



Good Practice Guidelines for the Development and Reporting of Indicators

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Summary

Key rules for developing a set of indicators

1. Know what you want to measure – if you are unclear about what you want to measure, it is not worth proceeding any further.
2. Less is more – it is important to paint a clear picture, so don't try and include too many indicators.
3. Valid and meaningful – if an indicator does not adequately reflect the phenomenon it is intended to measure, or is not appropriate to the needs of users, it should be discarded.
4. Be transparent – be open about the processes used in the design and selection of the indicators.
5. Objective reporting – present the indicators impartially, without advocacy or unsubstantiated comment.
6. Document metadata – record how the indicators were constructed, the data sources used, and any data limitations.

Background

Purpose

These guidelines provide those involved in indicator work with a set of tools, and advice to assist with the development and reporting of indicators. The guidelines are focused on the development of outcome indicators in the social domains but may also be applied to other domains.

Context

Globally there is interest in measuring the progress of societies. At a national, regional and local level there is a trend towards an increased use of indicators to monitor development and track progress. There is also interest in monitoring sectorally (eg health and education).

This document provides a reference to help organisations and communities to develop indicators. It provides generic steps in the indicator development process. Case studies and references are also included.

Before providing guidelines on how to develop indicators, it is important to define what an indicator is. The following are some definitions of an indicator:

- 'An indicator is a summary measure related to a key issue or phenomenon that can be used to show positive or negative change. The evaluative nature of an indicator distinguishes it from the descriptive nature of statistics' (Statistics New Zealand).
- 'An indicator is a statistic or parameter that, tracked over time, provides information on trends in the condition of a phenomenon and has significance extending beyond that associated with the properties of the statistic itself' (OECD, 1994).
- 'An indicator is a statistic or measure which facilitates interpretation and judgements about the condition of an element of the world or society in relation to a standard goal' (US Environmental Protection Agency, 1972).
- 'Indicators provide a simple summary of a complex picture, abstracting and presenting in a clear manner the most important features needed to support decision-making' (UN, 2009).
- 'Indicators are a way of seeing the "big picture" by looking at a small piece of it. They tell us which direction we are going: up or down, forward or backward, getting better or worse or staying the same' (Jacksonville Community Council, 1992).

While the definitions vary, there is consensus that indicators provide a summary indication of a condition or problem, and permit the observation of progress or change. The progress can be measured over time or against benchmarks, targets or visions for the future. The indicator should give a clear and unambiguous indication of change, in terms of whether the aspect of life captured by the indicator is progressing or regressing.

Indicators form part of the knowledge base needed to support policy and decision-making. They help to raise awareness of an issue. They contribute to monitoring progress in achieving goals, and in policy evaluation. They enable an evidence-based comparison of trends over time, and within and between countries. They are also important for enhancing accountability.

Target users

The guidelines will be useful to policy analysts, planners and others involved with indicator development work.

Structure of guidelines

The guidelines are divided into five sections representing the process involved in developing and reporting on indicators. The sections are:

- establishing the purpose and users for the indicators
- designing the conceptual framework
- selection and design of the indicators
- interpretation and reporting of the indicators
- maintenance and review.

Establishing the purpose and users of the indicators

Introduction

The first steps in defining a suite of indicators are to identify clearly who the indicators are for and the purpose for which they are required. Attention should also be given at an early stage to the processes that will be used in the development of the indicators. Some important questions to consider are:

- Who will be responsible for the final selection and publication of the indicators?
- How will key stakeholders be involved?
- Will a group of experts be established to provide specialist advice?
- Will public consultation be undertaken?

The purpose of measurement, the process of deciding what to measure, and determining who will benefit from the indicators are as critical as what to measure and how to define specific indicators and technical methods. Transparency in the development of the indicators is critical.

Understanding the purpose of the indicators and the target audience will help determine the scope of the indicators. Indicators can be comprehensive or they can focus on a particular topic (eg health or education) or population group (eg children or older people). Comprehensive indicator sets generally aim to create an overall picture of how a nation, region or community is doing, and the interconnectedness of various information areas, such as the inter-relatedness between economic development and environmental impact. Specialised indicator sets aim to provide in-depth information about a particular topic, issue or population group.

Guidelines

Factors which should be addressed	Characteristics of good practice	Additional information
a) Develop the terms of reference	<ul style="list-style-type: none"> • The purpose of the indicators is clearly defined. • The target audience for the indicators is identified. • The subject population and level of geography is identified. • There is agreement on who will be responsible for the final selection and reporting of indicators. • Governance 	<p>The purpose might be to assess progress, facilitate strategic planning, inform decision-making, strengthen accountability, raise awareness or educate the public.</p> <p>Possible target audiences include the general public, policy-makers, academics and educators.</p> <p>Is the subject population of interest the total population or a sub-group, such as children or older people, Māori or Pacific peoples? Is the indicator set primarily national or for a specific region or</p>

	<p>arrangements for the project are established.</p> <ul style="list-style-type: none"> • The budget and other resource constraints (eg timing) are identified. • The key stakeholders are identified and the process for engaging with them is defined. 	<p>community?</p> <p>Central responsibility should be assumed by one agency. Political interference should be avoided to ensure the integrity of the indicators.</p> <p>Good project management practice should be adopted. A project manager should be appointed with key responsibility for delivering the indicators within the agreed timeline and budget.</p> <p>Consider how the indicator set will be sustained and funded over time.</p> <p>The level of consultation that will be undertaken will affect the timeline and budget for the indicators.</p> <p>Key stakeholders should include both users of the indicators and producers of the data used in their construction. Different ways in which stakeholders can be involved include: advisory committees, focus groups, workshops, public forums and round-tables.</p>
<p>b) Set the parameters for developing indicators</p>	<ul style="list-style-type: none"> • Existing indicator sets/ reports are identified and reviewed. • The scope of the indicators is determined. • The frequency with which the indicators will be updated and reported on is determined. 	<p>It is important to complement and support existing indicator work, rather than duplicate it. Where possible, align with international best practice so that the indicators are of value in an international context.</p> <p>What topics will the indicators cover? Will the indicator set include indicators that are advanced in their development as well as those that are new and require substantial development? Will it include both objective and subjective indicators? What time period will the indicators cover? Will they include comparisons between population groups</p>

		<p>and between regions and other countries?</p> <p>Will the indicators be updated as new data becomes available or on a regular basis, such as every year or every three years?</p>
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Good practice examples

Case study A

The Sustainable Development Indicators project led by Statistics NZ aims to monitor sustainable development in New Zealand. The target audience is the general public and others with an interest in sustainable development. The indicator set will build on Statistics NZ's previous work on sustainable development and on recommendations from an international Working Group for Sustainable Development.

