

**STATISTICAL COMMISSION and  
ECONOMIC COMMISSION FOR EUROPE**

**COMMISSION OF THE  
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**EUROSTAT**

**Joint ECE/EUROSTAT Work Session on  
Methodological Issues of Environment Statistics**  
(Neuchatel, Switzerland, 22-25 September 1997)

**WORKING PAPER No. 11**

## **Sustainable Development Indicators in Australia: Progress on their development**

Paper submitted by G. Oakley, Australian Bureau of Statistics

[This paper represents the views, understandings and impressions of the author and does not necessarily reflect the position of the ABS with respect to future work program plans or policies.]

## 1. Introduction

1. The basis for much of the environmental policy and program development in Australia during the 1990's has been based on the concept of ecologically sustainable development (ESD). Considerable discussion and consultation lead to agreements between the various levels of government about data collection and handling, national environmental protection measures, world heritage, biodiversity, climate change and nature conservation. Most environmental initiatives at the Commonwealth government level are linked to the objectives in the *National Strategy for Ecologically Sustainable Development* (NSES D). The NSES D sets forth a number of goals, guiding principles and objectives, with a range of actions for achieving those objectives. A number of those actions relate broadly to indicator development.

2. The major sections in this paper cover:

- some background on definitions;
- sustainable development indicator work for agriculture, forests and fisheries;
- ABS activities concerning indicators of sustainable development; and
- an outline of some issues arising from an Australian conference which examined indicator of national progress.

## 2. Background

3. When considering the issue of sustainable development there is a requirement to take a broad view that includes the social and economic components, as well as the environment, and the interactions between all three. Policy decisions and programs aimed at providing sustainable development have to be concerned about the viability of all three components.

4. Most readers would be familiar with environmental indicators that reflect the condition of the environment. State of Environment reporting mainly uses this type of indicator which describes the quality or condition of environmental media. Examples would be annual mean concentrations of dissolved oxygen and biological oxygen demand; concentrations of nitrate, phosphorus and ammonium; concentrations of lead, cadmium and copper in water; all measured over time. These indicators would describe the trend in the quality of water in particular locations.

5. Opschoor and Reijnders (Kuik, 1991) describe environmental indicators as "quantitative descriptors of changes in either environmental pressure or in the state of the environment. The ... environmental pressure indicators express changes in the amount/levels of emissions, discharges, depositions etc in a predetermined region." These pressures can be by way of pollution, over-exploitation of natural resources such that future supply is at risk, and modification of ecosystems and landscapes so that the integrity of the system is in jeopardy. Environmental effect

indicators express the consequences of environmental quality changes in terms of their effects on people, populations of plants and animals, resources, ecosystems etc. For example, effect indicators concerning people would include indicators of public health, and for animal or plant species, the indicators could be monitoring quality and size of populations.

6. Sustainability indicators are more than 'state' descriptors. They are concerned with the distance between the current state of an environmental resource and the desirable condition or goal, and the description of the interactions (or linkages) between social, economic and environmental sectors. The economy and society must interact with the natural environment and the condition of one is important to the other. Economic activity is based on the continued availability of material and energy resources and an environment that is sufficiently clean to support life. However by discharging pollution and by other features associated with human activity, society is having an impact on environmental processes and systems. To integrate the economy and environment, the indicators need elements from both parts, for example the carbon dioxide emitted per tonne of wheat produced.

7. Sustainability indicators should assist decision-makers to answer questions, such as:

- Is there scope for further economic development in a region?
- Is the pattern of use of a resource sustainable or unsustainable?
- What is the urgency for taking measures to alleviate a particular pressure on the environment?

8. The time horizon for the decision-maker becomes very important in terms of the focus for sustainable development, that is between a socio-economic focus and an environmental one. In "sustained economic growth", the emphasis is on the economy expanding within some (often rather relaxed) side conditions related to environmental quality and resource utilisation. Alternatively the "environmental sustainability" of development emphasises the preservation of the natural resource base plus environmental quality (referred to as the environmental capital), to be passed on intact to future generations.

