytical capability to confirm certain issues and to identify those that need probing;
- the periodicity, timing, and consistency of the statistics;
- the methods and channels used to ensure wide and relevant dissemination of the statistical products.

116. The application of the SCB indicators to relevant statistics, or data producing agencies, will provide for an assessment of the current statistical capacity to produce such statistics (or reinforce the agency) according to a six-part reading of the statistical operations. By identifying the strengths and weaknesses of each part, such assessment should facilitate planning of the activities required to strengthen the statistical operations. Planning the activities strategically entails establishing priorities that need to meet national needs with the cooperation of both national authorities and external providers, thereby ensuring that the domestic and international needs are met; detailed plans could be prepared with specific targets, and resource requirements, and monitoring milestones. Plans organized according to the statistical capacity indicator framework should facilitate communication with external providers, and enhance the coordination of efforts among the various stakeholders. The indicators should help promoting sustainability in capacity building. It is expected that, by being applicable to any data producing agencies, they will encourage the development of measures that would lead to building a critical statistical mass self-financed by national authorities.

Annex 1: Candidates SCB indicators, De Vries and Fellegi statistical identifiers/activities presented according to the DQAF structure

0. Prerequisites of quality		
0.1 Legal and institutional environment – <i>The environment is supportive of statistics</i>		
0.1.1 The responsibility of collecting, processing, and disseminating statistics is clearly specified		
Candidate SCB Indicators	De Vries Indicators	Fellegi Indicators
<ul style="list-style-type: none"> Legal framework requires publication of information collected, and no collection of information for specific clients on a privileged basis. Legal framework and protocols specify the main players within the statistical system, their mandates, legal enforcement powers, and obligations. The legal framework is implemented effectively. Official statistics are accorded appropriate recognition, visibility and support within government, and their importance is actively promoted. There is a body (such as a national statistics council) that provides high-level policy guidance to the statistical system and serves as a further protection against politicization All elected representatives are served without preference or privilege. The survey content and questionnaire design must remain under the control of the data producing agencies. 	<ul style="list-style-type: none"> How good is the statistical legislation in a country, in terms of clearly setting out the mission and the competencies of statistical agencies, legal obligations to provide information for statistical purposes? 	<ul style="list-style-type: none"> Legal framework requires the publication of the information collected, which implies the ruling out of the collection of information for specific clients on a privileged basis. The survey content and questionnaire design must remain under the statistical agency's (agencies') control. Legal framework specifies who are designated as the main players within the statistical system, what their mandates are, what legal enforcement powers they have. There is a body (such as a National Statistics Council) whose purpose is to provide high-level policy guidance to the statistical system and to serve as yet another protection against politicization.
0.1.2 Data sharing and coordination among data producing agencies are adequate		
<ul style="list-style-type: none"> Legal and institutional environment permits data producing agencies to enter into agreements to jointly collect and share data. Higher management's role and authority, background, method of appointment and removal, standing in the government hierarchy, political independence, and public profile are appropriate for him/her to provide statistical policy advice to the government, coordinate the statistical system, and 	<ul style="list-style-type: none"> How well developed are national statistical coordination mechanisms and to what extent do they produce the envisaged results? How well considered is the 'data sources mix' used by statistical offices, and is achieving the best possible mix (also taking cost-effectiveness into account) a subject of systematic improvement effort? 	<ul style="list-style-type: none"> Legal and institutional environment permits statistical agencies to enter into agreements to jointly collect and share data. Chief Statistician's role and authority, background, method of appointment and removal, standing in the government hierarchy, political independence, and public profile are appropriate for him/her to coordinate and possibly be in charge of the

