



# **The review of the Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry and Pigs (IRPP BREF) under the Industrial Emissions Directive (2010/75/EU)**

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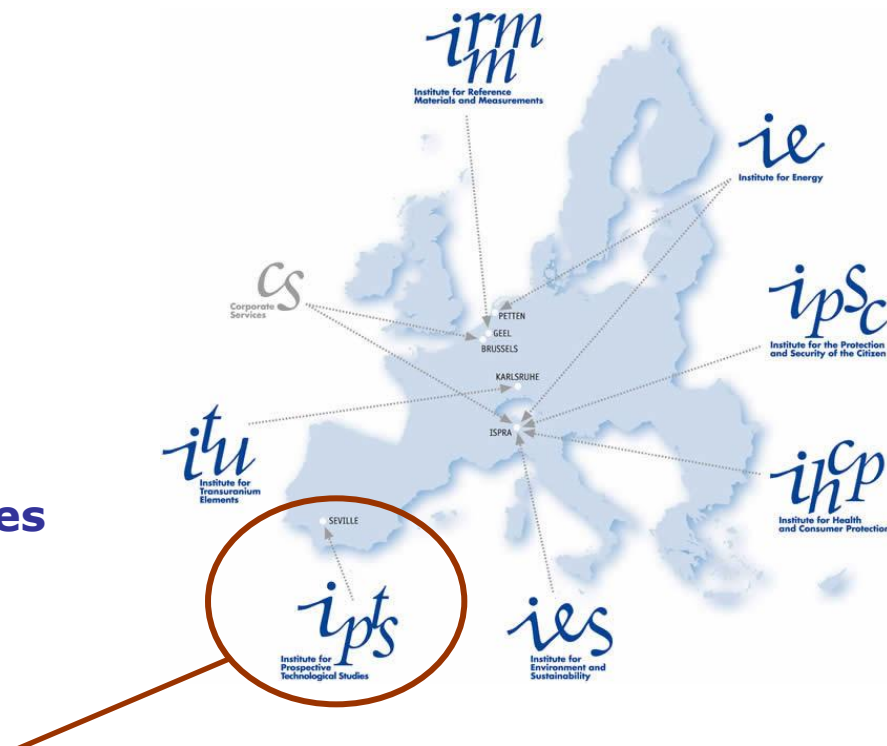
## Outline of the presentation

- **Who we are**
- **Industrial Emissions Directive (2010/75/EU)**
- **Overview of the IRPP BREF review process**
- **Examples of draft BAT conclusions in the IRPP BREF**
- **Challenges of the IRPP BREF review**

## Who we are (1/1)



- **European Commission: ~ 40 Directorates General**
- **DG Joint Research Centre: 7 institutes**
- **Institute for Prospective Technological Studies (IPTS): 5 scientific units**
- **European IPPC Bureau (EIPPCB): ~20 staff within the Sustainable Production and Consumption Unit**





## Industrial Emissions Directive (IED) (1/2) – General

- **Directive 2010/75/EU is the key legal instrument for environmental permitting of large (agro)industrial installations in the European Union**
- **Main elements:**
  - integrated pollution prevention and control
  - prevent or, where not practicable, reduce pollution
  - high level of protection for the environment as a whole
- **Best Available Techniques (BAT) as laid out in BAT conclusions documents are the reference for setting permit conditions**
- **Emission limit values are set based on emission levels associated with BAT (BAT-AELs)**