<http://www.unece.org/stats/groups/wgssd.e.htm>

An Advisory Group, comprising representatives from central government agencies, local government, business, the academic community and Non-Government Organisations (NGOs), was set up to provide expert advice to the project leader. Public consultation, in the form of workshops, was undertaken to obtain comment on Statistics NZ's proposed approach and to provide input into the selection of topics to be included in the development of the indicators. The Government Statistician will be responsible for the final selection of the indicators and the content of the report to ensure that an impartial view is presented.

The indicator report, which will be available in July 2009, will encompass economic, social and environmental areas and the inter-connections between them, and will take a long-term view of the factors that influence the build-up and run-down of resources over time. The report will focus on national measures of sustainable development. The regional and local aspects will be covered through looking at how different regions contribute to the national picture. Further information about the report can be found on Statistics NZ's website.

<http://www.stats.govt.nz/environment/sustainable-development/About+monitoring+sustainable+development.htm>

Case study B

The Australian Tasmania Together project was initiated by the Tasmanian Premier to allow local people to have a say about the kind of future they want for their area, and to work together to achieve their long-term social, economic and environmental goals.

A Community Leaders Group was established to take primary responsibility for the development of the plan and to consult with the community to see what the people of Tasmania wanted the plan to contain. The group was drawn from the widest possible spectrum of the community, with every effort made to include representation from sectors that may have previously felt that they were excluded from the decision-making process. More than 60 public meetings were held across Tasmania. The feedback from these meetings and submissions enabled the development of clear objectives and goals. These were used to determine the scope of the indicator suite which covers the key areas of community well-being, culture, democracy, economy and environment.

An independent statutory authority, The Tasmania Together Progress Board, monitors progress towards achievement of the goals and results are reported to all Tasmanians. Progress reports are published every two years. In addition, an online benchmarking reporting system provides up-to-date statistical information on the website, with progress information updated as soon as the new data is released. Further information about the Tasmania Together initiative, including access to the progress reports and online benchmarking system can be found on the following website:
http://www.tasmaniatogether.tas.gov.au/historical_information

Resources

Canterbury Region Community Plans Group (2005). Indicators for Monitoring Community Outcomes: Methodology and Process for Developing Indicators.
<http://www.stats.govt.nz/NR/rdonlyres/BEC0F235-570B-4CE3-B121-DF2319136D11/0/canterburyregionoutcomeindicators180705.pdf>

Meadows, D (1998). Indicators and Information Systems for Sustainable Development, The Sustainability Institute, Hartland Four Corners.
http://www.iisd.org/pdf/s_ind_2.pdf

NHS Institute for Innovation and Improvement, The Good Indicators Guide: Understanding how to use and choose indicators.
<http://www.apho.org.uk/resource/item.aspx?RID=44584>

OECD. Handbook on Measuring Progress (forthcoming).

Designing the conceptual framework

Introduction

It is useful to have a conceptual framework to guide the development of a set of indicators. A conceptual framework is an abstract view of the world. It provides a formal way of thinking about a topic area. An important advantage of a conceptual framework is that it helps to make explicit assumptions about the way the world works.

A conceptual framework provides a tool for helping to build and structure a set of indicators. It helps to ensure the selection of a balanced and relevant range of indicators and to recognise and understand the complicated links between them. It can also help to organise and report on indicators in a structured and meaningful way. In this manner, a framework provides a valuable tool for bringing information together in a coherent fashion. The absence of a conceptual framework can result in the generation of indicator sets which contain an eclectic mix of indicators, with no clear rationale for their selection.

There are several different types of generic framework, each of which is able to organise indicators in a unique way. Examples are:

- Goal-based framework – organises indicators according to how they correspond to various stated goals or objectives.
- Issue-based framework – organises indicators according to key issues or problems within the area of study, such as access to health care, environmental health, mental health.
- Sectoral-based framework – organises indicators into the relevant areas of government responsibility, such as housing, education, welfare or the labour market.
- Domain-based framework – organises indicators according to key domains such as environment, society and economy.
- Causal-based framework – considers the causal interactions between different elements and organises indicators into categories such as pressure, state and response.
- Combination framework – a hybrid of two or more of the above types of framework.

Guidelines

Factors which should be addressed	Characteristics of good practice	Additional information
a) Decide on the approach for selecting indicators	<ul style="list-style-type: none"> • Relevant literature and key players in the field are identified. • Existing frameworks that are relevant to the topic or field of enquiry are reviewed. • Selection of framework type (organising principles) 	<p>Read and consult to identify key issues, concepts and associations relevant to the topic.</p> <p>Framework development should build on existing work where possible. Where relevant international frameworks exist, consideration should be given to aligning with these.</p>

	considered most appropriate for the topic.	There are a number of different approaches to organising indicators, none of which is better than any other. A useful way of overcoming the limits of individual frameworks is to use a combination approach, eg combining themes and issues.
b) Design the proposed framework	<ul style="list-style-type: none"> • Key concepts, dimensions and sub-dimensions of concepts relevant to the topic area are identified and defined. • Relationships between key concepts and dimensions of a concept are documented. • Key concepts are organised into a logical structure. • Draft conceptual framework is distributed to stakeholders for comment. • Framework is adapted and edited based on feedback. 	<p>A primary function of a framework is to delineate the important concepts associated with a topic or area, and define the scope of the topic or enquiry. Often there will be a central concept, eg well-being or sustainability.</p> <p>A framework should show key relationships, processes and flows.</p> <p>An important value of a framework is organising knowledge in a meaningful way.</p> <p>The framework should be developed in consultation with key stakeholders.</p> <p>Once developed, the framework will need to be revisited from time to time to see whether any modifications are necessary.</p>
c) Assess the proposed framework against the characteristics of a good framework ¹	<p>The framework has the following characteristics:</p> <ul style="list-style-type: none"> • logical in structure • relevant • comprehensive but concise • cognisant of other frameworks • coherent • understandable. 	