9. An operational definition of sustainability requires that it be decided over what span of time we wish to ensure sustainability, and how to deal with the possible substitution of man-made assets for environmental resources. The time issue has been partly answered by reference to succeeding generations. This means that the physical stocks and condition of the environment are handed over such that economic and social development, at their current levels, are possible in that future time period. (This condition assumes that the current levels are themselves sustainable and where they are not then some repair work would be needed.) Examples of relevant practices might be harvesting trees at or below the maximum sustainable yield, and not emitting more gases from motor vehicles than can be handled by natural processes.

### **3. Sustainable development indicator work for some specific sectors**

10. Work has been undertaken on indicators of sustainable development for a number of economic sectors and for one specific region. The following sub-sections provide some information about the work for agriculture, forests and fisheries in Australia.

#### ***Indicators for Sustainable Agriculture***

11. The ABS presented a paper "Development of Sustainability Indicators for Agriculture" to the September 1995 work session. Here, there will be a brief review of the material covered in that paper, updated by the activities of the past 2 years work on the project. The previous paper mentioned ABS work on a related publication. That publication, *Australian Agriculture and the Environment* (ABS Catalogue No. 4606.0) was released in September 1996.

12. A multi-disciplinary team researched and proposed a set of key indicators of sustainability for agriculture. (The report of the group is titled *Sustainable Agriculture: Tracking the Indicators for Australia and New Zealand*). The indicators relate economic, environmental and social aspects, both on-farm and off-farm. The selected set was judged to be useful over a range of activities and at scales ranging from national to state to regional. The four key indicators (with 12 associated attributes) were: real net farm income; land-water quality to sustain production; managerial skills; and off-site environment impacts, for example food chemical contamination levels.

13. During 1994 and 1995, this set of attributes was evaluated by people in various government agencies. The evaluations was undertaken in six diverse regions which represented the broad farming systems used in Australia. The validity and applicability of each attribute was assessed, and alternatives were explored. The results of this pilot test were sufficiently encouraging to lead to the next phase.

14. In July 1995, the National Collaborative Project on Indicators for Sustainable Agriculture (NCPISA) commenced with task areas including specification and negotiation for the collection of farm survey data; further technical development of attributes; coordinated activities to further test indicators; and the compilation of a national report about the sustainability of agriculture in Australia (expected to be released at the end of 1997). The report will be titled "Sustainable Agriculture: Assessing Australia's Recent Performance", and will document and interpret the findings for the 5 key indicators and 21 attributes, reported at the national and 11 agro-ecological regions within Australia.

15. For Australian agriculture, the ESD vision is to sustain long-term productivity and future prosperity while protecting the biological and physical resource base on which agriculture depends. The principles of sustainable agriculture as laid down in a Standing Committee on Agriculture report in 1991 are:

- farm productivity is sustained or enhanced over the long-term;
- adverse impacts on the natural resource base of agriculture and associated ecosystems are ameliorated, minimised or avoided;
- residues resulting from the use of chemicals in agriculture are minimised;
- the net social benefit derived from agriculture is maximised; and
- farming systems are sufficiently flexible to manage risks associated with the variability of climate and markets.

16. The following table shows the indicators and attributes that are being used to compile the first report on the sustainability of agriculture.

**Table 1. Indicators and Attributes for Sustainable Agriculture**

Topic	Indicator	Attributes
Economic (on-farm)	Long-term real net farm income	Real net farm income Average real net farm income Farmers' terms of trade Debt servicing ratio Total factor productivity
On-site environmental	Land and water resources to sustain agricultural production	Water utilisation Nutrient balance Rangeland vegetation stress Agricultural diversity Soil condition
On-site social	On-site managerial skills	Level of farmer education Extent of participation in training and landcare Implementation of sustainable practices
Off-site environmental	Off-site environmental impacts	Chemical residues in products Salinity loads in streams Dust storm index Impact of agriculture on conserved vegetation
Off-site social	Regional socio-economic impacts related to agriculture	Trends in annual rate of population change Trends in level of workforce unemployed Age structure of agricultural workforce Access to key services and shopping

***Indicators for sustainable forest management***

17. Australia has been involved in the international development of a set of criteria and indicators for the conservation and sustainable management of temperate and boreal forests (forum known as the "Montreal Process"). Participants in the working group include Canada, Chile, China, Japan, the Republic of Korea, Mexico, New Zealand, the Russian Federation and the United States of America. These countries represent about 90% of the world's temperate and boreal forests. In February 1995, in Santiago, the working group countries endorsed the set of criteria and indicators for forest conservation and sustainable management shown in Table 2. As there are 67 indicators in the set, however, only a selection are included in the table.