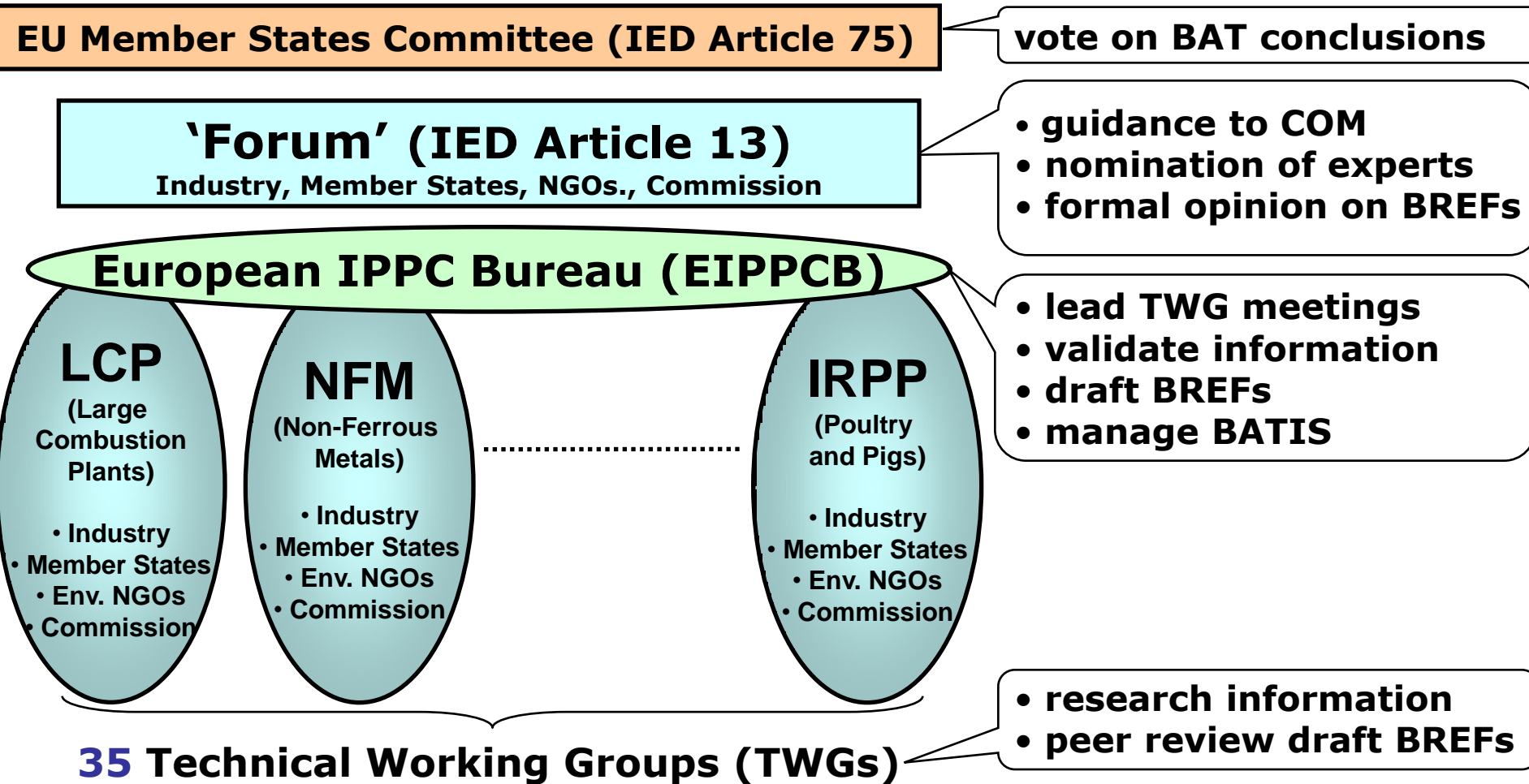


## Industrial Emissions Directive (IED) (2/2) – BAT definition

<b><i>Best</i></b>	<b>Most effective in achieving a high general level of protection of the environment as a whole</b>
<b><i>Available</i></b>	<b>Developed on a scale that allows implementation in the relevant industrial sector, under economically and technically viable conditions</b>
<b><i>Techniques</i></b>	<b>Both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned</b>