¹ Characteristics of good practice taken from “Measuring Well-being: Frameworks for Australian Social Statistics. Australian Bureau of Statistics. Page 15”

Good practice examples

Case study A

The legislative framework for local government requires local authorities to assess progress towards the achievement of community outcomes. Section 92 of the Local Government Act 92 states:

'A local authority must monitor, and not less than once every three years, report on progress made by the community of its district or region in achieving community outcomes for the district or region'.

The Canterbury Region Community Plans Group was established in May 2003 to establish a coordinated approach in the Canterbury region around consultation and engagement on the development on community outcomes. This initial focus was subsequently expanded to include a coordinated approach to developing indicators to monitor progress towards achieving community outcomes.

The work of the group included the development of a framework to provide a structure for selecting indicators and a context for understanding how the indicators relate to each other. The approach taken was to use a combined theme and issues-based framework to help ensure the selection of a well balanced indicator set. This entailed developing a comprehensive set of common themes that aligned fairly closely with the draft community outcomes that councils were in the process of defining with communities. Key issues were identified that were of primary relevance to each theme area.

The common themes were organised under the umbrella of the four well-being areas identified in the Local Government Act: social, cultural, economic and environmental well-being. Key issues of relevance to each theme were attached, as follows:

Social well-being

- Community connectedness (key issues: social networks and spirit, diversity).
- Health (key issues: home ownership, access to health care, environmental health, emotional health and well-being).
- Housing (key issues: home ownership, housing costs and affordability, home heating, social housing).
- Governance and democracy (key issues: voter turnout, community involvement in decision making, financial stewardship, Treaty issues).
- Safety (key issues: accidents and injury, child safety, road safety, workplace safety, crime, perceptions of safety).
- Recreation (key issues: recreation infrastructure, physical activity).

Cultural well-being

- Arts, culture and heritage (key issues: arts and culture, heritage).
- Economic well-being.
- Education, training and skills (key issues: foundation education, training and skills, innovation).
- Employment (key issues: full and part-time work, unemployment, underemployment, job vacancies, work-life balance, skilled migrants).
- Economy (key issues: economic growth, businesses and industry, retail sales, tourism).
- Social deprivation and income (key issues: income, deprivation).

Environmental well-being

- Natural environment (key issues: land cover, waste and recycling, water quality and consumption, energy consumption, biodiversity).
- Built environment (key issues: land use patterns, open space, infrastructure, transport systems and accessibility).

An advantage of using the combined theme and issues-based frameworks is that the resulting indicator structure allows for alignment with the vision and outcomes used in many of central government's strategic monitoring frameworks. The framework is also closely aligned with the metropolitan cities Quality of Life Project.

Further information about the methodology and process for developing the framework can be found on the web at:

<http://www.stats.govt.nz/NR/rdonlyres/BEC0F235-570B-4CE3-B121-DF2319136D11/0/canterburyregionoutcomeindicators180705.pdf>

Case study B

Cultural indicators in New Zealand was produced jointly by Statistics NZ and the Ministry for Culture and Heritage to establish a basis for monitoring trends in the cultural sector and that sector's contribution to New Zealand's cultural well-being.

The report is based on a framework which is structured around five main theme areas, which broadly reflect key goals for the New Zealand cultural sector and those involved within it.

The theme areas are:

- engagement
- identity
- diversity
- social cohesion
- economic development.

Under each of the five theme areas sit a number of desired outcomes, which provide the basis for the selection of the indicators. A total of 10 outcomes have been identified. The indicators relating to each theme area have been designed to provide insight into the extent to which the outcomes are being achieved – that is, they indicate whether there is an improvement or deterioration in the well-being of the cultural sector.

For example, for the theme area 'identity', two outcomes are identified:

i) identity – New Zealanders have a strong sense of identity based on their distinct heritages and cultures

ii) strength – the cultures of Māori and Pakeha are strong and living, with both cultures being valued by New Zealanders.

There are three indicators associated with the identity outcome: speakers of te reo Māori, local content on Māori television, and Māori TV ratings. The same three indicators are associated with the strength outcome. Further information can be found on the web at: <http://www.stats.govt.nz/analytical-reports/cultural-indicators-2006.htm>

Resources

Australian Bureau of Statistics (2001). Measuring Well-being: Frameworks for Australian Social Statistics.
<http://www.abs.gov.au/ausstats/abs@.nsf/mf/4160.0>

Berger-Schmitt, R and Noll, H (2000). Conceptual Frameworks and Structure for a European System of Social Indicators, Manheim, Germany: Centre for Survey Research and Methodology (ZUMA).

De Han, M and Kee, P. Accounting for Sustainable Development: the NAMEA-based Approach, Statistics Netherlands Division of Macro Economic Statistics and Dissemination Development Support Department.
<http://www.cbs.nl/nr/rdonlyres/789fc43c-28ac-4a07-a4e1-158745589a50/0/accountingforsustainabledevelopmentthenamebasedapproach.pdf>

Ministry of Education. Education Counts Indicator Framework
http://www.educationcounts.govt.nz/technical_info/indicator_framework#intro

United Nations Economic Commission for Europe (2009). Measuring Sustainable Development, United Nations New York and Geneva.
<http://www.unece.org/stats/archive/03.03f.e.htm>

Selection and design of the indicators

Introduction

Conceptual frameworks help us to depict the concepts and dimensions we are concerned with, but they do not immediately provide us with a set of indicators. To develop these, we need to analyse the frameworks and identify within them the key dimensions for which indicators are needed. Consultation is important to canvass a range of viewpoints.

