



Australian Government
**Department of Climate Change
and Energy Efficiency**



Quarterly Update of Australia's National Greenhouse Gas Inventory **June Quarter 2011**



thinkchange

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The Australian National Greenhouse Accounts are available on the Internet at the following address:
<http://www.climatechange.gov.au/en/climate-change/emissions.aspx>.

Suggestions and comments would be appreciated. They should be addressed to:

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October 2011

OCTOBER 2011

Australia's National Greenhouse Gas Inventory: June 2011 Update

Summary – Emissions Growth Rates

Table 1: Change in National Greenhouse Gas Inventory: June Quarter 2011

	June Quarter	Year to June
Emissions Growth Rate, Quarterly Change – Trend	0.5%	
Emissions Growth Rate, Quarterly Change – Seasonally Adjusted	0.8%	
Emissions Growth Rate, Annual Change through to June Quarter		-0.4%

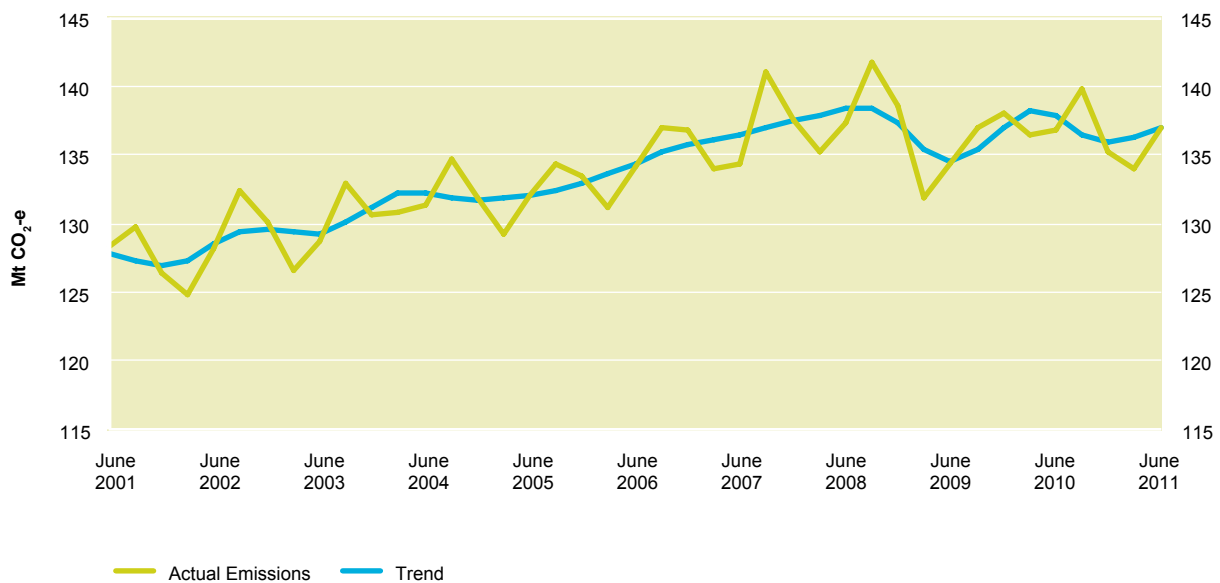
The National Inventory has increased in the June quarter with trend emissions rising by 0.5%. This growth is primarily attributed to an increase in emissions from stationary energy (other than electricity generation), transport and fugitive emissions (from coal mining).

The lift in emissions in the June quarter follows a year of relatively weak emission levels. Emissions for the year to June 2011 were 0.4% lower than the previous year reflecting, in particular, a decrease in fugitive emissions from black coal mining and a change in generation sources for electricity.

Annual electricity generation from coal fell 5% compared with the previous year, whereas natural gas generation increased 13% and hydroelectric generation grew 24%. A record wet spring in 2010 followed by the second wettest Australian summer on record¹ contributed to increased availability of hydroelectric resources.

The lift in emissions in the June quarter 2011 is evident in Figure 1 with trend emissions increasing by 0.5%. The Figure also shows the long term growth in emissions as well as the effect of recent temporary factors such as the global financial crisis in 2008-09 and the effects of temporary climatic factors in 2010-11.

