

# Measuring Up to the Measurement Problem



## The role of statistics in evidence-based policy-making

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This pamphlet is an extract from the paper “Measuring Up to the Measurement Problem” written by Christopher Scott, London School of Economics, on behalf of PARIS21. Chris Scott’s paper benefited from contributions and comments from many PARIS21 partners. It is available electronically at [www.paris21.org/documents/1509.pdf](http://www.paris21.org/documents/1509.pdf). Hard copies are available upon request at [contact@paris21.org](mailto:contact@paris21.org).

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# Measuring Up to the Measurement Problem: The Role of Statistics in Evidence-Based Policy-making

## What is evidence-based policy-making?

Evidence-based policy-making exists when policy decisions are based on careful and rigorous analysis using sound and transparent data.

In recent years, the international community has focused increasingly on monitoring and evaluation as the areas where statistics should be used in support of policy-making. However, policy outcomes are crucially affected by the use of statistics and statistical procedures in 'upstream' stages of policy-making, such as issue recognition, programme design, policy choice and accurate forecasting - as well as monitoring and evaluation.

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Sound and transparent statistics are essential for effective policy-making - a necessary part of the enabling environment for improving development outcomes. There is rarely a simple link between statistics and the adoption of a particular policy. Policy-makers often draw different policy conclusions from the same set of data, owing to differences in the type of analysis undertaken and/or to differences in value judgments about policy objectives.

## Why is evidence-based policy-making desirable?

Evidence-based policy-making is the only way of taking public policy decisions which is fully consistent with a democratic political process characterised by transparency and accountability.

**Transparency:** is desirable on grounds of equity and efficiency. In a democracy, citizens have the right to know how and why decisions are taken which affect their lives. Such knowledge is an essential part of good governance. Transparency affords protection against decision-making processes being captured by sectional

interests or becoming tainted by corruption. Transparency provides private firms and households with some assurance when taking rational personal and business decisions - thereby promoting the efficiency of capital markets which in turn contributes to faster economic growth.

**Accountability:** a central tenet of democracy is that civil servants should be accountable to politicians, and that politicians should be accountable to the electorate. Both types of accountability require good data to be effective. Politicians use statistics to shape party manifestos which are the objects of choice presented to the electorate. The availability of information to citizens allows them to monitor the performance of the governing party during its period of office and to hold it to account at the next election. For their part, members of the government hold senior civil servants to account by demanding empirical support for the design of particular policies, by requiring evidence that programmes are being implemented as planned and by requesting information on the impact of specific interventions.

To argue in favour of evidence-based policy-making is to acknowledge that other criteria can be, and often are, used to make public choices. **Alternative criteria for policy-making include:**

- **Power and influence of vested interests:** public policy decisions are made to satisfy particular lobbies, interest groups or elites.
- **Corruption:** policy-makers make decisions which favour particular individuals or groups in order to maximise their private gain.
- **Political ideology:** policy-makers are guided in their decisions by adherence to particular political beliefs or ideologies which are relatively impervious to empirical evidence.

- **Arbitrariness:** in the absence of clear criteria by which to take decisions, or of any process of accountability: one case is treated one way, but a virtually identical case is treated differently.
- **Use of anecdotal evidence** as a basis for making policy.

None of these are consistent with transparent and accountable democratic political processes, nor are they likely to lead to equitable, efficient and effective policy outcomes.

## Strengthening the evidence base of policy-making in developing countries is now more important than ever before. Why?

Firstly, there is an urgent need to use statistics in the design and tracking of national development strategies (including **Poverty Reduction Strategies** and sector programmes) and to monitor progress towards the **Millennium Development Goals** (MDGs).

Secondly, in recent years there has been increased demand for statistics to satisfy the needs of **more sophisticated policy analysis**, including a wide range of microeconomic and macroeconomic models using quantitative data, as well as a variety of **participatory techniques** based on the collection of qualitative information. There is a serious danger that national statistical offices, line Ministries and other government agencies charged with producing official data will be unable to meet this growing demand. Indeed, there is a risk that in trying to satisfy new data needs arising with insufficient resources, the quality of some foundational statistics, such as Population Censuses and price data, may suffer.

