Measuring the Green Economy

INFORMATION PAPER FOR THE LONDON GROUP MEETING

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The OECD and the United Nations green economy initiatives have highlighted the need for statistical information on the environment and its relationship with the economy to support policy development and monitor progress.

It is recognised that the notion of a green economy is relative, not absolute. It also has multiple dimensions — some are easily revealed in existing data, but many are deeply hidden. A further complication is that a greening economy is interlinked with a heterogeneous set of economic, environmental and societal changes.

This paper explores how the ABS could further develop its environmental-economic accounts program to help inform policy development and to monitor progress towards a green economy in Australia.

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Introduction

1. Australian governments at all levels have been developing and implementing policies to promote a re-engineering of the Australian economy towards lower carbon emissions, increased use of clean renewable sources of energy, the more efficient use of scarce resources, and reduced ecosystem impacts. Examples of recent policy initiatives at the Australian Government level include the Clean Energy initiative, Solar Flagships, Re-tooling for Climate Change, the Green Building Fund, and the Green Car Innovation Fund. State governments have responsibility for much of Australia's environmental management and regulation and have a plethora of policy initiatives around environmental protection and sustainability of natural resources.

2. These policies broadly align with various international agreements and initiatives to promote the transition to a greener economy, including the United Nations *Green Economy Initiative*, the International Labour Organisation (ILO) *Green Jobs Initiative,* and the Organisation for Economic Cooperation and Development (OECD) *Green Growth Strategy*.

3. Statistical information is an essential ingredient in good policy making. While data from the ABS and a wide range of other government and research organisations have been important inputs to environment policy development and research, it has been noted in a variety of reports (for example, in the Commonwealth State of the Environment Report 2006) that there is a lack of on-going, comprehensive statistical information to support decision making related to Australia's environment and for measuring progress towards a green economy.

4. In Australia, there are a large number of government agencies and other organisations that produce data on various aspects of Australia's environment. The ABS is a major provider of economic and social data but currently only provides a limited amount of environmental data, mostly in the form of environmental-economic accounts. Coordination of effort and integration of data is a challenge. The ABS is keen to work cooperatively with policy agencies and other data providers to develop and produce statistics related to the green economy.

5. The ABS information paper *"Towards an integrated environmental-economic account for Australia"* (cat. no. 4655.0.55.001) sets out ABS plans for developing integrated environmental-economic accounts. It centres on the linkage between the environment and the economy, and is based on the conceptual model and set of accounts articulated in the United Nations "System of Environmental and Economic Accounting" (SEEA). SEEA is an important overarching statistical framework from which to view and analyse information on the wide range of environmental themes that are of policy and research interest.

6. This paper is part of the process of exploring how the ABS could further develop its environmental-economic accounts program to help inform policy development and to monitor progress towards a green economy in Australia.

The meaning of green economy and green growth

7. Terms such as green economy, sustainability, green growth, green jobs, environment sector and other variations are often referred to in the literature and in the popular press. They change in favour over time, and their meaning and degree of overlap is often unclear. This has hindered data development, as the statistical process requires concepts, terminology and definitions to have a common understanding by all stakeholders - statisticians, survey respondents, policy analysts, researchers, industry bodies, advocacy organisations and other users of data. Statistical frameworks, particularly international statistical standards, have an important role to play.

8. In recent years, the terms green economy and green growth have been used widely in domestic and international discussions. The following definitions are drawn from the United Nations Green Economy Report and the OECD Green Growth Strategy.

> *'A green economy can be defined as an economy that results in improved human well-being and reduced inequalities over the long term, while not exposing future generations to significant environmental risks and ecological scarcities. It is characterised by substantially increased investments in economic sectors that build on and enhance the earth's natural capital or reduce ecological scarcities and environmental risks. These investments and policy reforms provide the mechanisms and the financing for the reconfiguration of businesses, infrastructure and institutions and the adoption of sustainable consumption and production processes. Such reconfiguration leads to a higher share of green sectors contributing to GDP, greener jobs, lower energy and resource intensive production, lower waste and pollution and significantly lower greenhouse gas emissions.'*
>
> - The UNEP 2011 Green Economy Report

> *'Green growth is about fostering economic growth and development while ensuring that the quality and quantity of natural assets can continue to provide the environmental services on which our well-being relies. It is also about fostering investment, competition and innovation which will underpin sustained growth and give rise to new economic opportunities.'*
>
> - OECD 2011 Draft Monitoring Progress
> Towards Green Growth

9. While there are some differences in emphasis, it would appear that they are essentially the same idea, and for the purposes of this paper the terms are used interchangeably. They are forward looking and multifaceted concepts that incorporate notions of sustainable economic growth, reduced environmental impact, inter-generational equity, improving quality of life and harnessing growth opportunities from new technologies and products.

10. Although a green economy as a concept or state of existence is somewhat open to interpretation, actions and behaviours that are considered to move us toward a greener economy can be more readily described and observed. Essentially, they entail:

- investing in cleaner energy,
- investing in natural resource efficient technologies and products,
- sustainable use of natural resources,
- repair and maintenance of natural ecosystems, and
- enabling policy settings, including the regulatory environment, taxation and subsidies.

11. Historically, much of the environmental data collected has been concerned with reporting on the state of the environment and natural resources. While this remains important, there is also a need to better link changes in the state of the environment to economic and human activity and to highlight actions and behaviours that result in progress towards a greener economy.

