

Measuring Progress – An Australian Travelogue

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In 2002 the Australian Bureau of Statistics (ABS) released *Measuring Australia's Progress* (Australian Bureau of Statistics 2002), a publication built around a set of headline indicators that spanned economic, social and environmental concerns. Different projects from around the world have used different ways of addressing what is essentially the same question: Is life getting better? Each agency has followed its own route. But along the way, each agency has faced the same core set of key decisions. This article describes those forks in the road and explains the path taken by the ABS. Although it is very unlikely that our approach would be appropriate for every organisation, it is likely that anyone wanting to measure progress will be faced with similar choices. We hope this article will provide help for anyone setting out on a similar journey.

Key words: Sustainable development; well-being; quality of life; headline indicators; triple bottom line reporting.

1. Introduction

Measuring a nation's progress – providing information about whether life is getting better – is one of the most important tasks that a statistical agency can take on. But it is far from straightforward. The very concept of progress is nebulous, subjective and politically sensitive, and so it is little wonder that there is no internationally agreed definition, let alone an international measure or set of measures. In recent years several statistical agencies have worked on progress or related issues such as quality of life, and sustainable development (see, for example Hass et al. 2002). In particular, in 1999 the United Kingdom government released *Quality of Life Counts*, a set of indicators for sustainable development (Department of the Environment, Transport and the Regions 1999): a publication that captured the attention of the Australian Bureau of Statistics (ABS). In April 2002 the ABS released a contribution to the debate when we published *Measuring Australia's Progress*.

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approach would be appropriate for every organisation, it is likely that anyone wanting to measure progress will be faced with similar choices. We hope this article will provide help for anyone setting out on a similar journey.

Section 2 of this article discusses why a statistical organisation might want to measure progress. Section 3 discusses the major steps in undertaking such a project, while Section 4 discusses some of the difficulties we encountered. The article concludes with Section 5 that discusses the project's reception.

2. Why Measure Progress?

Recent years have seen a growing public interest in the interrelationships between economic, social and environmental aspects of life. There have been, for example, debates about the sustainability of economic growth and a recognition that the environment is neither an inexhaustible source of raw materials nor capable of absorbing an unlimited amount of waste. Similarly, progress relates to social concerns – health, education and crime – and whether and how economic growth benefits those areas.

In 1987, the World Commission on Environment and Development (the Brundtland Commission) called for the development of new ways to measure and assess progress towards sustainable development. The 1992 Earth Summit in Rio de Janeiro was a further catalyst for discussion (United Nations 1992), as were calls from organisations such as the United Nations for better measures of social concerns to supplement the System of National Accounts. There is a great deal of interest as well in developing a broader set of economic statistics that give values to things hitherto left outside the traditional economic system. Around the world a consensus is growing that countries and governments need to develop a more comprehensive view of progress, rather than focusing mainly on economic indicators such as Gross Domestic Product (GDP) (Halstead 1998). In Australia, for instance, the Australia Institute has calculated a *Genuine Progress Indicator* for national progress (Hamilton 1997).

The ABS is Australia's official statistical agency and we have a mandate to provide statistical information to inform and stimulate debate. Clearly there was (and still is) a good deal of interest in measuring progress and in 1997 the ABS co-hosted a significant and well-attended conference on "Measuring Progress: Is Life Getting Better?" (Eckersley 1998). Many eminent Australians attended and they agreed that we needed better measures of progress. It was generally agreed that there had been too much emphasis on Gross Domestic Product as a measure of progress, although there was less agreement on how assessments of progress should be broadened to take other things into account. In late 1999 the ABS decided to make a contribution.

3. Measuring Progress

This section focuses on four major areas of decision making relevant to any project:

- Overarching (or basic) design choices (concept, audience and approach);
- Choosing dimensions of progress;
- Choosing indicators of progress; and
- Presenting the work.

3.1. Initial choices

3.1.1. Choosing a concept: progress, wellbeing, sustainability and the like

Thinking about progress and allied concepts (such as wellbeing and the good society) has exercised philosophers from the time of Socrates. Different commentators in this field start from different primary concepts, which include the following:

- **Progress**, which considers whether aspects of life – environmental, social and economic – are improving.
- **Quality of life**, which is linked strongly to (sometimes synonymous with) wellbeing and can also be used in a collective sense to describe how well a society satisfies people’s wants and needs.
- **Wellbeing or welfare**, which is generally used to mean the condition of being well, contented and satisfied with life. It typically includes material, physical, social and spiritual aspects of life.
- **Sustainability**, which is often taken to be “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development 1987), but is sometimes used to designate whether an activity or condition can be maintained indefinitely. Although it has most commonly been used when considering the human impact on environmental systems (as in “sustainable fishing”), it can also be extended to economic and social systems.

There is, of course, a good deal of inter-relationship between these concepts.

Measuring Australia’s Progress focused, of course, on progress. We chose progress for several reasons.