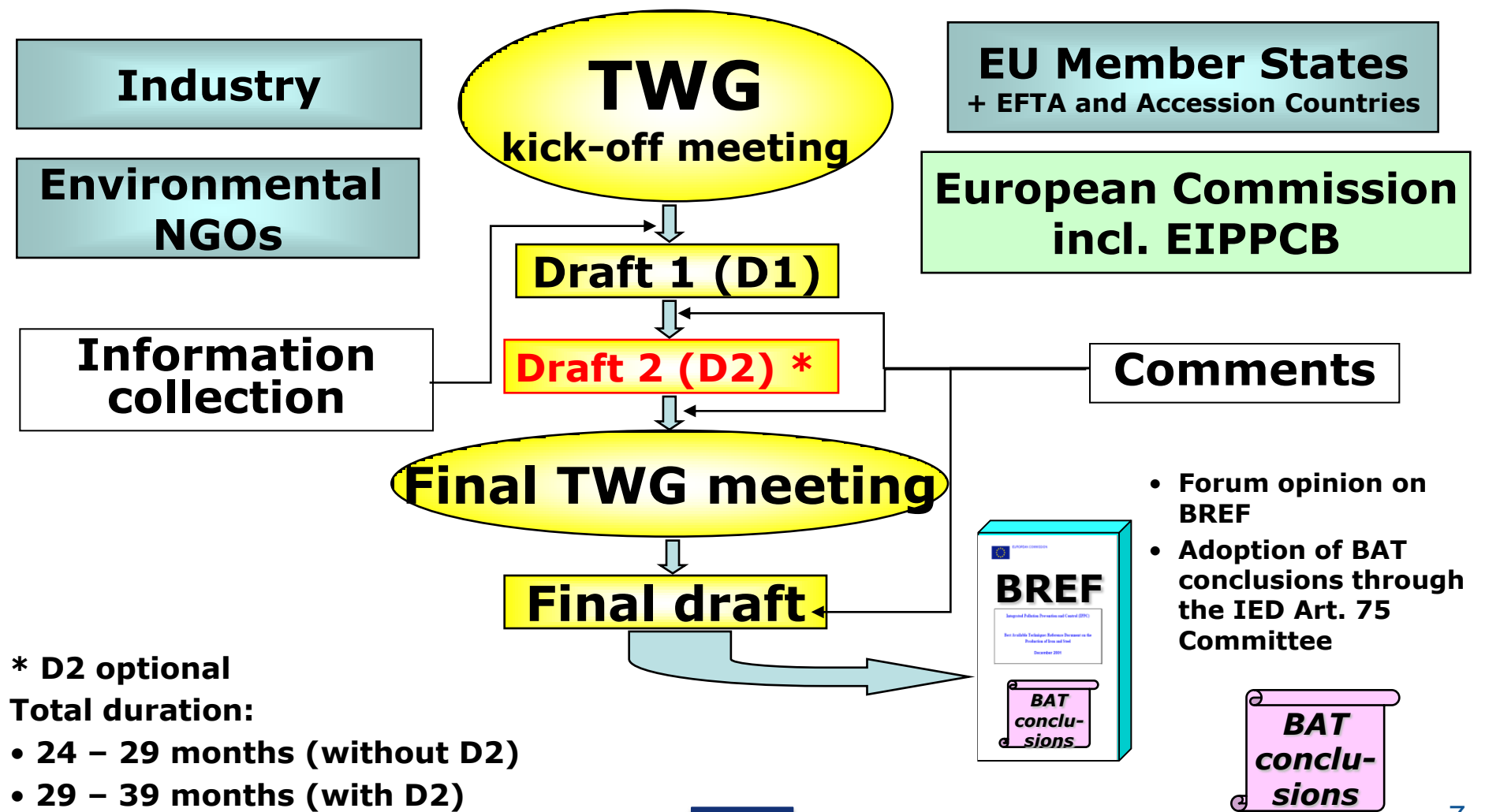


# Overview of the review process (1/3) - Actors





# Overview of the review process (2/3) – the 'Sevilla' process



## Overview of the review process (3/3) – IRPP BREF review

Main steps	Date
<b>TWG reactivation</b>	<b>March 2008</b>
<b>Call for wishes</b>	<b>May 2008</b>
<b>Kick-off meeting</b>	<b>June 2009</b>
<b>Collection of information (deadline)</b>	<b>February 2010</b>
<b>Draft 1</b>	<b>March 2011</b>
<b>Commenting period (deadline)</b>	<b>May 2011</b>
<b>Draft 2 (including draft BAT conclusions)</b>	<b>August 2013</b>
<b>Commenting period (deadline)</b>	<b>October 2013</b>
<b>Final TWG meeting (tentative date)</b>	<b>2<sup>nd</sup> semester 2014</b>



