Non-CO_2 Greenhouse Gases: Methane

Source/Sectors: Stationary Combustion

Technology: Options in general (A.1.3)

Description of the Technology:
Stationary combustion includes all fuel combustion activities from fixed sources (versus mobile combustion). For stationary sources, methane may result from incomplete combustion of fuels. Methane is produced in small quantities from fuel combustion due to incomplete combustion of hydrocarbons in fuel. The production of CH_4 is a function of the temperature in the boiler/kiln/stove. In large facilities and industrial applications, the combustion is more efficient and the emission rate is very low. On the other hand, emission rates from smaller combustion sources are often higher, particularly when smoldering occurs. The highest rates of CH_4 emissions from fuel combustion occur in residential applications such as small stoves and open burning (USEPA, 2006a).

Little information regarding technological options for methane emission reduction in this sector was found from the literature search. Basically, reducing energy demand and improving combustion efficiency can reduce methane emissions from this sector.

Effectiveness: Not applicable

Implementability: Not applicable

Reliability: Not applicable

Maturity: Not applicable

Environmental Benefits: It reduces methane emissions.

Cost Effectiveness: Not applicable

Industry Acceptance Level: Not applicable

Limitations: Not applicable

Sources of Information:

1. California Energy Commission (2005) "Emission Reduction Opportunities for Non-CO_2 Greenhouse Gases in California", a report prepared by ICF Consulting for California Energy Commissions, CEC-500-2005-121, July 2005.
2. Delhotal, K.G.; de la Chesnaye, F.C.; Gardinar, A.; Bates, J.; Sankovski, A. (2006) "Mitigation of Methane and Nitrous Oxide Emissions from Waste, Energy and Industry" *The Energy Journal*, Multi-Greenhouse Gas Mitigation and Climate Policy Special Issue, pp. 45-62.
3. European Commission (2001) "Economic Evaluation of Sectoral Emission Reduction Objectives for Climate Change", Brussels. (Document can be found at http://ec.europa.eu/environment/enveco/climate_change/sectoral_objectives.htm)
4. International Energy Agency (2003) "Building the Cost Curves for the Industrial Sources of Non-CO_2 Greenhouse Gases", Report Number PH4/25, IEA Greenhouse Gas R&D Programme, Cheltenham, United Kingdom, October 2003.

5. Lucas, P.L.; van Vuuren, D.P.; Jos Oliver, G.J.; den Elzen, M.G.J. (2006) "Long-term Reduction Potential of Non-CO_2 Greenhouse Gases", Netherlands Environment Assessment Agency (MNP), published on line November 28, 2006.
6. U.S. Climate Technology Program (2005) "Technology Options for the Near and Long Term", U.S. Department of Energy, http://www.climatetechnology.gov/index.htm, August 2005.
7. U.S. Environmental Protection Agency (1999) "Report on U.S. Methane Emissions 1990-2020: Inventories, Projections, and Opportunities for Reductions", United States Environmental Protection Agency, EPA 430-R-99-013, September 1999.
8. U.S. Environmental Protection Agency (2003) "International Analysis of Methane and Nitrous Oxide Abatement Opportunities: Report to Energy Modeling Forum, Working Group 21", a report prepared by ICF Consulting for the United States Environmental Protection Agency.
9. U.S. Environmental Protection Agency (2004) "International Methane and Nitrous Oxide Emissions and Mitigation Data", United States Environmental Protection Agency. Available online at www.epa.gov/methane/appendices.html (in Excel file).
10. U.S. Environmental Protection Agency (2006a) "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 to 2004", Office of Atmospheric Programs, United States Environmental Protection Agency, EPA-430-R-06-002, June 2006.
11. U.S. Environmental Protection Agency (2006b) "Global Mitigation of Non-CO_2 Greenhouse Gases", Office of Atmospheric Programs, United States Environmental Protection Agency, EPA-430-R-06-005, June 2006.