

# Agriculture Emission Estimation tool (AgrEE) – an update on the additional abatement measures for ammonia

Manjola Banja, Monica Crippa, Federico Pagani, Enrico Pisoni

Clean Air and Climate Unit, Joint Research Centre, Ispra, Italy

UNECE Task Force on Emission Inventories and Projections (TFEIP)

Agriculture Expert Panel, 29 April 2026

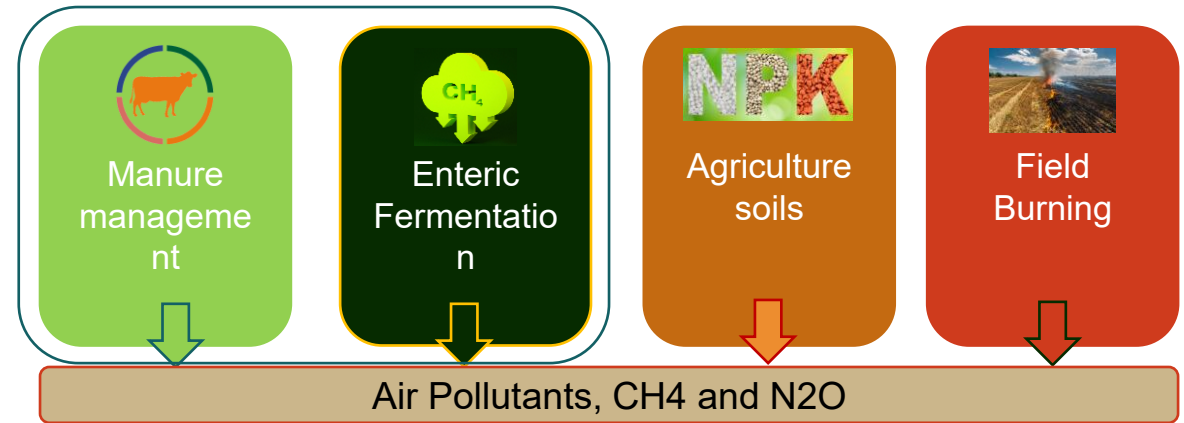
# Outline

- AgrEE tool – short overview, users
- AgrEE tool – access and main steps within the tool
- Intermediate step – Nitrogen excretion and  $\text{NH}_3$  abatement
- Ammonia abatement measures – housing
- Key takeaways
- AgrEE tool – further work



# AgrEE tool – short overview

- A user-friendly web tool, launched by the end of February 2022
- Updated following EMEP/EEA Guidebook 2023
- Supporting coherent EU Member States reporting of air pollutants (NECD) and GHG emissions (UNFCCC) for agricultural sector
- Tier 1 and Tier 2 method
- Enable extracting results conform the CLRTAP Annex I template
- Facilitate trend analysis, result comparison, relative contributions (by categories/sectors)
- NH<sub>3</sub> abatement measures for housing system



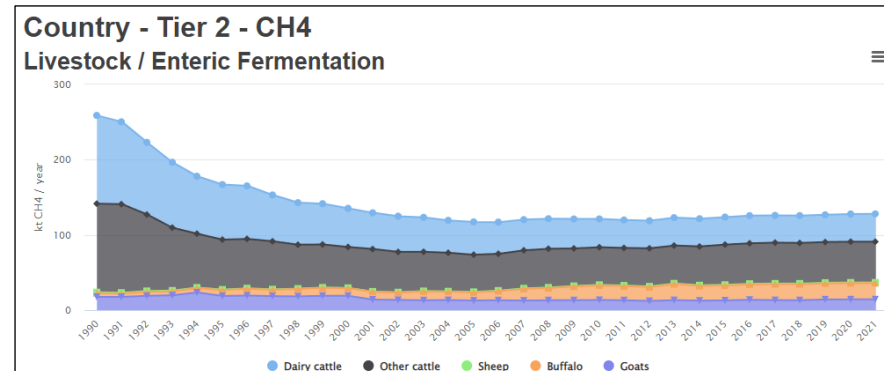
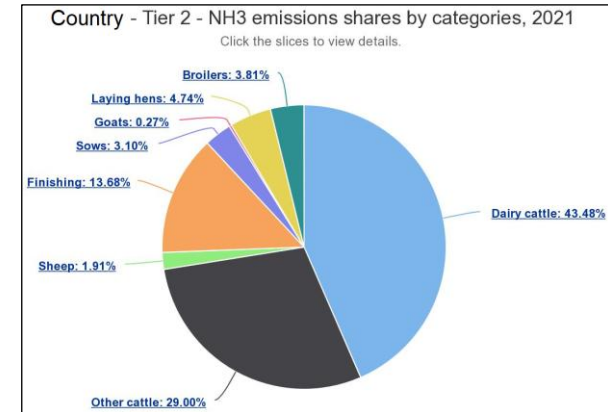
## ANNEX 1: National sector emissions: Main pollutants, particulate matter, heavy metals and persistent organic pollutants