Statistical measurement frameworks

12. There is a large amount of economic, social and environmental data already in existence. The challenge is to organise the data to maximise its usefulness, including its accessibility. An

environmental information system can be represented as a pyramid with the basic data at the base, an organising and integrating framework in the middle and a set of key indicators at the top.

The information pyramid
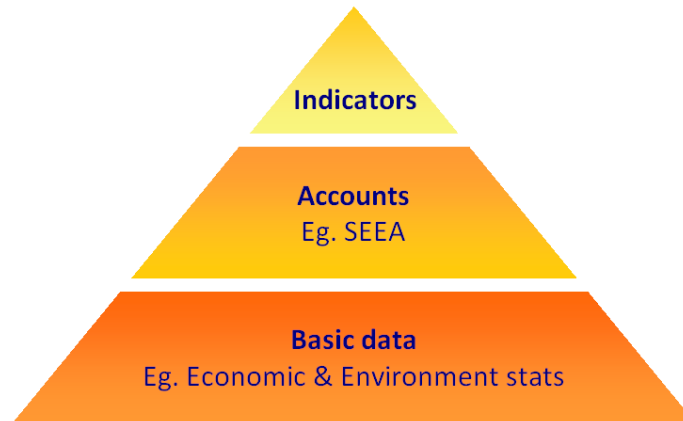
13. The SEEA provides a conceptual framework for integrating the environment and the economic information systems. It was developed as a 'satellite' to the international System of National Accounts (SNA) in order to articulate the interaction between the economy and the environment. It is currently in the final stages of a revision and is expected to be elevated to the status of an international statistical standard in 2012.

14. The SEEA is built around a series of physical and monetary accounts for environmental assets, and material and service flows (including sink services for emissions and wastes) between the environment and the economy. Importantly, it uses concepts, terminology and classifications consistent with the national accounts and other economic data produced by the ABS (and other national statistical agencies). As a broad based statistical framework, it embodies the technical concepts, terminology and classifications for the compilation of statistics on the various aspects of the green economy.

15. Building on the SEEA and quality of life indicator frameworks, the OECD 2011 Draft Report "Monitoring progress towards green growth" recommends a measurement framework and proposes a preliminary set of around twenty headline indicators based around four themes:

a) Environmental and resource productivity

   Improvements in the environmental efficiency of production and consumption across space and time are central tenets of a greening economy. This involves the adoption of more resource efficient and less polluting production technologies and changes to more environmentally efficient consumption patterns.

b)   Natural asset base

   This concerns a stocktake of natural resources and ecosystem capital and whether or not they are being depleted, degraded or repaired through time. The natural asset base is fundamental to the longer term sustainability of production, income and consumption.

c) Environmental quality of life

This refers to the direct impact of the environment on people's health status and quality of life. This includes exposure to air and water pollution and access to environmental services and amenity.

d) Economic opportunities and policy responses

Includes economic opportunities provided by a greening economy – production of environmental goods and services, R&D and innovation, green jobs and trade. It also includes the monitoring of various enablers of a greening economy such as appropriate price signals, incentives, regulation and management.

16. Appendix 1 contains the proposed list of headline indicators. The framework also provides a set of indicators of the socio-economic context and characteristics of growth. This relates to a country's economic growth, productivity and competiveness, its labour markets, education, health and income inequality. It includes many of the conventional measures usually available from economic and social statistics systems such as real GDP, labour force participation etc.

17. The ABS supports the OECD framework, its aspirations, and broadly the principles and methodology behind its construction, although it notes that some of the statistics can be difficult and costly to collect.

18. The United Nations Environment Program (UNEP) Green Economy Report takes a sectoral approach to statistical reporting. It focuses on eleven key economic sectors where investments to reduce environmental impacts are key in the transition to a green economy. These sectors include renewable energy, low-carbon transport, energy efficient buildings, clean technologies, improved waste management, improved freshwater provision, and sustainable agriculture, forests and fisheries. Appendix 2 contains the full list of sectors.

19. The Green Economy Report can be seen as providing a narrative on progress rather than a set of standard statistical indicators. However, the OECD and UNEP approaches are consistent and complementary. In principle, the OECD four environmental themes could be overlaid with the eleven economic sectors.

Data for Australia

20. Part two of the 2011 OECD Draft Report presents data for OECD countries including Australia. One of the selection criteria used by the OECD to develop its list of preliminary indicators was measurability - data should be currently available for member countries (or could be made available) at reasonable cost. These data are sourced from OECD and other international data systems which in turn draw on data from a variety of national systems. The regular ABS program of economic and social statistics is used to populate much of the socio-economic context and characteristics of growth. The primary data on natural assets, natural resource use and emissions would be sourced mainly from agencies other than the ABS.

