



Measuring the use of statistics in designing food and agricultural policies¹

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Abstract

In a context of shrinking public funding and greater emphasis on the accountability in its use, national and international statistical organizations are increasingly requested to demonstrate that the cost of producing statistical information is balanced by its benefits. Statistics is a core function of FAO and represents a highly visible area of the Organization's work. In particular, FAO performs an essential role in helping to reduce hunger and poverty by informing decision-makers through the provision of reliable and timely data. As part of its new monitoring approach, in 2013-2014 FAO conducted a corporate baseline assessment in about 80 countries to obtain robust evidence on their commitments and capacities in the areas where FAO has committed to achieve results. This paper provides a description of the methodology used by FAO for measuring its organizational outcomes and, in particular, the use of statistics in policy making processes and the results obtained through the corporate baseline assessment. It also describes the plans to repeat this assessment at the end of 2015 and 2017 to evaluate the progress made by countries in implementing evidence-based food and agricultural policies and FAO's contribution to this achievement.

Keywords: evidence-based policymaking; social returns; monitoring corporate results; balance sampling method.

1. Introduction

The importance of evidence-based policy making (EBPM) is increasingly recognized in the public discourse at national and international levels. Within the context of EBPM, policy decisions are informed by rigorous analysis using relevant and accurate data.

Statistics provide the foundation for EBPM, identifying which problems need to be addressed and designing/targeting the required policy interventions. High quality statistics also play a critical role in monitoring progress towards national and international development goals and targets, and in evaluating policy impact.

While it is widely recognized that good quality and relevant data are a pre-requisite for effective policy planning and implementation, they are not a sufficient condition for EBPM. In fact, the same type of data may lead to different types of analysis, which will have different policy implications. Furthermore, there are often different types of data on the same issue that may have different implications for policy. Last but not least, given the nature of the policy processes, in which decisions

¹This paper is part of an ongoing project aimed at developing the indicators needed to monitor the new FAO result-based framework at different levels of the results chain.



are taken on the basis of a range of different motivations (power, arbitrariness, corruption, political ideology, habits, anecdotes and public pressure) and undergo a complex mediation process, there is no guarantee that policy decisions will be consistent with the evidence.

Given the numerous intervening steps between the dissemination of statistical information and its actual use in policy making, measuring the benefits and impact of statistics on policies raises a number of important methodological challenges.

In recent years national and international organizations operating in the area of statistics are under a growing pressure to apply the principles of results-based management in order to demonstrate that their activities are cost-effective and offer good value for money. In a context of shrinking public funding and greater emphasis on the accountability in its use, statistical agencies are therefore increasingly invited to justify their budget requests and to demonstrate that the cost of producing statistical information is balanced by its benefits.

The measurement challenge in this case is even greater, as it is very difficult to isolate the contribution of each organization to broader development outcomes since statistical information is a global public good.

This paper provides a description of the methodology used by FAO for measuring its new results-based framework and, in particular, the use of statistics produced by the Organization in food and agricultural policy making processes. The methodology used to carry out the corporate baseline assessment in 2014 and the plans to repeat this assessment at the beginning of 2016 and 2018 are described. This will help FAO to evaluate the progress made by countries in implementing evidence-based food and agricultural policies and FAO's contribution to this.

2. FAO's approach to monitoring its new results-based framework

FAO's Medium Term Plan for 2014-2017 (MTP) and Programme of Work and Budget for 2014-2015 present FAO's new result-based model and its monitoring framework. The new strategic framework includes five Strategic Objectives (SOs) and one technical Objective which ensures the quality of corporate technical outputs and services. Each of the SOs is supported by a limited number of Organizational Outcomes (OOs), which are underpinned by Organizational Outputs.

In the new strategic framework, FAO Statistics provides several databases and information products that are associated with the delivery of specific SO Outcomes and Outputs. In addition, it creates the internal and external enabling environments through the development of international statistical methods and standards, the improvement of national statistical capacities, and the dissemination of reliable and comparable food and agriculture data with FAOSTAT, the corporate statistical database.