NFR

COUNTRY: XX (as ISO2 code)  
 DATE: DD.MM.YYYY (as DD.MM.YYYY)  
 YEAR: XXXX (as YYYY, year of emissions and activity data)  
 Version: v1.0 (as v1.0 for the initial submission)

XX: DD.MM.YYYY: XXXX NFR sectors to be reported

NFR Aggregation for Gridding and LPS (GNFR)	NFR Code	Long name
K_AgriLivestock	3B1a	Manure management - Dairy cattle
K_AgriLivestock	3B1b	Manure management - Non-dairy cattle



# AgrEE tool users

- >50 registered users (EU and non EU)
  - Inventory compilers
  - Researchers
  - DG Environment
  - DG Agriculture and Rural Development
  - DG for Climate Action
  - European Environment Agency
  - Received requests from outside Europe
- Mentioned in the Informative Inventory Reports (IIRs) under NECD reporting

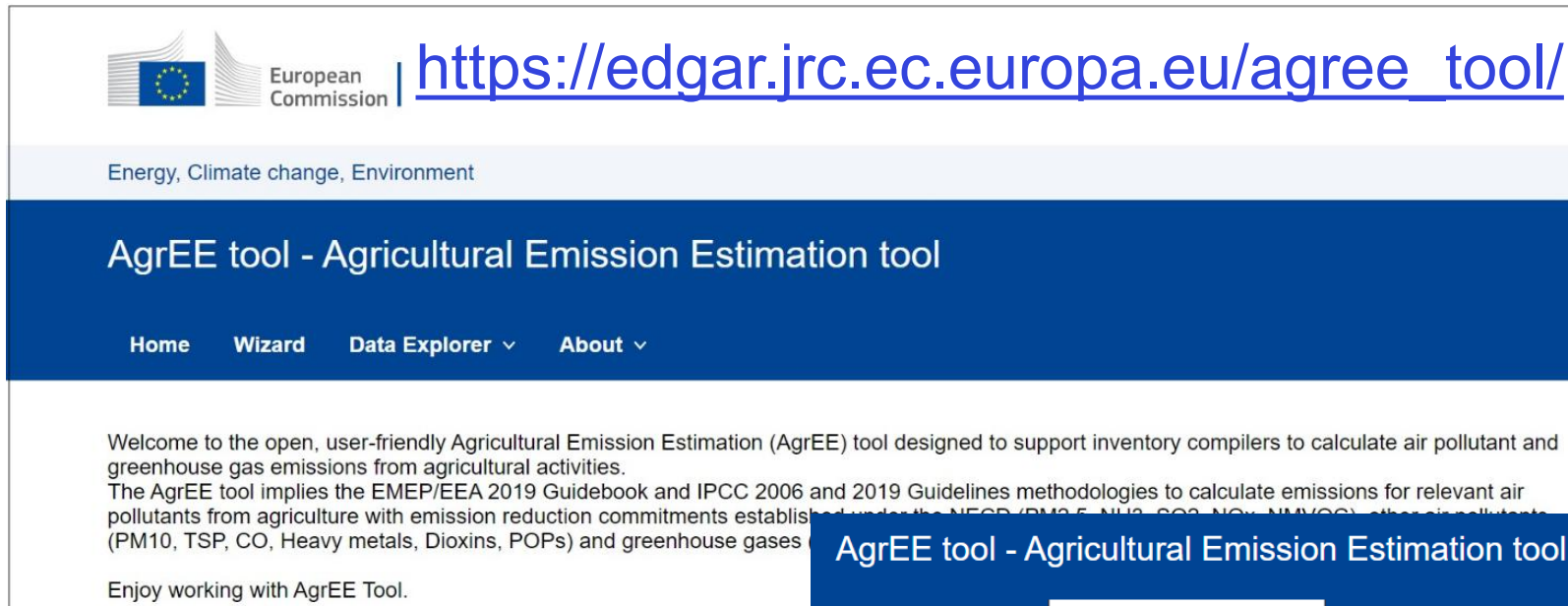
Feedback on the use or needs are welcomed