First, measuring progress meant considering whether things were moving in the right direction. But it did not require us to announce whether a certain level or pattern of activity is sustainable. The ABS did not feel confident about pronouncing on sustainable development when there is little consensus among experts about the term, other than in very general terms. Consider, for instance, greenhouse emissions. Most would agree that, other things

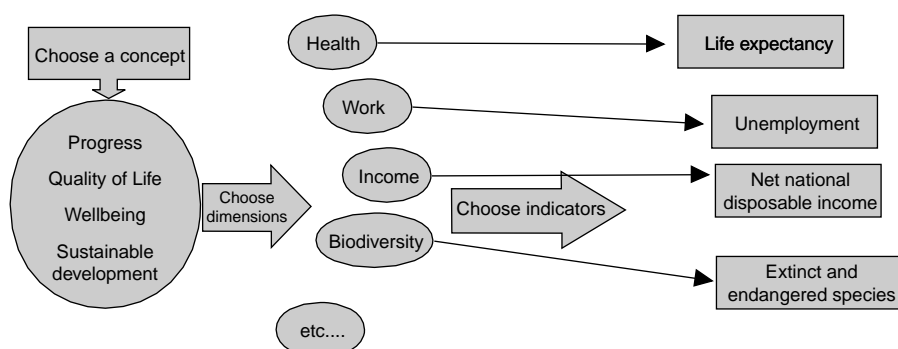


Fig. 1. Choosing a concept, dimensions and indicators

being equal, a reduction in greenhouse emissions represents progress. But, because of the uncertainties around global warming, it would be much harder to reach agreement about whether the reduced level of emissions was sustainable over the longer term.

Second, a focus on progress allowed us to give more prominence to the health of the economy and environment than would usually be possible in a project focused on wellbeing or quality of life. It is unlikely that a discussion about wellbeing (used in its traditional sense) would cover economic indicators of productivity or competitiveness for example.

3.1.2. The audience

The target audience for any piece of work will help dictate the contents, and so a key decision early on must be: for whom are we measuring progress? Possible audiences include policy makers; academics and other experts, and the general public. Each group has rather different requirements and the ABS already serves them in different ways.

Policy makers want statistical information to help them formulate and evaluate policy. And the ABS has a clear role in informing government policy, although we are careful not to evaluate it. A project measuring progress might be of interest to policy makers in several ways. In theory, a project could attempt to measure progress by measuring the success of key policies. This might be policy-informative but it might well cross the boundary into evaluation. Moreover, the selection of key policies would be a difficult and highly political decision. However, a less policy-focused work would also be useful. Policy makers interested in making broad comparisons of progress among Australia's States and Territories would have a set of dimensions and outcome indicators on which to focus, while those wanting to judge the success of their policies would have some key outcomes to refer to. A holistic approach to progress would also shed light on how each government department's work relates to progress overall – useful material for those interested in more coordinated government.

Academics and experts want statistical information to assist their work and research. The ABS already releases very detailed information on many aspects of life that would feature in any discussion on progress: health, income, the environment, etc. We felt a measuring progress style project is not the place to repeat that level of detail. It was more likely that the project would be of interest in other ways. First, it could include information about how we define and measure progress, which might be useful to some experts (many people, for instance, are involved in producing similar reports at a local level). Second, it could discuss different areas of academic research in the wider context of progress overall.

The public want statistical information to enhance and inform discussion and decision-making. Many of the statistics the ABS release are of interest to the general public, and some of our publications are targeted at a very wide audience. *Whether life is getting better?* is a question in which everyone is potentially interested. It is also a natural precursor to that most important national debate: "Where is Australia heading, and do we like the direction?"

Measuring Australia's Progress was targeted at the general public. We were careful to ensure that the publication looked at the nation's, not the government's, progress and so avoided looking at indicators tied to certain policies. But there has been wide interest in the publication on the part of both policy departments and academics. Policy makers most interested include those who are seeking to undertake similar projects at a regional level

and those interested in using or developing statistical indicators to measure their department's work in key areas.

3.1.3. A basic approach

We are aware of three main approaches used by statistical organisations in this field.

The suite of indicators approach sets out key aspects of progress side by side and discusses the links between them; readers make their own evaluations of whether the indicators together imply that a country is on balance progressing and, if so, at what rate. There is an irreducible element of subjectivity in such an approach. The choice of indicators cannot be made using statistical criteria alone; it requires some judgment both in choosing the dimensions of progress to include and in choosing the statistical measures for those dimensions of progress.

The one-number approach combines information about progress across a number of fronts (such as health, wealth and the environment) into a single composite indicator. Such composite indicators can be set in contrast with narrower indicators such as GDP. Although a good deal of effort has been put into trying to develop a single measure of progress (most notably the Genuine Progress Indicator (Cobb and Halstead 1995) and the Human Development Index (United Nations Development Program 2002)) consensus about the merits of the approach and about particular implementations still appears a long way off.