21. The ABS currently produces a range of complementary information on aspects of the green economy:

- Energy use and energy efficiency by industry and households (Energy Account, Australia - cat. no. 4604.0)

- Water use and water efficiency by industry, household water use per capita (Water Account, Australia - cat. no. 4610.0)
- Land use by industry and households (Land Account, Great Barrier Reef Region - cat. no. 4609.0.55.001)
- Waste generation by industry and households (Waste account, Australia - forthcoming)
- Environmental management practices of businesses (cat. no. 4660.0)
- National monetary balance sheets including estimates of the value of land, subsoil assets, native standing timber and permissions to use natural resources (Australian National Accounts – cat. no. 5204.0)
- National net disposable income and saving adjusted for other changes in real net wealth (including the value of annual changes in land, subsoil assets and native standing timber) (Australian National Accounts - cat. no. 5204.0)
- R&D where the intended purpose is to improve environmental outcomes (Research and Experimental Development - cat. no. 8112.0)

Topics where ABS could make a future contribution to measurement

22. The OECD 2011 Draft Report "Monitoring progress towards green growth" represents a significant advance in statistical measurement, particularly for the purpose of international comparisons. There is considerable scope, however, for further research and statistical development to complement and extend the OECD information, particularly for use in analysis and policy development in Australia. The OECD itself nominates an agenda for future statistical development, including more data at the industry level, more data on innovation in response to environmental concerns, more physical and monetary data for key stocks and flows of natural assets and improved information on biodiversity. The ABS is already undertaking some of this work in the context of SEEA-based accounts, and over time a longer (more useful) time series of data will become available.

23. Although the ABS currently provides a limited amount of environmental data, its use of the SEEA framework with its emphasis on the interaction between the economy and the environment, coupled with a highly developed statistical infrastructure around business and household surveys means that it is well placed to make a further contribution to the measurement of the green economy. It would require additional resources as well as high levels of collaboration with government and others organisations.

24. New work related to green growth could be pursued in the following areas:

- Assembling a compendium of green growth indicators data already available from environmental data sets
- Describing the characteristics and economic contribution of the producers of environmental goods and services in Australia
- Describing and collecting data on "green jobs"
- Collection of environmental protection and resource management expenditures
- Describing and measuring imports and exports of environmental goods and services
- Examining green R&D and innovation
- Integrating greenhouse gas emissions data with the existing energy account
- Examining the efficiency of water and energy use in production processes and products that enter final consumption, capital formation and foreign trade

25. The ABS does not have any plans to produce estimates of environmentally adjusted GDP, although it has experimented with a very limited adjustment for sub-soil asset depletion and

land degradation. Outside of the narrow area of natural resources where there is market information to enable a satisfactory adjustment for depletion, monetary valuation of the wider environmental costs remains contentious, and at this stage is better undertaken outside of the official statistics.

A. Green growth indicators for Australia

26. Part 2 of the 2011 OECD Draft Report provides high level data for Australia and other OECD countries in line with its measurement framework. These data could be supplemented with additional information from Australian environmental data sets and released in a form more suitable for informing domestic policy and the public at large. Appendix 3 to this paper presents some graphs to illustrate how this might look for Australia.

B. The environmental goods and services sector

27. The value added and employment in the production of environment goods and services are included as indicators in the OECD Draft Framework, but no data are available for Australia. A major constraint here and in other countries has been a lack of agreement around the meaning and scope of environmental goods and services. The choices made can have a big impact on the data. For example, should the value of conventional waste collection and sewerage services be included or only recycling/reuse activities and new and improved waste treatment technologies? Should the construction or operation of mass transit systems and green certified buildings be included? Policy focus is on improving production technologies and changing behaviours whereas the existing classification frameworks for environmental protection still embrace more traditional 'end of pipe' activities which are more indicative of the problem rather than the solution.

28. International experience in compiling statistical information for the sector is beginning to emerge. The Eurostat 'Handbook on the Environmental Goods and Service Sector' is the main reference for statistical measurement and is to be incorporated into the updated SEEA. It defines the environmental goods and services sector as producers of technologies, goods and services that:

> *'Measure, control, restore, <u>prevent</u>, treat, minimise, research and sensitise <u>environmental damages</u> to air, water and soil as well as problems related to waste, noise, biodiversity and landscapes. This includes 'cleaner' technologies, goods and services that prevent or minimise pollution.*
>
> *Measure, control, restore, prevent, minimise, research and sensitise resource depletion. This results mainly in resource-efficient technologies, goods and services that <u>minimise</u> the <u>use of natural resources</u>.'* (Emphasis added)

29. The environmental goods and services sector is not defined in ABS standard classifications such as the Australian and New Zealand Industrial Classification (ANZSIC), although the water and waste services industry could be expected to contain a substantial component of total EGSS. Environmental goods and services will be produced across a wide range of other industries but cannot be identified using ANZSIC.

30. In addition, the environmental goods and services sector is not a classification variable on the Australian Business Register. A substantial amount of work and collaboration with policy departments, academia, industry and other organisations would be required to scope the range

of environmental goods and services and to build a register of businesses that are likely to be producing them in order to undertake data collection.

31. Data items collected might include the number of businesses, employment, value of output, exports, costs of production, operating surplus, value added and contribution to GDP cross classified by environmental domain and industry.

32. Ideally, data on the environmental goods and services sector and other dimensions listed below for green jobs, environmental protection expenditures, resource management expenditures and imports and exports of environmental goods and services would be compiled in an integrated way using a balanced supply and use table. The ABS has used supply and use tables to compile satellite accounts for tourism and information and communication technology. Appendix 4 to this paper outlines such an approach for some aspects of the green economy.

C. Green jobs and associated characteristics

33. There is substantial policy interest in the number and characteristics of green jobs by industry and how they are evolving through time. As well as the quantum of green jobs, job characteristics of interest include the current status and future need for green skill sets, and the emergence of new occupations.