[JRC-AGREETOOL@ec.europa.eu](mailto:JRC-AGREETOOL@ec.europa.eu)



# AgrEE tool access

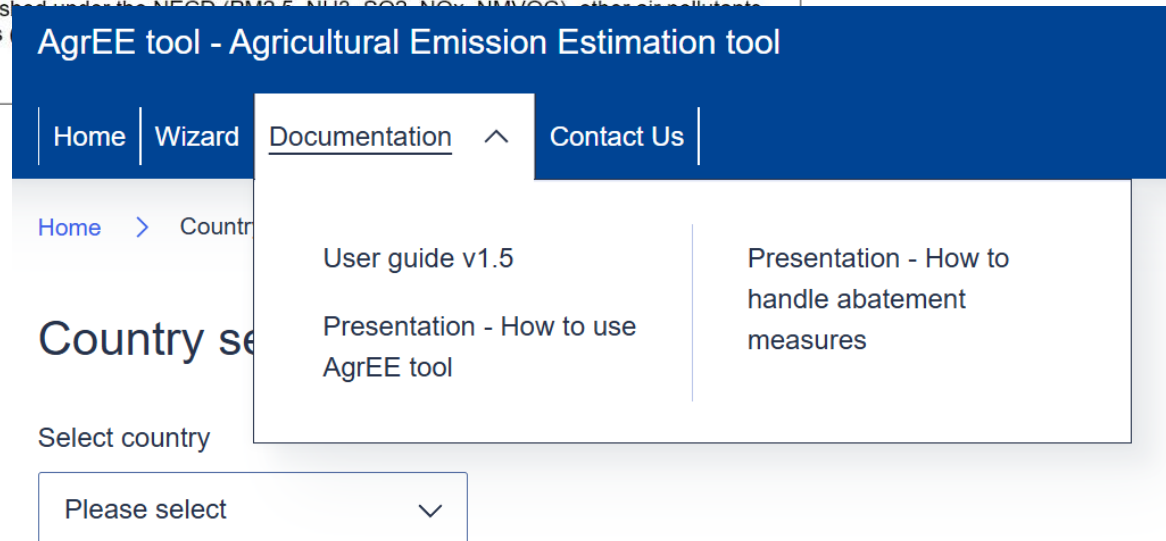
“EU login” needed through registering on ECAS (European Commission Authentication Service) which is a **secure “single sign-on” approach** <https://webgate.ec.europa.eu/cas/privacyStatement.html>



The screenshot shows the top part of the AgrEE tool website. At the top left is the European Commission logo. To its right is the URL [https://edgar.jrc.ec.europa.eu/agree\\_tool/](https://edgar.jrc.ec.europa.eu/agree_tool/). Below the logo and URL is a light blue bar with the text "Energy, Climate change, Environment". A dark blue navigation bar contains the text "AgrEE tool - Agricultural Emission Estimation tool" and a menu with "Home", "Wizard", "Data Explorer", and "About". Below the navigation bar is a white content area with a welcome message: "Welcome to the open, user-friendly Agricultural Emission Estimation (AgrEE) tool designed to support inventory compilers to calculate air pollutant and greenhouse gas emissions from agricultural activities. The AgrEE tool implies the EMEP/EEA 2019 Guidebook and IPCC 2006 and 2019 Guidelines methodologies to calculate emissions for relevant air pollutants from agriculture with emission reduction commitments established under the NERF (PM<sub>2.5</sub>, NH<sub>3</sub>, CO<sub>2</sub>, NO<sub>x</sub>, NMVOC), other air pollutants (PM<sub>10</sub>, TSP, CO, Heavy metals, Dioxins, POPs) and greenhouse gases." At the bottom of this section is the text "Enjoy working with AgrEE Tool."