## IED and the livestock sector

- **IED 2010/75/EU - Point 6.6 of Annex I**
- **Only farms over these thresholds are covered:**
  - **> 40 000 places for poultry**
  - **> 2 000 places for pigs over 30 kg**
  - **> 750 places for sows**
- **> 19 000 IRPP installations of a total of ~ 50 000 EU-28 industrial installations under the IED**

## Key issues for the IRPP sector

### ➤ *Specific characteristics:*

- **Directly connected activities: feeding, housing, storage, manure spreading (essentially “chained by the manure”), requiring planning of nitrogen use**
- **Diffuse emissions mostly calculated/estimated and not commonly measured on-farm**

### ➤ *Additional legal constraints:*

- **Animal welfare (housing systems)**
- **Nitrates Directive (storage and spreading of manure)**

## **Draft BAT conclusions in D2 (1/2) – Structure**

### **Scope, definitions, general considerations**

#### **5.1 General BAT conclusions**

- **Environmental management systems**
- **Good housekeeping**
- **Efficient use of water**
- **Run-off waters**
- **Efficient use of energy**
- **Noise emissions**
- **Residues other than manure and carcasses**
- **Storage of carcasses**
- **Manure management**
- **Monitoring of emissions**



**Draft BAT conclusions in D2 (2/2) – Structure**

<b>5.2 Intensive rearing of pigs</b>	<b>5.3 Intensive rearing of poultry</b>
<b>Nutritional management (N and P excretion)</b>	
<b>Air emissions (NH<sub>3</sub>, dust, odour) from housing</b>	
<b>Efficient use of energy</b>	
<b>Emissions from manure storage</b>	
<b>On-farm processing of manure</b>	
<b>On-farm treatment of manure</b>	
<b>Emissions from manure spreading</b>	
<b>Emissions from the whole production process</b>	

## Draft BAT conclusions in D2 – Overview

- **A total of 48 individual BAT conclusions**
- **12 BAT conclusions with an associated emission limit level (BAT-AEL):**
  - **8 BAT-AELs for NH<sub>3</sub> (mating sows, lactating sows, weaners, fattening pigs; laying hens, broilers, ducks, turkeys)**
- **4 BAT conclusions with an associated performance level (BAT-AEPL):**
  - **Excretion of N and P for poultry and pigs**



Draft BAT conclusions in D2 – Example 1 (1/3)

18. In order to reduce nitrogen excretion from pig rearing while meeting the nutritional needs of the animals, BAT is to use a diet formulation and nutritional strategy which includes one or a combination of the techniques given below.

	Technique <sup>(1)</sup>	Applicability
a	Use a balanced diet with an optimum feed conversion rate based on net energy, low crude protein content and digestible amino acids	Generally applicable
b	Phase feeding with a diet formulation adapted to the specific requirements of the production period	For small farms (<xxxx animal places), applicability may be limited due to the need for sophisticated and expensive equipment which may require skilled labour