Thirdly, **more donors' and recipients' resources are vulnerable now to bad public policy decisions** than at any time in the last ten years because an increased share of higher levels of Official Development Assistance (ODA) is being directed to budget support rather than to large numbers of projects. The **growing convergence on policy priorities** among donors needs to be under-pinned by good data and serious analysis. Donors must be confident that partner governments have in place effective mechanisms to track public ex-

penditures, monitor policy implementation and evaluate policy impact.

Finally, recent **advances in information and communications technology**, such as the Internet, mobile telephony and FM radio stations, have increased the pressure for evidence-based policy making as governments are drawn into a broader and more intense dialogue with the private sector and civil society, and are increasingly challenged to explain and justify their actions.

## Where and when has the use of good statistics made a difference to policy-making?

This section provides examples of cases where the use of good statistics has had a positive effect on the policy process, as well as situations in which either the absence of data, or a failure to use available information had a negative effect on policy-making.

### 1. Statistics to help identify issues

The first stage in the process of policy formation occurs when the appearance of a statistic reveals some aspect of social or economic life which had until then remained hidden from the general public and from policy-makers. For instance, **Indian Population Census figures on the ratio of females to males** have played, and continue to play, an important role in giving recognition to gender inequalities. In **Ghana**, **household surveys** demonstrated that trends in poverty can vary widely across regions over time. Such information was an important input into policy-making between 2000 and 2003.

Unfortunately, policy-makers do not always receive a flow of timely and accurate information warning them of impending problems or may receive conflicting signals. In the case of **Malawi**, a combination of erroneous food production estimates, a lack of transparency over management of the Strategic Grain Reserve, and official scepticism over statistics produced by civil society led policy-makers to be caught unprepared by the **food crisis** of early 2002. The resulting famine may have led to several thousand deaths.

### Public expenditure tracking survey in Uganda

In the early 1990s, it was believed in **Uganda** that a prime cause of poor public service delivery was the government's failure to ensure that budgeted funds reached frontline agencies, such as health clinics and schools. However, no management instruments or procedures were available to check whether such leakages occurred. So, the World Bank sponsored a **public expenditure tracking survey (PETS)** in 1996 to establish what proportion of budgeted funds for education and health actually reached their intended destination.

The results of this pioneering study showed that only 13% of the non-wage funds allocated for such items as the purchase of textbooks reached the schools. The remaining 87% either disappeared or was spent by district officials for other purposes. These findings were widely disseminated and led to the public display of information, at local level, on the funds approved for, and received by each school. The effect of introducing these measures to promote transparency and accountability was revealed by two follow-up PETS. These surveys indicated that the proportion of non-wage funds reaching the schools rose from 13% between 1991 and 1995, to between 80% and 90% in 1999 and 2000.

## 2. Statistics to inform the design and choice of policy

Once a policy issue has been identified, the next step is to undertake some analysis, so that the extent and nature of the problem can be understood. This understanding provides the basis for any subsequent policy recommendations.

Various techniques are used to target poverty and vulnerability to determine cost-effective expenditure priorities from a limited budget. For instance, **poverty maps are produced to rank localities by need** by combining Population Census data with information on consumption expenditure from household surveys. However, their validity depends crucially on the accuracy and consistency of the data sources. For instance, **in Malawi** estimates of the size of the rural population vary by as much as 35%.

When **Mozambique suffered devastating floods** in 2000, information from the 1997 Population Census was used to design relief efforts, so as to ensure that international aid was allocated to best effect. Statis-

tics played a similarly important role in **Montserrat after the volcanic eruption in 1997**. In this case, a survey was undertaken rapidly in the aftermath of the disaster to assess the distribution of needs on the island.