<p>possibly lead and manage the overall statistical system.</p> <ul style="list-style-type: none"> There is an effective statistical coordination system in order to develop national statistical standards, frameworks, and methodologies and to ensure consistent application of statistical standards, providing for consistent and good quality data, and guarding against duplication of effort; data producing agencies play a key role in development of standards for electronic data exchange and underlying data sets e.g. accounting standards. 		<p>management of the statistical system.</p>
<p>0.1.3 Respondents' data are to be kept confidential and used for statistical purposes only</p>		
<ul style="list-style-type: none"> Legal framework requires a strong and unequivocal protection of the confidentiality of individually identifiable information Methods are in place to ensure privacy protection, e.g., questionnaire content is minimally intrusive; staff give undertakings of fidelity and secrecy. Formal reviews and approval methods used for record linkage are appropriate. Rules and practices are in place to prevent disclosure of confidential data. A highly secure physical and computing environment is maintained. Arrangements are in place, where legal, to release statistical files (with identifying characteristics removed) for research purposes; and lists of names and addresses for specified purposes. The statistical organization fulfills its obligations under related legislation on privacy, official information, etc. 	<ul style="list-style-type: none"> How good is the statistical legislation in a country, in terms of protecting the confidentiality of individual data? How well developed and practiced are the rules to prevent disclosure of individual data in printed publications? How well developed are techniques and systems to make statistical files available for research purposes, while preventing disclosure in the best possible manner? 	<ul style="list-style-type: none"> Legal framework requires a strong and unequivocal protection of the confidentiality of individually identifiable information, and there exist methods to ensure privacy protection, that is, questionnaire content is minimally intrusive, respondents are informed of the purpose to be served by the data collection, the total reporting burden imposed on the population is regularly measured, and the formal reviews and approval methods used for record linkage are appropriate. The procedure in place to fulfill the confidentiality of the information provided is visible to interested respondents. There exists a culture which respects the confidentiality of individually identifiable statistical information.
<p>0.1.4 Statistical reporting is ensured through legal mandate and/or measures implemented to encourage voluntary response</p>		
<ul style="list-style-type: none"> Legal framework requires compulsory provision of information to specified agencies, and/or measures are in place to encourage response. Respondents are informed of purposes served by data collection, and their rights and responsibilities 	<ul style="list-style-type: none"> How well developed are the policies and practices of dealing with respondents, in terms of ensuring that they are fully informed of their rights and duties with regard to statistical data collection? How successful has 	<ul style="list-style-type: none"> Statistical reporting is ensured through legal mandate and/or measures to encourage response. There is an effort to minimize and monitor the reporting burden at different stages: survey

<ul style="list-style-type: none"> • The total reporting burden imposed on the population is regularly measured and efforts made to reduce it to a minimum through sampling, improved questionnaire design, short forms, data imputation, use of administrative data and other means; respondent rotation is used to spread burden. • Procedures for maintaining confidentiality of information provided are visible to interested respondents and to the general public • Efforts are made to minimize and monitor reporting burden at different stages, e.g., survey design; questionnaire design/ testing; deciding collection procedures; and actual imposing of response on respondents. • Efforts are made to communicate with respondents on trends in response, and to negotiate with government organizations, institutions and large businesses on response arrangements. • Statistical system provides sufficiently competitive salaries and conditions to allow retention of competent, experienced staff. • Statistical system has some guarantee of continuity of funding for core statistics and longer term development work. 	<p>a statistical office been in systematically reducing the response burden it imposes on data providers?</p>	<p>designing; deciding on collection procedure; and actual imposing of response on respondents. There is also an effort to communicate with the respondents on the trends in the response, and to negotiate with government organizations, institutions and large businesses on response arrangements.</p>
<p>0.2 Resources – Resources are commensurate with needs of statistical programs.</p>		
<p>0.2.1 Staff, financial, and computing resources are commensurate with institutional programs.</p>		
<ul style="list-style-type: none"> • Statistical system has adequate staff, financial resources, technology resources and statistical systems to cope with major statistical needs • Statistical system has flexibility to deploy appropriate staff numbers on each statistical program • Statistical system has flexibility to allocate funds to programs within an overall budget • Wise and careful management of existing funds through macro-financial reporting and adherence to financial policies and procedures • Tracking of costs, workloads, product sales, and cost 		<ul style="list-style-type: none"> • Statistical system can deploy people according to overall needs, and has the full allocation authority within an overall budget to meet broad priorities. • Effort is made to maintain a strong capacity for client-sponsored and client-paid surveys.

