National Greenhouse Gas Inventory

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Frequently Asked Questions:

FACT SHEET 8

1998

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The National Greenhouse Gas Inventory is a comprehensive database of human induced greenhouse gases emitted from sources and removed by sinks. The annual national inventory provides a means to track emissions and monitor and review effectiveness of response actions and is a basis for developing projections of greenhouse gas emissions in future years.

Under the United Nations Framework Convention on Climate Change, Australia has committed to provide an annual greenhouse gas inventory which conforms to international guidelines adopted under the Convention. Australia has produced an inventory for each year from 1990. Estimates of emissions for previous years are updated as improved information and methodologies become available.

The Inventory categorises emissions and sinks into standard sectors set out by the Intergovernmental Panel on Climate Change. The format of Australia's 1998 Inventory, presenting land-clearing emissions separately from aggregate emissions, is similar to previous inventories.

Australia's greenhouse gas emissions in 1998 totaled 455.9 million tonnes (Mt) of carbon dioxide equivalent (CO_2-e)*, excluding emissions from land clearing.

** Carbon dioxide equivalents, CO_2-e, provide the basis for comparing the warming effect of the various greenhouse gases such as methane, nitrous oxide, perfluorocarbons, etc.*

This represents an increase of about 5.2% on 1997 estimates of national greenhouse gas emissions and a 16.9% increase on 389.8 Mt estimated emissions for 1990. This does not equate to the Kyoto Protocol accounting requirements.

Incorporating the current best estimate of land clearing emissions would bring Australia's total emissions to 519.9 Mt CO_2-e in 1998 and 493.3 Mt CO_2-e in 1990. On this accounting basis, emissions are estimated to have increased by 5.4% between 1990 and 1998. The assessment of trends in land clearing emissions since 1990 is highly uncertain and is likely to change significantly in the future, for this reason land clearing emissions are excluded from the assessments in the Inventory report.

QUESTIONS

1. How does Australia's emissions profile compare with other countries?

In Australia, the Energy sector produces 79.6% of national emissions - mostly from electricity generation and transport. (This proportion does not factor in the effect of land clearing emissions). The Energy sector produces a higher proportion of national emissions in most developed countries. Unlike many other developed countries, Australia also has substantial emissions from activities on the land such as agriculture, forestry and land clearing.

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Australia specialises in the production of energy and greenhouse intensive goods—more than 80% of our exports are greenhouse gas intensive. For example, Australia is a significant supplier of aluminium, steel and agricultural products. Emissions from the manufacture of these products and the energy supplied to make them are attributed to Australia, though the goods are often used elsewhere.

Most of Australia's electricity supply comes from coal fired power stations. Coal produces more emissions per unit of energy than does natural gas. Australia also has no nuclear power and limited hydroelectric power, sources of energy that produce relatively low emissions of greenhouse gases per unit of energy produced.

Other unique features for Australia include our high population growth, which leads to growth in energy demand and emissions from electricity generation, transport and waste.

2. Do the increases in emissions mean government policy isn't working?

This Inventory covers the early stages of Australia's greenhouse response strategy. Many greenhouse measures have a considerable lead time so their effects won't be seen to any real degree in this Inventory.

Since 1997 there has been a substantial increase in greenhouse actions. For example, the Prime Minister's statement of November 1997 announced funding of $180 million over five years for the reduction of greenhouse gas emissions. This program includes:-

- the promotion of renewable energy
- energy market reform
- implementation of an Automotive Industry Environment Strategy
- development of energy efficiency codes and standards for housing and commercial buildings, appliances and equipment
- partnership programs between Government and industry, local governments and the residential sector.

In 1998, the Commonwealth, State and Territory governments released the National Greenhouse Strategy. This comprehensive strategy includes a raft of greenhouse abatement measures covering areas such as energy sector reform, the promotion of renewable energy sources, improving vehicle fuel efficiency and fuel technologies, as well as fostering community action through local government initiatives, education and awareness. Implementation of the 86 measures outlined in this Strategy has been underway since late 1999.

As part of the Commonwealth Government's *A New Tax System* package, an additional $796 million has been committed to support greenhouse gas abatement measures over four years . This includes $321 million to support development of renewable energy generation, $75 million for the alternative fuel conversion program, and $400 million to support greenhouse gas abatement programs to further assist Australia in meeting its international commitments.

These initiatives will have a significant effect upon future trends in Australia's greenhouse gas emissions. The Australian Greenhouse Office will be undertaking regular assessments of trends in emissions.

3. Do emissions figures show that Australia already exceeds its Kyoto target of 108%?

No. The National Greenhouse Gas Inventory is compiled under the Framework Convention on Climate Change. The Inventory covers emissions and sinks of greenhouse gases arising from human induced activities for all sectors.

Guidelines for measurement of emissions under the Kyoto Protocol are still being worked out. However, we do know that the 1990 baseline for the Kyoto Protocol will not include sinks and the accounting in the commitment period will differ from the annual inventory.

In a basic sense, there are four elements that will be necessary to measure progress towards Australia's Kyoto target. These are:

- establishment of the 1990 baseline for the purposes of the Protocol;
- measurement of emissions in the commitment period 2008-12;
- measurement of offsets from specified carbon sequestration (sinks) activities in the same period.
- accounting for activity in international emissions trading, joint implementation and Clean Development Mechanism provisions of the Protocol.

Further work is needed to progress all these matters before a realistic assessment of progress to meeting the Kyoto target can be made.