**In Nicaragua, environmental policy has been shaped by satellite observations on the extent of forest cover.** Satellite information also shapes agricultural policy, since these photographs reveal the location and frequency of forest fires, which are one of the few reliable indicators of where the country's agricultural frontier is to be found at a given point in time.

### Cost-effectiveness of health spending in Tanzania

In order for public health spending to have the greatest impact on reducing mortality and disability, information is required about which diseases have the largest effect on reducing the health status of a population (disease burden), and how health expenditure is allocated to combat different diseases (expenditure mapping). In the mid-1990s, rural districts in **Tanzania** lacked both kinds of information. An innovative pilot scheme in two areas of the country combined information on cost-effective health interventions with data on the local disease burden and the distribution of local health expenditures, in order to improve the efficiency of health spending. This evidence-based reallocation of existing public sector resources supplemented by minimal additional funds had a major impact on health outcomes.

Based on the findings of research studies, the **PROGRESA/OPORTUNIDADES poverty-reduction programme in Mexico** makes cash transfers to mothers rather than to fathers to secure higher benefits to children's health and education; and pays a higher level of grant to female pupils at secondary school reflecting the higher drop-out rate among female pupils.

## 3. Statistics to forecast the future

The value of modelling exercises is crucially affected by the quantity and quality of available information.

Forecasting is of paramount importance when a country is afflicted by the outbreak of a serious disease. The authorities need to know how quickly it is likely to spread among the population in order to design ap-

appropriate counter-measures. **Having access to accurate data on disease prevalence in the early stages of an epidemic is crucial to obtaining reliable forecasts of future prevalence.** In the case of HIV/AIDS, much of the debate has focussed on how the process of disease transmission is modelled. However, the paucity of data with which to calibrate the models is an equally serious problem. For most of the last decade, the information on current levels of HIV/AIDS prevalence in southern Africa has been drawn from surveillance systems which monitor infection rates among pregnant women aged 15-24 attending pre-natal clinics. Most of these clinics are located in urban areas, while most of the population live in rural areas which are beyond the reach of many official statistics, particularly those on morbidity and mortality.

#### Debt sustainability analysis

In 1996, the external public debt in forty of the world's poorest countries averaged more than four times their annual export earnings. Growing concern in the international development community over Third World debt led to the launch of the **Highly Indebted Poor Countries (HIPC) initiative**. This offered debt relief to the poorest countries in order to reduce their external indebtedness to sustainable levels, thereby hopefully ending the cycle of debt rescheduling. Once a given amount of relief was granted, the associated debt trajectory over time would indicate the likelihood that a country's growth path was sustainable and that the HIPC initiative would achieve its main objective.

While all forecasting is subject to uncertainty, the lack of timely, accurate and consistent macroeconomic statistics makes such exercises more hazardous than would otherwise be the case. The overwhelming majority of HIPCs are located in Sub-Saharan Africa, but only eight countries in the region covering 11% of the regional population and 29% of regional GDP are considered to have implemented the UN System of National Accounts (SNA) methodology (1993). This is the lowest rate of compliance of any region in the world and suggests that improving the quality of macroeconomic statistics in Sub-Saharan Africa should be a high priority.

#### 4. Statistics to monitor policy implementation

The lack of baseline data or of information on trends is a serious impediment to implementing a target-driven development strategy. For instance, many countries still

do not have the statistics which would allow them to track progress towards the **Millennium Development Goals (MDGs)**. Ten years remain before the time horizon set for most of the MDGs in 2015, but **data are still missing for many key indicators in many countries** as highlighted by the 2003 Human Development Report.

**Large data gaps even in basic human development indicators: countries lacking data, 1990-2001**  
Percent

Indicator	Countries lacking trend data	Countries lacking any data
Children underweight for age	100	22
Net primary enrolment ratio	46	17
Children reaching grade five	96	46
Births attended by skilled health personnel	100	19
Female share of non-agricultural wage employment	51	41
HIV prevalence among pregnant women ages 15-24 in major urban areas	100	91
Population with sustainable access to an improved water source	62	18
Population living on less than \$1 a day	100	55

Note: Data refer to developing countries and countries in Central and Eastern Europe and the CIS. A country is defined as having trend data if at least two data points are available—one in 1990-95 and one in 1996-2001—and the two points are at least three years apart.