<p>recovery, and performance measures</p> <ul style="list-style-type: none"> • Strong capacity maintained for client-sponsored and client- paid surveys 		
<p>0.2.2 Measures to ensure efficient use of resources are implemented.</p>		
<ul style="list-style-type: none"> • Effective human resource management and development through participative management practices; effective staff development, communication and information sharing; encouragement of learning, innovation, excellence, and a performance culture; and quantitative tracking of key human resource statistics • Tightly managed resource management system in order to: avoid duplication of effort, profit from synergies, benefit from available and emerging technologies and data infrastructure (e.g., business registers), and identify possible outsourcing opportunities. • Agency-wide work programs are established and regularly monitored to ensure resources are allocated optimally • Analysis of benchmarking measures such as number of statisticians per 10,000 of population, value of statistical budget per head of population, cost of processing a statistical return (trends over time, internal and inter-country comparisons). • Formal reviews of efficiency and effectiveness of specific processes and products are conducted from time to time 	<ul style="list-style-type: none"> • Measures to ensure efficient use of resources are implemented. 	<ul style="list-style-type: none"> • Measures to ensure efficient use of resources are implemented.
<p>0.3 Quality awareness – <i>Quality is a cornerstone of statistical work.</i></p>		
<p>0.3.1 Processes are in place to focus on quality.</p>		
<ul style="list-style-type: none"> • Management provides a clear and strong focus on quality and promotes well documented quality management guidelines • A reasonable level of funding for methodology research is available, findings are published, and research is integrated with methodological practice • Regular provision of analytical output, especially related to policy issues, reinforces public image of 	<ul style="list-style-type: none"> • Is statistical quality management a real policy issue and are real and systematic efforts (including the promotion of well documented quality management guidelines) made to enhance the quality of statistics? • How actively is a statistical agency involved in international technical assistance? • How well is professionalism systematically 	<ul style="list-style-type: none"> • Effort is made by the statistical system to maintain a balanced and open approach to the measurement of its own performance. • There is an effective public information approach (which could be customer-specific) to guarantee that the public is aware of the importance of the statistical information, and consequently supportive of the statistical

<p>the data producing agency as professional and independent.</p>	<p>promoted and shared by such mechanisms as analytical work, circulating and publishing methodological papers, and organizing lectures and conferences?</p> <ul style="list-style-type: none"> • Is training and re-training of professional and other staff a real policy issue for the organization and is enough effort (e.g. in a percentage of the overall budget) spent on training? 	<p>system.</p> <ul style="list-style-type: none"> • Effort is made to publicize the innovations of the internal management of the statistical system. • There is a regular provision of analytic output, especially in response to important public policy needs, which reinforces a public image of relevance and helps to make the statistical office stand apart from the government. • Reasonable level of funding for methodology research is available and the research is integrated with methodological practice. • There exists a policy to protect core values of effective statistical system, that are, legitimacy (a social judgment that the activity of the statistical system is in the interest of the country, and that it indeed serves an essential purpose) and credibility.
<p>0.3.2 Processes are in place to monitor the quality of the collection, processing, and dissemination of statistics.</p>		
<ul style="list-style-type: none"> • Appropriateness of statistical standards (including methodology, classification, scope and concepts) are continuously examined • Efforts are made to ensure that changes to administrative systems do not adversely impact on statistics based on such systems • Mechanisms exist to ensure that the statistical system has control over standards such as concepts and classifications, and reporting burden 		<ul style="list-style-type: none"> • The system is able to highlight selected innovative activities in response to changing client needs, and to changing respondent and technology environments. • Management of the survey methodology staff is efficient and effective. • Appropriateness of the statistical standards (including methodology, classification, scope and recording) are continuously examined. • Effort is made to ensure that changes to administrative records will not do irreparable harm to statistical information derived from them. • There exist mechanisms to ensure that the statistical system has control over classification systems and reporting burden.
<p>0.3.3 Processes are in place to deal with quality considerations, including tradeoffs within quality, and to guide planning for existing and emerging needs.</p>		
<ul style="list-style-type: none"> • Technical tools, costing information and professional judgments are available to maintain an 		<ul style="list-style-type: none"> • The statistical system lends itself to establishing overall and long-term priorities.

<p>optimal balance between cost, quality, and timeliness of surveys</p>		<ul style="list-style-type: none"> • Technical tools and professional judgments are available to maintain an optimal balance between cost, quality and timeliness of surveys. • Good information on project costs is available. • A planning system exists to bring together for consideration the relevant external signals and proposed internal responses to them, convert them into initiatives that will address the most important gaps or weaknesses, and put forward proposals to invest for improvement. • Statistical system exploits possible synergies within the system for an efficient usage of information. The planning decisions favors innovations.
<p>1. Integrity –The principle of objectivity in the collection, processing, and dissemination of statistics is firmly adhered to.</p>		
<p>1.1 Professionalism – Statistical policies and practices are guided by professional principles.</p>		
<p>1.1.1 Statistics are compiled on an impartial basis</p>		
<p>Candidate SCB Indicators</p> <ul style="list-style-type: none"> • There are formal, well-managed institutional reviews and peer reviews designed to ensure objectivity, exploring alternatives and highlighting major findings without political fear or favor. • There exists a policy to promote and protect core values such as legitimacy (the statistical system acts in the country's best interests) and credibility. 	<p>De Vries Indicators</p> <ul style="list-style-type: none"> • How well do national statistical offices adhere to their obligation of impartiality? • How well are statistical offices shielded from political intervention as to the content and the release of statistical results? 	<p>Fellegi Indicators</p> <ul style="list-style-type: none"> • There are formal and well-managed peer reviews and institutional reviews designed to ensure objectivity, which involves exploring all sides of an issue, avoiding policy advocacy, stating assumptions, and highlighting major findings whether or not these reflect well on the current or the preceding government.
<p>1.1.2 Choices of sources and statistical techniques are informed solely by statistical considerations.</p>		