The process of selecting the indicators, or indicator components in the case of composite indicators, is generally an iterative one undertaken in consultation with interested stakeholders. Selection criteria should be used as a tool to evaluate the proposed indicators during the selection phase to ensure that they are relevant, analytically sound and measurable. Experts should be consulted as they will have a good sense of the data issues and the scientific rigour regarding the proposed indicators.

Statistics NZ has developed the following set of criteria for indicator selection:

- Valid and meaningful – an indicator is valid and meaningful if it adequately reflects the phenomenon it is intended to measure and is appropriate to the needs of the user.
- Sensitive and specific to the underlying phenomenon – sensitivity relates to how significantly an indicator varies according to changes in the phenomenon. An indicator should ideally respond relatively quickly and noticeably to changes, but not show false movements. The indicator should also be specific, aligning with the phenomenon of interest and not other non-related phenomenon.
- Grounded in research – awareness of key influences and factors affecting outcomes needs to be built up.
- Statistically sound – indicator measurement needs to be methodologically sound and fit for the purpose to which it is being applied.
- Intelligible and easily interpreted – indicators should be sufficiently simple to be interpreted in practice and be intuitive in the sense that it is obvious what the indicator is measuring.
- Relate where appropriate to other indicators – a single indicator tends to show part of a phenomenon. Simple single indicators, such as life expectancy or employment rates, are useful as ‘background’ measures, but each by itself has serious limitations and disadvantages as an indicator of the quality of life, or as a measure of development. They are best interpreted alongside other similar indicators.
- Allow international comparison – indicators need to reflect New Zealand-specific goals, but also need to be consistent with those used in international indicator programmes so comparisons can be made.
- Ability to be disaggregated – indicators need to be able to be broken down into population sub-groups or areas of particular interest, such as sex or ethnic groupings or regional areas.
- Consistency over time – the usefulness of indicators is related directly to the ability to track trends over time, so as far as possible indicators should be consistent.
- Timeliness – data needs to be collected and reported regularly and frequently relative to the phenomena being monitored. There should also be minimal time lag between the collection and reporting of data, to ensure that indicators are reporting current rather than historical information.

- Linked to policy or emerging issues – indicators should be selected to reflect the important issues as closely as possible. Where there is an important emerging issue, indicators should be developed to monitor that issue.
- Compel, interest and excite – does the indicator resonate with the intended audience?

Further information relating to the selection criteria can be found on Statistics NZ's website at:

<http://www.stats.govt.nz/products-and-services/user-guides/indicator-guidelines/indicator-guidelines-indicator-selection.htm>

Guidelines

Factors which should be addressed	Characteristics of good practice	Additional information
a) What dimensions/sub-dimensions of the conceptual framework will be measured?	<ul style="list-style-type: none"> • Consultation with stakeholders to identify key dimensions/sub-dimensions of progress for measurement. 	<p>Community participation is essential if the indicators are to gain widespread support and eventual use. The following link contains information on working with communities.</p> <p>http://www.goodpracticeparticipate.govt.nz/</p>
b) What criteria will be used to select the indicators?	<ul style="list-style-type: none"> • Decisions surrounding the selection of indicators are transparent. 	<p>Criteria are needed to reduce subjectivity in the selection of the indicators. A recommended set of selection criteria developed by Statistics NZ is reproduced above.</p> <p>Care is needed in selecting indicators which resonate with their audience, and yet which are technically and scientifically sound.</p> <p>The rationale behind each indicator, and why it has been selected, should be documented.</p>
c) Do the indicators meet the selection criteria?	<ul style="list-style-type: none"> • Evaluation of the indicators against the selection criteria. 	<p>An individual indicator may not meet all of the selection criteria. The process of selecting the indicators will involve judgement about which criteria are most important to meet.</p> <p>At the very least, the indicator should be valid and meaningful and sensitive to changes in the phenomenon it is intended to measure. If the indicator does not satisfy these criteria, it should be discarded.</p>
d) Picking a suite of indicators	<ul style="list-style-type: none"> • The selection 	<p>Do the indicators provide enough information to give an adequate picture, but</p>

	<p>needs to be fair and balanced, using an objective approach.</p> <ul style="list-style-type: none"> • There are not too many indicators. A large number of indicators can be difficult to interpret as a group. • The indicators should be coherent, mutually supportive and inter-linked. • The suite of indicators is comprehensive and gives an overall picture. 	<p>not too much information to be incomprehensible? Having headline and supplementary indicators is a good approach.</p> <p>This 'balanced scorecard' approach ensures that all dimensions or sub-domains of the topic/domain of interest are adequately covered.</p>
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Good practice examples

Case study A

Statistical Indicators Benchmarking the Information Society (SIBIS) is an initiative of the European Commission to develop a system of indicators to assess the progress of European countries towards the Information Society. A conceptual framework provided the basis and foundation for the selection of a suite of indicators. This was complemented by a benchmarking framework defining the required properties of the indicators. It included the following dimensions and sub-dimensions for selecting and assessing the quality of the indicators:

1. Benchmarking value – indicators should be 'rooted in theory', ie for any indicator, there should be clarity around the link between the indicator and the latent concept it aims to measure. In the SIBIS context, this concept was some feature of the information society that was benchmarked across the SIBIS countries. The benchmarking value was operationalised by three sub-dimensions:

- amount of arguments (policies, important scientific problems) relating an indicator to a relevant concept of the information society in Europe.
- goal orientation – an indicator should be unambiguous in terms of how large and small values as well as increases and decreases over time should be interpreted.
- variance of the indicator values – if there is very little variation across the data set, the indicator is not suited for assessing differences.

2. Validity – an indicator should measure what it intends to measure. It must be investigated and proven empirically through testing and using an indicator. This can be done in different ways:

- prognosis validity – comparing prediction and actual development of an indicator for different points of time.
- external validity – comparing different indicators which aim to measure the same construct.
- construct validity – the indicator values are interpreted in regard to the concept that stands behind.

3. Reliability – an indicator should produce the same results whenever it is implemented to measure a concept. Reliability can be checked through:

- repetitions
- data collections for sub-samples.

