



ENVIRONMENTAL IMPACT OF INTENSIVE LIVESTOCK IN SPAIN

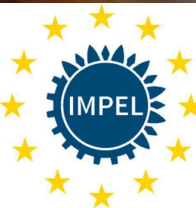
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IMPEL WG10: Poultry and Pigs: Environmental Controls on Intensive Farms

MINISTERIO
PARA LA TRANSICIÓN ECOLÓGICA
Y EL RETO DEMOGRÁFICO



GOBIERNO
DE ESPAÑA



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1. ENVIRONMENTAL IMPACTS OF INTENSIVE LIVESTOCK IN SPAIN

AIR

- Air pollution: Gases (NH_3 , N_2O , NO_x), Particles (PM_{10} , $\text{PM}_{2.5}$), aerosols (N,P), micro-organism.
- Acidification (NH_3 , N_2O , NO_x).
- Greenhouse Effect (CH_4 , N_2O , CO_2)
- Odours and noise.

Nitrates Directive: Council Directive of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources (91/676/EEC).

Water Frame Directive (WFD): Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.

● Light up red

WATER

- Contamination of surface and ground water (NO_3^- and NH_4^+).
- Eutrophication of water (N_T and P_T).
- Veterinary drug residues and dissemination of pathogenic micro-organisms.
- Water consumption by livestock farming: Animals consumption, cleaning systems.

SOIL

- Alteration of properties and structure.
- Acidification of soil (NH_3 , NO_3^- and NH_4^+).
- Veterinary drug residues and dissemination of pathogenic micro-organisms.
- Dissemination of metals (Zn, Cu), pesticides and toxic substances.

Biodiversity loss in terrestrial and aquatic ecosystems

Source: [BATs Guide to reduce environmental impact of livestock farming](#).MAPA

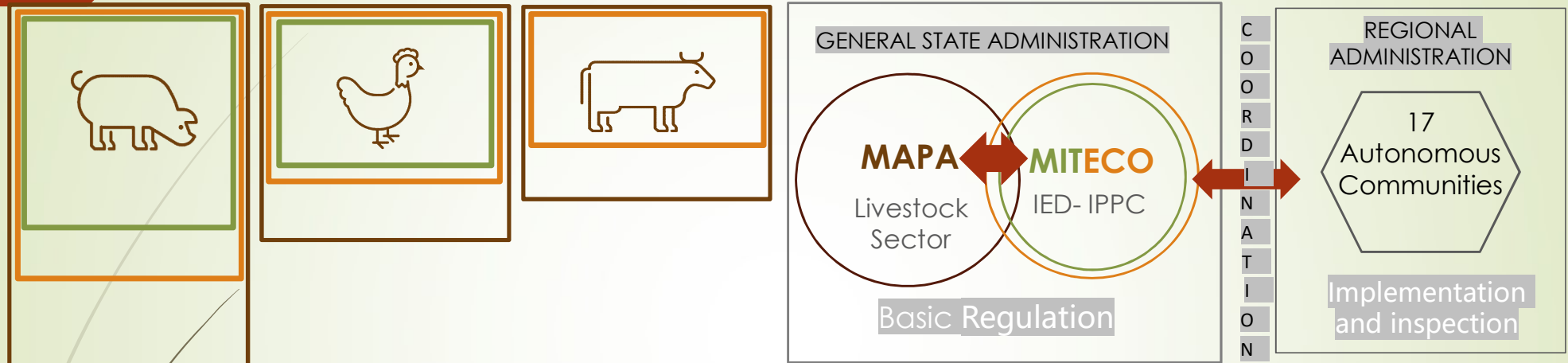
1. ENVIRONMENTAL IMPACTS OF INTENSIVE LIVESTOCK IN SPAIN

1.1. EMISSION SOURCES

EMISSION	SOURCES
Ammonia (NH ₃)	Animal housing. During storage, management and landspreading of manure.
Methane CH ₄ *	Animal housing, storage and landspreading of slurry.
Nitrous Oxide* (N ₂ O)	Animal housing, storage, management and landspreading of slurry or solid manure. manure.
Nitrogen oxides (NO _x)(NO+N ₂ O)	Diesel fuel of vehicles and heating systems.
Carbon dioxide (CO ₂)*	In animal housing and because of the energy used for heating, lighting and transport. transport.
Dust (PM ₁₀ , PM _{2,5})	Animal housing, production, storage and distribution of animal feed. Storage, and and landspreading of solid manure and by heating systems.
Nitrogen, Phosphorus (N _T , P _T)	Animal housing, storage, management and landspreading of slurry or solid manure manure
Odours	Animal housing, storage, management and landspreading of slurry or solid manure. manure.
Noise	Animal housing, vehicles and landspreading

