

CHAPTER 1

INTRODUCTION

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1 INTRODUCTION

1.1 INTRODUCTION

The Waste volume gives methodological guidance for estimation of carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) emissions from following categories:

- Solid waste disposal (Chapter 3),
- Biological treatment of solid waste (Chapter 4),
- Incineration and open burning of waste (Chapter 5),
- Wastewater treatment and discharge (Chapter 6).

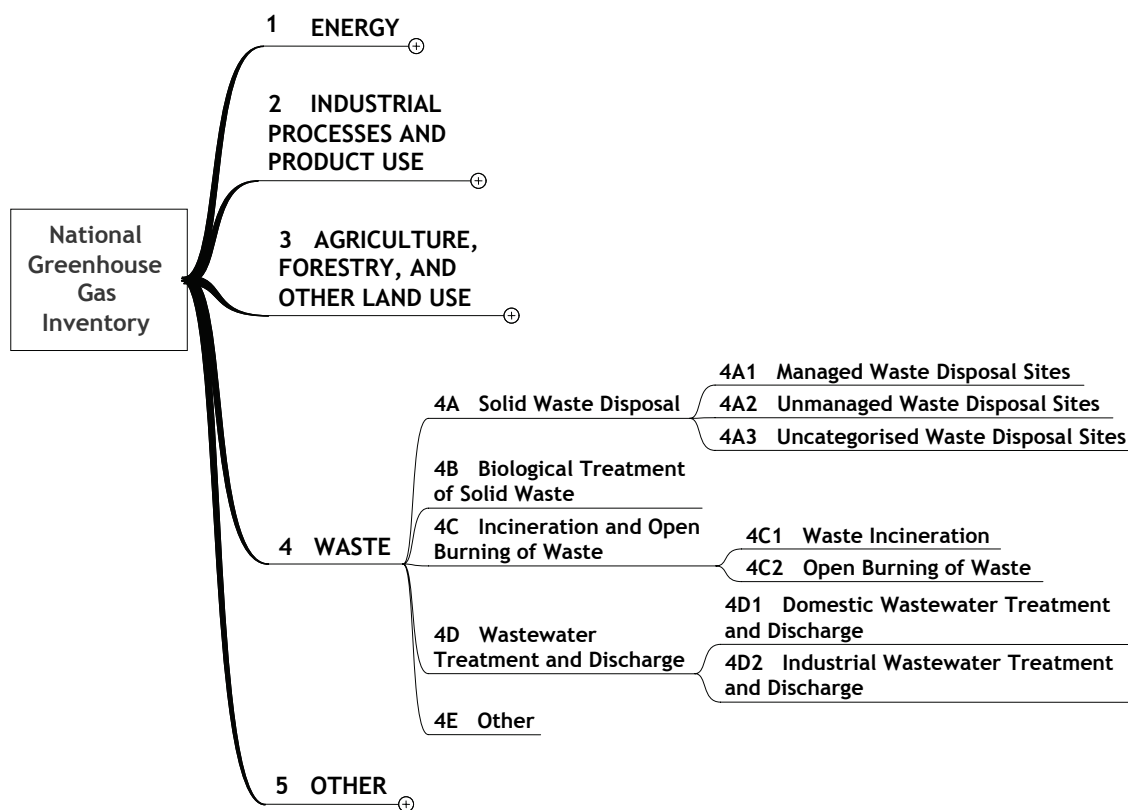
Chapter 3, Solid Waste Disposal, provides also a methodology for estimating changes in carbon stored in solid waste disposal sites (SWDS), which is reported as an information item in the Waste Sector (see also Volume 4, AFOLU, Chapter 12, Harvested Wood Products).

Chapter 2, Waste Generation, Composition and Management Data, gives general guidance of data collection for solid waste management including disposal, biological treatment, waste incineration and open burning of waste.

Categories and activities of the Waste Sector and their definitions can be found in Table 8.2 in Chapter 8 of Volume 1, General Guidance and Reporting. It is good practice to apply these categories in reporting as fully as possible.

Figure 1.1 shows the structure of categories within the Waste Sector and coding of their IPCC categories.

Figure 1.1 Structure of Waste Sector



Typically, CH₄ emissions from SWDS are the largest source of greenhouse gas emissions in the Waste Sector. CH₄ emissions from wastewater treatment and discharge may also be important.

Incineration and open burning of waste containing fossil carbon, e.g., plastics, are the most important sources of CO₂ emissions in the Waste Sector. All greenhouse gas emissions from waste-to-energy, where waste material is used directly as fuel or converted into a fuel, should be estimated and reported under the Energy Sector. The guidance given in Chapter 5 of this Volume is generally valid for waste burning with or without energy recovery. CO₂ is also produced in SWDS, wastewater treatment and burning of non-fossil waste, but this CO₂ is of biogenic origin and is therefore not included as a reporting item in this sector.¹ In the Energy Sector, CO₂ emissions resulting from combustion of biogenic materials, including CO₂ from waste-to-energy applications, are reported as an information item. Nitrous oxide is produced in most treatments addressed in the Waste volume. The importance of the N₂O emissions varies much depending on the type of treatment and conditions during the treatment.

Waste and wastewater treatment and discharge can also produce emissions of non-methane volatile organic compounds (NMVOCs), nitrogen oxides (NO_x), and carbon monoxide (CO) as well as of ammonia (NH₃). However, specific methodologies for the estimation of emissions for these gases are not included in this Volume, and the readers are guided to refer to guidelines developed under the Convention of Long Range Transboundary Air Pollution (EMEP/CORINAIR Guidebook, EEA, 2005) and EPA's Compilation of Air Pollutant Emissions Factors (U.S.EPA, 1995). The NO_x and NH₃ emissions from the Waste Sector can cause indirect N₂O emissions. NO_x is produced mainly in burning of waste, while NH₃ in composting. Overall, the indirect N₂O from the Waste Sector are likely to be insignificant. However, when estimates of NO_x and NH₃ emissions are available, it is good practice to estimate the indirect N₂O emissions for complete reporting (see Chapter 7 of Volume 1).

The scope of the Waste Volume is similar to the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories (1996 Guidelines, IPCC, 1997)* and the *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories (GPG2000, IPCC, 2000)*. Following new subcategories have been added to complement the guidance to cover all major waste management practices:

- Biological treatment of solid waste: Guidance for estimation of CH₄ and N₂O emissions from biological treatment (composting, anaerobic digestion in biogas facilities) has been included in Chapter 4, Biological Treatment of Solid Waste.
- Open burning of waste: Guidance to estimate emissions from open burning of waste as well as for estimation of CH₄ emissions from incineration complements the previous guidance on waste incineration in Chapter 5, Incineration and Open Burning of Waste.
- Septic tanks and latrines: Methods to estimate CH₄ and N₂O emissions from septic tanks and latrines as well as from discharge of wastewater into waterways are included in Chapter 6, Wastewater Treatment and Discharge.

References

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- U.S.EPA (1995). U.S. EPA's Compilation of Air Pollutant Emissions Factors, AP-42, Edition 5. <http://www.epa.gov/ttn/chief/ap42/>. United States Environmental Protection Agency.

¹ CO₂ emissions of biogenic origin are either covered by the methodologies and reported as carbon stock change in the AFOLU Sector, or do not need to be accounted for because the corresponding CO₂ uptake by vegetation is not reported in the inventory (e.g., annual crops).