There is no doubt that composite indicators are appealing. The demand for an alternative to that important indicator, GDP, is an argument in favour of a one-number approach. But composite indicators have their drawbacks. First, the choice of a composite indicator components, like the choice of indicators in a suite of indicators approach, is subjective. Second, movements in composite indicators are difficult to interpret: when presented with an indicator moving in a certain direction, an obvious question to ask is "Which components are driving the movement?" Answering that question requires stepping back towards a suite of indicators style analysis. And third, difficulties arise when one wishes to combine several indicators into one number. The components of composite indicators are usually measured in different units – life expectancy (in years), income (in dollars), air pollution (in particles per volume of air), etc. Some compilers of composite indicators express the components in index form and then calculate a weighted or unweighted mean; others convert the components to a common unit of measurement, typically some estimate of their economic value or cost. But neither technique removes the basic methodological (and ethical) issue – namely, that any composite indicator is based on some judgment regarding the relative weights to be applied to the components. Is a one-year increase in average life expectancy to be weighted more heavily than, less heavily than or equally with a 5% decrease in greenhouse gas emissions? There is, therefore, a danger that a composite index will oversimplify a complex system and give potentially misleading signals.

The accounting framework approach presents social, economic and environmental data in one unified system of accounts, measured in various units. The Dutch System of Economic and Social Accounting Matrices and Extensions (SESAME) is one of the most mature sets of integrated accounts (Keunig 1997). Potentially this is a powerful tool for analysts, and a detailed set of accounts will complement indicators. However, such a complex system may be too difficult to interpret for anyone wishing quickly to form an

overall view of progress. Most importantly, such an approach requires a great deal of data and is difficult to construct.

Measuring Australia's Progress used the suite of indicators approach.

3.2. Choosing dimensions of progress

Whichever approach one uses, to understand progress one must examine many aspects of people's lives – their health, the quality of their environment, their incomes, their work and leisure, their security from crime, and so on. So progress is multidimensional. Moreover, the dimensions of progress are intertwined. To earn more income, people may need to work longer hours and so have less leisure time. Increased industrial activity may generate more money to spend on health care, but it might also lead to more air pollution and hence to poorer health. In order to measure progress one needs first to select the dimensions of progress that should be measured. Only then can one choose a statistical measure for each. It is important to recognise that any publication using a suite of indicators will necessarily be both partial and selective – partial because not every dimension of progress is included and selective because progress in each of the included dimensions is measured using just one or two indicators.

Selecting the dimensions of progress to be measured is arguably the most difficult part of a project. The statistician's job is to recognise and minimise the inherent subjectivity in choosing dimensions. Two approaches are key. First, it is important to recognise there are many ways of looking at the world and that the statistician's view is not the only one. Second, it is important to be open about how the dimensions of progress were chosen. It is perhaps inevitable that there will always be those who disagree with the choices you have made: what is important is they have some understanding of why those choices were made.

It is also important to recognise that society's views of progress, and of what is important, change over time, and that there are also some aspects of progress – governance and democracy, for example – that are seen as important now, but for which there are few agreed statistical measures yet.

Consultation

Whichever approach is taken, it is likely that anyone undertaking a project in this field will want to consult widely about aspects of the project, particularly the areas of progress that should be measured. There are at least three broad ways of taking on board the views of the world outside the statistical office, all of which should probably be used to greater or lesser degrees.

- referring to international standards or practice;
- referring to current policy issues and debates;
- referring to the views of stakeholders and the general public.

Listening to the views of stakeholders was particularly important in MAP's development. Giving stakeholders some ownership in the publication was almost as valuable a determinant of the publication's success as the advice they gave.

3.2.1. Frameworks

When trying to select measures of progress it is often useful to use some sort of framework to sketch out the territory one is trying to measure. Frameworks have two main purposes.

At one level, frameworks can break the world into manageable pieces. Rather than asking “How should we measure progress?” one can use a *presentational framework* to consider, separately, ways to measure progress in social, environmental and economic concerns. The choice of a view is largely a matter of presentational convenience; the view is a tool to help choose areas of concern and identify progress indicators, but it does not have to purport to be a model of a world in which the environment, economy and society can be separated. Such a framework can help in the preparation and presentation of a publication. It can also help to set out the links between the various dimensions of progress: paid work for example is important to the economy and to people’s sense of self-worth.

At another level, a framework can provide a theory of the way the world works. Such *theoretical frameworks* often require value judgments about what progress overall means. National statistical agencies would often be uncomfortable making such judgments. These frameworks are also designed to demonstrate how the various aspects of progress fit together and relate to one another. This is easier said than done however. In 2003, Professor Alex Michalos, from the University of Northern British Columbia, discussed the claim by Berger-Schmitt and Jankowitsch (1999) that “the indicator systems are missing a real theoretical foundation which defines the concept of welfare used and explains the relations between the various components” (p. 11). Professor Michalos noted that “since there is no generally accepted definition of a ‘scientific theory,’ this may not be a very serious complaint” (Michalos 2003).