**Table 2. Montreal Process Criterion and Indicators for Sustainable Forest Management**

Criterion	Indicator
1. Conservation of biological diversity	Ecosystem diversity * Extent of area by forest type relative to total forest area * Extent of area by forest type in protected area categories Species diversity * Number of forest dependent species * Status (rare, endangered, extinct, etc) of forest dependent species at risk of not maintaining viable breeding populations Genetic diversity * Number of forest dependent species that occupy a small portion of their former range
2. Maintenance of productive capacity of forest ecosystems	* Area of forest land and net area of forest land available for timber production * Area and growing stock of plantations of native and exotic species * Annual removal of wood products compared to volume determine to be sustainable
3. Maintenance of forest ecosystem health and vitality	* Area and percent of forest affected by processes and agents beyond the range of historic variation eg by insects, disease, fire, storm, land clearance, salinisation * Area and percent of forest land with diminished biological components indicative of changes in fundamental ecological processes
4. Conservation and maintenance of soil and water resources	* Area and percent of forest land with significant soil erosion * Percent of stream kilometres in forested catchments in which stream flow and timing has significantly deviated from the historic range of variation

	<p>* Area and percent of forest land experiencing an accumulation of persistent toxic substances</p>
5. Maintenance of forest contribution to global carbon cycles	<p>* Total forest ecosystem biomass and carbon pool, by forest type, age class and successional stages</p> <p>* Contribution of forest ecosystems to the total global carbon budget, including absorption and release of carbon</p>
6. Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies	<p>Production and consumption</p> <p>* Value and volume of wood and wood products, including value added through downstream processing</p> <p>* Value and quantities of production of non-wood forest products</p> <p>Recreation and tourism</p> <p>* Area and percent of forest land managed for general recreation and tourism, in relation to total area of forest land</p> <p>* Number of visitor days attributed to recreation and tourism</p> <p>Investment in the forest sector</p> <p>* Value of investment, including investment in forest growing, forest health, planted forests, wood processing</p> <p>* Level of expenditure on research and development, and education</p> <p>Cultural, social and spiritual needs and values</p> <p>* Area and percent of forest land managed in relation to the total area of forest land to protect the range of cultural, social and spiritual needs and values</p> <p>Employment and community needs</p> <p>* Direct and indirect employment in the forest sector, and as proportion of total employment</p> <p>* Average wage rates and injury rates</p>
7. Legal, institutional and economic framework for forest conservation and sustainable management	<p>* Extent to which legal framework (laws, regulations, guidelines) supports the conservation and sustainable management of forests, including the extent to which it:</p> <ul style="list-style-type: none"> <li>- clarifies property rights</li> <li>- provides opportunities for public participation</li> <li>- encourages best practice codes</li> </ul> <p>* Extent to which the institutional framework supports sustainable management of forests, including the capacity to:</p> <ul style="list-style-type: none"> <li>- develop and maintain human resource skills</li> <li>- develop and maintain efficient physical infrastructure</li> </ul>

	<ul style="list-style-type: none"> <li>- enforce laws, regulations and guidelines</li> <li>* Extent to which the economic framework supports sustainable management of forest through: <ul style="list-style-type: none"> <li>- investment and taxation policies</li> <li>- non-discriminatory trade policies</li> </ul> </li> <li>* Capacity to measure and monitor changes, including: <ul style="list-style-type: none"> <li>- availability of up-to-date data, statistics</li> <li>- reliability of forest inventories, assessments, monitoring</li> </ul> </li> <li>* Capacity to conduct and apply research and development <ul style="list-style-type: none"> <li>- of forest ecosystem characteristics and functions</li> <li>- new technologies and to assess the consequences</li> </ul> </li> </ul>
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18. These indicators have been compiled by most countries involved in the Montreal Process in the First Approximation Reports. In the Australian case, the report was produced as much as a test of the availability of data and the relevance of the criteria as a description of the state of Australian forests. Some points raised in the Australian report include:

- Australia has on average 11% of its native forests and woodlands in nature conservation reserves and 8.6% of its forests reserved on State forest or timber reserves;
- nationally, timber yields are now below sustainable levels and all State and Territory governments have either achieved sustainable yields or have adopted plans to work towards sustainable yields;
- available data suggests that managed forests and woodlands are a net sink of carbon;
- Australia is a net exporter of forest products, as measured by volume, but has a negative trade balance according to the value of products;
- recycling of paper products has increased dramatically in recent years;
- Australia has adopted a national forest policy which has been agreed by the Commonwealth and all State and Territory Governments and is being actively implemented.