Source: BAIS Guide to reduce environmental impact of livestock farming. MAPA

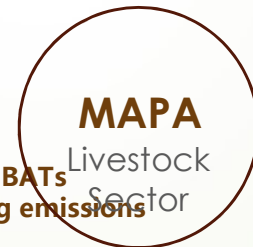
2. ENVIRONMENTAL REGULATION IN THE SPANISH LIVESTOCK FARMING



Royal Decrees of Ordinance as livestock farming basic rules:

- ✓ Royal Decree 306/2020: Intensive pig farms.
- ✓ Royal Decree 1221/2009: Extensive pig farms.
- ✓ Royal Decree 637/2021: Poultry farms.
- ✓ Royal Decree 1053/2022: Cattle farms.
- ✓ Royal Decree 988/2022: Regulating the general register of BATs

on farms and support for calculating, monitoring and reporting emissions in livestock farming. (ECOGAN)



- Biosecurity, hygiene, animal welfare and health requirements.
- Equipment and operating conditions.
- **Integrated Farm Management System.**
- **Manure management.**
- **Emissions reduction on the farm.**
- **BATs Register. (ECOGAN)**
- Permits and registration.
- Control and Penalties.

CURRENT IED 75/2010/EU: Intensive rearing. Thresholds: 40.000 chicken places, 2.000 pigs, 750 breeding sows.
TRANSPOSITION:

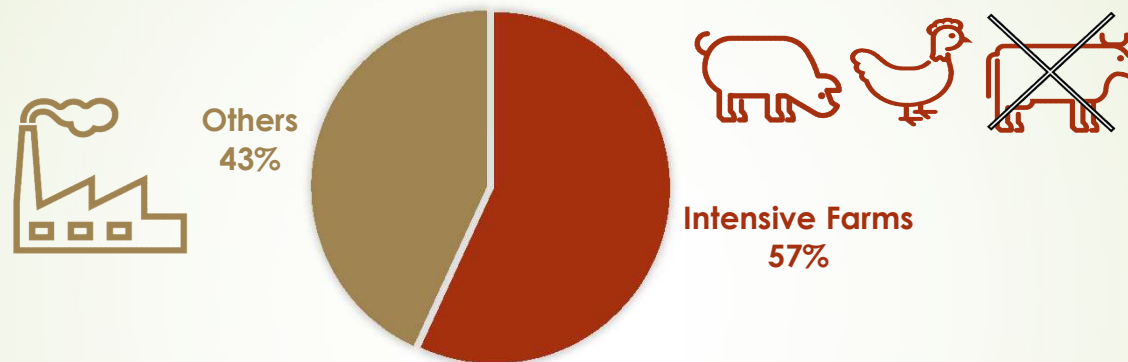
- ✓ Royal Legislative Decree 1/2016 on Integrated Pollution Prevention and Control (IPPC Law).
- ✓ Royal Decree 815/2013 on Industrial Emissions.



IED REVISION: INTENSIVE rearing of pigs, poultry, cattle and mixed. Chapter VI.a. FUTURE TRANSPOSITION.

3. SPANISH LIVESTOCK FARMING UNDER THE CURRENT IED

IPPC INTALATIONS: IED 75/2010/EU



- **In force:** Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on Industrial Emissions (Integrated Pollution Prevention and Control (IPPC)).
- **Spain, approx.:** 6.700 IPPC installations, 3.800 are intensive farms (>50%). (Source: PRTR-ES)
- **Scope:** Intensive pig and poultry farming (Extensive and cattle farms are not included).
- **Emission Control:** Commission Implementing Decision (EU) 2017/302 establishing Best Available Techniques (BAT) conclusions for the intensive rearing of poultry and pigs.
- **Emission Report:** PRTR-ES and EU-Registry/IEP (Industrial Emission Portal).