The table shows that 55 countries lack information on the share of the population living on less than US\$1 per day. 100 countries have no data on poverty trends, so that progress towards the first MDG cannot be tracked directly over time.

Careful monitoring can reveal when key indicators are going off-track, which prompts further investigation leading to a change of policy. For instance, the **Uganda Demographic and Health Survey** revealed that the infant mortality rate had not changed between 1995 and 2000, despite the country's experience of rapid economic growth and declining poverty. Further analysis disclosed a variety of explanatory factors, including a decline in vaccination coverage. Following discussions among policy-makers, the immunisation programme was revitalised.

Civic monitoring of goods and services delivered by the state can also improve public sector performance. **Use of Citizen Report Cards** by the Public Affairs Centre in Bangalore, administered to a random sample of households, led to a marked increase in levels of user satisfaction with the provision of water, electricity, transport and hospital treatment over a period of five years during the 1990s.

The **Malawi food crisis** in 2002 shows how the lack of timely and accurate information can hide emerging problems. But, even when policy-makers are in possession of key information, a failure to disclose it can

make a bad situation worse. In the weeks before the **devaluation of the Mexican peso** in December 1994, the Bank of Mexico published figures on foreign currency reserves very irregularly. This prevented foreign investors from assessing accurately the problems facing the exchange rate regime.

### SDDS and GDDS

The experience of the Mexican devaluation was an important factor leading the IMF to establish the Special Data Dissemination Standard (SDDS) in 1996 and the General Data Dissemination System (GDDS) in 1997 to improve the reporting of macroeconomic data. Among low-income countries, around two-thirds subscribe to the GDDS, a handful of countries have met the more exacting standards of the SDDS and over one quarter of countries remain outside both systems of standards. There is growing evidence that subscription to the SDDS (for countries accessing international financial markets) has lowered developing countries' borrowing costs; whilst the GDDS promotes coordination among the various agencies responsible for the production and dissemination of official statistics and provides a solid foundation on which to build a programme to develop national statistics.

## 5. Statistics to evaluate policy impact

Evaluating policy impact is more methodologically and informationally demanding than monitoring policy implementation.

A recent **assessment of the impact of pre-HIPC measures of debt relief** by 1997 compared the level of indebtedness and a range of policy indicators in a group of countries all of which were later classed as HIPCs with (i) debt levels in the same group of countries in 1989 before debt relief was granted, and (ii) policy indicators among other Less Developed Countries over the same period. This evaluation concluded that (pre-HIPC) debt relief may result neither in a reduction of external indebtedness in the medium to long run, nor in improved economic performance by debtor countries.

**Wheat-flour ration shops in Pakistan** were finally abolished in 1987 after an evaluation undertaken by IFPRI in collaboration with the Pakistan Institute for Development Economics (PIDE). The study demonstrated that poor consumers obtained few benefits from the shops and that these benefits could be supplied at a lower resource cost.

### Randomisation helps to identify policy impact.

The PROGRESA/OPORTUNIDADES programme in Mexico attained national coverage within a few years, but at first areas were selected randomly and transparently. This allowed a rigorous analysis of the programme's impact in its early years, by comparing results between areas covered and those not covered by the programme. A random selection approach was also used during the 1990s by the Colombian government as a transparent and equitable mechanism for eliminating excess demand from eligible candidates for its education voucher programme (PACES). Unfortunately the Colombian PACES programme was closed down before a rigorous impact evaluation was conducted, because of apparently disappointing results. Subsequent research which exploits the randomised selection of applicants into the programme has shown that PACES had a positive impact in both the short-term and medium-term, and proved to be very cost-effective.