Figure 1: National Inventory, actual and trend emission estimates



¹ Source: Bureau of Meteorology (BOM, 2011). *Reports and Summaries: Seasonal Climate Statements*, Australian Government. <http://www.bom.gov.au/>, accessed October 2011.

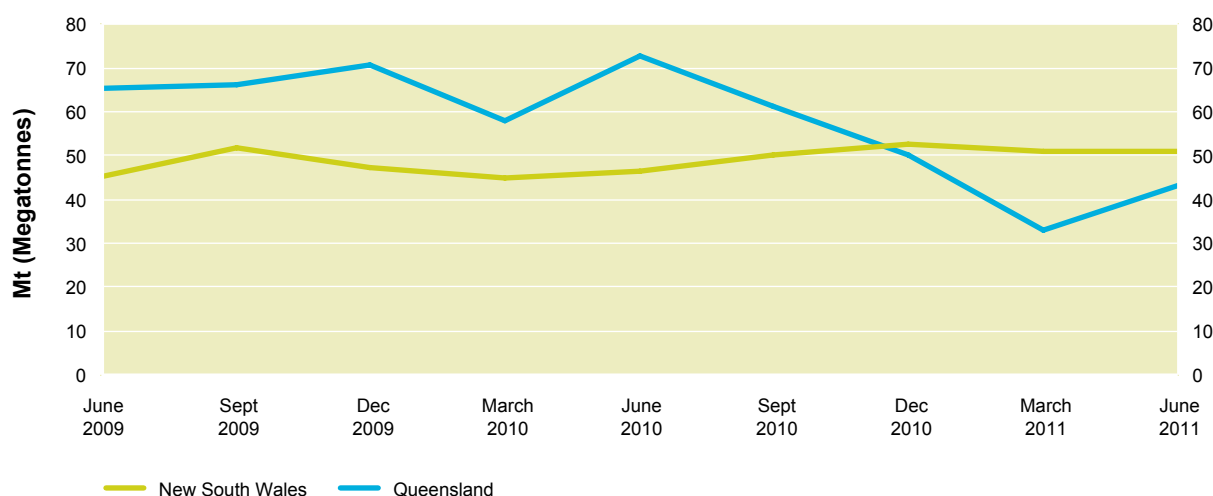
Quarterly Change in Emissions – Key Points

Trend emissions for the June quarter rose 0.5%. Three sectors in the energy sector exhibited strong growth in this quarter.

Fugitive emissions from fuel extraction increased by 10% in original terms in the June quarter, emissions from stationary energy (other than electricity generation) increased by 8% in original terms and transport emissions increased by 3% in original terms.

Fugitive emissions from coal mining increased as a result of an 11%² increase in black coal production in the June 2011 quarter. Further increases in this sector are expected as coal production recovers from the effects of the Queensland floods. At the end of the June 2011 quarter, the Queensland coal mining industry was functioning at approximately 80% capacity³ (Figure 2).

Figure 2: Raw black coal mined



Source: BREE, *Resource and Energy Statistics 2011, June quarter 2011*

Emissions from fuel combustion used in the production of non-ferrous metals increased strongly in the June 2011 quarter to their highest ever levels.