In the FAO results-chain model, OOs reflect the changes in the country-level enabling environment needed to achieve the specific Strategic Objective. For each SO, the OO indicators are clustered around the main determinants of success, which generally include aspects such as, relevance of policy and programming frameworks, level of resources and investments committed, level of coordination/partnerships and availability/use of information and data for decision making. The OO indicators then measure progress in terms of the extent to which countries have made the necessary reforms, and established the required capacities to achieve the strategic objectives, in the areas where FAO contributes. A set of indicators is defined for each OO within each SO, which is supposed to be monitored and reported upon every two years.

Given the nature of the OOs, very few data on OO related indicators are currently available in the public domain. Moreover, no information is currently produced on the specific FAO contribution to the achievement of development outcomes. Consequently, the data to inform the OO indicators are primarily obtained through the corporate monitoring strategy, coordinated at FAO HQ and involving the implementation of a sample survey in a number of FAO member countries.

This survey was conducted for the first time in 2014 to establish the baselines assessment for OO-level indicators for the five SOs. It will be followed by two in-depth surveys at the end of each biennium of



this MTP, respectively in early 2016 and 2018. The data from these surveys will measure the changes in country-level outcomes where FAO is expected to have had an influence, and will assess FAO's contribution to those changes.

3. The Corporate Baseline Survey: goals and methodology

3.1. Goals of the Corporate Baseline Survey

The Corporate Baseline Survey (CBS) was developed in three steps. An initial pilot survey was conducted in August-September 2013, as part of a rapid assessment aimed to provide preliminary data to inform the *Adjustments to the PWB14-15* that were presented to the FAO Council in December 2013. Drawing on lessons learned from the pilot phase, the fully-fledged implementation of the CBS, conducted between February and April 2014, produced more robust evidence on the baseline situation of the OO-level indicators for each SO. In August-September 2014 the expanded CBS was conducted. This extension of the fully fledged CBS, was designed to meet the SO teams' need to have data for all focus countries where their implementation efforts are concentrated. To meet this need, a different set of additional countries for each SO were added to the CBS sample.

3.2. The methodology used: the sample strategy and the data collection

The target population of a sample survey is defined on the basis of criteria that identify unequivocally the set of unit of analysis to be surveyed. This set is represented by the sample selected using the defined sampling design, and therefore the sample estimates are referred to this set. In the context of the CBA, the target population is defined as the list of countries where FAO worked – i.e. delivered – in 2011 and 2012. This refers to a total of 148 countries.

The sampling strategy was designed in order to obtain a representative sample of the population taking into consideration the region in which the countries are located, their performance regarding five key indicators² representing the five SOs, and their importance in terms of FAO delivery. The representativeness of the sample was then guaranteed by the random selection procedure, which prevents the introduction of any sort of bias.

The sample design took into account the variable *FAO delivery* as the main criterion for the selection of countries. This choice meets the requirement of defining a sampling scheme which gives countries with larger FAO investments a higher chance of entering into the sample. This was achieved by: a) selecting countries with probability proportional to delivery; b) distributing the sample between strata (region and SOs) in proportion to the delivery of each stratum (so as to assign a greater sample to the strata with higher overall delivery). In this context, some countries were included in the sample with certainty, as they were assigned an inclusion probability greater than 1. The self-representative countries are: Somalia, Afghanistan, Pakistan, Sudan, DR Congo, Zimbabwe and Bangladesh. Six stratification variables were then defined: the region and the five indicator groups³. Delivery was used to allocate the sample among the strata, and to define selection probabilities.

