

Inventory

National Greenhouse Gas Inventory

INFORMATION FROM THE AUSTRALIAN GREENHOUSE OFFICE—JULY 2000

Waste

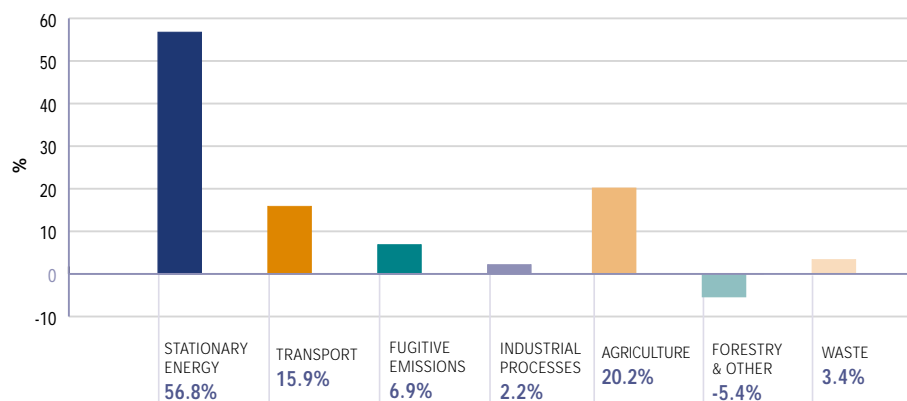
1998 inventory and trends

1998 emissions	Changes in emissions 1990–1998
Australia's estimated greenhouse gas emissions in 1998 totalled 455.9 million tonnes of carbon dioxide equivalent* (Mt CO ₂ -e), excluding emissions from land clearing. [#]	This represents an increase of 5.2% on 1997 national greenhouse gas emissions and a 16.9% increase on 389.8 Mt in 1990. This does not equate to the Kyoto Protocol accounting requirements.
Waste sector emissions in 1998 totalled 15.5Mt CO ₂ -e, accounting for 3.4% of national net emissions.	Total emissions from the waste sector in 1998 were 1.1% lower than in 1997, and 4.2% higher than the 1990 level.
Almost all reported emissions from waste are methane, accounting for 13.5% of total national emissions of methane.	In 1998, 13.0% of methane generated at landfill sites was recovered, mainly for electricity generation, compared to a negligible amount in 1990.
Although the waste sector is a minor source of emissions there is scope for further emission reductions.	There was a 3.6% increase in emissions from waste disposal in municipal landfills from 1990 to 1998.

* Carbon dioxide equivalents, CO₂-e, provide the basis for comparing the warming effect of greenhouse gases such as methane, nitrous oxide, the perfluorocarbons, etc

[#] Including the current best estimate of land clearing emissions, Australia's total emissions would be 519.9 Mt in 1998 and 493.3 Mt in 1990, representing a 5.4% increase. This does not equate to the Kyoto Protocol accounting requirements.

1998 Estimated emissions by sector (excluding land clearing)
Total 455.9 Mt CO₂-e



FACT SHEET
1998

5



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The National Greenhouse Gas Inventory

Australia has produced an annual Inventory of national greenhouse gas emissions since 1990 as part of its commitments under the Framework Convention on Climate Change. The 1998 Inventory provides the latest report on Australia's greenhouse gas emissions. This Inventory incorporates improvements in methods that have been used to update emission estimates in the 1990-1997 inventories.

The total emissions reported in the national inventory do not represent Australia's performance against the Kyoto Protocol. Guidelines for reporting on the Kyoto Protocol are still being negotiated. For example, some of the land-based emissions and sinks that are reported in the national Inventory will not be included or will be reported differently for the Kyoto Protocol.

Australia's National Greenhouse Gas Inventory is based on international guidelines established by the Intergovernmental Panel on Climate Change and reports on human-induced greenhouse gas emissions in six sectors:

1. Energy
2. Industrial Processes
3. Solvent and Other Product Use
4. Agriculture
5. Land Use Change and Forestry
6. Waste

The numbers presented in the text and figures may not add up to the reported total due to rounding errors. Inclusion of the decimal place does not necessarily indicate a level of precision in the estimates.