Some form of framework is very useful for keeping a project manageable. But a theoretical framework, while useful, is not necessary. Moreover it is difficult territory for an impartial statistical office. At times it seems that some projects put rather too much emphasis on designing the perfect framework. There is, surely, sometimes a place for a more pragmatic approach: an approach which aims to produce quite quickly a first cut at a set of indicators and plans to improve them, using feedback from a wide audience, over time. A quick glance over the many different frameworks and indicator sets used around the world shows a very large degree of overlap: it seems the choice of framework has only a fairly limited influence on the choice of indicators.

There is no one international framework on which everyone agrees. Some international statistical initiatives, such as the United Nations’ Human Development Index (HDI), consider only a very small number of common concern to all nations and so take quite a narrow view of progress. (The HDI uses information about longevity, knowledge, and command over resources needed for a decent living.) Others use a larger number of issues. But it is unlikely that any international initiative will include all aspects that are important to any one country. In Australia, for example, some issues of concern are almost uniquely Australian (salinity, for example, affects few other countries; and while much of western Europe is preoccupied with growing road congestion, this is not (yet) a major issue here — at least not when compared to the scale of congestion problems in the UK, for example).

3.2.2. Choosing the progress dimensions in *Measuring Australia’s Progress*

The progress dimensions presented in MAP were chosen in three key steps. First, we defined three broad domains of progress (social, economic and environmental). Second,

we compiled a list of potential dimensions of progress within each of the three domains. Third, we chose a subset of dimensions for which we would try to find indicators. This was an iterative process and several steps were revisited after listening to the views of the many people we consulted during the publication's development.

3.2.3. Domains of progress

Most commentators consider that progress relates to issues clustered around broad areas of concern (*domains of progress*). Each domain in turn comprises a number of dimensions of progress.

Domain boundaries can be drawn in several ways:

- The two-domain view: human concerns and environmental concerns.
- The three-domain view: economic concerns, societal concerns, and environmental concerns.
- The four-domain view: concerns about aggregate material wellbeing and economic development; society and equity; democracy and human rights; and the environment and nature.

The choice of domains is perhaps primarily a matter of presentational convenience and labelling. Human concerns in the two-domain approach can include economic and societal concerns. Societal concerns in the three-domain approach can include democracy and human rights issues.

We adopted the three-domain view during the publication's development. (Although if you read the publication you will notice that we used a different view to present our indicators based on how the dimensions related to stocks and flows of four broad types of capital – human, social, produced, and natural.)

3.2.4. From domains to dimensions

Economic, social and environmental progress was considered by the ABS as well as an expert group from outside government. To identify the major dimensions, the three domains were considered in detail and partitioned into a number of dimensions of progress to ensure that the important aspects of economic, social and environmental progress were considered.

Economy. We began with the systems of economic accounting that guide the ABS program of economic statistics, and concentrated on the major stock and flow variables represented in those systems. Our aim was to find one primary flow variable (which would express changes in the volume of Australia's economic activity) and one primary stock variable (which would express changes in Australia's wealth). Other economic indicators are provided as supplements to these two key measures of economic progress.

Society. We began by considering key dimensions of social concern, which are underlaid by a view of fundamental human needs and aspirations. The ABS program of social statistics is guided by a social concerns framework, the design of which has drawn on many other frameworks and initiatives, such as those developed by the UN, the OECD and the EU.

Environment. We began by considering major ecosystems and environmental resources that are recognised in international frameworks such as the System of Economic and Environmental Accounting.

Once a list of dimensions of progress that might be presented had been compiled, we selected the subset that would be presented. A balance had to be struck – if we showed too many indicators, readers would not be able to assimilate them; if we showed too few, important aspects of progress would be omitted, and the overall picture might be biased. Ten to 20 indicators seemed about right, and the choice of those 10–20 headline dimensions was guided by the expert group and ABS subject matter specialists. We also selected some supplementary dimensions (dimensions that were judged less important but still necessary to investigate for those wanting a more comprehensive overview of progress).

3.3. *Choosing the indicators of progress*

The next step is to find indicators to express the dimensions of progress. Many projects seek to find just one headline indicator to measure progress in each dimension. A useful first step is to take each dimension of progress in turn, and ask “Why is this dimension particularly important to the nation’s progress? What are the key facets of progress in this dimension that any headline indicator should seek to express?”

Once again there will be some subjectivity in this process but that subjectivity can be reduced by agreeing – at the outset – on a set of criteria on which indicator selection will be based.

3.3.1. Criteria for selecting indicators

Many projects use a set of criteria or principles for selecting indicators. Each set will depend on what the project is trying to achieve. For *Measuring Australia’s Progress* we used a number of criteria. Some, such as the availability of timely data in a time-series, are commonly used for selecting any good statistical indicator. Others were designed especially for MAP: two of these *ad hoc* criteria were particularly influential in deciding the final indicator set.