The sampling design was based on a random selection procedure which takes into account all the SOs simultaneously. Considering the small size of the population (and consequently of the sample), the sample was selected using the balanced sampling method (Deville and Tille, 2004). This method is the most efficient methodology designed for the selection of a random sample in terms of marginal

² A set of indicators was selected, each associated to one of the Strategic Objectives (SO):

- Stunting prevalence (% of children under 5) (SO1)
- Arable land per person (Hectares) (SO2)
- Poverty headcount ratio at \$1.25 a day (PPP) (% of population) (SO3)
- Agriculture, value added (% of GDP) (SO4)
- Global Needs Assessment - Vulnerability Index and Crisis Index (GNA) Final Index Rank (SO5)

³ For each of the five indicators the countries have been classified in two groups on the basis of the median value of the distribution of the indicator. A third group has been defined containing, for each indicator, the countries with missing values.



allocations (Falorsi and Righi, 2008). Therefore, the randomly selected sample ensures all the marginal allocations as well as the total sample size.

In the first phase of the fully-fledged survey, the sample size was fixed at 39 countries. Subsequently, in order to satisfy the SO Teams need to have data for all focus countries, the final sample size was increased to a total of 80 countries. The number of countries surveyed, however, is different for each SO (53 countries for SO1, 48 countries for SO2, 55 countries for SO3 and 53 countries for SO5). The CBS did not cover SO4, therefore the OO indicators for SO4 were obtained only through secondary data.

Data were collected through a structured questionnaire with sections dedicated to each SO. The specific questions in each section were therefore defined on the basis of the SO data requirements. When possible, data were obtained from existing data sources (secondary data) and were therefore not included in the survey questionnaire.

The respondents in each country were selected on the basis of six stakeholder groups (Government, UN agencies, international donors and International Financial Institutions, research institutions/academia, civil society and the private sector), thus providing diverse perspectives on the enabling environment and their respective capacity to achieve the Strategic Objectives. Respondents from each stakeholder groups were identified with the support of the FAO country office. Given the broad range of respondents involved, the survey was conducted through a facilitated data collection event in each sample country, where the questionnaire was presented and respondents were asked to individually complete relevant sections during the event. A total of 1474 questionnaires (334 for SO1, 346 for SO2, 490 for SO3 and 304 for SO5) were collected.

The estimates of the OO-level indicators and sub-indicators for the whole population were obtained by using adjusted sampling weights, starting from the sampling weights calculated for the 39 sample countries of the fully-fledge CBS. The sampling weights were assigned to each sample country, calculated as the inverse of the inclusion probability (the probabilities used to select the sample), adjusted taking into account non respondent countries. These weights allow the expansion of the values of the indicators from the sample countries to the target population.

After the enlargement of the sample to include all SO focus countries, different weighting systems were defined to provide representative estimates for each SO. Two domains, *unplanned* in the original sampling plan, were considered separately for each SO: the set of the focus countries and the set of non-focus countries. The weight adjustment was performed taking into account regional differences.

Each OO-level indicator was derived by combining the values of sub-indicators derived from the CBS and those taken from secondary sources. Survey data for a specific country were firstly aggregated by group of respondents (through a simple mean), and then aggregated at country level (also through a simple mean). A score was calculated for each OO-level indicator, ranging from zero to one, as a result of an average of the values of the sub-indicators.

4. Measuring the use of statistics in policy making processes

4.1. The CBS results

In planning the CBS, one topic considered an essential component of the enabling environment was the importance of statistics and information for the decision making process at country level. In order to collect relevant information on this component, SO experts identified specific items to measure the availability/use of information and data for decision making, and for each SO, a section of the questionnaire was devoted to collecting data about the existence and use of information systems for guiding government actions and policy measures.