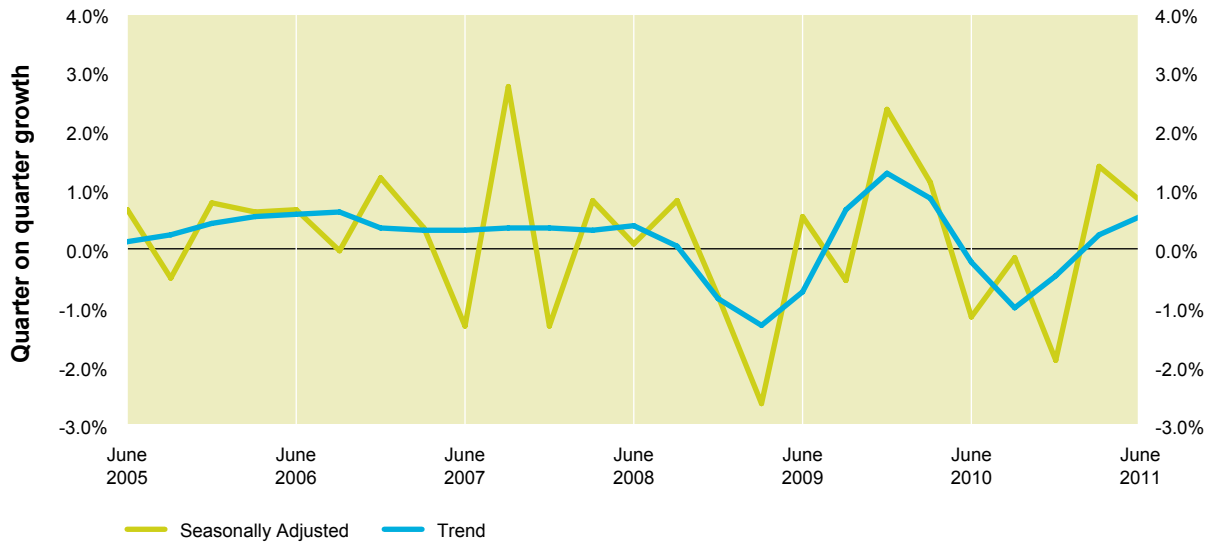
The strongest contributor to increased transport emissions in the June quarter was increased consumption of diesel oil.

The quarterly change in the national emissions growth rate from June 2005 to June 2011, in both trend and seasonally adjusted terms, is shown in Figure 3.

² Source: Bureau of Resources and Energy Economics (BREE, 2011), *Resource and Energy Statistics 2011, June quarter 2011*, Australian Government. <http://www.bree.gov.au/>, accessed October 2011.

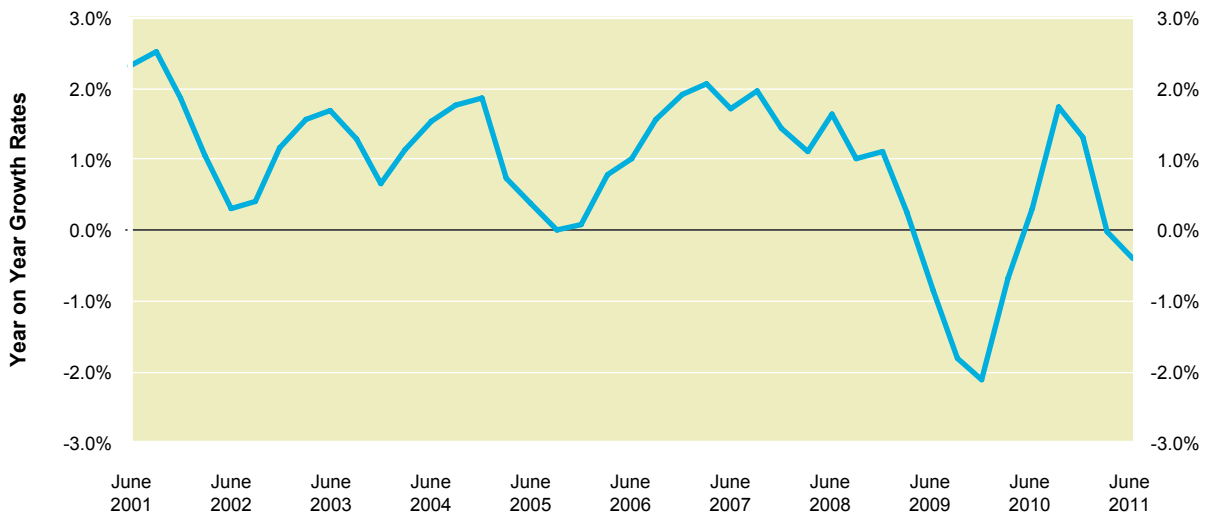
³ Source: Queensland Resources Council (21 July 2011), *High cost of floods confirmed*. <http://www.qrc.org.au/>, accessed October 2011.

Figure 3: National Inventory, seasonally adjusted emissions growth rates by quarter



The annual growth rates of emissions for Australia are presented in Figure 4, updated on a quarterly basis. The annual growth rate in emissions for the year to the June quarter 2011 shows a moderate reduction, following on from a moderate reduction in the previous quarter. This decrease has been largely driven by climatic factors and is considered temporary.