***Indicators of sustainable fisheries development***

19. In a fisheries context, adopting sustainable development principles requires broadening the traditional fisheries management concerns of sustainable fishing of target species to consideration of the total ecosystem health, and both the social and economic well-being of all stakeholders in the fishery.

20. In Australia there are legislative objectives for fisheries under Federal jurisdiction concerning sustainable development. They are: ensuring that the exploitation of fisheries resources and the carrying on of any related activities are conducted in a manner consistent with the principles of ecologically sustainable development (ESD), in particular the need to have regard to the impact of fishing

activities on non-target species and the marine environment; and maximising economic efficiency in the exploitation of fisheries resources.

21. The Australian Fisheries Management Authority (AFMA) has three specific objectives for achieving ESD principles and economic efficiency:

- manage Commonwealth fisheries at an ecologically sustainable fishing level;
- maximise economic returns to the industry and the broader community while meeting sustainability objectives; and
- effectively communicate and consult with government, the fishing industry, other marine resource users and the broader community.

22. A crucial next step is to define success for each objective. The objectives are usually written in very general terms, and could be interpreted quite differently unless there are agreed outcomes. Each outcome needs to be described considering issues such as cost, timeliness, relevance, accuracy, quality and quantity. Performance indicators are then developed.

23. Australia has had limited experience in developing and implementing indicators of sustainable development for fisheries. The main problems relate to availability of information. The fisheries are small, low-value and low-investment. At the national level it has been decided to develop indicators in the form of a check list. Table 3 contains the list of questions that are answered in a simple yes/no/uncertain response based on comparison against various criteria. Considerably more work is required, but the approach provides a practical entry point for fisheries managers.

**Table 3. Fishery Sustainable Development Indicator Check List**

Fishery:	Yes/No/Uncertain
Fishing Pressure	
Is current fishing effort sustainable?	
Is latent effort at an acceptable level?	
Resource/ecosystem status	
Target species	
Is the current catch sustainable?	
Are catch rates stable?	
Is the spawning stock adequate (refer to biological reference points)?	
Non-target species	
Is the level and composition of bycatch acceptable?	
Is the quantity of bycatch declining?	
Is the composition of bycatch stable?	
Impact of fishing on the environment	
Is impact of fishing on habitats & the marine environment acceptable?	
Is the impact declining?	

Impact of other activities on the environment	
Pollution	
Are pollution levels declining?	
Habitat change	
Is the area of critical fisheries habitat stable?	
Socio-economic status	
Is the community obtaining an adequate return?	
Is the fishery profitable or providing net benefits?	
Are the average rates of returns sufficient for economic sustainability?	
Is the rate of new investment commensurate with return?	
Is the capital investment appropriate (not overcapitalised)?	
Is the fishing unit value stable?	
Is employment stable?	
Management	
Is a formal management plan in place?	
Is fisheries management meeting its objectives?	
Are management costs being met by the stakeholders?	
Is habitat management adequate to meet its objectives?	
Is pollution control adequate?	

#### 4. Activities by the ABS

24. ABS work concerning indicators has included a number of activities, such as the preparation of compendia and thematic publications of sets of indicators, data collections that provide the raw data for indicators, involvement in wider government processes such as State of the Environment reporting and the UN Commission for Sustainable Development indicator exercise, and, more recently, consideration of indicators in the context of sustainable development, the issues surrounding measures of well-being and the development of information systems that link environmental and economic accounts. A few of these activities will be covered in this section.

##### ***Compendia and thematic publications***

25. Over the past six years, ABS activity has been to draw together a range of information concerning environmental issues and to present that information using various presentational frameworks. The publications provide a range of indicators about the topics covered, as well as a directory to more detailed ABS and non-ABS data. Four publications fall into this category of work and they are briefly described here.