34. Green jobs can be considered narrowly as employment in the environmental goods and services sector (the 'output' approach), or more broadly as employment in occupations where the primary purpose is to make production processes more environmentally efficient for all goods and services (the 'process' approach). It would appear that there is policy interest in both measures, and that the scope of green jobs should ideally encompass both aspects.

35. The Australian and New Zealand Standard Classification of Occupations (ANZSCO) does not contain a concept of green jobs. The challenge is to provide a definition and scope that is analytically useful and that can be understood by survey respondents.

36. Depending on information required, there are a number of ABS household and business survey vehicles that could be considered to collect the data. The Labour Force Supplementary Survey is already used to collect environment related data from households.

D. Environmental protection and resource management expenditures

37. The primary purpose of environmental protection expenditure is to avoid or minimise the impact of economic activity on the environment – the reduction or elimination of air emissions, the reduction or treatment of waste and wastewater etc. Resource management expenditures are aimed at reducing the extraction of natural resources, re-use and recycling, replenishment and general management of natural resources.

38. Environmental protection and resource management expenditures can be seen as a counterpart to the environmental goods and services sector. In principle, the scope of the goods and services to be included should be the same. However, the values will be different because some of the expenditures will be on imported goods and services and some Australian production of environmental goods and services will be exported (there are also other valuation differences of a more technical nature).

39. The ABS conducted economy-wide surveys of environmental protection expenditure for the years 1992-93 to 1996-97. Since then only surveys of the waste management industry and business expenditure on waste management services have been conducted. A resource management expenditure account has not been compiled. The ABS environment statistics program now includes plans for partial collections of data for environmental protection expenditure.

E. Imports and exports of environmental goods and services

40. 'Environmental' is not a classification variable in any of the international standards applicable to international trade including the Balance of Payments manual (BPM6), the Harmonised System, the Standard International Trade Classification (SITC), or other classifications used by Australian Customs or the ABS for the recording of international trade. However, the potential usefulness of these data for measuring trade in environmental goods and services could be further explored. An alternative, subject to an assessment of cost, feasibility and reporting burden, could be to collect exports of environmental goods and services as a data item in a survey of the domestic producers of environmental goods and services. Collecting the equivalent imports via a survey is likely to be more problematic.

F. Environmental R&D and innovation

41. Innovation is a critical enabler of a more sustainable future. It is also an economic opportunity for Australian businesses.

42. Research and development (R&D) expenditure is an input to innovation. In the national accounts and SEEA, R&D is recorded as investment in a knowledge asset (the intention of the investment is to receive economic gain from selling the knowledge asset, leasing it to others, or using it in the production of goods and services).

43. The ABS collects data on business, government, higher education and non-profit institution expenditure on R&D by Industry and by Field of Research and Socio-economic objective using the Australia and New Zealand Standard Research Classification (Cat. 1297.0). Some of these categories relate specifically to environmental fields and objectives, although 'green' R&D is likely to be included in a number of categories. There is potential to further explore the existing data or to collect additional information including expenditure by type of environmental theme.

G. Environmental taxes and subsidies

44. These are taxes, subsidies and other transfer payments that have an environmental purpose such as pricing environmental services and encouraging better environmental practices. This data could potentially throw some light on the degree of government intervention and regulation. It is an important component of the 'policy responses' aspect of the OECD Draft Framework. As for the other aspects of measurement, there are issues around the choice of individual taxes and subsidies that qualify as environmental.

H. Greenhouse gas emissions accounts

45. The National Greenhouse and Energy Reporting Act mandates that corporations that reach specified thresholds for greenhouse gas emissions or energy use must report to the Australian Department of Climate Change and Energy Efficiency to meet international reporting obligations and for domestic policy use. Much of the emissions reported within this system are shown

against the electricity generation industry. The ABS would like to explore how that data could be integrated with the energy use accounts produced by the ABS.

I. Energy, water and CO2 emissions embodied in final goods and services

46. Much of the data available on resources and emissions efficiency concerns Australian industry - the producers of goods and services. It is also possible to model selected natural resources (such as energy and water) and emissions embodied in final consumption goods and services, capital goods and import and exports using the inter-industry relationships established in the input-output table for Australia. The ABS produced estimates of energy and greenhouse gas emissions embodied in household final consumption, exports and other final demand categories by product type for 1994-95 and is keen to update that work.

Where to from here

47. The OECD and the United Nations green economy initiatives have highlighted the need for statistical information to support policy development and to monitor progress. The ABS has made available resources from its research program to monitor and contribute to new international developments in statistical measurement of the green economy and to prepare a proposal for how it could further contribute to measurement in Australia. This paper is drawn from that work.

48. The overriding technical issue from a statistical perspective is the need to satisfactorily define the meaning and scope of the 'green economy' and the participants in it. Much work still needs to be done to determine a scope which is useful for policy analysis and is viable for cost-effective collection of data. The ABS plans to work with stakeholders to extend the research and to further develop options to address the information gaps.