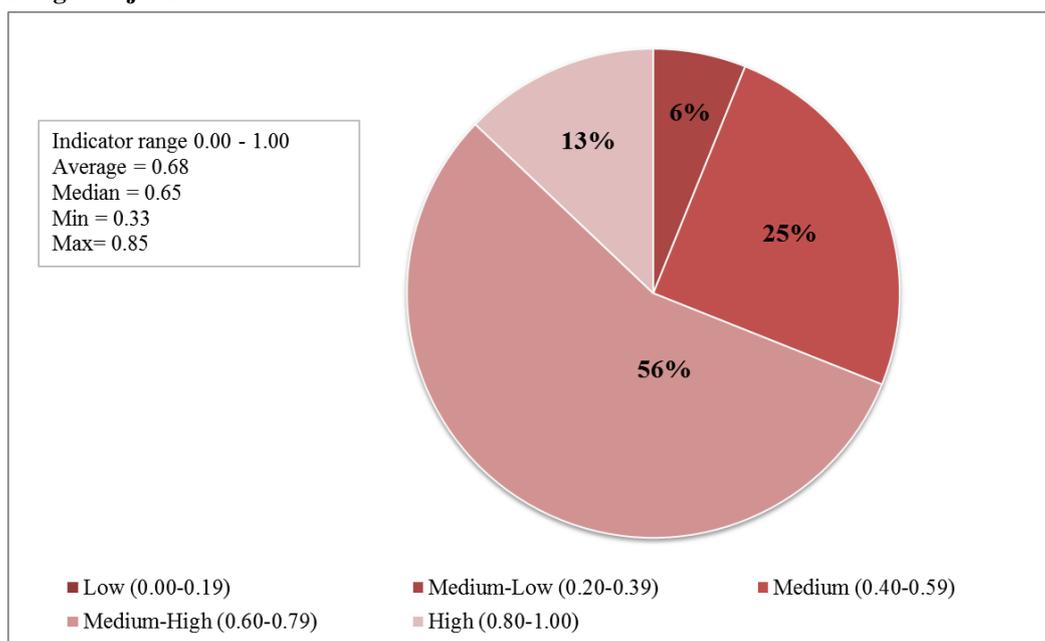
In addition, an explicit question to measure the use of statistics for evidence-based policy making was



included, on an experimental basis, in each section of the questionnaire of the CBS⁴.

The following graph displays the CBS results on the use of statistics at the global level obtained on the basis of this single question. Over two-thirds of the FAO target countries shows a "medium - high" or "high" value of the indicator (i.e. with a score ranging from 0.60 to 1.00). It appears, therefore, that in the majority of developing countries where FAO works, information systems to support policy making processes are available and, above all, are used by the government. This can also be deduced from the analysis of the average (equal to 0.68) and the median (equal to 0.65) of the indicator.

Graph 1: Percentage of countries by use of statistics for evidence-based policy making - Average for the four Strategic Objectives



Source: FAO – CBS 2014

The results obtained from the specific sections of the SO questionnaires are not always consistent with the general results described above (see tab. 1). With regard to SO1, most countries show low values in the use of functional information systems to support food security and nutrition policy and programming (over 74% of the countries with values below 0.4). A closer look at the components of this indicator highlights that, while several countries have a national food security information system in place, few of them have a mechanism for monitoring their policies and programmes, and almost none have established a mapping system of their food security investments. A relatively low score is also obtained for SO3, for which about 40% of the countries show a “low” or “medium low” capacity to monitor and analyze social protection policies and programmes. More favourable results are obtained for SO2 and SO5. In particular, over 72% of FAO countries present an extensive use of statistics in policy making processes pertaining to agriculture and natural resources management (value of the indicator above 0.6). The majority of FAO countries have efficient information systems

⁴ “To what extent policy making processes (e.g. preparation of national policy documents) in the field of [food security and nutrition (SO1)/ agriculture and natural resources management (SO2)/ rural poverty reduction (SO3)/ resilience to threats and crises (SO5)] are based on existing statistics at country level?

1. Statistics are extensively used
2. Statistics are partially used
3. Statistics are marginally used or not used at all (although relevant statistics exist)
4. Relevant statistics do not exist”



that trigger timely actions against threats to agriculture, food and nutrition (almost 40% with a value greater than 0.6).