(a) *Australia's Environment: Issues and Facts* (ABS Cat No 4140.0, released in June 1992). This was the ABS's first environment publication and was released at the time of the Rio Earth Summit in 1992. The UN Framework for the Development of

Environment Statistics (FDES) was the basis for the presentation. Broadly, the framework is a matrix with the rows showing the environmental media, such as atmosphere, flora, fauna, water, human settlements; and the columns classify the interactions between society and the environment in the sequence of 'action, impact and reaction'. A final information column covers inventories, stocks and background conditions to add context to the other categories.

(b) *Australians and the Environment* (ABS Cat No 4601.0, released June 1996). This compendium publication was intended to be the subsequent edition of the book described in (a) above. The title reflects a changed approach to focus more closely on the relationship between Australia's environment, its economy and society. The book followed the premise of sustainable development - that environment, economy and society are interdependent. The presentation framework was based on Statistics Canada's Population Environment Process (PEP) model. This model shows how the economy and population interacts with the stock of natural assets and natural processes. Specifically, it explores the resources and services that flow from the environment to the economy and population, and the impacts by the economy and population on the environment that result in changes to natural assets and processes.

(c) *Australian Agriculture and the Environment* (ABS Cat No 4606.0, released September 1996). This thematic publication also followed the PEP framework and presents information for a range of indicators, some of which overlap with the NCPISA project (mentioned earlier) and the OECD set of agri-environmental indicators.

(d) *Australian Transport and the Environment* (ABS Cat No 4605.0 released June 1997). Transport systems play a major role in the economic life of industrialised countries and in the daily lives of their citizens, as well as having a significant detrimental effect on the environment. This thematic publication uses the OECD 'Pressure - State - Response' framework to present a range of information about the transport issue.

### ***Indicators linked to environmental accounts***

26. In 1995 the ABS commenced a project to develop environmental and resource statistics in an integrated set of accounts. These will be comparable with, and relatable to, the national economic accounts. The development will achieve a number of objectives including the provision of an information base for the analysis of a range of policy issues, the contribution of industry sectors to environmental problems and the likely effects of environmental policy measures. One of the parts of the project is to explore issues associated with the derivation of indicators related to sustainability concepts (eg sector contributions to pollution).

27. The ABS view is that a range of indicators could be derived from the information system assembled for the stocks and flows tables of the various resource accounts.

### **Possible Indicators of Sustainable Development Publication**

28. The ABS has decided to halt further work on the development of thematic and compendia publications. These books are resource intensive to research and produce, and ABS wants to commit resources, at this time, to the environmental accounts project and to a more strategic approach to indicator work. The State of the Environment Reporting process will provide a range of environmental indicators that describe the state/condition of environmental media, the major pressures/activities that lead to the observed condition, and societal responses. There are a number of sectoral processes (described earlier) to produce indicators relevant to sustainable development in those sectors. It is imperative that efforts not be duplicated.

29. As part of the process to determine the ABS role with respect to sustainable development indicator work, a discussion paper is being drafted, and ABS has also part-sponsored a national conference (see next section). The discussion paper will review a wide range of organisational frameworks for indicators of sustainable development; provide background about the definition of sustainable development, selection criteria for indicators, and limitations of indicators; and propose a first set of indicators. After considerable consultation, the intention is for the ABS to assemble the data and produce a publication on a regular basis. The work in the United Kingdom has been a significant influence on ABS deliberations.

30. The proposed set of indicators are organised in a framework which reflects the goals of sustainable development, initially sourced from Agenda 21 objectives, namely economic prosperity, social well being and intra and inter generational equity, optimal use of non-renewable and renewable resources, and that human activities minimise damage to the earth's carrying capacity, human health and biodiversity. The following table provides a possible set of goals, key issues and some examples of indicators.