Appendix 1

OECD: Proposed list of indicators

Environmental and resource productivity

1. CO_2 productivity
2. Energy productivity
3. Material productivity (non-energy)
4. Water productivity
5. Multi-factor productivity reflecting environmental services

Natural asset base

6. Freshwater resources
7. Forest resources
8. Fish resources
9. Mineral resources
10. Land resources
11. Soil resources
12. Wildlife resources

Environmental quality of life

13. Environmentally induced health problems & related costs
14. Exposure to natural or industrial risks and related economic losses
15. Access to sewage treatment and drinking water

Economic opportunities and policy responses

16. R&D expenditure of importance to GG
17. Patents of importance to GG
18. Environment-related innovation in all sectors
19. Production of environmental goods and services (EGS)
20. International financial flows of importance to GG
21. Environmentally related taxation
22. Energy pricing
23. Water pricing and cost recovery

Appendix 2

UNEP Focus on Green Sectors

The UNEP Green Economy Report proposes to focus on 11 sectors. It indicates the aspects of the green economy that is of most interest to the UN. Note that the UNEP also views this against the backdrop of poverty reduction in the developing world and the Millennium Development Goals. It could also guide further research into the scope of the green economy in Australia.

1. Agriculture – sustainable agriculture and food system practices including supply chains and market infrastructure.
2. Buildings – new green buildings and retrofitting existing buildings
3. Cities – resource efficiency through proximity of urban functions, modal shifts in transportation and increased efficiency in provision of infrastructure, utilities and energy
4. Energy - renewable sources
5. Fisheries - rebuilding depleted stocks and better management practices
6. Forests - new types of forest related employment such as forest carbon projects
7. Manufacturing – gains from investing in improved resource efficiency and reduced GHG emissions
8. Tourism – investments in sustainable tourism
9. Transport – green transport solutions including public transport
10. Waste – decoupling waste production from economic growth – reducing waste and turning waste into a resource – reuse, recycling.
11. Water – policy regimes that facilitate conservation and rapid adaption to changing supply conditions.

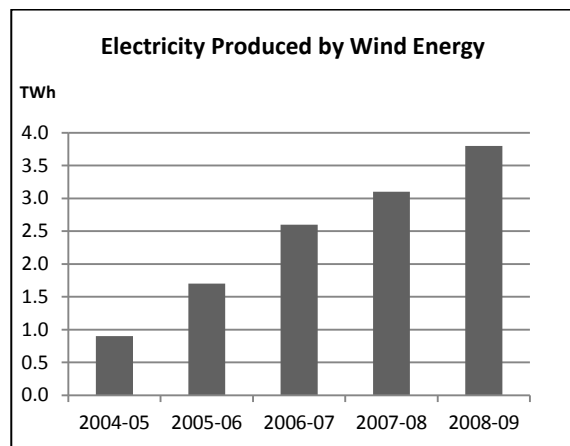# Appendix 3

Green growth indicators: Examples for Australia
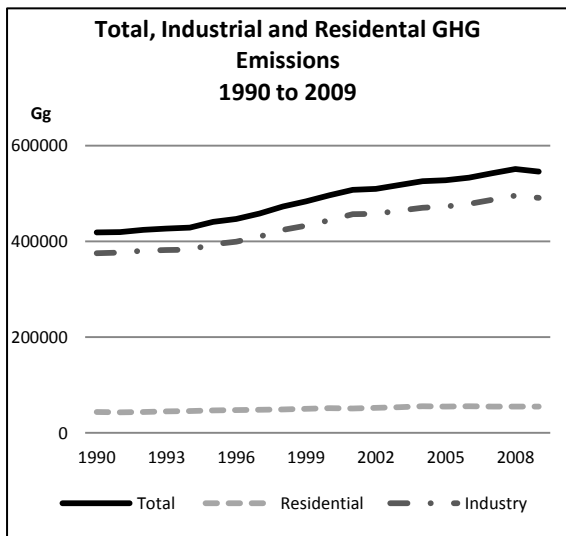
Total, Industrial and Residental GHG Emissions 1990 to 2009

Gg

Source: Australian Department of Climate Change and Energy Efficiency
*Emissions calculated based on the UNFCCC reporting method