Indicators should focus on the **outcome**, rather than, say, the inputs or other influences that generated the outcome, or the government and other social responses to the outcome. For example, an outcome indicator in the health dimension should if possible reflect people’s actual health status and not, say, their dietary or smoking habits or public and

Domains	Headline dimensions
<i>Economic</i>	<i>National income, National wealth</i>
<i>Social</i>	<i>Health, Education, Work, Housing, Economic disadvantage, Social attachment, Crime</i>
<i>Environmental</i>	<i>Biodiversity, Land, Water, Air, Greenhouse</i>

Fig. 2. *The framework used in MAP’s production*

private expenditure on health treatment and education. Input and response variables are of course important to understanding why health outcomes change, but the outcome itself must be examined when one is assessing progress.

Although a focus on outcomes has a number of advantages, it does mean that the indicators are often of less relevance to policy-makers than might be the case if indicators focused on inputs or outputs: policies are generally targeted at changing inputs or processes in the belief that these will lead to better outcomes. Moreover, some outcome measures (such as life expectancy) change relatively slowly and can reflect changes in inputs (such as smoking habits) that happened many years earlier. These limitations can be addressed in the commentary accompanying each indicator.

We also judged it important that movements in any indicator could be **unambiguously associated with progress**. For instance, one might consider including the number of divorces as an indicator for family life. But an increase in that number is ambiguous – it might reflect, say, a greater prevalence of unhappy marriages, or greater acceptance of dissolving unhappy marriages. Applying this no-ambiguity criterion depends crucially on interpreting movements in one indicator, assuming that the other indicators of progress are unchanged. For example, some would argue that economic growth has, at times, brought environmental problems in its wake, or even that the problems were so severe that the growth was undesirable. Others would argue that strong environmental protection might be retrograde to overall progress because it hampers economic growth. However, few would argue against economic growth or strong environmental protection if every other measure of progress was unaffected: that is, if growth could be achieved without environmental harm, or if environmental protection could be achieved without impeding economic growth. Of course, although keeping other things equal might be possible in theory, it seldom, if ever, occurs. The links between indicators are important, and *Measuring Australia's Progress* discusses some of these links once trends in the individual indicators have been analysed.

The full list of MAP's dimensions and indicators of progress are in Appendix I.

Outcome indicators: links between measures of progress and sustainability

Progress and sustainable development are strongly connected. Indicators of national progress describe whether a country is moving in the right direction. Indicators of sustainable development broadly indicate whether a country is moving, and will continue to move, in the right direction. A set of outcome indicators is necessary to measure either concept, but measuring sustainable development, unlike progress, requires a further set of input indicators. That is, if one knows the key outcomes one wishes to influence (measured by progress indicators) and one knows and can measure the key factors that influence movement in those outcomes (the inputs) one can begin to assess whether progress is sustainable over the longer term.

Of course, deciding which inputs are key influences on the outcomes is far from trivial! And in an uncertain world it would require statisticians to take one side in many of the great policy debates. But it is, nevertheless, important to realise that only after a set of outcome (progress) indicators are agreed on, can one make the transition to a set of sustainable development indicators.

3.4. *Presenting the work*

There are, of course, many ways in which work might be presented. The progress indicators provide the building blocks to which readers can apply their own evaluations to assess whether a nation is on balance progressing and, if so, at what rate. Readers can use a publication in three ways to assess progress:

- first, by examining the data and reading comments about each indicator's historical movements;
- second, by reading the discussion of links between indicators; and
- third, by reading the comments about factors that influence change and the national assets that may support future progress.

Although data can be presented in a variety of ways and the comments made about the progress indicators can vary, some common features are important and should be discussed for each:

- national, disaggregated national and (occasionally) international progress;
- direction and rate of change; and
- recent and longer-term progress.

3.4.1. Disaggregated national data

Although an aspect of life for a nation as a whole may be progressing or regressing, the rate of change – or even its direction – may not be mirrored in every region, or in every industry or every population subgroup. One cannot discuss every difference within a country for every indicator. But one can discuss some of the more significant differences and provide signposts to the more detailed and disaggregated data sets underlying the indicators.

3.4.2. Direction and rate of change

Both the direction and rate of change in a progress indicator are important. It is informative to see whether an indicator is increasing or decreasing, but the rate of increase is also informative, particularly when compared with historical rates. Just as the rates of progress or regress differ, so do the levels of economic, social or environmental wellbeing attained and how those levels differ for different subgroups or regions.

3.4.3. Past, present, and future

Each indicator might focus on progress during the recent past (typically the past ten years in MAP). Where possible, though, reference should be made to progress over the longer term. Some indicators move only slowly, and so a longer time horizon is needed to perceive any appreciable change. For other indicators, the longer-lasting trends that are of greatest interest are overlaid by cyclical and other short-term variation (e.g., the business cycle or regular climatic patterns such as El Niño).