<ul style="list-style-type: none"> • Decisions about survey design, survey methods, processing, dissemination methods, and commentary about data are made on the basis of professional judgments. • Statistical methods are well documented and methodological changes are made on the basis of scientific criteria. • A culture of professionalism is systematically promoted and shared through analytical work, circulating and publishing methodology papers, organizing lectures and seminars, staff development (internal and external), contributions to international statistical developments, sharing experiences in statistical developments with other countries, etc. 	<ul style="list-style-type: none"> • Are decisions about survey design, survey methods and techniques etc. made on the basis of professional considerations (or do other – e.g. political – considerations play a role)? • Are methodological improvements made on the basis of scientific criteria? 	
<p>1.1.3 The appropriate statistical entity is entitled to comment on erroneous interpretation and misuse of statistics.</p>		
<ul style="list-style-type: none"> • The organization responds in a professional, objective and positive manner to informed criticism of statistics and cases of misuse of statistics. 	<ul style="list-style-type: none"> • How well and systematically do statistical offices educate their key users in order to promote proper use of statistics and to prevent misuse? 	
<p>1.2 Transparency – Statistical policies and practices are transparent.</p>		
<p>1.2.1 The terms and conditions under which statistics are collected, processed, and disseminated are available to the public.</p>		
<ul style="list-style-type: none"> • There is a clear statement of roles and functions of data producing agencies, both in legislation and in other publicly available documents. • The statistical planning process is transparent. • Effective public information programs encourage public awareness of the importance of statistical information, and support for the statistical system. 		<ul style="list-style-type: none"> • Statistical planning process is transparent.
<p>1.2.2 Internal governmental access to statistics prior to their release is publicly identified.</p>		
<ul style="list-style-type: none"> • Any arrangements for early internal government access are transparent. 		
<p>1.2.3 Products of statistical agencies/units are clearly identified as such.</p>		
<ul style="list-style-type: none"> • The source of all official statistical products is clearly identified. 		
<p>1.2.4. Advance notice is given of major changes in methodology, source data, and statistical techniques.</p>		

<ul style="list-style-type: none"> Major changes in methods and sources are notified to users and the general public with adequate advance notice. 		
<p>1.3 Ethical standards – Policies and practices are guided by ethical standards.</p>		
<p>1.3.1 Guidelines for staff behavior are in place and are well known to the staff.</p>		
<ul style="list-style-type: none"> Comprehensive guidelines for staff behavior are actively promoted in staff induction and training courses and in staff manuals There exists a culture that respects and absolutely guarantees the confidentiality of individual identifiable statistical information There is an active program of training for interviewers and staff with significant contact with the public, to help foster good relations with respondents and maintain their trust and cooperation. 		<ul style="list-style-type: none"> There is an active program of training interviewers for ‘doorstep diplomacy,’ which helps to maintain good relationship with the respondents.
<p>2. Methodological soundness – The methodological basis for the statistics follows internationally accepted standards, guidelines, or good practices.</p>		
<p>2.1 Concepts and definitions – Concepts and definitions are in accord with internationally accepted statistical frameworks.</p>		
<p>2.1.1 The overall structure in terms of concepts and definitions follows internationally accepted standards, guidelines, or good practices.</p>		
<p>Candidate SCB Indicators</p> <ul style="list-style-type: none"> International statistical concepts and definitions (or concepts closely linked to international standards) are used throughout the statistical system and are actively promoted Common conceptual frameworks are used as far as possible, and efforts are made to create such frameworks where they do not exist. 	<p>De Vries Indicators</p> <ul style="list-style-type: none"> How well does a statistical system adhere to agreed international standards and does it contribute to the best of its abilities to the further development and promulgation of best statistical practices? 	<p>Fellegi Indicators</p> <ul style="list-style-type: none"> Common conceptual frameworks are used where they exist, and there are efforts to create such frameworks if they do not exist.
<p>2.2 Scope – The scope is in accord with internationally accepted standards, guidelines, or good practices.</p>		
<p>2.2.1 The scope is broadly consistent with internationally accepted standards, guidelines, or good practices.</p>		
<ul style="list-style-type: none"> The scope of surveys/censuses adopts international standards where they exist, or international guidelines and good practices. 		
<p>2.3 Classification/sectorization – Classification and sectorization systems are in accord with internationally accepted standards, guidelines, or good practices.</p>		
<p>2.3.1 Classification/sectorization systems used are broadly consistent with internationally accepted</p>		