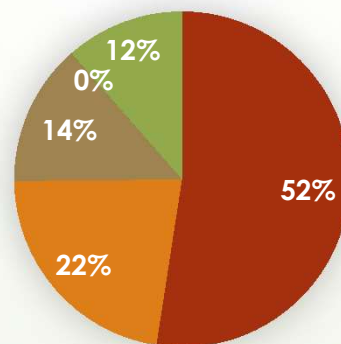
1. ENVIRONMENTAL IMPACTS OF INTENSIVE LIVESTOCK IN SPAIN

1.1. EMISSIONS: SPANISH LIVESTOCK EMISSIONS (IPPC) VS TOTAL EMISSIONS PRTR-ES

SUBSTANCES	LIVESTOCK EMISSIONS (PRTR-ES) t/year(2021)	TOTAL EMISSIONS (PRTR-ES) t/year(2021)	LIVESTOCK VS TOTAL(PRTR-ES) %
NH ₃	52.500	54.500	96
CH ₄	108.000	261.000	41
N ₂ O	656	2.600	25
NO _x	99	148.000	0,07
TSP	3.500	16.700	21

Source: [PRTR-ES](#)

% PRTR-ES Livestock Emissions vs PRTR-ES total Emissions



■ NH3 ■ CH4 ■ N2O ■ NOx ■ TSP

4. EMISSIONS REPORT: FARMS IN PRTR-SPAIN

English version: <https://en.prtr-es.es/>

Home page

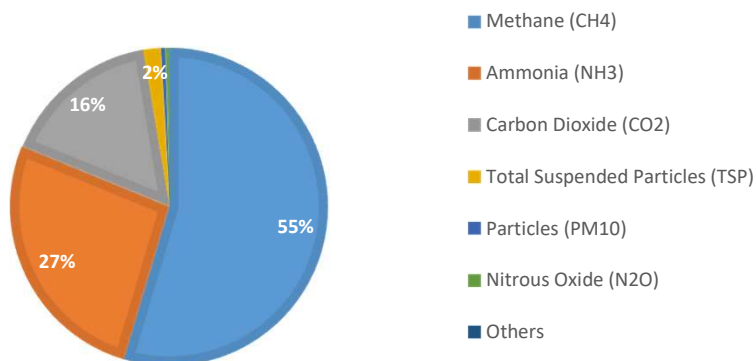
Facility inventory

Environmental information

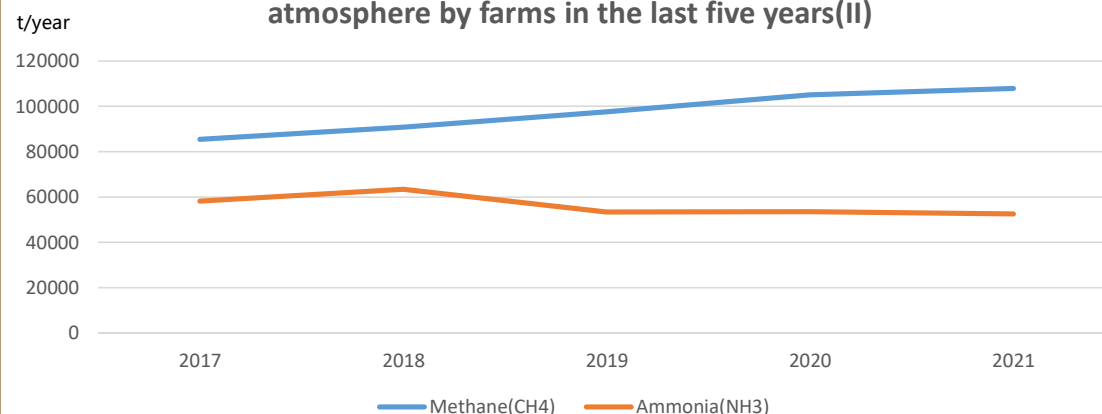
4. EMISSIONS REPORT: FARMS IN PRTR-SPAIN

- Total PRTR installations-Spain: 7170. Total IPPC installations: 6762. **Farms: 3.846 (57% of the total number of active PRTR installations).**
- Characteristic **emissions to air** from farms in PRTR-SPAIN:

DISTRIBUTION OF AIR EMISSIONS FROM FARMS. YEAR 2021 (I)



Evolution of emissions of the main pollutants emitted into the atmosphere by farms in the last five years (II)