3.4.4. How the indicators relate to one another

Each aspect of progress is related, either directly or indirectly, to most of the others. Change in one dimension of progress is typically accompanied by change elsewhere. Therefore it is important to consider the full array of indicators together.

International comparisons

When considering a nation's progress, or quality of life, it is often preferable to compare levels and rates of progress with those of other countries. Improvements in life expectancy, for example, seem less impressive if they are slower than improvements in life expectancy overseas. Ideally, therefore, one might choose dimensions and indicators of progress for which international comparisons are available. But there are at least two drawbacks to such an approach.

Comparable Dimensions: Some of MAP's dimensions cover aspects of progress that are (almost) uniquely Australian. For example salinity (a form of land degradation) is not a significant problem in many other countries. Restricting our measures of progress to cover only those areas of concern for which international data were available would have forced us to neglect areas of progress important to Australia.

Comparable indicators: For most of MAP's dimensions, however, some international data are available. But it can be misleading to compare different data sets. For some indicators, say life expectancy at birth, where there is an agreed international definition, comparisons are valid. For other indicators, say recorded crime rates, differences might be influenced by compiling practices. For say, other indicators, the number of people with degrees, differences might be influenced by university curriculum standards.

Measuring Australia's Progress focused on national progress. We drew some international comparisons where possible, but these were restricted. The second issue of MAP included an essay comparing Australia with other OECD members (Australian Bureau of Statistics 2004).

Broadly, we may think of two types of relationship between different areas of progress — trade-offs and reinforcements:

- *Trade-offs* occur when one area of progress improves at the expense of another. In some cases, trade-offs arise after a change of preference: spending on education might be cut, for example, to give more money to health. But they also occur as flow-on effects: for example, economic activity rises and so might greenhouse gas emissions.
- *Reinforcements* occur when one aspect of progress improves and strengthens another. For example, as economic production rises, so might employment.

In reality, the overall effect of a change in any one dimension is much more complex. An intricate system of trade-offs and reinforcements come into play when any dimension of progress changes. Suppose, for example, that factory output increases. This generates more income, and so there is more money to pay for health care, for instance. But increased factory output might also increase air pollution, which is harmful to people's health or might be detrimental to other economic activity such as agriculture. Although within the indicator commentary one might mention some of the more obvious links, it is not practicable to mention every relationship. Rather, one should remind readers that there are many possible links between indicators.

4. Difficulties in Developing *Measuring Australia's Progress*

Projects such as MAP are increasingly becoming a part of a national statistical agency's work. But this style of work is still quite new, quite politically sensitive, and requires some subjectivity. One of the ABS's greatest assets is its political independence. Without this independence, it would almost certainly have been very difficult to prepare a publication such as MAP without compromising our statistical integrity.

In any project it is almost certain that there will be difficult choices involving the dimensions of progress that are included, or the indicators that measure them. Although a set of selection criteria can certainly help they are not a panacea. During the development of *Measuring Australia's Progress*, three areas provided a particular challenge:

- subjective indicators;
- poverty as a dimension of progress; and
- the overall balance of numbers of economic, environmental and social indicators.

4.1. *Subjective indicators*

During MAP's development, there was a good deal of discussion about whether the publication should include some subjective indicators, most notably a measure of happiness. Although the ABS of course agreed that the way people feel – be it about themselves, their country or society – is important in any assessment of progress, the measurement of these feelings presents a very real challenge to statisticians. It is particularly difficult to measure change over time in these areas. Improvements in living standards (income say) might bring increased happiness for a short time. But after one gets used to life with a higher income, a subjective statistical indicator might suggest we feel no more or less happy than before (see, for example, Brickman et al. 1978). But that is not to say that if we moved back to the lower, original, income we would not feel less happy. Changes in happiness over time have been likened to getting into a warm bath: although the water feels hot to begin with it soon loses its impact, and we feel cold when we get out.

Some subjective indicators, such as whether people trust strangers, are closely aligned with some aspects of progress (social cohesion in this example). Notwithstanding the difficulty in accurately measuring such indicators, the concept they are designed to capture could fit into a suite of indicators approach. But happiness, in particular, presents more of a problem. MAP broke the world into dimensions of progress that, although linked to one another, are discrete: health is conceptually distinguishable from education, which is distinguishable from biodiversity, etc. But in this context, happiness is not a separate entity. On the one hand, happiness may be seen as a summation or integrating concept – it depends (to a degree at least) on all the other progress dimensions taken together. On the other hand, happiness may be seen as a superdominant concept – if we were able to judge that happiness had indeed increased, then we might be tempted to assert that there had been progress almost regardless of what had happened in the other dimensions. Thus happiness appears to occupy a different part of the semantic space from our headline dimensions.