**Table 4: Example of Goals, Issues and Indicators for Sustainable Development**

Sustainability Goal	Key Issues	Key Indicators
<p>Economic Prosperity</p> <p>A healthy economy should be promoted and maintained to foster a good quality of life, while at the same time protecting the environment.</p>	<p>Economic growth Employment and Inflation International Trade Environmental Protection Expenditure</p> <p>These issues enable an appraisal of the health and growth of the economy, an indication of the contribution by different sectors, and the important social component of employment.</p>	<p>Gross Domestic Product Gross Domestic Product per capita. Employment Employment by sectors Long term unemployed Inflation CPI Debt, savings, investment National debt as a % of GDP Savings International Trade Value of Imports. and exports Overseas aid as a % of GDP Environmental Protection Expenditure</p>
<p>Minimise Damage to Environmental Carrying Capacity</p> <p>Damage to the earth's carrying capacity should be minimised in order to maintain or enhance the life support services and productivity of the earth.</p>	<p>Environmental Quality Air Quality Freshwater and River Systems Marine and Estuarine Waters Waste Climate Change Ozone Depletion Agricultural Productivity</p>	<p>Environmental Quality Perceived environmental quality Air Quality % of Urban population exposed to SO<sub>2</sub>, particulates, CO and Lead Method of transport to work or study Days Photochemical smog exceedance Marine and Estuarine Water</p>

	<p>Population</p> <p>These issues enable monitoring and appraisal of environmental quality, the maintenance and amenity of the earth's life support functions, and the effect of human population growth and corresponding levels of economic activity particularly in terms of land use and waste on the sustainability of the earth's carrying capacity.</p>	<p>Marine and Estuarial Water quality Contaminants in Fish. Volume of Untreated Sewerage Freshwater and River Systems Total phosphorus Number &amp; diversity of macroinvertebrates No. of Catchment Management Groups Waste Space consumed by landfill sites Household waste - per capita Industrial waste per unit GDP Climate Change CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions Deforestation Rate Ozone Depletion Ozone Depleting Substances emitted Agricultural Productivity Pesticide Usage Organic Matter Content in soils Distribution and Extent of Soil Salinity Soil Erosion Population Population density Fertility Rate Net Migration Rate Urban Population Growth</p>
<p>Fulfilment of Basic Human needs, social well-being, community participation and Intergenerational and Intra-generational Equity.</p> <p>The importance of human and social capital is emphasised as an integral component of sustainable development. It follows that the fulfilment of basic human needs and social well being are important. The theme of inter and intra generational equity is a fundamental principle of sustainable development and aims to ensure that current human activities do not disadvantage or hinder the ability of future generations to meet their needs nor do they disadvantage or deny groups or societies in our current generation the ability to meet their needs.</p>	<p>Income Equity Employment Equity Food Supply Community Participation Education Equity Provision of Public Goods Community Safety</p> <p>The issues listed here enable an analysis of how well basic human needs are being met in terms of food, shelter, health and education and a measure of the social well-being of our society. Some of the issues also assist an understanding of whether the needs of all groups in our current generation are being met, and ensuring appropriate measures are in place for the fulfilment of the basic needs and social well being of future generations.</p>	<p>Income Equity % Families living below the poverty line Average annual wages/salaries Employment Equity Labour Force Participation Rate Unemployment Rate Food Supply Diet - Nutrient intake Community Participation % of adult population who contributed time to community Educational Equity Literacy Rate Secondary School - Year 12 Retention Rate Provision of Public Goods Government Expenditure on Health, Education, Employment Programs, Housing Community Safety Incidence of Violent Crime. Incidence of property related crime</p>
<p>Optimal Use of Non-renewable Resources</p> <p>Non-renewable resources should be used optimally to ensure the sustainability of non-renewable resource supply for future generations. The impacts of the use of non-renewable resource use, particularly that of fossil fuels should be minimised.</p>	<p>Energy Use Land Use Mineral Resources</p> <p>The issues listed here enable an appraisal to be made of the sustainability or otherwise of the use of non-renewable resources. In addition the impacts of the use of non-renewable resources can be quantified and monitored.</p>	<p>Energy Use Depletion of Fossil Fuels Contribution of energy sector to GDP % share of energy consumption from renewable resources Vehicle km travelled Market share of unleaded petrol Land Use Conversion of agricultural land to residential development Land Cover Change Mineral Resources Depletion of mineral stock Recycling of minerals</p>
<p>Optimal Use of Renewable Resources</p> <p>Renewable resources need to be used so that human use of renewable resources is not greater than the natural regenerative</p>	<p>Forests Fisheries Water</p>	<p>Forests Forest Cover Timber production Fisheries Fish stocks above minimum biological acceptable level</p>

