

## **NT ENVIRONMENTAL IMPACT ASSESSMENT GUIDE:**

### **GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE**

#### **PURPOSE**

The Northern Territory Government's objective for managing greenhouse gas emissions from new and expanding operations is to minimise emissions to a level that is as low as practicable. This will help fulfil the objective of minimising greenhouse gas emissions from the NT into the future.

The Northern Territory Government's objective for considering future climate change in the assessment process is to ensure projects and developments are planned taking climate change science and projections into account, to minimise future environmental, social and economic costs and take advantage of any opportunities.

This Guide aims to assist proponents in providing the information needed by the Department of Natural Resources, Environment and the Arts (NRETA) to assess the impact of greenhouse gas emissions from proposed projects and assess other potential impacts from proposed projects under projected future climatic conditions under the *Northern Territory Environmental Assessment Act 1994*.

#### **GUIDANCE**

##### **Emissions estimates**

Note that the Australian Government is establishing a national greenhouse gas emissions trading system, which may have implications for some proponents. More information on a national emissions trading scheme is available at <http://www.climatechange.gov.au/emissionstrading/index.html>

Proponents should detail the following in their environmental impact assessment documentation:

1. An estimate of the greenhouse gas emissions for the construction and operation phases:
  - (a) in absolute and carbon dioxide equivalent figures (refer to the Glossary in this Guide) for each year of the project;
  - (b) identified on a gas by gas basis; and
  - (c) by source (including on site and upstream sources such as emissions arising from land clearing and the production and supply of energy to the site).

Emissions estimates are to be calculated using the methodology developed and periodically updated by the National Greenhouse Gas Inventory Committee or another national or internationally agreed methodology. See <http://www.climatechange.gov.au/workbook/index.html> for access to the National Greenhouse Accounts Factors which may assist.

For emissions from clearing of vegetation, emissions estimates are to be calculated using the National Carbon Accounting System, or another nationally recognised methodology. For more information see <http://www.climatechange.gov.au/ncas/index.html>

2. Details of the project lifecycle greenhouse gas emissions and the greenhouse gas efficiency of the proposed project (per unit and/or other agreed performance indicators).

Lifecycle emissions and greenhouse gas efficiency should be compared with similar technologies producing similar products.

To provide an understanding of the broader impact of the proposal, proponents are encouraged to place the estimated greenhouse gas emissions from the proposal into a national and global context. Information on Australia's national emissions profile can be obtained from the Department of Climate Change at <http://www.climatechange.gov.au/inventory/2005/index.html>. International emissions can be seen at the United Nations Framework Convention on Climate Change (UNFCCC) website at [http://unfccc.int/ghg\\_emissions\\_data/items/3800.php](http://unfccc.int/ghg_emissions_data/items/3800.php)

### **Measures to minimise greenhouse gas emissions**

Proponents must demonstrate consideration of a wide range of options and indicate the intended measures and efficient technologies to be adopted to minimise total greenhouse gas emissions from the proposed project, including:

- (a) identifying energy conservation measures, opportunities for improving energy efficiency and ways to reduce fugitive emissions where applicable;
- (b) indicating where potential savings in greenhouse gas emissions can be made through the use of renewable energy sources, taking into account fossil fuels used for supplementary power generation; and
- (c) their commitment to offsetting greenhouse gas emissions.

The design measures to maximise efficiency and minimise emissions should represent best practice at the time of seeking project approval.

Proponents are to advise whether they will join the Commonwealth Government's Greenhouse Challenge program. For more information on the program see <http://www.climatechange.gov.au/challenge/index.html>

### **Offsets**

Emission offsets include activities that remove carbon from the atmosphere or reduce the greenhouse gas intensity (output per unit product) from current or future activities. No Australian standards for offsets currently exist, although the Australian Government has committed to the development of an Australian standard for offsets by the end of 2008. The Australian Government does currently approve Greenhouse Friendly carbon credits under the Greenhouse Friendly initiative, more information about which can be found at <http://www.greenhouse.gov.au/greenhousefriendly>

Measures that offset emissions within the NT are encouraged, and NRETA staff can discuss possible options with proponents. Proposed emissions offsets projects should include an estimate of greenhouse gas emissions savings that will be achieved through implementation.

### **Emissions monitoring and reporting**

Consistent with the principles of continuous improvement, a program is to be outlined in the proponent's Environmental Management Plan which includes ongoing monitoring, investigation, review and reporting of greenhouse gas emissions and abatement measures.