4.2. *Measuring poverty*

Although it is probably important that the distribution of income is discussed in any assessment of national progress, choosing a headline indicator for poverty is particularly difficult. The very word “poverty” is loaded and without an agreed definition. Moreover poverty is both an absolute and relative concept. It is absolute because there is arguably some absolute level of income below which one can be considered to be poor. And it is relative because that *poverty level* will depend – or so many people believe – on the income of others in society.

When assessing progress in this dimension a statistical agency might choose to use a progress indicator that focuses on the absolute income of the poorest members of society, rather than consider changes in the income gap between rich and poor. Although this measure meets our criteria for unambiguity (in that an increase in income among the poorest in society would be viewed by everyone as unambiguously good) it is also controversial: in using this measure the statistical agency could be accused of siding with those who view poverty as an absolute and not a relative concept. However, if the statistical agency decides to associate reductions in relative poverty with progress – perhaps measuring progress with the Gini coefficient – they run the risk of using an indicator that not everyone sees as an unambiguous measure of progress: some might argue that movement towards a more even distribution of income is not progress, because it removes some of the incentives to work harder. This is a debate that is unlikely to be resolved soon.

In *Measuring Australia’s Progress* we used an absolute measure of poverty as our headline indicator: we looked at the real income of the poorest Australians, and felt few would argue that a rise in this indicator did not represent progress. But the commentary for this dimension also gave prominence to the concept of relative poverty.

4.3. *Balance*

As MAP began to take shape we realised there were going to be rather more indicators that were primarily environmental and social than there were economic indicators. We wanted to ensure that the publication was seen to be balanced, and so we explained why the number of indicators associated with a domain was not a measure of the domain’s relative importance to overall national progress. We explained that:

Just two headline indicators – national income and national wealth – were used to encapsulate economic progress. They consolidate major flows and stocks relevant to national progress.

There was no similarly compact set of indicators to encapsulate progress in the social and environmental domains. When seeking indicators of social progress, we have examined the various areas of social concern; when seeking indicators of environmental progress, we have examined the various environmental subsystems or resources.

Not everyone who read the publication understood this, however (see below).

5. MAP's Reception

Measuring Australia's Progress was developed and written in two years by a small team from the Bureau's Analysis Branch, who reported to a project board chaired by Dennis Trewin, the head of the ABS (the board also comprised senior members of our economic and population statistics group). The project's outcomes – some expected, others unforeseen – were felt both inside and outside the ABS.

Within the ABS, MAP helped us to reassess gaps in our work program. Our "ideal" measure of progress was not available for most progress dimensions and so MAP had to use a proxy. Many of these gaps – either conceptually difficult to measure gaps (such as human and social capital) or data driven gaps (such as better statistics on salinity – a form of land degradation) are now being addressed. And MAP's focus on using time series has encouraged parts of the ABS to confront data, and so spot problems, in new ways.

Outside the Bureau, the publication received a good deal of coverage in the Australian press. Much of the coverage around the first issue was along the lines of an article that appeared in the *Australian Financial Review* in April 2002, "Progress has green price-tag."

The publication is also being picked up on overseas, and in 2004 was one of the keynote case studies at an OECD World Forum on Statistics, Knowledge and Policy (Trewin and Hall 2004). And so it went some way to achieving its main objective: to stimulate and inform debate.

Nearly all of the coverage has been favourable but MAP attracted one quite prominent critic, who claimed that the ABS had fallen unwitting victim to a broadly green and left-wing agenda (Saunders 2002). We were able to refute these allegations because they were based on a misreading of the publication. The critic cited as proof the imbalance between numbers of environmental and economic indicators (this issue was covered in the publication and is described in the Section *Balance* above). He also based his argument on his claim that we had included a measure of the income gap between rich and poor as a headline progress indicator: this was not true, although admittedly we could have been rather clearer about this in the publication.

He went on to claim that the ABS had no right to measure progress because progress was inherently subjective, and therefore not suitable territory for a national statistical agency. This allegation was of more concern. On balance, and after discussing the publication with a variety of key stakeholders, we still believe that the ABS is better placed than any other organisation in Australia to produce a publication assessing progress. But it is an important question and one that we will continue to consider.

In 2004 we released a second issue of MAP. It was always our intention that the publication should evolve. This second edition of MAP incorporated a number of changes, including:

- A strengthened discussion of *governance, democracy and citizenship*, that used a range of information to illustrate aspects of Australian life in this dimension but did not assess overall progress.
- New material that painted a picture of the nation's families and communities and how they relate to social cohesion. This material went beyond the information presented in MAP 2002, although, once again, we did not attempt to assess overall progress here.

- Replacing the headline progress dimension *Economic disadvantage and inequality* with *Financial hardship*, that covered material better suited to discussions of progress in this area.
- Combining several environmental progress dimensions into a new overarching dimension, *The natural landscape*, to better highlight the links between aspects of the Australian landscape.
- Elevating the *Productivity* dimension to headline status, to reflect its very important influence on Australia's economic performance, now and in the future.
- Including an essay that set out more clearly MAP's underlying framework.
- Including special articles that relate to, rather than measure, progress. Material about multiple disadvantage, and levels of progress in Australia and other OECD countries, is included.