capacity of these resources.		Water Water Consumption by sector % of available water, by drainage basin
Minimise Risk to Human Health  It is important that the impacts of human activities on the environment do not adversely affect human health.	Mortality Water Quality Pollution Abatement Activities Life Style Factors  The above issues allow an assessment of the impact on human health of environmental	Mortality Infant Mortality Life Expectancy Water Quality Bathing Water Quality Sewerage Contamination Life Style Factors % population who are smokers Average daily consumption of alcohol Use of illicit drugs Participation in exercise activities Average daily nutrient intake Proportion of infants immunised
Minimise Damage to Biodiversity  Maintenance of biological diversity is important because it provides critical processes that make life possible; it is important for ethical, aesthetic and cultural reasons, and it is important for economic reasons.	Habitats and Ecosystems Plants and Animals  To conserve the wide variety of species and habitats and ensure that commercially exploited species are managed sustainably.	Habitats and ecosystems Habitat Fragmentation Designated Protected Areas Representativeness of ecosystems in protected areas Plants and Animals Number of native plant/animal species - endangered or vulnerable Distribution and Abundance of major environmental pest plants and feral animals

## 5. Conference 'Measuring National Progress'

31. In July 1997, the ABS co-sponsored a conference "Measuring national progress: Is life in Australia getting better, or worse? ". The conference considered indicators of national performance, and what they reveal about the quality and sustainability of life in Australia. The point of departure for much of the debate was the adequacy of Gross Domestic Product (GDP) as a measure of national well-being. A number of composite indicators that adjust GDP to take account of a wide range of issues have been proposed. "Green GDP", the Genuine Progress Indicator (GPI) and the Index of Sustainable Economic Welfare (ISEW) are examples.

32. The presentations to the conference covered a range of topics, including:
- a discussion of the strengths and weaknesses of the GPI
  - the concept of citizenship, and the development of benchmark/indicator systems
  - accountability at local and global scales
  - measures of economic activity
  - indicators of income inequality, and income poverty
  - indicators associated with the work-place - paid employment, hours of work
  - indicators of well-being for children
  - population health and well-being, and the definition of health that incorporates the concepts of physical, mental, social and spiritual well-being
  - measuring social capital
  - quality of life and standard of living
  - indicators about the state of the environment, with focus on biological diversity
  - the compilation of an Australian ISEW.

33. At the conference, the ABS presentation put forward the view that the preferred approach is to develop a set of indicators, linked by an underpinning statistical framework. It agreed that GDP was not sufficient for analysing national progress and that this had never been the intention, although there is considerable focus on GDP results in that context. Also, the ABS view is that any other composite indicator may be effective in capturing headlines, but will have difficulties with interpretation and compilation. The ABS conclusion is that the 1993 System of National Accounts, with its support for satellite accounts and social accounting matrices, provides the most suitable framework. The ABS has an inclination towards the work of the Statistics Netherlands on SAMs.

## **6. Concluding Remarks**

34. The ABS is at the launching point of a new direction concerning indicators. The organisation has a vast range of social and economic data, and other agencies in Australia have large databases of environmental information. A process is under way, guided by state of the environment reporting requirements, to identify the indicators needed in the environment regime. Then, there will follow the considerable work to assemble that data. The ABS data series already have an established conceptual base in terms of definitions and classifications, and in some cases the same conceptual base which allows integration.

35. An exercise, modelled on the UK processes and framework (described above), could be pursued to bring into the public arena a wide range of indicators specifically related to the goals of sustainable development. This effort would draw on existing information within the current frameworks. The resource requirements, whilst still significant in terms of the size of the ABS Environment Statistics Unit, would be about half of those required to undertake a compendium publication of the size previously produced (about 400 pages).

36. Pursuit of the initiative mooted at the "national progress" conference would be longer term and involve research into the construction of SAM's, and investigation of the latest Netherlands work called SESAME - System of Economic and Social Accounting Matrices and Extensions. SESAME is described as a statistical information system in matrix format, from which a set of core economic, environmental and social macro-indicators are derived. This exercise would be more resource intensive and require a collaborative effort across many areas of the ABS.

37. The way forward is still being considered.

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