Direct GHG Emissions' Intensity, Total* Direct GHG Emissions and IGVA 1990 to 2009
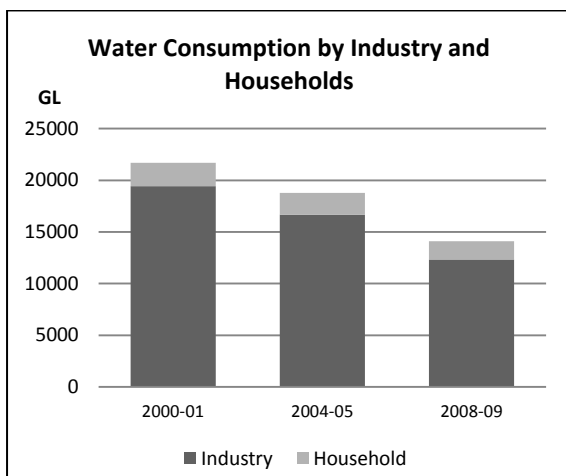
index 1990 = 1
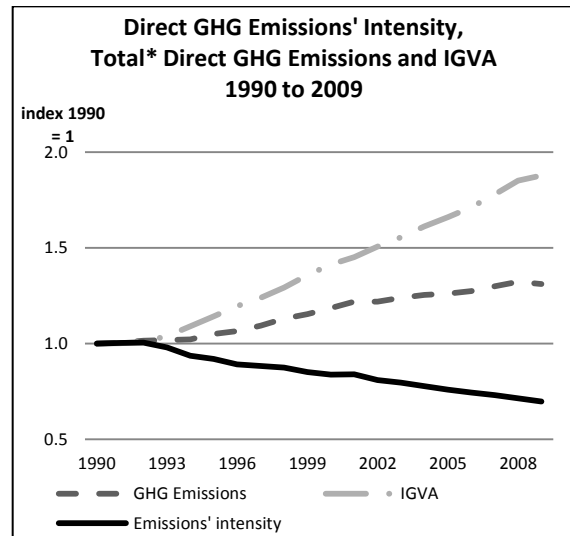
Source: Australian Department of Climate Change and Energy Efficiency
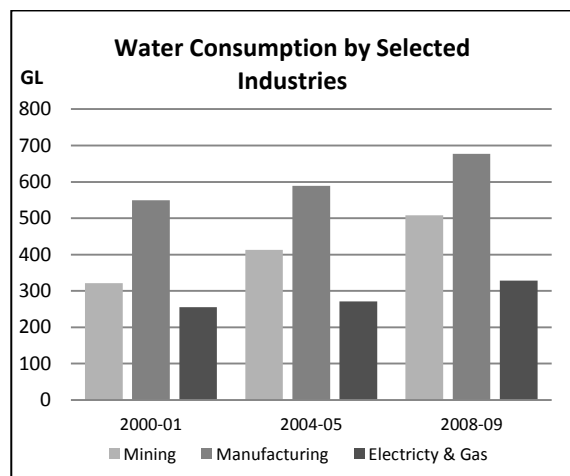*Emissions calculated based on the UNFCCC reporting method and excludes household.emissions

Renewable Energy* Production and Non-Renewable Energy Production

1989/90 index = 1
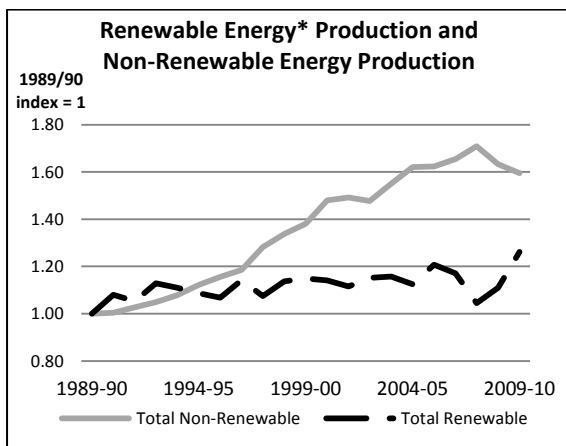
Source: Australian Bureau of Agricultural and Resource Economics and Sciences
*Excludes displaced energy from solar hot water