4. Availability and accessibility – refers to availability and accessibility of data for the indicator. It includes three sub-dimensions:

- completeness – comparable data are available for all countries of the SIBIS benchmarking exercise
- timeliness – best practice is availability of data either in 2003 or 2002
- repeatability – refers to whether the data collected comes from a regular data collection or a one-off data collection exercise.

For each dimension and indicator a four-point rating scale with values from 0 to 3 was employed:

- | | |
|---|--|
| – | The dimension cannot be evaluated as the necessary information to rate the indicator is not available (for instance no comparable indicator exists to check the validity). |
| 0 | The indicator has significant problems in this dimension (sub-dimension). |
| 1 | The dimension (sub-dimension) can be evaluated but the indicator receives a rather low rating as it only meets less than 50 percent of best practice in this dimension. |
| 2 | The indicator receives a rather good rating as it achieves more than 50 percent but not 100 percent of best practice in this dimension (sub-dimension). |
| 3 | The performance of the indicator in this dimension (sub-dimension) cannot be improved. |

Further information about the SIBIS project can be found on the web at:

<http://www.sibis-eu.org/index2.htm>

Case study B

Measuring Ireland's Progress, containing 108 indicators and covering 48 domain themes, is published annually by the Central Statistical Office (CSO). The purpose of the publication is to present a manageable set of indicators which, when taken together, broadly summarise the progress being made in Ireland in achieving desirable outcomes. It was developed to support a move towards more evidence-based policy.

From the outset, the CSO was aware that great care would be needed to ensure that what was ultimately published would be widely welcomed and recognised as an independent and professional piece of work – the kind of publication that would be expected of a national

statistical office. The CSO also recognised that detailed consultations on the selection of indicators carried a risk that the whole process would become bogged down. Finally, it identified a need to educate the public about the debate that had commenced both at home and abroad, so that they could better understand the context of the publication and the selection of indicators. It was therefore decided:

- to produce a background report which would try to develop a conceptual framework for the selection of the indicators and include information on some known national and international developments in this area
- to independently select within the CSO a set of indicators according to this framework
- to describe the choices made as a 'preliminary set of key national progress indicators for Ireland'
- to invite feedback following publication in order to give users the opportunity to influence future publications.

The background report made it clear that the intention was to select a fairly manageable set of indicators rather than a large set that would overwhelm users. It provided information on the domains of policy interest, the headline indicators and background indicators in four national proposals, the indicator sets used by several international bodies and relevant work by other national statistical offices. This helped to put in context what the CSO was attempting to achieve.

The domains of interest in some of the national and international indicators reports were compared and account was taken of a social framework developed in an earlier National Statistics Board report. This led to the selection of 10 domains which were considered to represent a reasonable balance across the economic, social and environmental areas and to be broadly representative of the issues of importance to Ireland. The 10 domains were:

- economy
- innovation and technology
- employment
- social cohesion
- education
- health
- population
- housing
- crime
- environment.

Within these domains, theme areas or sub-domains were identified. For example, the social cohesion domain has four theme areas or sub-domains – voter turnout, official development assistance, risk of poverty and gender pay gap.

The National Statistical Board, which provides advice to the CSO, requested that the selected indicators should be consistent with international statistical concepts and facilitate international bench-marking. This meant that in addition to providing statistical information to show progress in achieving outcomes in a number of key priority areas of critical interest for Irish society, the report should allow comparisons to be made between Ireland and countries.

Guided by this framework, the 108 indicators were selected by experienced subject-matter experts in the CSO using the following criteria, developed by the European Commission:

- easy to read and understand
- policy-relevant

- mutually consistent
- timely availability
- comparable across countries
- selected from reliable sources
- not too large a response burden.

Measuring Ireland's Progress is available in hard copy or on the web at:
<http://www.cso.ie/releasespublications/measuringirelandsprogress2004.htm>

Resources

Atkinson Foundation. Canadian Index of Well-being
<http://www.atkinsonfoundation.ca/ciw>

Cobb, C and Halstead, T (1995). The Genuine Progress Indicator.

De Vries, WFM (2001). Meaningful Measures: Indicators on Progress, Progress on Indicators in International Statistical Review, 69, 313-331.

Jacksonville Community Council Inc. Guidelines for Selecting and Maintaining Successful Community Indicators
http://www.jcci.org/Portals/0/documents/statistics/indicator_guidelines.pdf

Keuning, S (1997). SESAME: An Integrated Economic and Accounting System, International Statistical Review 65 (1).

OECD (2005). Handbook on Constructing Composite Indicators: Methodology and User Guide, OECD Statistics Working Paper JT00188147.
<http://lysander.sourceoecd.org/vl=3434140/cl=34/nw=1/rpsv/ij/oecdthemes/99980150/v2008n2/s1/p1l>

OECD. Handbook on Measuring Progress (forthcoming).

Interpretation and reporting of the indicators

Introduction

The interpretation and reporting of the indicators is a critical stage of the indicator development process. It bridges the gap between measurement and understanding.

In deciding how the indicators are to be reported, the target audience should be kept in mind. Indicators should be presented in a way that engages the audience. A mix of graphs and simple commentary is generally more effective for a public audience than large amounts of commentary. Contextual information such as changes in key demographic variables should be provided, where appropriate, to assist readers to interpret the indicators. In some instances, producing a summary report and a larger technical report may be the best approach for reaching different audiences.

All aspects of the indicator design should be readily transparent in the reporting of the indicators. To ensure that this is the case, detailed metadata describing each indicator and how it was designed should be made available. The information provided should include full definitions and details of computation, guidance on the data sources and information on known limitations of the data.

In addition to commenting about each indicator, it is often useful to discuss the overall picture based on all the indicators. It is also useful to discuss linkages between indicators.

A communication strategy is important to ensure the indicator findings reach a wide audience. Examples of activities that could be included as part of the communication strategy include the preparation of a media release(s) which tells a story or stories, a public launch of the report, briefing key people who the media can contact for commentary about the indicators and arranging seminars for key interest groups.