Country pairing

Guide and other documents available in the tool



This screenshot shows a dropdown menu from the "Documentation" link in the navigation bar. The menu is titled "AgrEE tool - Agricultural Emission Estimation tool" and contains four items: "User guide v1.5", "Presentation - How to use AgrEE tool", "Presentation - How to handle abatement measures", and "Presentation - How to handle abatement measures". Below the menu is a "Country selection" section with a dropdown menu labeled "Please select" and a downward arrow.



# Main steps within AgrEE tool

## Wizard page

**WIZARD**

### Country

Select a year:

Range:  Check to set a range of Years.

Select a sector:

Tier 2 method (T2)  
 Tier 1 method (T1)

**Proceed »**

**WIZARD**

### Country - Tier 2 Livestock

Select pollutant:

- CH4
- N2O
- NH3**
- NMVOC
- NOx
- PM10
- PM2.5
- TSP

### Country - Tier 2 - NH3 Livestock

Select sub-categories:

Search:

Select all

- Dairy cattle / Dairy cattle (3B1a)
- Non Dairy cattle / Calves (3B1b)
- Non Dairy cattle / Cattle 1-2yr (3B1b)
- Non Dairy cattle / Cattle older 2yr (3B1b)
- Non Dairy cattle / Cattle younger 6months (3B1b)
- Non Dairy cattle / Other cattle (3B1b)
- Sheep / Sheep (3B2)
- Swine / Finishing (3B3)

**« Go back** **Proceed »**

Intermediate step – Nitrogen excretion and abatement

**WIZARD**

### Country - Tier 2 - NH3 Livestock

**« Go back**

Input fields legend: ■ Changed by user ■ Precompiled country-specific value ■ Value copied from previous year ■ Value changed by uploaded file ■ Default value

Data type	Description	System	Fuel	Unit	2018
<b>Livestock / Dairy cattle / Dairy cattle (3B1a)</b>					
AD	Animal Weight	All types	All types	kg	645.0
AD	AWMS	Biogas	slurry	Fraction	6300
AD	AWMS	Biogas	solid	Fraction	2000
AD	AWMS	House	slurry	Fraction	4300
AD	AWMS	Storage	slurry	Fraction	3700
AD	AWMS	Storage	solid	Fraction	8000
AD	AWMS	Storage	without natural crust	Fraction	5000
AD	AWMS	Storage	with natural crust	Fraction	5000
AD	AWMS	Tied Housing	All types	Fraction	0000
AD	AWMS	Yard	waste	Fraction	2500
AD	fem	All types	All types	kg N/kg straw	0050
AD	fmin	All types	All types	kg N/kg	1000

Input template & Calculations



# Intermediate step – Nitrogen excretion and NH<sub>3</sub> abatement

Select mode for Nitrogen excretion

IPCC 2006 Eq. 10.30

IPCC 2006 Eq. 10.30

IPCC 2006 Eq. 10.31

Country specific calculation

Nitrogen excretion calculated with IPCC 2006 method  
Country specific

Select Housing abatement measures

None

None

**Flooring**

Fully slatted floor

Partially slatted floor

**Air scrubbing**

Air Scrubbing – Classic

Air Scrubbing – Advanced

Combined Scrubber Effect

**Other**

Acidification (in-house slurry)

Reduction efficiency and Fraction of livestock  
NH<sub>3</sub> emission factor with abatement is calculated  
Reduced ammonia emissions in house provided

# NH<sub>3</sub> abatement measures for housing (3B)

Informative table on available NH<sub>3</sub> abatement measures for each Livestock