## Draft BAT conclusions in D2 – Example 1 (2/3)

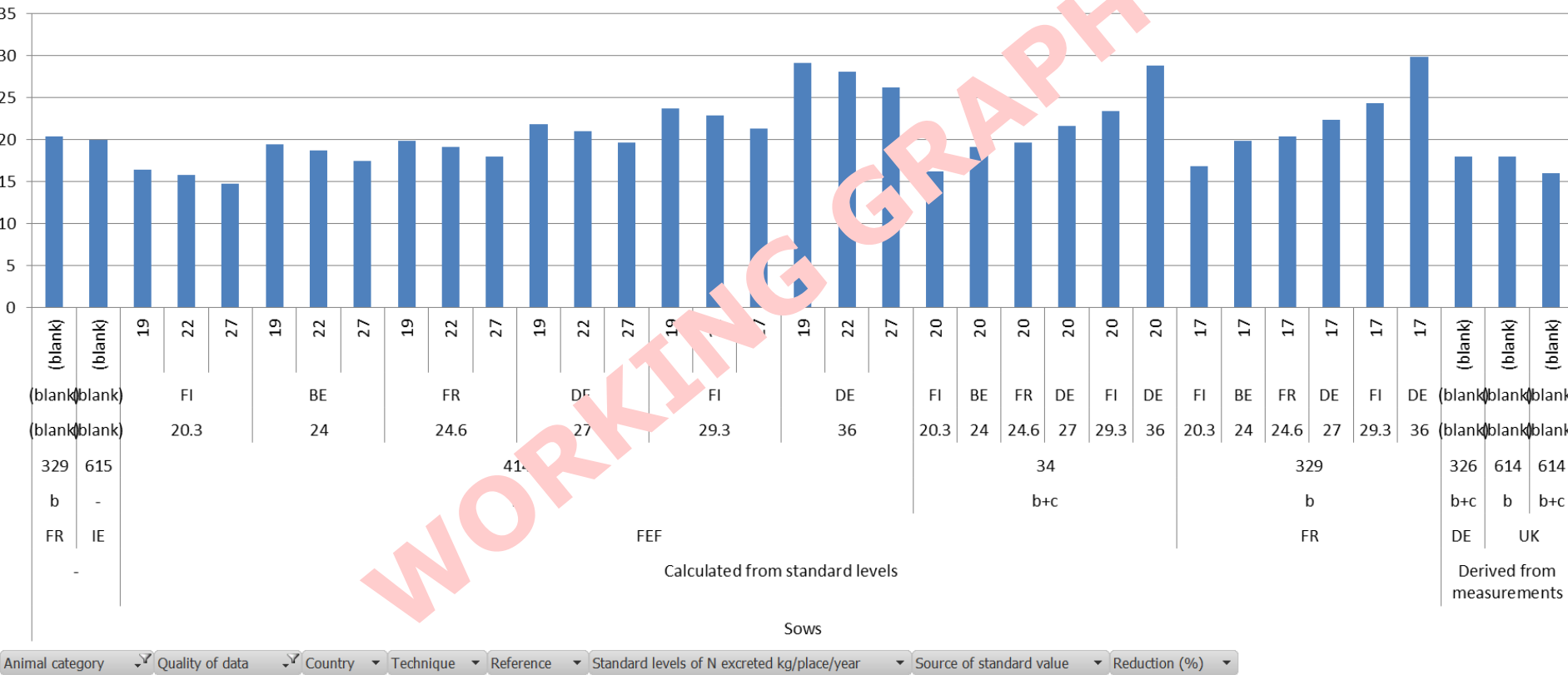
	<b>Technique <sup>(1)</sup></b>	<b>Applicability</b>
c	Add controlled amounts of essential amino acids to a low crude protein diet	Generally applicable
d	Use additives that improve the animal growth and promote performance in feed conversion	Generally applicable
<sup>(1)</sup> A description of the techniques is given in Section 5.4.1.1.		