Interpretation and reporting of the indicators – the guidelines

Factors which should be addressed	Characteristics of good practice	Additional information
a) Responsibility for the statistical content of indicator reports.	<ul style="list-style-type: none"> The ultimate accountability for the statistical content of the indicator report rests with the Chief Executive (or equivalent) of the producing agency. 	Politicisation of the report should be avoided to maintain credibility of the report's content.
b) Issues to be addressed in deciding the content.	<ul style="list-style-type: none"> The organisation and presentation of indicators is driven by the conceptual framework. 	<p>The presentation and commentary on the indicators should be policy-neutral.</p> <p>Comparative data can provide useful contextual information for the indicators</p>

	<ul style="list-style-type: none"> • In the reporting of indicators, the commentary and presentation are objective and professional, and confined to describing the information in its context. • The results are reported in a way that eases understanding. This can be achieved through written commentary, maps, graphs and statistical tables. • Tables, maps and graphs follow best practice so that they are easy to read and do not mislead. • Where data collected by another organisation is used, credit should be given to the original data source. 	<p>(eg comparisons with other parts of the country or with other countries). However, care should be taken to ensure the comparisons are valid. League tables which rank countries or regions should be avoided as they may be misleading and potentially can do harm. Instead, actual indicator values should be reported for each entity.</p> <p>The form of presentation should be driven by the target audience for the indicators. Sometimes it may be necessary to produce different reports for different audiences.</p> <p>The United Kingdom's Neighbourhood Statistics website contains key principles and best practice guidelines for statistical presentation (see reference below).</p> <p>Newfoundland's Community Accounts provides examples of the presentation of indicators (see reference below).</p>
<p>c) Issues to consider in the interpretation and reporting of indicators</p>	<ul style="list-style-type: none"> • The report includes enough supporting information about the construction of the indicators to enable accurate interpretation of them. • Links between indicators are identified and discussed in the commentary. 	<p>A selection of statistical issues that may be relevant is set out in Annex B and an outline of the range of meta data that should accompany the indicators is included in Annex C.</p> <p>Known reasons for changes in the direction or rate of growth of an indicator, such as an external event or change in policy direction, should be identified in the commentary.</p> <p>Care should be exercised in the interpretation of subjective indicators, such as happiness or life satisfaction. It is particularly difficult to measure change over time in these indicators (see ABS reference below).</p>

	<ul style="list-style-type: none"> Factors influencing the direction or rate of change of an indicator are discussed. 	
d) Expert review of indicator report	<ul style="list-style-type: none"> The presentation and interpretation of the indicators is subject to technical review. 	Independent technical review of the report is important to ensure that the technical quality is of an acceptable standard.
d) Timing of release	<ul style="list-style-type: none"> The timing of the release of the indicator report/indicators is not influenced by the content of the release or set in such a way to create advantage to any particular individual or group. 	The Principles and Protocols for Official Statistics contain guidelines around release practices. http://www.statisphere.govt.nz/about-official-statistics/protocol-5-release-practices.htm
e) Communication and dissemination plan	<ul style="list-style-type: none"> A communication and dissemination plan is prepared. The final report is widely disseminated, and is accessible and user friendly to meet the needs of diverse audiences. 	A well-developed communication and dissemination strategy will help ensure that the indicators reach target audiences.

Good practice examples

Case study A

Measures of Australia's Progress (MAP) is published annually by the Australian Bureau of Statistics. A full report of MAP is published every two years and a summary web-based report in the other years. The purpose of MAP is to provide a selection of statistical evidence to enable readers to make their own assessment of whether life in Australia is getting better. The report covers the social, economic and environmental aspects of Australian life.

MAP is targeted at the general public and uses the suite of indicator approach. The full report begins with a description of how the progress indicators are measured and an outline of the framework used for selecting and organising the indicators. This is followed by a

chapter on population trends and composition which provides important contextual information. Population has an influence on many dimensions of progress and is used as a denominator in some indicators.

The bulk of MAP is made up of discussion of each dimension of progress and the associated indicators. Each progress dimension is reported in a consistent format, beginning with a summary of key points, followed by a discussion of the headline indicator, presentation of some differences within Australia (eg for socio-demographic groups and regions), discussion of factors influencing observed change and ending with links to other dimensions of progress. Statements are objective and no commentary on policy is included. Standards for tabular and graphical presentation are applied uniformly throughout the report. The amount of technical detail is kept to a minimum and the use of technical jargon is minimised. Sources of all data are identified. Definitions of the indicators and important statistical concepts are given, and breaks in data series are clearly documented.

Each addition of MAP includes one or two essays on issues of topical interest. Examples of essays that have appeared in MAP include essays on multiple disadvantage, subjective indicators, the relationship between domains of progress, and comparisons of progress indicators with other countries.

MAP is released by the Australian Statistician according to an advertised release date published in advance in the ABS release calendar. A media release highlighting key findings accompanies the release of the report.

MAP is available in hard copy, or on the web at <http://www.ausstats.abs.gov.au>

Case study B

Health at a Glance, published annually by the OECD, provides the latest available comparable data on trends in various dimensions of health system performance in member countries (including New Zealand). The intention is to allow member states to benchmark their performance against other similar countries or the OECD average, and inform debate concerning health reform. The report does this by means of some 45 statistical indicators balanced across five dimensions of health system performance: health status, non-medical determinants of health; health care resources and utilisation; health expenditure and financing; and quality of care. The report provides a useful model of user-friendly and transparent reporting, and objective interpretation especially with regard to the difficult area of international comparability.

The report begins with a chapter setting out the demographic and economic context within which the indicator trends should be understood. The dimensions of health system performance then follow in logical sequence, with each indicator presented in a uniform format across two pages. The first page includes a definition of the indicator and brief commentary highlighting key findings conveyed by the data. Limitations in data quality or comparability, including any significant national deviations from the data definition or standards, are also made transparent. On the facing page are charts visualising the current level of the indicator, trends in indicator level generally over the last 20 years or more, and the percentage change in the indicator over the past five or sometimes 10 years, all by country in rank order along with the OECD average. Linked spreadsheets allow users to customise tables and charts for their own use. Statistical annexes provide the full tabular data used to construct the charts, along with metadata on definitions, ICD codes, statistical methods and data sources.

An innovative feature of the report is the inclusion of charts relating (some) indicators to important explanatory variables – so providing insights into possible drivers of inter-country

variation in health system performance and enhancing the interest and usefulness of the report for the member states.