Abatement measures are category-specific and automatically filtered by the tool

When multiple livestock categories are selected, only common abatement measures can be applied

AgrEE tool - Agricultural Emission Estimation tool

Home | Wizard | Documentation | Contact Us

Home > Wizard

Wizard - Italy - Tier 2 - NH<sub>3</sub> - Livestock

Select sub-categories

Dairy cattle / Dairy cattle (3B1a)

« Go back Proceed »

« Go back Proceed »

Livestock	Partially slatted floor	Fully slatted floor	Air Scrubbing Classic	Air Scrubbing Advanced	Combined Scrubber	Acidification
Dairy cattle	✓	✓				✓
Non Dairy cattle	✓	✓				✓
Swine	✓	✓	✓	✓	✓	✓
Laying Hens			✓	✓	✓	
Broilers			✓	✓	✓	
Turkey			✓	✓	✓	

Abatements applicability table

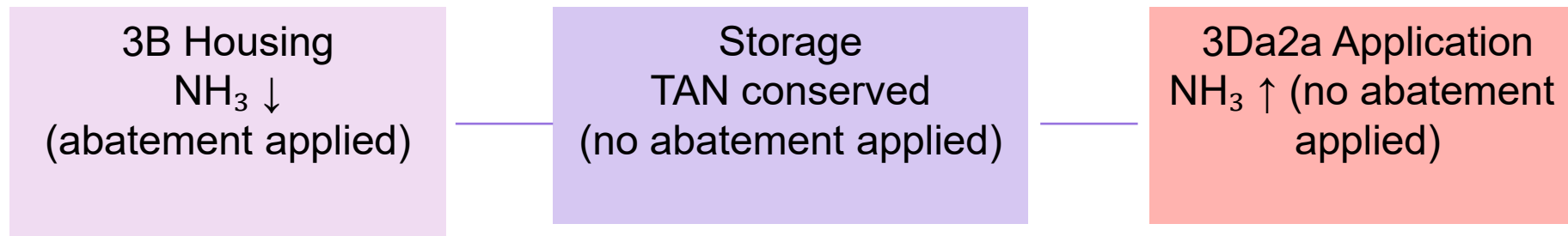


# NH<sub>3</sub> abatement measures for housing (3B)

- Measures selection based on IPCC guidelines, EMEP/EEA Guidebook and available literature on ammonia emissions mitigation
- Nitrogen Flow Logic is applied

$$N_{\text{excreted}} = NH_{3\text{housing}} + NH_{3\text{storage}} + NH_{3\text{application}} + N_{\text{retained}}$$

- Abatement reduces NH<sub>3</sub> at source but conserves TAN (Total Ammoniacal Nitrogen)
- Downstream emissions redistributed rather than removed
- Slight increase in application emissions
- Overall NH<sub>3</sub> emissions still decreases



# Key takeaways

- AgrEE tool ensures consistent air pollutant and GHG emission estimation aligned with the reporting frameworks
- Updated Guide will be available in the tool
- The tool provides several NH<sub>3</sub> abatement measures for housing system
- Abatement in housing system can be used to estimate **direct reduction at source**
- Total NH<sub>3</sub> emissions should be interpreted as **partial-chain mitigation outcome**
- Abatement measures are livestock-specific; when multiple categories are selected, only measures common to all selected livestock are applied
- Abated NH<sub>3</sub> emission factors are provided for housing system
- Stage-specific NH<sub>3</sub> emissions for the manure management chain taking into account the abatement are provided



# AgrEE tool – further work

- JRC responsible for the maintenance and update (end of 2028)
- Additional abatement measures in other systems – upon interest and following the revision of the Ammonia Guidance Document
- Improvement and further development of the data visualisation and analysis section of the tool- e.g comparing and quantifying the effect of different feeding situations – subject of further discussions
- Possible use as support tool for the revision of Industrial Emissions Directive (IED2) -subject to further discussion

# Thank you



© European Union 2026

Unless otherwise noted the reuse of this presentation is authorised under the [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/) license. For any use or reproduction of elements that are not owned by the EU, permission may need to be sought directly from the respective right holders.

Icons by <https://phosphoricons.com>