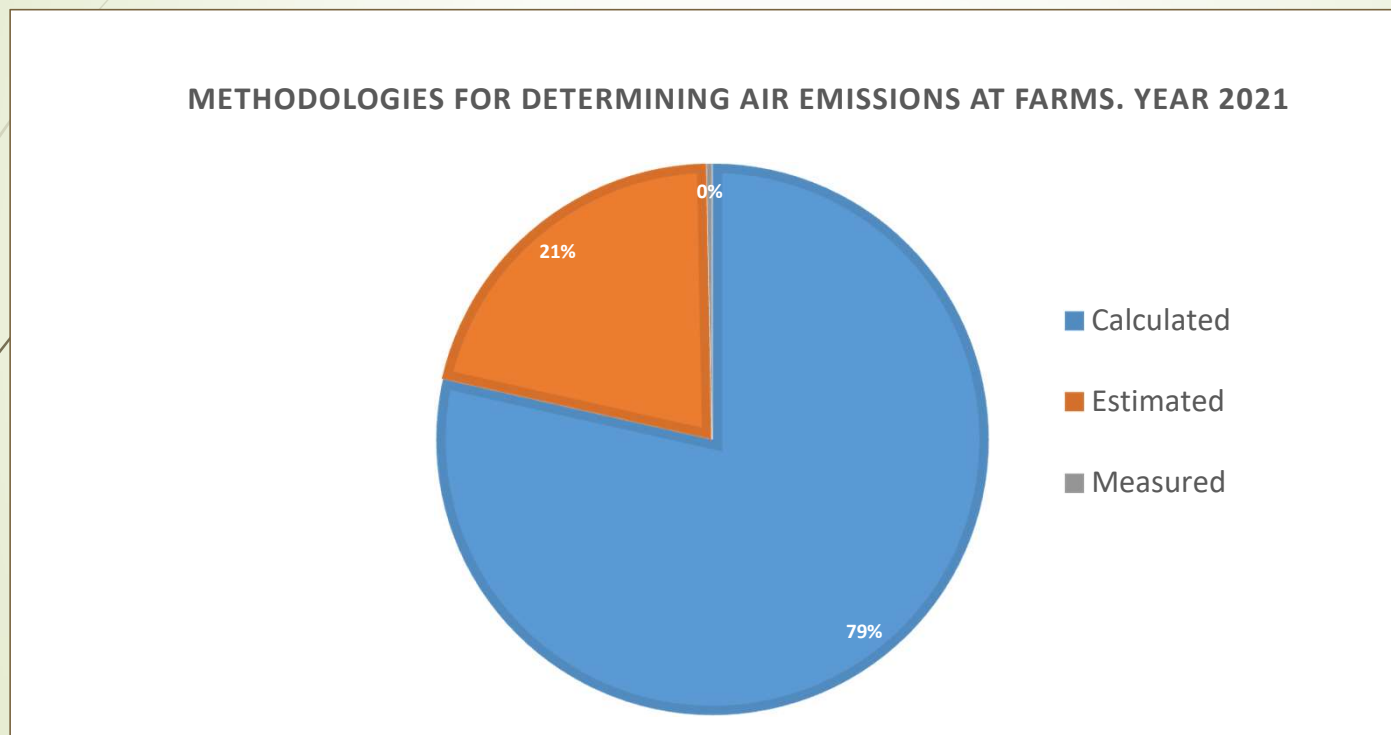
➤ Other air emissions from farms in PRTR-SPAIN:

- ✓ Carbon Monoxide (CO)
- ✓ Nitrogen Oxides (NOx)
- ✓ Non-Methane Volatile Organic Compounds (NMVOCs)
- ✓ Sulphur Oxides (SOx/SO₂)
- ✓ Total Organic Carbon (TOC) (air)
- ✓ Metals
- ✓ Others

...associated with activities and installations other than animal husbandry (e.g. combustion installations)....

4. EMISSIONS REPORT: FARMS IN PRTR-ES

- Methods for the determination of emissions to air:



4. CONCLUSIONS, CHALLENGES AND WORK IN PROGRESS

Conclusions



- The intensive livestock causes relevant environmental impacts.
- Intensive livestock farming in Spain has a considerable share in total emissions under the IPPC regime.
- We need to take action.

IED/EU Revision



Cluster 6

Future Challenges



- Increased ambition: New chapter with special provisions for intensive rearing poultry, pigs and **cattle**. Lower thresholds and inclusion of cattle.
- Trilogues during the Spanish Presidency of the European Council.
- Transposition into Spanish legal system.

[MITECO/SGALSI]-MAPA



- Better coordination between administrations. Good example: ECOGAN.
- Interconnection of information systems and registers: ECOGAN-PRTR-SEI.
- Compilation of emerging techniques for the submission of the JRC.
- Analysis of BATs for cattle sector.

THANK YOU FOR YOUR ATENTION

Are there any questions?