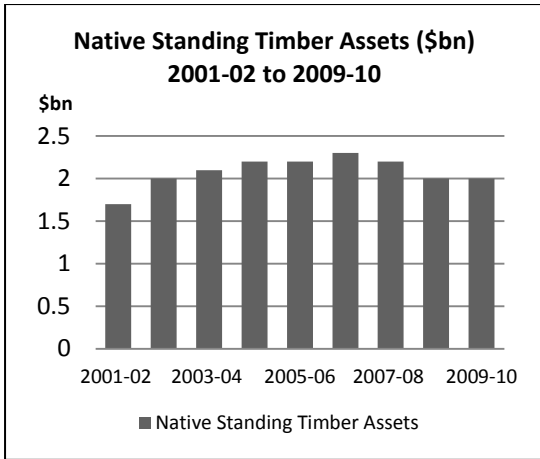### Electricity Produced by Wind Energy

TWh

Source: Australian Bureau of Agricultural and Resource Economics and Sciences

Water Consumption by Industry and Households

GL

Source: Australian Bureau of Statistics

Water Consumption by Selected Industries

GL

Source: Australian Bureau of Statistics

Native Standing Timber Assets ($bn) 2001-02 to 2009-10

Source: Australian Bureau of Statistics

Subsoil Assets ($bn) 2001-02 to 2009-10

Source: Australian Bureau of Statistics

Land Assets ($bn) 2001-02 to 2009-10

Source: Australian Bureau of Statistics

Environmental R&D Spending 1992-93 to 2008-09
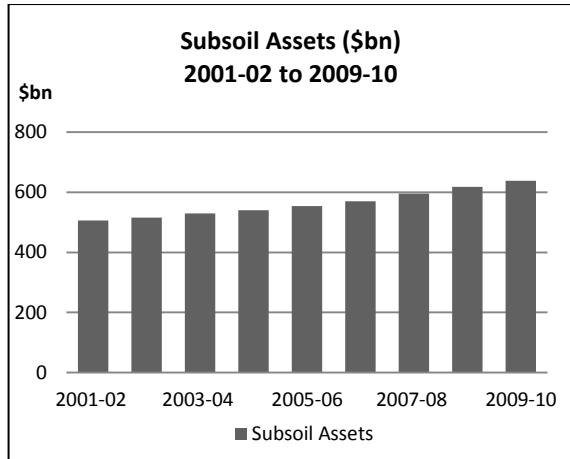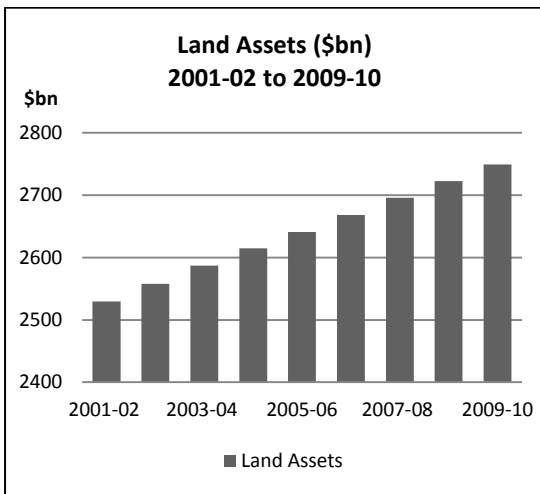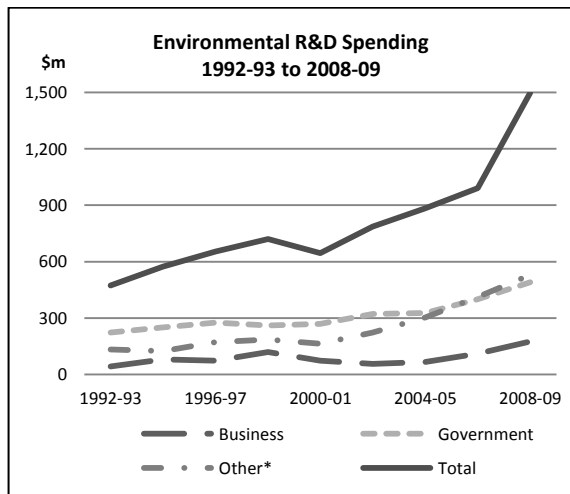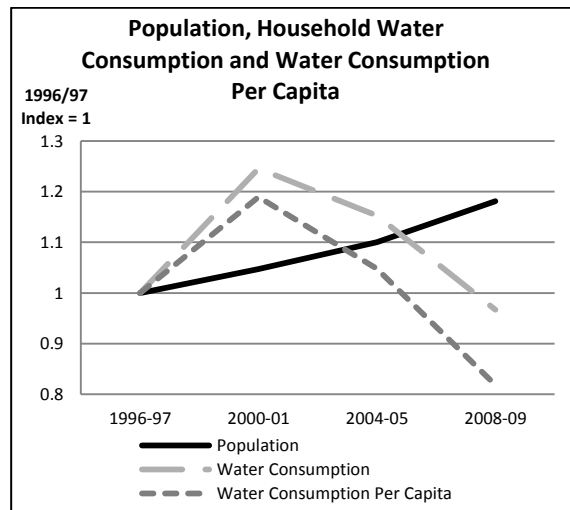

Source: Australian Bureau of Statistics

* Other comprises higher education and private non-profit environmental spending
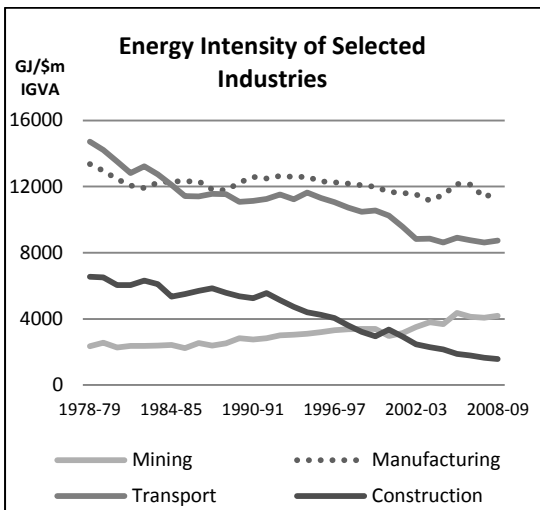
Energy Intensity of Selected Industries

Source: Australian Bureau of Statistics

Population, Household Water Consumption and Water Consumption Per Capita

Source: Australian Bureau of Statistics

Water Consumption and Water Intensity by the Agriculture Industry, and all Other Industries