<b>Parameter</b>	<b>Animal category</b>	<b>BAT-AEPL (kg N excreted/animal place/year)</b>
Total excreted nitrogen, expressed as N	Weaners	2 – 3.5
	Fattening (growers and finishers)	8 – 12
	Mating, gestating sows	17 – 22
	Lactating sows	23 – 28



Draft BAT conclusions in D2 – Example 1 (3/3)

Nitrogen excretion (kg N/animplace/year)







**Draft BAT conclusions in D2 – Example 2 (1/9)**

**23. In order to reduce ammonia emissions from housing systems for weaning pigs, BAT is to use one or a combination of the techniques given below.**

	Technique <sup>(1)</sup>	Applicability
a	Reduce the emitting manure surface, while facilitating the cleaning of surfaces and slurry (manure) removal to external storage. For this purpose, the following techniques may be used:	
	1. Pens or flat decks with fully- or partly-slatted floor with vacuum system for slurry removal	Limited applicability to existing animal houses; applicable when the existing solid floors allow building on top (sufficient height) or on fully-slatted floor systems with a storage pit underneath in the event of a renovation.
	2. ...	...



Draft BAT conclusions in D2 – Example 2 (2/9)

Technique (¹)	Applicability
...	...
9. Manure collection in water	Applicable to new animal houses.  For existing houses, applicability depends on the design of the existing manure pit and may present significant limitations.
10. Pens with solid concrete floor with litter	Applicable to new animal houses and existing houses already equipped with solid concrete floor.



Draft BAT conclusions in D2 – Example 2 (3/9)

	Technique (1)	Applicability
b	Cooling the manure surface to minimise ammonia evaporation. For the purpose, the following techniques may be used:	
	1. Fully or partly-slatted floors with manure surface cooling fins.	Applicable to individual and group animal housing.  For existing houses, applicability depends on the design of the existing manure pits.



Draft BAT conclusions in D2 – Example 2 (4/9)

	Technique <sup>(1)</sup>	Applicability
c	Use of an air cleaning system, such as:	
	1. Wet acid scrubber	The applicability to existing animal houses is possible where a forced ventilation system is used; however, where the ventilation system consists of multiple fans or multiple outlets, implementation is considered difficult.  Due to high implementation costs, this technique is more suitable for farms located close to residential or other sensitive receptors.
	2. Two-stage or three-stage air cleaning system	
<sup>(1)</sup> A description of the techniques is given in Section 5.5.1.		

## Draft BAT conclusions in D2 – Example 2 (5/9)

BAT-associated emission level (AEL) for ammonia emissions from housing systems for weaning pigs are given in Table 5.5.

**Table 5.5: BAT-AEL for ammonia emissions from the housing of weaning pigs**

Parameter	Animal category	BAT-AEL <sup>(1)</sup> (kg NH <sub>3</sub> /animal place/year)
Ammonia expressed as NH <sub>3</sub>	Weaning pigs	0.2 – 0.4
<sup>(1)</sup> The lower end of the range is associated with the use of an air cleaning system.		



**Draft BAT conclusions in D2 – Example 2 (6/9)**

**13. BAT is to monitor ammonia emissions to air from the rearing of poultry or pigs by using one of the following monitoring techniques with at least the frequency given below.**

	Technique	Frequency	Applicability
a	Estimate ammonia emissions from excreted nitrogen in the different production phases of the farm (animal housing, manure storage, field application) by using a mass balance calculation based on standard retention (or emission) rates expressed in percentage of the amount of total nitrogen present at each production stage. (See BAT 11)	Every time there are changes to: (a)the animal diet or nutritional management (b)the groups of livestock reared at the farm (c)significant modifications to any process step due to the implementation of BAT	Generally applicable



Draft BAT conclusions in D2 – Example 2 (7/9)

	Technique	Frequency	Applicability
b	Direct measurement of ammonia emissions to air by using EN standard methods or other methods (ISO, national or international) ensuring data of an equivalent scientific quality. The measurement is performed at the air outlet of the animal house	Adjusted to the specific needs (e.g. vicinity of sensitive receptors, size of the farm)	Only applicable to animal houses equipped with a forced ventilation system fitted with a single channelled air outlet



Draft BAT conclusions in D2 – Example 2 (8/9)