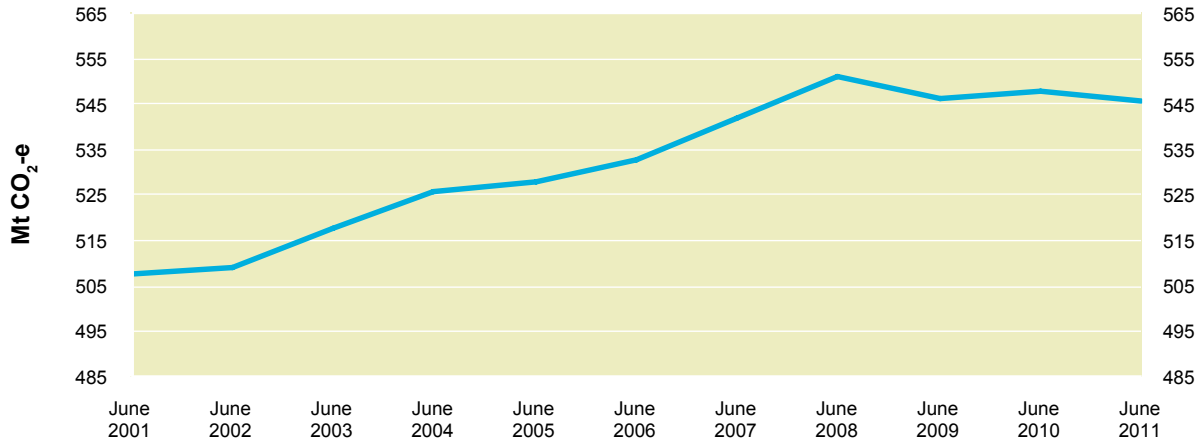
Figure 4: National Inventory, annual emissions growth rate



Annual Emissions – Key points

The annual emissions estimates for the year to the June quarter each year from 2001 to 2011 are presented in Figure 5. Absolute levels remain below the 2008 peak with relatively stable emissions from June 2009 to June 2011. The national inventory total has experienced a net increase of 7% over the 10 year period.

Figure 5: National Inventory, annual emissions – year to June quarter 2001 to 2011



Over the year to the June quarter of 2011, Australia's National Greenhouse Gas Inventory was an estimated 546 Mt CO₂-e (million tonnes of carbon dioxide equivalent), down 0.4% on the previous year (see Table 2).

Table 2: National Inventory, for the year to June quarter 2011

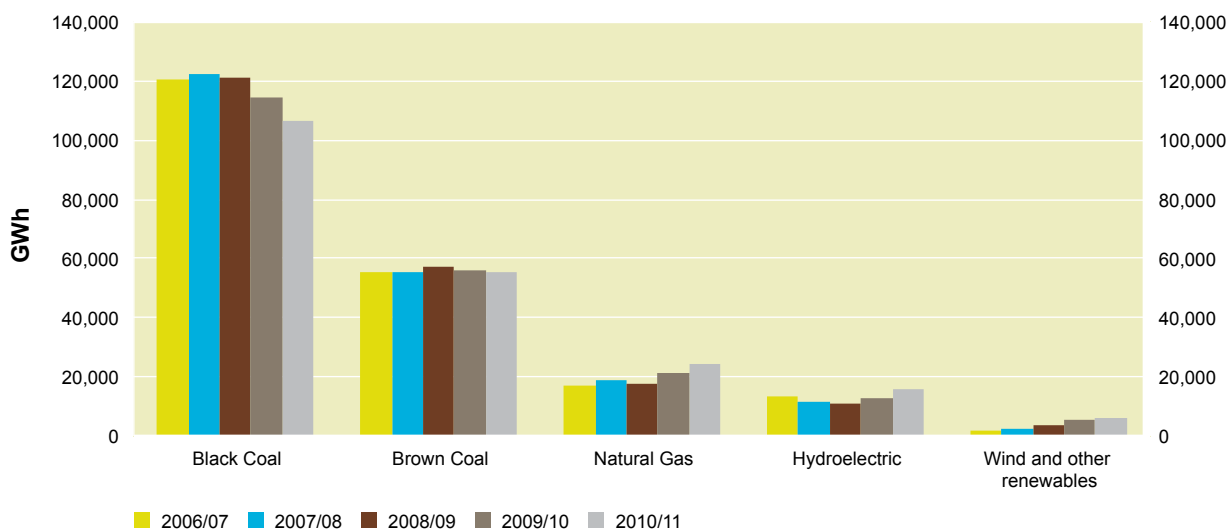
Category	Emissions through to year ended (Mt CO ₂ -e) ^a		Change in annual emissions ^b
	2010 June quarter	2011 June quarter	
National Inventory – Annex A sectors			
Energy – Electricity	201	194	-3.4%
Energy – Stationary energy excluding electricity	90	94	4.1%
Energy – Transport	84	86	2.1%
Energy – Fugitive emissions	44	42	-4.0%
Industrial processes	31	33	3.9%
Waste	14	14	1.3%
Agriculture	83	83	-0.6%
National Inventory (excluding LULUCF)	548	546	-0.4%