Waste sector

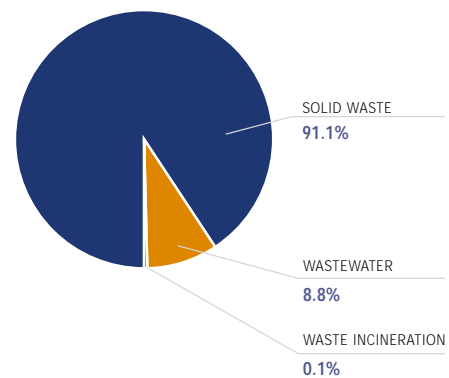
Estimated waste emissions are predominantly methane. A small amount of carbon dioxide generated through the incineration of solvents is also included. The main sources of waste emissions are:

- **Solid waste** – emissions resulting from anaerobic decomposition of organic matter in landfills. Methane generated from this source accounted for 91.1% (14.1 Mt) of total methane emissions from the waste sector in 1998.

- **Wastewater** – emissions resulting from anaerobic decomposition of organic matter in sewage facilities (including on-site systems such as septic tanks) during treatment and disposal of wastewater. Emissions from this source accounted for 8.8% (1.4 Mt) of total methane emissions from the Waste sector in 1998.

All emissions from the Waste sector will be included in the 1990 baseline (that will provide a benchmark for comparison of future emissions) and accounting for the Kyoto Protocol commitment period in 2008-2012.

1998 Waste sector emissions
Total 15.5 Mt CO₂-e



Emissions estimates and trends from 1990 to 1998

Methane emissions from solid waste disposal on land were 14.1 Mt or 3.1% of total national emissions in 1998.

Anaerobic decomposition of organic matter in sewage facilities during treatment and disposal of wastewater, and on-site sewage treatment systems such as septic tanks also generate methane. Emissions from this source amounted to 1.4 Mt or 0.3% of total national emissions.

Carbon dioxide emissions from the decay of plant and animal material (and flaring of methane arising from decay) are not included as these are considered part of the natural cycle. The small amount of carbon dioxide resulting from the incineration of fossil fuel products, such as solvents from paint application, is included in the emissions estimates.



Household Gas Inventory

Solid waste

Estimated emissions from municipal solid waste disposal increased during the period 1990-1998 by 3.6%. This trend is due to population growth and an estimated increase in waste disposal per capita.

The waste degradation process occurs slowly and methane emissions continue long after waste is placed in landfill. Estimates in any year include a large component of emissions resulting from waste disposal over the preceding 25 years. This means that recent changes in waste management practices do not have an immediate impact on reported methane emission levels.

Net emissions showed a declining trend from 1993 because of increased recovery of methane from municipal solid waste disposal (see graph). The 1997 Inventory for the first time included information on methane recovered from municipal solid waste disposal. The 1998 Inventory shows a continuing increase in the recovery of methane from landfill. Net emissions from waste disposal on land fell by 1.3% from 1997 to 1998, due to increased methane recovery.

After 1993, the rate of methane recovery from landfills for electricity generation increased rapidly. There has been a further increase from 1997 to 1998. In 1998, methane recovered was 13.0% of methane generated from solid waste disposal compared with negligible quantities in 1990.

Wastewater

Methane emissions from wastewater amounted to 1.4 Mt or 0.3% of total national emissions.