These examples demonstrate the **importance of incorporating an explicit mechanism for evaluating policy impact into the design of a programme**. Statisticians should be involved in the policy making process at an early stage to advise on how the impact of a new policy will be assessed. In some instances, this assessment may need to be undertaken at regular intervals over many years.

### How to promote evidence-based policy-making?

Low-income countries vary greatly in the quantity and quality of information available to policy-makers, and in the extent to which this information is used. It may be useful to distinguish four types of country:

- **Vicious circle countries:** *statistics are weak and policy-makers make little use of them. Evidence-based policy-making is not practised which results in poor policy decisions and poor development outcomes.* This is the situation in many of the poorest developing countries, particularly in Sub-Saharan Africa. In this case, it is necessary to adopt measures which will simultaneously increase both the demand and supply of statistics, as well as improve the dialogue between producers and users of data.
- **Data supply-constrained countries:** *although statistics are weak, they are increasingly used by policy-makers.*

ers. However, data deficiencies reduce the quality of decision-making which results in poor development outcomes. Policy-makers are likely to resent being held to account on the basis of inadequate data. The priority is to adopt measures to increase the quantity and quality of statistics, which will require additional funding, as well as to improve the dialogue between producers and users of data. The challenge is to strike a balance between generating improvements to statistics quickly, while laying the foundations for better performance of the National Statistical System in the long-run. What should be avoided are actions which offer short-run benefits, but generate long-run costs.

- **Data demand-constrained countries:** *the quantity and quality of statistics are improving, but they are not used for decision-making because policy-makers lack the incentives and/or the capacity to utilize them. This results in poor policy design and poor development outcomes.* Policy-makers are likely to be at the very least wary of (or may even actively dislike) having more and better figures pushed at them when these data may not support decisions they have taken or wish to take. In this case, priority should be given to the adoption of measures to increase the demand for statistics, as well as to improve the dialogue between producers and users of data.
- **Virtuous circle countries:** *statistics are improving and are being increasingly used for decision-making. The production of good (or at least improved) statistics is matched by their widespread (or at least increased) use in decision-making. These two processes mutually reinforce each other, resulting in better policy design and better development outcomes.*

This situation of virtuous circle countries serves more as a goal to be achieved, even in some developed nations, than as a description of events in a particular group of countries. Nevertheless, it provides a useful benchmark against which to compare the other three cases. **Developing a culture of evidence-based policy-making is a slow process which may take years. But the potential rewards are worth the effort.** Where this situation is approximated in practice, it is clear that good statistics are an integral part of good governance, including corporate governance. Strengthening the democratic process by requiring transparency and accountability in public sector deci-

sion-making, together with the establishment of clear accounting standards and an effective regulatory framework for the private sector are essential elements for sustaining a virtuous circle linking statisticians to policy-makers.

## National Strategies for the Development of Statistics (NSDSs)

PARIS21 (Partnership in statistics for development in the 21<sup>st</sup> century) aims to assist countries in each of the four situations described above by supporting the preparation of National Strategies for the Development of Statistics (NSDS). A strategy is both a product and a process. The product is a document which provides an assessment of the current status of the National Statistical System (NSS). It sets out the objectives for improving the NSS over a 5-10 year period and outlines the actions required in the short- and long-term to achieve these objectives. A NSDS will address relevant legal and institutional issues, identify technical assistance and training needs, estimate the costs of implementing the strategy and explain how these costs will be financed.

As a process, the elaboration of a NSDS will be consultative and participatory in order to mobilise support, build ownership and obtain political commitment from all stakeholders to reform and improve the statistical system. Those involved will include a variety of user groups, such as government agencies, the private sector, civil society, the media, donors and international organisations, as well as several producers of statistics, such as the National Statistical Office, the Central Bank and line Ministries.