Many other changes have been made, including the title: the publication is now called *Measures of* – rather than “Measuring” – *Australia's Progress*, to ensure readers realise immediately that we are not claiming to have included everything that is important to progress in Australia.

5.1. MAP's influence on policy-making

This is difficult to assess. It is fair to say the report has had more influence on public – rather than policy – debate. But MAP is often cited as a reference in Parliament and elsewhere, and the ABS is often asked to give presentations based on MAP, both to public and private audiences. There seems to be a real interest in having a well thought through, holistic and facts-based presentation on progress. GDP is no longer seen as the main indicator of growth although its role as a measure of progress remains fundamental.

There have been several comments from influential people to the effect that it is great to have an objective, trusted view of what is happening in their country, particularly after the second release. MAP clearly provides a valued point of reference. As evidence of its value, Dennis Trewin (the ABS head) won the Society category in the Bulletin Magazine's “Smart Australian” prize for 2003, for what the judges regarded as a very important initiative with regard to informed debate in Australia.

Both MAP 2002 and 2004 are on the ABS website < www.abs.gov.au > and are linked to the homepage.

Appendix I: MAP 2002: Dimensions and Indicators

<i>Headline dimensions</i>	<i>Headline indicators</i>	<i>Supplementary indicators</i>
Health	Life expectancy at birth	Proportions of people surviving to ages 50 and 70; Infant mortality rate; Burden of disease
Education and training	People aged 25–64 years with a vocational or higher education qualification	Education participation rate for those aged 15–19; Year 7/8 to Year 12 apparent retention rate
Work	Unemployment rate	Extended labour force underutilisation rate; Long-term unemployment rate; Retrenchment rate; Casual employees; People in part-time jobs; People in jobs with longer hours (50 hours a week or more); Average hours per week, full-time workers
Biodiversity	Extinct, endangered and vulnerable birds and mammals	
Land clearance	Annual area of land cleared	
Land degradation	Salinity, assets at risk in areas affected with, or with a high potential to develop, salinity	
Inland waters	Water management areas, proportion where use exceeded 70% of sustainable yield	Water diversions: Murray–Darling Basin; River condition (biota) index; Net water use; River environment index
Air quality	Fine particle concentrations, days health standards exceeded, selected capital cities	Highest one-hour averages of SO ₂ , selected regional centres; Days when ozone concentrations exceeded guidelines, selected capital cities; Consumption of ozone depleting substances
Greenhouse gases	Net greenhouse gas emissions	Total greenhouse gas emissions (including land clearance); CO ₂ -e emissions, net, per capita and per \$ GDP
National wealth	Real national net worth per capita	Real national assets and liabilities per capita; Real net capital stock per capita; Economically demonstrated resources (minerals and energy) per capita; Real net foreign debt

Continued

<i>Headline dimensions</i>	<i>Headline indicators</i>	<i>Supplementary indicators</i>
National income	Real net national disposable income per capita	Real Gross Domestic Product per capita; Proportion of the population in work; Terms of trade
Economic disadvantage and inequality	Real equivalised average weekly disposable income of households in the second and third deciles of the income distribution	Children without an employed parent
Housing	No headline indicator	Households with housing affordability problems; Households with insufficient or spare bedrooms
Crime	Unlawful entry with intent and assault (victimisation rates)	Homicide rate; Imprisonment rates
Social attachment	No headline indicator	Attendance at live performances; Participation in organised sports; Voluntary work; Marriage and divorce rates; Persons living alone; Waking-time spent alone; Homelessness; Suicide and drug-related death rates

Supplementary dimension	Supplementary indicator
Land use	Native forest area
Marine ecosystems	Estuarine condition index; Oil spill sightings and national plan responses
Invasive species	Birds and mammals threatened by invasive species; Distribution of weeds of national significance
Waste	Quantities of solid waste disposed of at landfills
Consumption	Real final consumption expenditure per capita
Saving	Net national saving as a proportion of GDP
Inflation	Consumer price index; Domestic final demand price index
Capital formation	Real gross fixed capital formation per capita
Productivity	Multifactor productivity; Labour productivity
Knowledge and innovation	Expenditure on research and development expenditure, as a proportion of GDP; Expenditure on education, as a proportion of GDP; Managers and professionals, as a proportion of total employment; Investment in software, as a proportion of GDP; Proportion of businesses with Website or Homepage
Competitiveness	Real effective exchange rate
Openness	Ratio of imports to GDP; Ratio of foreign investment inflow to GDP
Communication and transport	Computer ownership and internet access, households; Passenger vehicles per 1,000 people
Culture and leisure	<i>No indicators</i>
Governance, democracy and citizenship	<i>No indicators</i>

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