This analysis clearly highlights that there are rather diverse degrees in the use of statistics in the national decision making process in the different policy areas under the FAO mandate (food security, sustainable agriculture, poverty, risk management, etc.). This depends on the priority given to the specific policy area by the national government, and the funding invested in support of the associated information systems. Moreover, countries are often better equipped in terms of availability of basic information systems, than in terms of the ability to conduct needs assessments, and especially, to monitor and evaluate the impact of policy measures.

The experience gained through the CBS shows, therefore, that only one question is not sufficient to describe how statistics are used in policy and decision-making processes. More detailed information on the type of data required by policy-makers and the type of policy processes considered is necessary to gather a more comprehensive and realistic picture on evidence-based policy making. These results guide the methodological refinements that will be introduced in the second (and third) phase of the FAO Corporate Survey.

Table 1: Absolute value (a.v.) and percentage of countries by some OO level indicators (about the existence and use of information systems, data and statistics)

Indicators			Low	Medium Low	Medium	Medium High	High	Total
SO1	Countries with high quality analytical products generated through functional information systems in support of food security and nutrition policy and programming processes	a.v.	11	99	36	2	0	148
		%	7.4	66.9	24.3	1.4	0.0	100.0
SO2	Countries that use statistics extensively in policy making processes pertaining to agriculture and natural resources management.	a.v.	1	2	38	40	67	148
		%	0.7	1.4	25.7	27.0	45.3	100.0
SO3	Capacities to monitor and analyze social protection policies and programmes	a.v.	7	53	65	23	0	148
		%	4.7	35.8	43.9	15.5	0.0	100.0
SO5	Countries with capacity to deliver regular information and trigger timely actions against potential, known and emerging threats to agriculture, food and nutrition	a.v.	0	12	48	63	25	148
		%	0.0	8.1	32.4	42.6	16.9	100.0

Source: FAO – CBS 2014

4.2. The second phase of the FAO Corporate Survey

FAO is currently planning an in depth investigation to more accurately capture which mechanisms are in place in different countries to increase the use of agricultural statistics in policy making processes.

It is planned that in the second (and third) phase of the corporate surveys (that will be conducted at the beginning of 2016 and 2018) considerable space will be devoted to this issue. As it is highlighted in the scheme 1 below, the FAO indicator on the use of statistics will be composed of three sub-indicators related to the availability of statistical data, the use of statistics for policy making and FAO's contribution to this outcome. The information needed to build this indicator will involve the use of secondary data from existing sources (i.e. assessments of national statistical systems) and data collected from a new section of the questionnaire of the Corporate Survey.

This new section will be administered to the same respondents of corporate survey. In particular, new information will be collected on the country performance in the use of statistics in the fields of food security and nutrition, sustainable agriculture, rural poverty and resilience to threats and crises. The questionnaire will investigate the prevalent situation at the time of the future surveys and the changes that have occurred in recent years.



Scheme 1: Indicators and sub-indicator to measure of the use of statistics in decision making

Indicator	Sub indicator
1. Existence of statistical data	1.1 Existence of quantitative data
	1.2 Access to the data
2. Use of statistics	2.1 Use of data for planning and programming
	2.2 Use of statistics in the stages of policy process: a) choice among available alternative policy instruments differing in terms of the involvement of the government, b) allocation of resources for implementation of chosen policy instrument, c) monitoring of implementation, d) evaluation of impact in terms of outcomes
	2.3 Existence of evidence-based decision-making process
	3.2 The contribution of FAO in the statistical knowledge management procedures
3. Role of FAO	

The new sections of the questionnaire will evaluate especially the use of statistics for policy making and FAO’s role. Insights will be derived on the quality dimensions of statistical data (accuracy, accessibility, timeliness, etc.), which are critical for informing policy processes at country level. The use of quantitative data and statistics will be investigated in the different stage of the policy process: for planning and programming, for allocating resources, for monitoring of policy implementation and for impact evaluating. The respondents will be also asked to evaluate the role of FAO in raising awareness and facilitating the use of empirical evidence in policy making.

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