<ul style="list-style-type: none"> International classifications and sectorization systems (or systems and guidelines closely linked to international classifications) are used throughout the statistical system and are actively promoted. 	<ul style="list-style-type: none"> Standard variables and classification systems are used.
<p>2.4 Basis for recording – Flows and stocks are valued and recorded according to internationally accepted standards, guidelines, or good practices.</p>	
<p>2.4.1. Market prices are used to value flows and stocks.</p>	
<p>2.4.2. Recording is done on an accrual basis.</p>	
<p>2.4.3. Grossing/netting procedures are broadly consistent with internationally accepted standards, guidelines, or good practices.</p>	
<p>3. Accuracy and reliability – Source data and statistical techniques are sound and statistical outputs sufficiently portray reality.</p>	
<p>3.1 Source data – Source data available provide an adequate basis to compile statistics.</p>	
<p>3.1.1. Source data are collected from comprehensive data collection programs that take into account country-specific conditions.</p>	
<p>Candidate SCB Indicators</p> <ul style="list-style-type: none"> A wide range of appropriate and relevant source data are available from censuses, surveys and administrative records, and these data and their underlying systems take account of country-specific conditions. There is an appropriate mix of data sources so that there is an even development across-the-board of data sources. Appropriate use is made of administrative data , with necessary adjustments for differences in concepts etc. 	<p>De Vries Indicators</p>
<p>Fellegi Indicators</p>	
<p>3.1.2. Source data reasonably approximate the definitions, scope, classifications, valuation, and time of recording required.</p>	
<ul style="list-style-type: none"> The source data are compiled according to international standards, or standards that are closely linked to international standards, or acceptable guidelines; source data are consistent with overall frameworks, e.g., the <i>System of National Accounts 1993</i>; users are involved in major methodological and conceptual changes. 	
<p>3.1.3. Source data are timely.</p>	

<ul style="list-style-type: none"> Source data are available in a sufficiently timely fashion to meet needs of external users (and internal users where data form part of an overall framework). 		
<p>3.2 Statistical techniques – Statistical techniques employed conform to sound statistical procedures.</p>		
<p>3.2.1 Data compilation employs sound statistical techniques.</p>		
<ul style="list-style-type: none"> Common, standardized collection and processing methods are used as far as possible. Efficient and effective statistical and data management practices are used at all stages, including effective use of relevant existing and emerging technologies A range of comparability (over time) and internal consistency edits are applied. 	<ul style="list-style-type: none"> Common collection and processing methodologies are used. 	
<p>3.2.2 Other statistical procedures (e.g., data adjustments and transformations, and statistical analysis) employ sound statistical techniques.</p>		
<ul style="list-style-type: none"> Statistically valid methods are used to adjust data from alternative sources, and/or to impute data compiled on alternative bases. Data analysis leads to development of new measures from existing data, added value and improved quality. 		
<p>3.3 Assessment and validation of source data – Source data are regularly assessed and validated.</p>		
<p>3.3.1 Source data—including censuses, sample surveys and administrative records—are routinely assessed, e.g., for coverage, sample error, response errors, and non-sampling error; the results of the assessments are monitored and made available to guide planning.</p>		
<ul style="list-style-type: none"> Source data are regularly validated to ensure acceptable coverage, concepts, and accuracy (e.g., in terms of errors from sampling, response and other non-sampling error). Effective continuing contact is made with agencies from which administrative data are obtained, to ensure continuing reliability of data and to explore possible further use of administrative data. Results of assessments are available to users and to guide planning of future surveys. 	<ul style="list-style-type: none"> In order to maintain accuracy in statistical information, source data—including censuses, sample surveys and administrative records—are routinely assessed, e.g., for coverage, sample error, response error, and non-sampling error; the results of the assessments are monitored and made available to guide planning. 	
<p>3.4 Assessment and validation of intermediate data and statistical outputs – Intermediate results and statistical outputs are regularly assessed and validated.</p>		
<p>3.4.1 Main intermediate data are validated against other information where applicable.</p>		