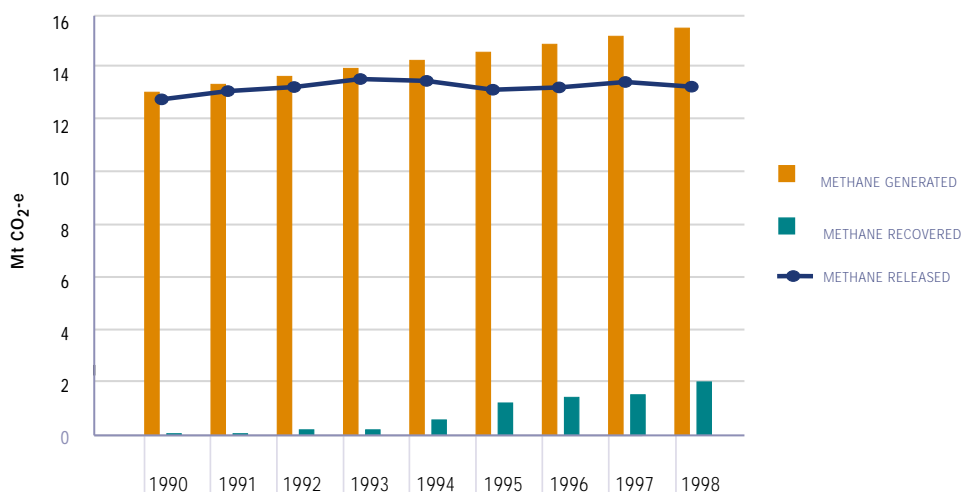
In the absence of better data, emissions from solid waste and wastewater are assumed to be driven by changes in population. Therefore methane generation from sewage and methane recovery at wastewater plants increased at the same rate as population growth. A high proportion of methane from wastewater treatment plants is captured, and an estimate of this has been included in the Inventory since it was initially compiled.

Reliability of emissions estimates

Data on methane captured from landfills covers the majority of significant landfill gas recovery projects in Australia. The accuracy of this data is significantly higher than the accuracy of estimates of gross methane generation. Gross emissions are estimated using changes in population and default values, whereas the amount recovered and used at landfill sites is measured directly by organisations operating landfill gas recovery projects. The uncertainty associated with estimates of emissions of greenhouse gases in the waste sector is high and estimated to be greater than 50%.



Methane emissions from solid waste disposal



Greenhouse

Reducing greenhouse gas emissions in the waste sector

Australia is undertaking a range of activities that are expected to reduce emissions from the waste sector by the year 2010 compared to the levels that would otherwise have been reached.

States and Territories have been implementing waste minimisation and recycling strategies since the late 1980s. Under the Australian and New Zealand Environment and Conservation Council's (ANZECC) Waste Minimisation and Recycling Strategy, the Commonwealth, States and Territories agreed to reduce the amount of waste going to landfill by the year 2000.

In 1999, ANZECC adopted a plan to reduce the volume of green and organic waste (such as food, garden, industrial organic and sewage sludge) going to landfill. This will reduce the methane potential of landfilled waste and, ultimately, reduce methane generation and emissions.

Voluntary Industry Waste Reduction Agreements (IWRA) between industry and government aim to reduce the amount of waste going to landfill. These agreements consistently exceed targets set for collection and recycling. For instance, the current IWRA for the newsprint industry set a recycling target of 60% to be achieved by 2000. By 1999, however, the industry had achieved a recycling level of 68%.

The recovery of landfill gas for energy use is continuing to increase. These developments should lead to further reductions in emissions.



Information about the National Greenhouse Gas Inventory and initiatives to reduce greenhouse gas emissions from the waste sector can be obtained from the Australian Greenhouse Office website:

<http://www.greenhouse.gov.au/inventory>

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

Telephone: 1300 130 606

Facsimile: 02 6299 6040

National Greenhouse Gas Inventory 1998 with Methodology Supplements.

National Greenhouse Gas Inventory Land Use Change and Forestry Sector 1990–1998.

National Greenhouse Gas Inventory: Analysis of Trends and Greenhouse Indicators 1990 to 1998.

Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks: Workbook for Waste, Workbook 8.1 reprinted with supplements 1998.

Fact Sheets—1998 National Greenhouse Gas Inventory—Frequently Asked Questions, Overview and other sectors in this series.



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