Resources

Australian Bureau of Statistics (2006). Essay on Life Satisfaction and Measures of Australia's Progress 2006.

[http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/47132EE72AC3581DCA25717F0004ACE8/\\$File/13700_2006.pdf](http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/47132EE72AC3581DCA25717F0004ACE8/$File/13700_2006.pdf)

Newfoundland Community Accounts

<http://www.communityaccounts.ca/communityaccounts/onlinedata/getdata.asp>

OECD. What makes a set of key indicators successful (forthcoming).

Office for National Statistics. Neighbourhood Statistics – best practice in statistical presentation

<http://www.neighbourhood.statistics.gov.uk/dissemination/Info.do?page=userguide/detailedguidance/statisticalpresentation/best-practice-key-principles.htm>

Statistics New Zealand (2007). Principles and Protocols for Producers of Tier 1 Statistics, Wellington. (see Protocol 5 Release Practices)

<http://www.statisphere.govt.nz/about-official-statistics/protocol-5-release-practices.htm>

Tufte, E (1983). The Visual Display of Quantitative Information, Graphics Press.

Maintenance and review

Introduction

Indicators should be subject to ongoing assessment. They should be open to challenge, discussion and modification to reflect changing objectives, the emergence of new issues and improvement in measurement techniques and data availability.

It is useful to have a formal mechanism or process for reviewing the indicators that will allow for the creation of new indicators and/or revision of existing indicators. This should involve open consultation with stakeholders, including technical and subject matter experts, data providers, the target audience for the indicators, other interested groups and the community. There are a variety of ways that this can be achieved, such as through public meetings, focus groups and written submissions.

It is important to listen to the criticisms and feedback provided through the review process and to react to their responses by making adjustments to the indicator publication.

Maintenance and review – the guidelines

Factors which should be addressed	Characteristics of good practice	Additional information
a) Periodic review of the indicator framework and indicators	<ul style="list-style-type: none"> • There is a periodic review of the indicator framework and indicators. • The review takes account of real world changes and statistical developments. 	A balance needs to be struck between adding and subtracting indicators in response to real world changes and maintaining a stable set of indicators to track change over.
b) Development of a data quality improvement programme	<ul style="list-style-type: none"> • A programme of data quality improvement is developed and monitored. • A culture of continuous improvement, through sharing good ideas and evaluation, is systematically fostered to manage and improve the quality of statistics. 	The data quality improvement programme should include a strategy for obtaining data to populate unpopulated indicators, as well as proposals for improving the quality of existing indicators.
c) Periodic review of the processes and procedures used for compiling the indicators	<ul style="list-style-type: none"> • The processes for compiling the indicators are efficient, transparent and result in indicators that are fit for purpose. 	
d) Periodic review of the reporting and dissemination of the indicators	<ul style="list-style-type: none"> • The indicators are accessible to, and readily understood by, the target audience. 	

Good practice examples

Case study A

The Social Report was first published by the Ministry of Social Development in 2001 as the first step in the establishment of a regular programme of social monitoring. Following its release, a review was undertaken to obtain feedback from a wide range of people and groups on the report and reporting process. The review sought comment on the areas chosen and the outcomes identified in *The Social Report*. The review also considered issues relating to data collection for future social reporting, how often the report should be produced and by who, its relationship to other indicator reports, and how policy should target those outcomes identified in the report.

Several modifications were made to *The Social Report* as a result of this review. They include:

- the addition of a chapter on 'People' which provides contextual information on the size and composition of the New Zealand population
- the addition of a new domain on 'Recreation and Leisure'
- the publication of separate regional reports.

In addition, the Ministry of Social Development undertakes consultation with subject matter experts and data providers before the production of each new issue of *The Social Report*. The focus of this consultation is on the indicators and data used in their computation and the proposed topic of special focus for the next report. This consultation has resulted in the addition of new indicators and the removal of others not considered robust, and given rise to a process of ongoing improvement in the quality of the indicators included in the report.
<http://www.socialreport.msd.govt.nz/>

Case study B

Measures of Australia's Progress (MAP), published by the Australian Bureau of Statistics, provides a selection of factual information about whether life in Australia is progressing or regressing. The first edition of MAP, then called *Measuring Australia's Progress*, was published in 2002 as an experimental publication. The ABS sought comments on the report and received a lot of feedback, which has helped shape its development.

In the second issue of MAP a number of changes were made, including adjusting the balance between the number of economic, social and environmental headline dimensions of progress. Productivity was elevated to headline status, while the dimensions of land, water and biodiversity were combined to give a new dimension entitled the natural landscape. In addition, a clearer description was given of MAP's underlying framework and an essay included showing MAP's place within the philosophical spectrum of approaches to measuring progress, sustainability, well-being and the like.

Further improvements were made in the third issue, one of which was to review the family, community and social cohesion chapter to further embrace ideas around social capital.

The report is now in a period of continuous improvement, with some dimensions attracting more development than others. Family and community, and government, democracy and citizenship are two such cases. It is planned in future editions to include more analysis of distributional aspects and to include more essays that link different dimensions of progress. Attention will also be given to the sustainability of progress through the development of a framework that recognises sustainability as well as progress.

[http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1370.02006%20\(Reissue\)?OpenDocument](http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1370.02006%20(Reissue)?OpenDocument)

Resources

OECD. Handbook on Measuring Progress (forthcoming).

Statistics New Zealand (2007) Principles and Protocols for Producers of Tier 1 Statistics, Wellington (refer Protocol 5 Release Practices, Element 8 Revisions).

<http://www.statisphere.govt.nz/about-official-statistics/element-8-revisions.htm>

Annex A – Useful resources

Suggested resources for developing and reporting on indicators

- Statistical advice from a member of the Official Statistics System
- Subject matter expertise
- Availability of external stakeholders
- Expertise in indicators work.