<ul style="list-style-type: none"> • Comparisons are made between main intermediate data and relevant data from other sources, taking due account of relevant differences in concepts, coverage, etc. 		
3.4.2 Statistical discrepancies in intermediate data are assessed and investigated.		
<ul style="list-style-type: none"> • Statistical discrepancies found in intermediate data are investigated and resolved through amendment where necessary; results are used to review need for improvements in future surveys. 		
3.4 Assessment and validation of intermediate data and statistical outputs – Intermediate results and statistical outputs are regularly assessed and validated.		
3.4.3 Statistical discrepancies and other potential indicators of problems in statistical outputs are investigated.		
<ul style="list-style-type: none"> • Statistical discrepancies found in outputs are investigated and resolved through data amendment where necessary; results are used to review need for improvements in future surveys. 		
3.5 Revision studies – Revisions as a gauge of reliability, are tracked and mined for the information they may provide .		
3.5.1 Studies and analyses of revisions are carried out routinely and used to inform statistical processes.		
<ul style="list-style-type: none"> • Studies and analyses of revisions are carried out, both informally and in a more detailed and structured way, to identify systemic problems and/or frequent error sources stemming from, e.g., questionnaire design, clerical error, etc. 		
4. Serviceability – Statistics are relevant, timely, consistent, and follow a predictable revisions policy.		
4.1 Relevance – Statistics cover relevant information on the subject field.		
4.1.1 The relevance and practical utility of existing statistics in meeting users' needs are monitored.		
Candidate SCB Indicators	De Vries Indicators	Fellegi Indicators

<ul style="list-style-type: none"> • There are established mechanisms through which current and future information needs of users can be determined and continuously monitored, and efforts made to satisfy them; e.g., through participation in committees and working groups; and development of new products responsive to emerging needs. • The system provides for independent periodic assessments of the extent to which individual statistical programs are meeting users' needs. • The data producing agency has a good understanding of how statistics are used, and feedback on users' views of the relevance, reliability, and accessibility of the statistical products; e.g., through surveys of users and informal contacts. • There is an appropriate balance between various fields of statistics, in accordance with user needs and priorities; top priority needs are met; priorities are not unduly influenced by donor funds • There is an appropriate balance between benchmark data and current indicators. • The statistics produced satisfactorily address major user requirements and issues. • The data producing agency responds flexibly to user feedback. 	<ul style="list-style-type: none"> • How well developed are mechanisms to ensure that statistical work programs are relevant for the various user groups? • How well developed are mechanisms to assess user satisfaction with statistical products and their dissemination? 	<ul style="list-style-type: none"> • There are mechanisms through which current and future information needs of national/provincial/other users can be determined and efforts are made to meet those needs. • There are incentives in the system to foster client orientation such as a periodic independent assessment of the extent to which individual statistical programs are meeting the needs of their users.
<p>4.2 Timeliness and periodicity – Timeliness and periodicity follow internationally accepted dissemination standards.</p>		
<p>4.2.1 Timeliness follows dissemination standards.</p>		
<ul style="list-style-type: none"> • Timeliness of various series meets SDDS/GDDS standards and requirements of major users; target dates are set for major products and for various stages of the process. Preliminary summary data and subsequent more detailed data are released according to user needs. • Efforts are made to improve timeliness without unduly sacrificing other aspects of quality especially accuracy. • Where timeliness affects the utility of the data, analyses are made of factors contributing to excessive delays, and corrective action is taken. 	<ul style="list-style-type: none"> • Is improving timeliness an issue of serious and systematic effort? 	<ul style="list-style-type: none"> • Timeliness is determined according to differing timing needs. Pre-announced release dates exist for regular series. • Effort is made to improve the timeliness without unduly sacrificing other aspects of data quality, especially accuracy.