GL   Index 1996/97 = 1

Legend:
- Agri Water Consumption
- Other Ind Consumption
- Agri Water Intensity

Source: Australian Bureau of Statistics

Waste Diversion from Landfill* 2009-10

%
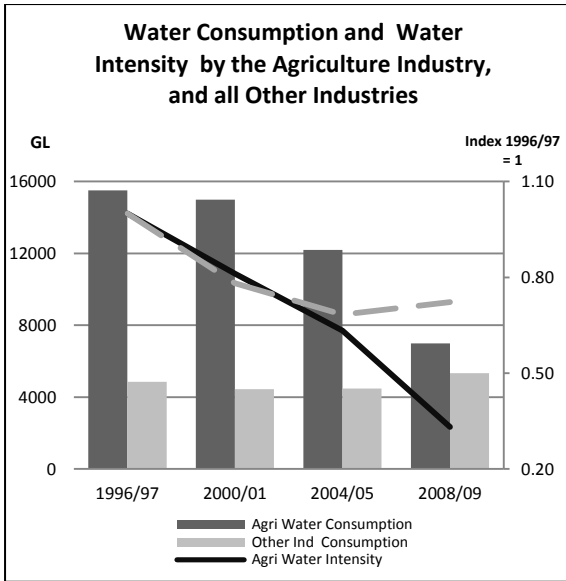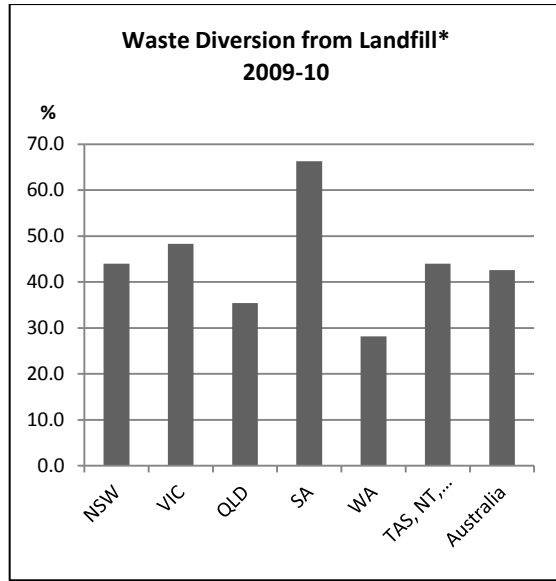
Source: Australian Bureau of Statistics

*Waste management services produced by waste management industry. Excludes waste management by other industries

Appendix 4

Integrating financial data in SEEA – the supply and use approach

Important dimensions of the green economy include the production of the environmental goods and services sector, employment in the sector, imports and exports of environmental goods and services and expenditures on environmental protection and resource management.

The supply and use table approach juxtaposes the supply of environmental goods and services by the Australian environmental goods and services sector (EGSS) and from imports with the use of those goods and services in environmental protection and resource management by Australian industries, households, governments and for export. It also provides the framework for deriving the EGSS value-added, employment and contribution to GDP. The supply and use table model has been used by the ABS to compile other satellite accounts where a non-conventional industry concept is used, including the tourism 'industry' and the ICT 'industry'.

For cost and other reasons, the availability of statistical information related to these dimensions of a green economy is likely to be fragmentary and incomplete. The supply and use table methodology provides the best framework for assembling available data, revealing the data gaps, and for making decisions about priorities for new data development. It also provides a logical framework for confronting data from different sources and making them consistent.

In practice, some environmental goods and services might be better collected from the use side – environmental protection expenditure and resource management expenditure. The SU table provides a framework for re-routing this information back to the production of environmental goods and services by the domestic EGSS and to imports. This is the method used in the tourism satellite account (TSA).

It is likely that many of the environmental goods and some services will be imported rather than being produced by the Australian EGSS. Further investigation is required to establish what environmental goods and services can be identified in the international trade data system.

The following tables outline the supply and use data model in a rudimentary form. The extent to which it can be completed will depend on the existing primary data available, what new data can be collected and what is feasible to estimate using assumptions.

Supply of environmental goods and services ($m)

	Domestic production by ANZSIC Industry-			Imports	Total supply	Taxes less subsidies	Total supply (b)
	Agric.	etc.	Total domestic output				
Environmental protection products-							
- climate and air							100
- waste							100
- etc.							100
Resource Man Products-							
- water							100
- forests							100
- etc.							100
Total							

Use of environmental goods and services ($m)

	Consumption by domestic industries -			Final use -				Total use (b)
	Agric.	etc.	**Total**	House-hold Cons.	Gov't Cons.	Capital formation (a)	Exports	
Environmental protection								
- climate and air								100
- waste								100
- etc.								100
Resource management								
- water								100
- forests								100
- etc.								100
Total								
Gross Value added and components								
Employment								

(a) Includes gross fixed capital formation and change in inventories
(b) Valued at purchasers' prices.

Some domestic enterprises will specialise in environmental goods and services, others will produce no environmental goods and services and the remainder will produce both environmental goods and services and other goods and services. For the latter group, their production has to be partitioned into an activity of producing environmental goods and services and an activity of producing all other goods and services.   This should be relatively straightforward for the value of sales provided that workable definitions can be provided. However, it is unlikely they will be able to partition production costs, value added and

employment, so proportionality assumptions are likely to be required (this is the approach in the TSA).

While the supply and use tables provide a very useful organising framework for data collection and integration, there are a number of other considerations that require amendments to the simple accounting identity shown in the tables above. This might be accomplished by inserting an extra column as a reconciliation bridge.

The key differences are as follows –

- For the production of environmental goods and services, the scope is determined by the intention of the producer – they are produced predominantly for an environmental purpose. However for environmental protection and resource management expenditure, it is the purchasers' intention that defines the scope. For example, a chemical manufacturer's cost of own labour in monitoring emissions from chemical manufacture is included in the value of environmental protection expenditure, but the chemical would not be regarded as an environmental product.

- For certain goods – referred to as adapted goods and integrated technology products – a different basis of valuation of the supply side and use side is recommended in SEEA. Adapted goods and integrated technology products do not have a primary purpose which is environmental, but they are more environmentally efficient than equivalent 'normal' goods. SEEA recommends for the purpose of measuring the EGSS, the whole value of these products is included, whereas for environmental protection expenditure it is the marginal value of the environmental improvement. For example, the EGSS would include the full sale value of a hybrid car (say $40,000), but environmental protection expenditure should include only the marginal value over a 'normal' car (say $10,000). It is unclear to what extent this differentiation can actually be made in practice.