Publications

New Zealand indicator reports

Comprehensive

Ministry of Social Development. The Social Report.
<http://www.socialreport.msd.govt.nz/>

Quality of Life Project. Quality of Life in Twelve of New Zealand's Cities.
<http://www.bigcities.govt.nz/>

Statistics New Zealand. Monitoring Progress Towards a Sustainable New Zealand.
<http://www.stats.govt.nz/environment/sustainable-development/About+monitoring+sustainable+development.htm>

Regional/community

Christchurch City Council. Community Outcomes for Christchurch.
<http://www.ccc.govt.nz/LTCCP/CommunityOutcomes/Monitoring/>

Monitoring and Reporting Community Outcome Team. Choosing Futures Waikato.
<http://www.choosingfutures.co.nz/index.asp?pageID=2145845111>

Specialist

Ministry of Health. Health and Independence Report.
<http://www.moh.govt.nz/moh.nsf/indexmh/health-independence-report08>

Ministry of Social Development. Children and Young People: Indicators of Well-being in New Zealand.
<http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/monitoring/children-young-indicators-well-being/index.html>

Ministry of Social Development. Positive Ageing Indicators.
<http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/monitoring/positive-ageing-indicators/>

Injury Prevention Research Unit. A Chartbook of the New Zealand Injury Prevention Strategy Serious Injury Outcome Indicators: 1994-2007.

http://www.nzips.govt.nz/documents/20081208_popn_chartbook.pdf

Statistics New Zealand. Housing Indicators.

<http://www.stats.govt.nz/analytical-reports/housing/housing-indicators/default.htm>

Statistics New Zealand and Ministry for Culture and Heritage. Cultural Indicators for New Zealand.

<http://www.stats.govt.nz/analytical-reports/cultural-indicators-2006.htm>

International indicator reports

Comprehensive

Australian Bureau of Statistics. Measures of Australia's Progress.

[http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1370.02006%20\(Reissue\)?OpenDocument](http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1370.02006%20(Reissue)?OpenDocument)

Irish Central Statistics Office. Measuring Ireland's Progress.

<http://www.statcentral.ie/viewStat.asp?id=191>

Millennium Development Goals Monitor

<http://www.mdgmonitor.org/>

OECD. Society at a Glance: OECD Social Indicators.

http://www.oecd.org/document/24/0,3343,en_2649_34637_2671576_1_1_1_1,00.html

Treasury Board of Canada. Canada's Performance.

<http://www.tbs-sct.gc.ca/report/govrev/06/cp-rc-eng.asp>

State/regional/community

Jacksonville Community Council Inc. Tracking the Quality of Life in Jacksonville, Florida.

<http://www.jcci.org/statistics/qualityoflife.aspx>

Growing Victoria Together

<http://www.dpc.vic.gov.au/CA256D8000265E1A/page/Growing+Victoria+Together-Progress+Reports!OpenDocument&1=30-Growing+Victoria+Together~&2=40-Progress+Reports~&3=~>

Newfoundland Community Accounts

<http://www.communityaccounts.ca/communityaccounts/online/getdata.asp>

Sustainable Calgary

<http://www.sustainablecalgary.ca/Page-31.html>

Sustainable Seattle

<http://www.sustainableseattle.org>

Tasmania Together

<http://tasmaniatgether.tas.gov.au>

Annex B – Statistical issues to consider in the interpretation and reporting of indicators

Specific issues that may need to be considered include:

- Comparative data – where comparisons are made with other countries or between different regions in the same country, care must be taken to ensure that the indicator is calculated in the same way (using the same procedures) and is based on data that have consistent concepts, definitions and counting units and are collected using the same data collection methods.
- Confidentiality – the relative small size of some of New Zealand’s sub-populations (eg Māori and Pacific peoples) means that the probability of identifying an individual is greater than for larger populations. Care must be taken when presenting statistics that confidentiality is assured for relatively small populations, such as people of a particular age, sex, ethnicity and occupation. The confidentiality requirements of the Statistics Act 1975 prohibit the release of statistics which allow any individual, household, or business to be identified.
- Measurement context – this can have a significant impact on the data values for a given indicator. For example, the level of crime victimisation can vary significantly depending on whether it is measured in a dedicated crime victimisation survey or in a General Social Survey. As a result, it is recommended that indicators should use data from a consistent source over time, where possible.
- Numerator/denominator consistency – this is particularly important in New Zealand in the computation of indicators for different ethnic groups.
- Reliability – problems with reliability arise when the numerator is small, and thus the effects of random variation can be substantial. As a result, rates or percentages, based on small numbers are likely to fluctuate widely from year to year or from one geographic area to another. One way of dealing with small numerators is to increase the size of the numerator population by aggregating data. Data can be aggregated by collapsing age groups, geographic areas or combining multiple years of data. An alternative option is to include a footnote indicating that the rate is based on a small number of events and is therefore likely to be imprecise. Care should also be exercised in using decimal points, especially when reporting percentages, to avoid implying some spurious accuracy.
- Sampling and non-sampling errors – where an indicator is derived from sample survey data, the sampling and non-sampling errors should be calculated when considering the suitability of an indicator.
- Skewed distribution – where data has a skewed distribution both a mean and median measure should be used.
- Standardisation – consider this where outcomes being analysed are significantly determined by age and sex. For example, age-standardised mortality rates are useful when making comparisons between a population with a high proportion of older people and a youthful population. This is particularly important in New Zealand when making comparisons between the Māori and European ethnic groups, which have very different age structures.
- Statistical measure – absolute counts or frequencies are usually not very useful, as they do not take account of the population at risk, which may be very large or very small, increasing or decreasing and will therefore affect the absolute account of events. Where rates are used, they should relate the event to the population at risk.
- Time series – some indicators are subject to short-term volatility while others change very slowly. To obtain an appreciable picture of the nature of change the reference period should be at least 10 years. In the case of indicators that are very volatile from one year to the next, consideration should be given to using a moving average.

Annex C – Metadata

Indicator metadata

- Definition of indicator
- Topic
- Indicator's relevance to topic
- Source data
- Calculation of indicator
- Strengths of the indicator
- Limitations of the indicator.

Source data metadata

- Data coverage
- Time series availability
- Smallest geographic unit
- Methodology
- Data quality issues
- Quality assurance procedures
- Frequency of data collection
- Data sources.