^a Values are estimates of annual emissions through to the June quarter.

^b The percentage change is the annual growth rate for the June quarter (i.e. the increase in emissions for the four quarters to the June quarter over the corresponding period of the previous year). Percentage change reflects a higher degree of precision than is listed in the emission estimates, which are rounded to the nearest million tonnes.

The current negative annual growth rate is largely attributed to reductions in emissions from electricity generation (Figure 6), which constitutes 36% of Australia's National Greenhouse Gas Inventory. Over the 12 months to June 2011 emissions from black coal generation fell 9% and brown coal generation fell 1%. Natural gas generation increased 13% and, as a result of increased rainfall throughout the year⁴, hydroelectric generation increased 24%.

Figure 6: National Electricity Market (NEM) generation by fuel type



Source: Australian Energy Market Operator (AEMO, 2011), obtained using NEM Review software. The NEM constitutes over 80% of the total Australian electricity market.

In addition to the fuel switching in generation sources, the decrease in emissions in 2010/11 reflected a 1.2% drop in demand in the National Electricity Market (NEM).

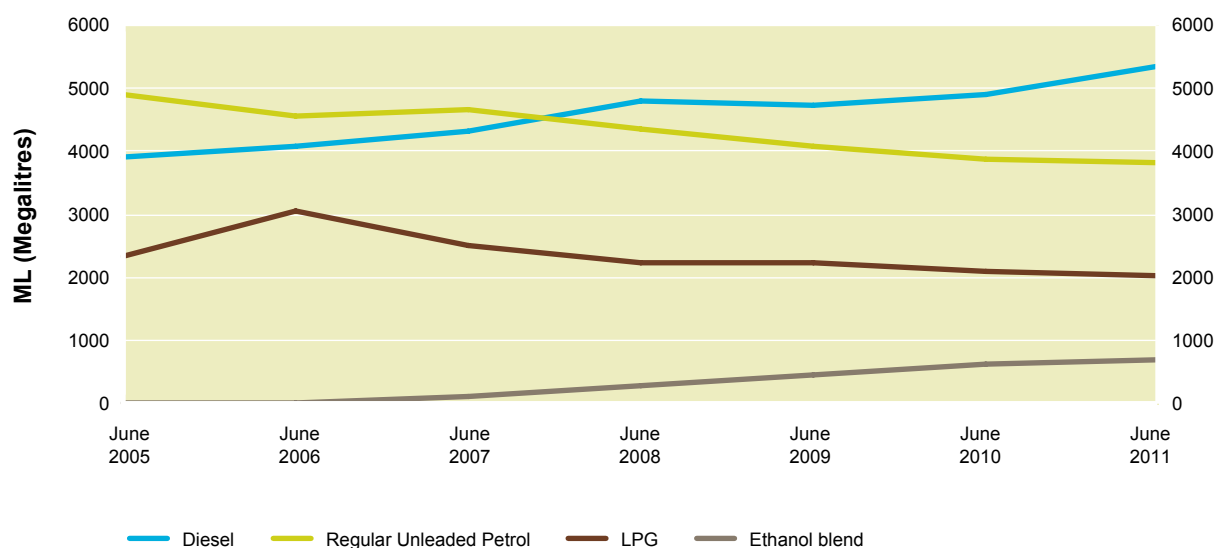
The reduction in emissions from electricity generation has been offset by growth in emissions from transport, other stationary energy and industrial processes. Annual fugitive emissions remain temporarily low with Queensland coal mining activities disrupted by the summer 2010/11 floods and subsequently wet autumn.