The Australian Government is developing a nationally consistent framework for greenhouse and energy reporting by industry. Projects with significant emissions may be required to report their emissions under the National Greenhouse and Energy Reporting Act 2007. Data reported through the system will underpin the National Emissions Trading Scheme. For more information see <http://www.climatechange.gov.au/reporting/index.html>

### **Impacts of climate change**

Climate change is projected to result in changes to sea level, land and sea temperatures, cyclone intensity, frequency of fire weather, and frequency of extreme weather events including storms, drought and flood.

Proponents should discuss how projected climate change has been taken into account in planning the proposal, and how climate change is expected to affect the proposal over its stated lifetime. Proponents should discuss how climate change-related risks (for example, risk of failure of project infrastructure during potential extreme weather events) will be managed.

Potential impacts of climate change on the surrounding environment including water, land, biodiversity and ecosystems, coastal zones, and the social environment should also be taken into account in proposal planning.

In assessing climate change risk, proponents should be guided by recent projections published by organisations such as the CSIRO, the Bureau of Meteorology (BoM), and the Intergovernmental Panel on Climate Change. For the latest CSIRO and BoM projections for Australia, see: <http://www.climatechangeinaustralia.gov.au>

## GLOSSARY OF GREENHOUSE TERMS

**Abatement:** Limiting, abating, avoiding or sequestering greenhouse gas emissions through source reduction, fuel displacement or switching, carbon stabilising techniques or sink enhancement.

**Absolute emissions:** Refers to the total emissions of greenhouse gases expressed in terms of the actual mass of each individual gas emitted over a specified time period.

**Best Practice:** A best practice is a process, technique, or use of technology, equipment or resource that has a proven record of success in minimising energy use and greenhouse gas emissions. A commitment to use best practice is a commitment to use all available knowledge and technology to ensure that greenhouse gas emissions are minimised.

**Carbon Dioxide Equivalent:** A unit of greenhouse gas emissions calculated by multiplying the actual mass of emissions by the appropriate Global Warming Potential. This enables emissions of different gases to be added together and compared with carbon dioxide (see Table 1 below).

**Commonwealth Government's Greenhouse Challenge program:** A cooperative effort by industry and the Commonwealth Government to reduce greenhouse gas emissions through voluntary industry action. See: <http://www.climatechange.gov.au/challenge/index.html>

**Greenhouse Gases:** Table 1 lists the greenhouse gases proponents are required to report on.

**Global Warming Potential (GWP):** The warming potential of a gas, compared to that for carbon dioxide. GWPs are revised from time to time as knowledge increases about the influences of different gases and processes on climate change. Refer Table 1.

**Project Lifecycle Greenhouse Gas Emissions:** Those greenhouse gas emissions measured cumulatively over a defined period. Typically this period is from the point of extraction of the raw materials to either the beginning of the consumer phase of a product or the final disposal or recycling stage of a product, depending on its nature. Proponents should justify their choice of the defined period.

**National Greenhouse Gas Inventory Committee:** A committee comprising representatives of the Commonwealth, State and Territory Governments that oversees the development of greenhouse gas inventory methods and compilation of inventories for Australia.

**Sequestration:** Removal of greenhouse gases from the atmosphere by vegetation or technological measures. Sequestration is not yet precisely defined for the purposes of recognised trading or offset schemes. Accordingly, NRETA will take a common sense approach on a case by case basis in the interim. To assist proponents, NRETA regards sequestration as a process that results in the isolation of carbon dioxide from the atmosphere for a period which is significant in terms of influencing the global warming effect.

**Source:** Any process or activity that releases a greenhouse gas into the atmosphere.

**Table 1: Greenhouse gases and respective Global Warming Potential (GWP) factors**

Greenhouse Gas	Global Warming Potential
Carbon dioxide (CO <sub>2</sub> )	1
Methane (CH <sub>4</sub> )	21
Nitrous oxide (N <sub>2</sub> O)	310
Perfluorocarbons (CF <sub>x</sub> )	6,500 – 9,200
Hydrofluorocarbons (HFCs)	140 - 11,700
Sulphur hexafluoride (SF <sub>6</sub> )	23,900

Greenhouse gas emissions expressed in carbon dioxide equivalent (CO<sub>2</sub>-e) are calculated by multiplying the actual mass of emissions for each greenhouse gas by its respective GWP factor. GWP factors listed are those published by the International Panel on Climate Change in its 4<sup>th</sup> Assessment Report, 2007, see [http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1\\_Print\\_Ch02.pdf](http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Print_Ch02.pdf)