4.2.2 Periodicity follows dissemination standards.		
<ul style="list-style-type: none"> Periodicity of various series meets SDDS/GDDS standards and requirements of major users. The statistical system strives for an appropriate balance between monthly, quarterly, other short term, annual and periodic series. 		
4.3 Consistency – <i>Statistics are consistent within the dataset, over time, and with major datasets.</i>		
4.3.1 Statistics are consistent within the dataset (e.g., accounting identities observed).		
<ul style="list-style-type: none"> Consistency edits are applied to ensure that accounting identities (E/C) are observed. 		<ul style="list-style-type: none"> Statistics are consistent within the dataset.
4.3.2. Statistics are consistent or reconcilable over a reasonable period of time.		
<ul style="list-style-type: none"> Comparability edits from period to period are applied to ensure that series are consistent over time, and that significant differences are explainable. 		<ul style="list-style-type: none"> Statistics are consistent or reconcilable over a reasonable period of time.
4.3.3 Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical frameworks.		
<ul style="list-style-type: none"> Efforts are made to improve coherence, compatibility, and consistency of data from different programs; i.e., data can be analyzed together where necessary; mechanisms exist to improve coherence through the use of broad frameworks. 		<ul style="list-style-type: none"> Data or information from different programs are coherent, that is, they are compatible and can be analyzed together where they need to be. There also are mechanisms to increase this coherence, for example, through regular analytic integration of data within broad frameworks.
4.4 Revision policy and practice – <i>Data revisions follow a regular and publicized procedure.</i>		
4.4.1 Revisions follow a regular, well-established and transparent schedule.		
<ul style="list-style-type: none"> Revisions are made on a planned and orderly basis, according to well documented practices; users are informed about revisions policies. 		
4.4.2 Preliminary data are clearly identified.		
<ul style="list-style-type: none"> Preliminary data are clearly identified as such in publications and other data releases so that there is an expectation that these data are subject to revision. 		
4.4.3 Studies and analyses of revisions are made public.		
<ul style="list-style-type: none"> Analyses of revisions are made public including comments on main error sources and other factors causing revisions, and any corrective action planned. 		
5. Accessibility – <i>Data and metadata are easily available and assistance to users is adequate.</i>		
5.1 Data accessibility – <i>Statistics are presented in a clear and understandable manner, forms of dissemination are adequate, and statistics are made available on</i>		

<i>an impartial basis.</i>		
5.1.1 Statistics are presented in a way that facilitates proper interpretation and meaningful comparisons (layout and clarity of text, tables, and charts).		
Candidate SCB Indicators	De Vries Indicators	Fellegi Indicators
<ul style="list-style-type: none"> Disseminated data are professionally presented, including clear tables, charts, text material, cross reference to related data, etc. Suitable analytical tools are provided where appropriate (e.g., data base management and mapping tools) Data analysis and interpretation is objective and non-political. 		<ul style="list-style-type: none"> There are mechanisms to meet client-specific dissemination requirements for the government, general public (generalist with a broad interest, academic researchers, students, and special interest groups) and business clients.
<p>5.1.2 Dissemination media and formats are adequate.</p> <ul style="list-style-type: none"> Data and metadata are available on a range of dissemination media including publications, CD-ROM, diskettes, web sites, email, telephone, mail, media releases, libraries, and, where appropriate, emerging technologies. Access points for clients are well advertised and include central and regional offices of data producing agencies, and libraries Provision of access is affordable and convenient to different user groups, taking account of varying facilities available. In general, users are charged the same price for specific statistical products; exceptions are limited to defined classes of users (e.g., government agencies, media, libraries) under clearly specified criteria. The importance of the media in data dissemination is recognized through media conferences, media releases, etc. ;widespread media coverage of data releases is actively encouraged. 		<ul style="list-style-type: none"> Clients have a single point of access as well as effective tools and motivation to carry out the task, whatever their statistical information needs are. Provision of access is affordable and convenient to different user groups. There is an effort to focus on media, which is the source of statistical information for the vast majority of the population.
<p>5.1.3 Statistics are released on the pre-announced schedule.</p> <ul style="list-style-type: none"> Data releases are made in accord with schedules announced in advance. 		<ul style="list-style-type: none"> Timeliness in dissemination is observed.
<p>5.1.4 Statistics are made available to all users at the same time.</p> <ul style="list-style-type: none"> Normal practice is to release data to all users simultaneously; exceptions are clearly identified, 	<ul style="list-style-type: none"> How well is the principle of 'equal access under equal conditions' adhered to? 	<ul style="list-style-type: none"> All elected representatives are served without preference or privilege.