Annual estimates for consumption of selected liquid fuels⁵ are presented in Figure 7. As a whole, consumption of these liquid fuels in Australia increased by 375 ML (3%) in 2010/11.

⁴ Source: Bureau of Meteorology (BOM, 2011). *Reports and Summaries: Seasonal Climate Statements*, Australian Government. <http://www.bom.gov.au/>, accessed October 2011.

⁵ Source: Department of Resources, Energy and Tourism (DRET, 2011), *Australian Petroleum Statistics- Issue no. 177-179*, Australian Government. <http://www.ret.gov.au>, accessed October 2011.

Figure 7: Diesel, unleaded petrol, ethanol-blended petrol and LPG consumption in Australia



Source: DRET (2011), *Australian Petroleum Statistics*- Issue no. 177-179.

In 2010/11, approximately 16% (712 ML) of gasoline (petrol) sold across Australia was ethanol blended. In Australia, ethanol is primarily sold in a 10:90 ethanol to unleaded petrol blend (known as E10). New South Wales and Queensland constituted the majority of ethanol blended petrol consumption in Australia.

The growth in E10 uptake has been impacted by State Government policies. For example, the New South Wales Government implemented a mandate that a proportion of the total volume of petrol sold in New South Wales would be ethanol. A rise to 6% was implemented on 1 October 2011.⁶

It is estimated that the uptake of ethanol blended petrol has offset 0.7 Mt of CO₂-e in the year to June 2011.

Growth in the consumption of diesel oil has been a strong driver for emissions growth over the last five years. Figure 7 shows diesel oil consumption increasing while petrol consumption has decreased.

⁶ Source: *Media Release: New South Wales ethanol mandate rises to 6 per cent from 1 October 2011*, New South Wales Government. <http://www.biofuels.nsw.gov.au/>, accessed October 2011.

NOTES

Quarterly Coverage

This report provides estimates of Australia's National Inventory up to the June quarter of 2011. The Quarterly Update of the National Inventory includes emission sources listed under Annex A of the Kyoto Protocol – energy, industrial processes, agriculture and waste sectors – but does not include emissions from the Land Use, Land Use Change and Forestry (LULUCF) activities under article 3.3 of the Kyoto Protocol. LULUCF data is available on an annual basis.

Quarterly Methodology

Emission estimates have been compiled by the Department of Climate Change and Energy Efficiency using the estimation methodologies incorporated in the Australian Greenhouse Emissions Information System (AGEIS) and documented in the National Inventory Report.

Preliminary activity data is obtained under the National Greenhouse and Energy Reporting System and from a range of publicly available sources – principally the Australian Bureau of Statistics (ABS), the Australian Energy Market Operator (AEMO), the Bureau of Resources and Energy Economics (BREE), and the Australian Department of Resources Energy and Tourism (DRET). As additional data becomes available from the Department's reference sources these preliminary activity data will be overridden and the estimates of emissions revised before submission to the United Nations Framework Convention on Climate Change (UNFCCC).

Seasonal Adjustment

The actual quarterly data has been adjusted using SEASABS to remove the effects of seasonal factors. The trend series reflects the seasonally adjusted series with irregular components smoothed and provides the best indication of underlying movements in the inventory. SEASABS is the main seasonal adjustment tool used by the Australian Bureau of Statistics.

Quarterly Uncertainty

The Department's assessment is that the 90 per cent confidence interval for the national inventory (before taking account of article 3.3 activities) is ± 1 per cent (i.e. there is a 90 per cent probability that future revisions will be limited to ± 1 per cent of the current estimate).

Future releases

The next quarterly estimates, including latest estimates from September 2011, will be released on 31 January 2012.