4. What is the picture for energy sector emissions?

Emissions of greenhouse gases from the entire Energy sector, comprising stationary, transport and fugitive emissions, increased by 62.4 Mt CO_2-e (21.1%) between 1990 and 1998.

Emissions from **electricity generation** increased by 30.6% (39.5 Mt) from 1990 to 1998. This was almost two thirds of the total growth in energy sector emissions. Total emissions from electricity generation have increased due to increased usage and also due to increased generation from high emission brown coal power stations increasing their capacity. There was a signifcant increase in both consumption and emissions per unit of electricity in the period 1997 to 1998.

Road transport emissions grew by 18.2% (10 Mt), from 1990 to 1998. Almost two thirds of road transport emissions are from passenger cars. The catalytic converters installed in newer cars to reduce air pollution has increased emissions of nitrous oxide.

Air transport emissions increased by 71.5% from 1990 to 1998. Though air transport was at a low point in 1990 following an extended pilot strike, emissions have increased significantly to contribute 4.4 million tonnes in 1998.

Effectively, the increase in transport emissions reflect more people travelling more often and going greater distances. There are also more goods being moved.

5. What is the government doing to tackle growing greenhouse gas emissions?

The Commonwealth Government has committed 1 billion dollars for greenhouse response actions.

As part of its 1999 *A New Tax System*, the Commonwealth Government has committed $400 million to the Greenhouse Gas Abatement Program, substantially advancing Australia's climate change response. This Program is one of a several greenhouse initiatives included in the tax package, *Measures for a Better Environment*. These funds, together with allocations for renewable energy generation, alternative fuels use and household energy reduction initiatives, amount to nearly $800 million.

A $180 million package of measures was announced as part of the Prime Minister's November 1997 statement on climate change. Major elements of this package include:

- boosting the use of renewable energy
- introducing efficiency standards for fossil fuel energy generation
- energy efficiency measures relating to buildings and appliances
- new fuel efficiency targets for passenger vehicles
- expansion of the Greenhouse Challenge and other partnership programs
- vegetation projects to act as carbon sinks.

The measures announced in 1997 were projected to reduce growth in emissions from 28 per cent to 18 per cent between 1990 and 2010, equivalent to 39 million tonnes of emissions. The 1999 package will make a significant additional contribution to reducing emissions, and its effect will be calculated once the details are worked out.

In addition, the Commonwealth, State and Territory governments released the 1998 National Greenhouse Strategy which provides a foundation for greenhouse actions by all governments.

The Australian Greenhouse Office has been established to deliver the Commonwealth's domestic greenhouse programs. It is the world's first dedicated greenhouse office.

6. Have the actions to date made any difference?

Economic growth, a projected increase in population (30% from 1990 to 2010), electricity demand and continued growth in exports will drive increased greenhouse gas emissions. The challenge is to counteract these factors so that Australia meets its emissions target under the Kyoto Protocol and emissions in 2008 –2012 are within 108% of 1990 levels.

Greenhouse

The National Greenhouse Gas Inventory points to some significant emerging trends in emissions and underlying factors over the period 1990 to 1998:

- greenhouse gas emissions per dollar of GDP decreased by 8.2% from 1990 to 1998;
- coal production increased but the emissions per tonne of production decreased;
- the amount of coal used in electricity production increased but the average efficiency of power generation improved from 1990 to 1997, though this trend was reversed in 1998;
- the amount of energy used increased but the average efficiency of its use improved; and
- economic activity increased but emissions from industrial processes declined and only a small increase was recorded in non-energy emissions.

There are other positive signs. For example:-

- the use of LPG in passenger vehicles has nearly doubled from 1990 to 1998. Emissions per unit of energy produced from LPG are much lower than for either petrol or diesel.
- fugitive emissions from gas distribution have been held in check, for example through relining the Sydney gas network in the early 1990s.
- 13% of the methane generated by solid waste in municipal landfills was recovered in 1998 - compared to none at all reported in 1990.
- emissions of PFCs from aluminium smelting reduced from 1990 to 1997, as a result of technology changes, though this started to reverse in 1998.

7. Why are the estimates from land clearing still unreliable?

Estimating emissions from land clearing requires knowledge of the extent and location of areas cleared, vegetation cover, the mass of vegetation, growth rates and soil carbon processes for different locations. We do not have sufficiently accurate data for any of these, particularly for activities that happened 10 or 20 years ago – past activities affect present emissions level.

The international guidelines supply default values for biomass and soil carbon losses that have been used in the absence of information on Australian trees and the land. We know these do not take proper account of Australia's unique environment and that we need to develop a better understanding of Australian conditions.

Through the National Carbon Accounting System announced as part of the Prime Minister's 1997 greenhouse package, methods and data are being developed to provide better estimates of the land clearing emissions. The first priority is to establish a solid estimate of Australia's 1990 emissions and sinks connected with land clearing and forestry activities. Details on the National Carbon Accounting System can be found on the Australian Greenhouse Office website.

The new Cooperative Research Centre for Greenhouse Accounting (for forestry and land use activities) will underpin the National Carbon Accounting System with research products to ensure that Australia's carbon accounting system represents international best practice.

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Information about the National Greenhouse Gas Inventory and initiatives to reduce greenhouse gas emissions from forestry and land clearing activities can be obtained from the Australian Greenhouse Office web site:

http://www.greenhouse.gov.au

Copies of the 1998 Inventory and related documents can be obtained by contacting AGO Publications:

Telephone: 1300 130 606
Facsimile: 02 6299 6040