<p>made public, and time released in advance is kept to a minimum.</p>	<p>(including equal access in terms of the price of statistical products).</p>	
<p>5.1.5 Non-published (but non-confidential) sub-aggregates are made available upon request.</p>		
<ul style="list-style-type: none"> Users are entitled to non-published but non-confidential aggregates (e.g., detailed dissections and regional data). 		
<p>5.2 Metadata accessibility – Up-to-date and pertinent metadata are made available.</p>		
<p>5.2.1 Documentation on concepts, scope, classifications, basis of recording, data sources, and statistical techniques is available, and differences from internationally accepted standards, guidelines or good practices are annotated.</p>		
<ul style="list-style-type: none"> Information on underlying concepts, definitions, classifications, methodology, accuracy, etc. is easily obtainable by users. Metadata with searching tools are available; e.g., keyword data embedded in CD-ROM format and in hyper-links. Differences from international standards and guidelines are explained, including the rationale for such departures. Metadata provide explicit statements about data quality to enable user assessment of the various dimensions of quality of the data. 	<ul style="list-style-type: none"> How well does a statistical office provide the users with information about what the data really mean and about the methodology used to collect and process them? How well developed and applied is the presentation of the quality of statistics? Are statistical methods well documented? 	<ul style="list-style-type: none"> Information about the underlying concepts and definitions used, the methodology used in complying data, and the accuracy of the data is easy to obtain.
<p>5.2.2 Levels of detail are adapted to the needs of the intended audience.</p>		
<ul style="list-style-type: none"> Data are released with varying levels of detail to appropriately satisfy needs of different user groups. 		
<p>5.3 Assistance to users – Prompt and knowledgeable support service is available.</p>		
<p>5.3.1 Contact person for each subject field is publicized.</p>		
<ul style="list-style-type: none"> Contact details (telephone, address, email address, etc.) are provided for all statistical series; information officers are well trained, expected service levels are publicized, and actual service levels are monitored. 		<ul style="list-style-type: none"> Service levels to be expected from information enquiry officers are publicized and service levels achieved are monitored.
<p>5.3.2 Catalogues of publications, documents, and other services, including information on any charges, are widely available.</p>		
<ul style="list-style-type: none"> Comprehensive catalogs are widely available, listing all data products and services available, with brief descriptions and any charges applicable. Pricing policies are understood by clients and 		<ul style="list-style-type: none"> Catalogues or searching tools that allow users to know what is available and how to obtain it are available.

<ul style="list-style-type: none"> consistently applied. Data producing agencies provide user education to: increase public awareness of the value of statistics, promote awareness of data available, inform users about data strengths and limitations, promote more effective use of data, and minimize misuse. New products and services are actively promoted to relevant target audiences. 		
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Source: This table is produced based on the IMF's Data Quality Assessment Framework: Generic Framework (July 2001 Vintage) and How are we doing? Performance indicators for national statistical systems (1998) by Willem F. M. de Vries; and "Characteristics of an effective statistical system" in the International Statistical Review 64, 2 (August 1996), pp. 165-197 and on the Statistics Canada Intranet. (1999), and "Monitoring the Performance of a National Statistical Institute," presented to the CES Conference, both articles by Ivan P. Fellegi.

Note: Candidate SCB Indicators have been compiled with reference to a large number of documents including: this paper (The Framework for Determining Statistical Capacity Building Indicators); the De Vries Indicators, the Fellegi Indicators, and material from the Australian Bureau of Statistics and Statistics New Zealand.

Annex 2: Illustration of Monitoring of Indicators

Table: Statistical Capacity Matrix

Country: XXX

Statistics: National Accounts

Activity	Status as of	Milestone by		Achievement as of	
	Dec 1998	Dec 1999	Aug 2002	Dec 1999	Aug 2002
(1)	(2)	(3)	(4)	(5)	(6)
<i>Prerequisites of quality</i>					
Environment is supportive of statistics	O			O	
Resources are commensurate with statistical program	NO	LO	O	NO	
Quality awareness is cornerstone of work	NO	LO	O	NO	
<i>Integrity</i>					
Policies are guided by professional principles	O			O	
Policies and practices are transparent	O			O	
Practices are guided by ethical standards	O			O	
<i>Methodological soundness</i>					
Concepts definitions follow international frameworks	NO	U	LO	NO	
Scope is in accord with international standards	NO	U	O	NO	
Classification systems are in accord with int. standards	NO	LO	O	LO	
Flows/stocks are valued according to international standards	NO	LNO	LO	NO	
<i>Accuracy and reliability</i>					
Source data are adequate	O			LO	
Statistical techniques conform with sound procedures	NO	LNO	LO	NO	
Source data are assessed and validated	NO	LNO	LO	NO	
Intermediate results are assessed and validated	NO	LNO	LO	LNO	
Revisions are tracked	NO	LNO	LO	LNO	
<i>Serviceability</i>					
Statistics cover relevant information on the subject	NO	LO	O	LO	
Timeliness, periodicity follow dissemination standards	NO	LO	O	LO	
Statistics are consistent	NO	LNO	LO	NO	
Data revisions follow regular, publicized procedures	NO	LNO	LO	NO	
<i>Accessibility</i>					
Presentation is clear and data are available	LO			LO	
Up-to-date pertinent metadata are available	LO			LO	
Prompt, knowledgeable support is available	LO			LO	

Note: Assessment follows the following scale: O – Practice observed; LO – Practice largely observed; LNO – Practice largely not observed; NO – Not observed; U- Work under progress; NA - Information not available.

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