A NSDS should build on what already exists, drawing on existing best practice in statistical planning and improvement and on the UN Fundamental Principles for Official Statistics. On the supply side of the market for official data, this includes what countries have achieved through the GDDS, SDDS, the Data Quality Assessment Framework (DQAF), and other initiatives such as the Statistical Master Plans (SMP) promoted by the World Bank, and the Multi-annual Integrated Statistical Programmes (MISP) developed by Eurostat. On the demand side, several countries have prepared, or are in the process of preparing Poverty Monitoring Master Plans (PMMP) which outline the actions re-

quired in the short- and long-term to improve monitoring and evaluation of Poverty Reduction Strategies (PRS).

Integrating poverty monitoring into a NSDS offers both opportunities and challenges. A poverty monitoring master plan articulates clearly the needs of a large number of users for a broad range of data. Since a NSDS should be demand-focussed, it may be helpful to build up the demand assessment for a NSDS from a poverty monitoring master plan when such a document exists, while noting that they focus on a limited set of official statistics, such as those relating to poverty, health, education, housing, employment, crime and governance. This would also highlight the importance of administrative data collected by the management information systems of line Ministries. In many HIPC and IDA-eligible countries, these statistics provide the basis of many, if not most PRS indicators, but these data are often acknowledged to be of lower quality than the figures derived from Censuses and surveys. Raising the profile of routine statistics by including this type of information within a NSDS would be a positive development.

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Accommodating all the needs of stakeholders in NSDSs poses several challenges, which will need to be addressed at the level of individual countries, such as: institutional responsibilities and inclusion of qualitative information produced by participatory poverty assessments (PPAs). Management of the poverty monitoring system usually resides with a unit located in the Ministry of Finance (Uganda, Mongolia), the Vice-President's Office (Tanzania) or the Secretariat of the Presidency (Honduras). A high level of inter-agency trust and goodwill must exist to ensure the level of collaboration required for complete integration of poverty monitoring and national statistical strategies. NSDSs must take full account of these institutional factors in order to promote effective coordination between the producers and users of data.

## In conclusion

This report shows clearly that **better use of better statistics leads to better policy and better development outcomes**. Making the transition to evidence-based policy-making can best be achieved through formulating a national strategy for the development of statistics, which is fully integrated into the system of

national policy making. The recently agreed Marrakech Action Plan for Statistics (MAPS) recommended mainstreaming strategic planning of statistical systems and preparing national strategies for the development of statistics for all low income countries by 2006; and beginning to implement them by the following year in order to have high-quality, locally-produced data for the next major review of the MDGs in 2010. This is an ambitious goal, but will be achievable so long as the international development community lends its support. This support is crucial because those countries most in need of better statistics are those least able to afford them, while many key areas of statistics are not directly covered by the MDGS.

Training and financial support are being provided for the design of NSDSs, including through PARIS21 and the World Bank's Trust Fund for Statistical Capacity Building. The World Bank has also established STATCAP, a lending facility for statistical capacity building, under IDA, and there is evidence through DAC reporting systems that bilateral funding of statistics is increasing.

**We need to strive to increase the level of donor support for statistical capacity building and to ensure that all donor support for statistical programs is provided within the frameworks of national strategies for the development of statistics.**

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### About PARIS21

The PARIS21 Partnership in Statistics for development in the 21st Century was launched at an international meeting hosted by OECD in Paris on 18 November 1999. PARIS21 is a partnership between statisticians, analysts, policy makers and development professionals.

The consortium's goal is "to develop a culture of evidence-based policy making and implementation which serves to improve governance and government effectiveness in reducing poverty and achieving the Millennium Development Goals (MDGs)". The consortium can help to achieve this by stimulating: greater demand, availability and use of better statistics and statistical analysis in national, international, and civil society decision-making. PARIS21 works mainly at the international and regional levels, developing the partnership in support of statistics for development mainly through: advocacy and facilitation, including resource mobilisation.

For more details, contact the PARIS21 Secretariat at [contact@paris21.org](mailto:contact@paris21.org) or visit our website at [www.paris21.org](http://www.paris21.org)

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