Category		Title
NFR	6A	Other
SNAP		
ISIC		
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1 Overview

This source category provides a 'catch all' for emissions from animals that cannot be attributed to the agricultural sector. Thus, this may potentially be a very extensive sector covering lots of different activities not covered by other source categories.

The following criteria should be used to determine whether emissions should be reported in this section:

- The animals should be largely managed by humans. Emissions from wildlife are considered natural, even when those wildlife are subject to a degree of management (e.g. hunting), and should not be reported in the inventory. The distinction is thus related to management and not to species; some species (e.g. deer) will normally be considered wildlife but can be farmed.
- The animals should not primarily be kept for producing agricultural products (meat, milk, fibre, feathers etc); these should be considered as agricultural livestock and should be reported under section 3 (Agriculture). The emissions reported under section 6A would thus include those arising from animals raised or used for leisure purposes (horses for riding, pets) and domestic livestock used primarily for nature conservation. The emphasis here is on the primary purpose for the animals and can include the use of animals subsequently culled for additional purposes, such as food for human consumption or pet food.

It is noted that some Parties consider some or all livestock kept on agricultural holdings or some animals kept for commercial purposes (e.g. stud horses, riding stables) to be agricultural animals and have reported their emissions as such, under CRF code 3B. Parties may choose to continue to account for these livestock under 3B, while ensuring that emissions from other animals (including pets) are reported under 6A. A Party choosing to adopt this approach must make a note of such in their Informative Inventory Report.

The compounds included here are identical to those in Chapter 3B; ammonia (NH_3), nitric oxide, non-methane volatile organic compounds and particulate matter. For cats and dogs, which are not covered by Chapter 3B, only NH_3 emissions are considered due to lack of specific data on other emissions.

2 Description of sources

For a description of sources, see Chapter 3B.

3 Methods

3.1 Choice of method

For methods appropriate to animals that can also be kept for agricultural purposes (e.g. cattle, sheep, goats, horses, poultry), use the methods described in Chapter 3B (Manure management). For pets, only cats and dogs are considered and a Tier 1 method for NH_3 emission from cats and dogs is provided below. While the potential range of non-agricultural animals, whether kept in households as pets or on commercial properties such as riding stables or petting zoos is huge, only those for

which there are agricultural analogues (e.g. horses) or cats and dogs are considered. The most robust estimates available (Sutton et al. 2000) considered that NH_3 emissions from non-agricultural horses, dogs and cats amounted to 2.6, 1.6 and 0.3% of total UK NH_3 emissions respectively. Hence emissions from the very wide range of other animals kept as pets, from snakes to parrots, are unlikely to make a significant contribution to national emissions.

3.2   Tier 1 default approach

3.2.1   Ammonia

3.2.1.1   Algorithm

The emission of NH_3 from pets is estimated as follows:

$$E_{pet} = \sum (m_{pet\_i} \cdot AAP_{pet,i})$$

where:

E_{pet} = total emission of NH_3 from pets (in kg a^{-1}),

$AAP_{pet,i}$ = annual average population of pet i (a^{-1}),

Sutton et al (2000) provide the following estimates of ammonia emission factors of 0.13 and 0.74 kg NH_3 a^{-1} AAP^{-1} for cats and dogs respectively, and 12.0 and 40.9 kg NH_3 a^{-1} AAP^{-1} for horses ridden for pleasure and race horses respectively.

3.2.1.2   Activity data

Estimates of the cat and dog populations for European countries are available from the European Pet Food Federation (https://europeanpetfood.org/about/statistics/). Numbers of non-agricultural horses may be available from national statistical sources. Otherwise, information on race horse populations may be available from the breeders' organisations (European Federation of Thoroughbred Breeders' Associations) or one of the national/international organisations that are members of the European Horse Network (https://www.europeanhorsenetwork.eu/).

4 Data quality

4.1   Completeness

Achieving completeness for this chapter will be challenging, since by definition, they will be diverse and usually minor sources.

4.2   Avoiding double counting with other sectors

Double counting is not expected for emissions from pets such as cats and dogs but is a risk for horses, since they are also kept for agricultural purposes. Furthermore, agricultural enterprises may have subsidiary businesses which use horses for riding and other animals such as alpacas or rabbits to entertain children. The use of such animals may not be explicitly recorded.

4.3   Verification

There are no direct methods to evaluate total inventory estimates of these emissions.

4.4 Developing a consistent time series and recalculation

Developing a trend of emissions from these sources will only be possible where long-term activity data are available.

4.5 Uncertainty assessment

4.5.1 Emission factor uncertainties

Sutton et al (2000) suggested that the emission factors for cats varied between 0.06 and 0.19 kg NH_3 a^{-1} AAP^{-1} and for dogs varied between 0.36 and 1.13 kg NH_3 a^{-1} AAP^{-1}. For pleasure riding horses, the equivalent values are 6.1 and 24.3 kg NH_3 a^{-1} AAP^{-1} and race horses 18.2 and 48.6 kg NH_3 a^{-1} AAP^{-1}.

4.5.2 Activity data uncertainties

Activity data uncertainties will depend on the accuracy of the population data, which could vary widely.

4.6 Inventory quality assurance/quality control QA/QC

The quality of emission estimates of NH_3 emissions from non-agricultural animals will vary considerably from country to country, depending largely on the quality of the information concerning the population of pets.

4.7 Gridding

Gridding for emissions from cats and dogs should be based on the spatial distribution of the human population. The population of horses for pleasure riding is likely to be concentrated around the major centres of population whereas that for race horses will be more dispersed over the rural landscape.

5 References

Sutton M.A., Dragosits, U., Tang, Y.S. and Fowler, D. (2000) Ammonia emissions from non-agricultural sources in the UK, Atmospheric Environment 34 (2000) 855-869

6 Point of enquiry

Enquiries concerning this chapter should be directed to the relevant leader(s) of the Task Force on Emission Inventories and Projection's expert panel on Agriculture and Nature. Please refer to the TFEIP website (www.tfeip-secretariat.org/) for the contact details of the current expert panel leaders.