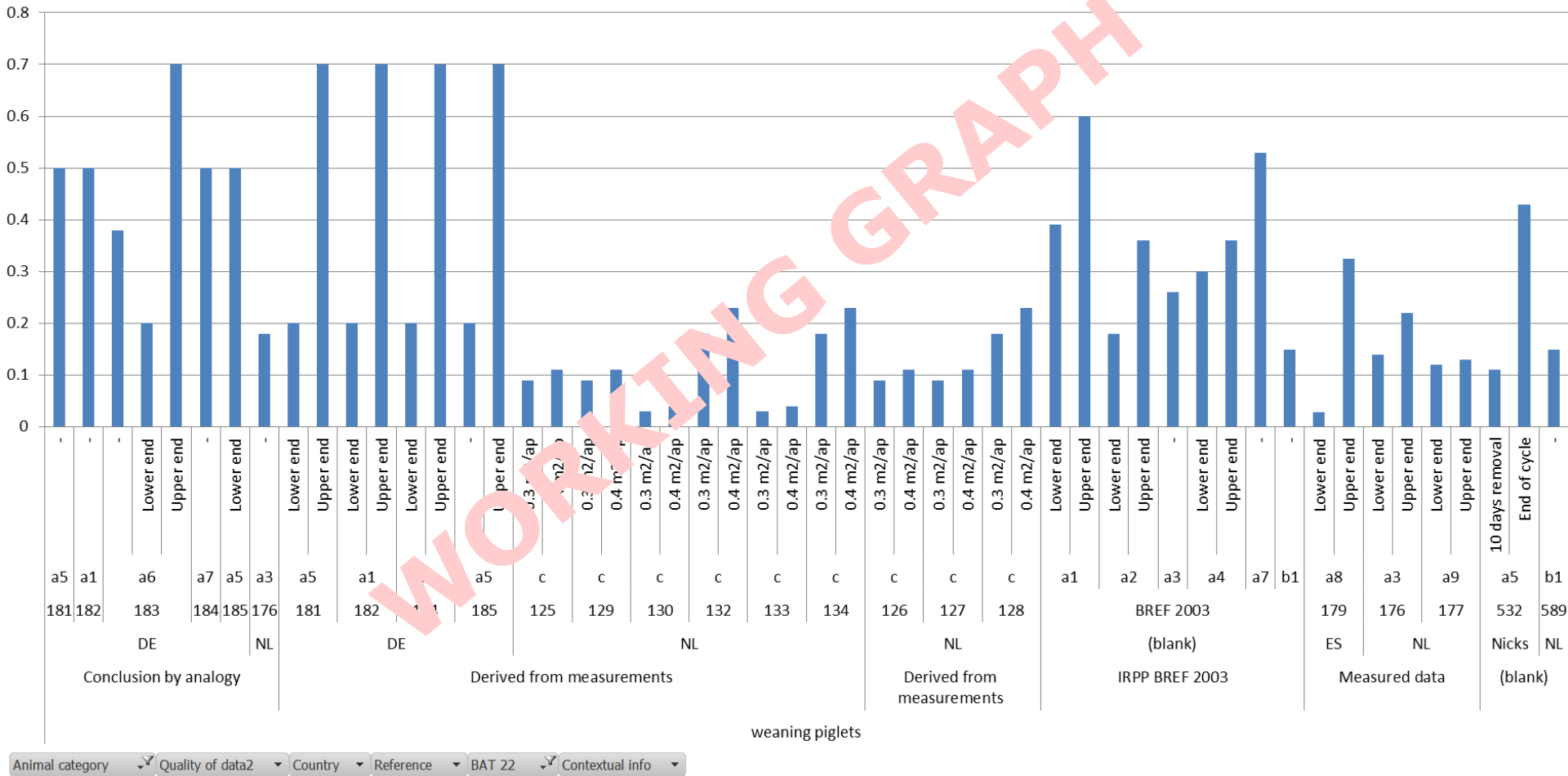
	Technique	Frequency	Applicability
c	Indirect measurement of ammonia emissions to air by measuring the concentration at different points inside the house. The ventilation rate, necessary to determine the emission mass flow, is determined either by calculation or by means of tracer gases	Adjusted to the specific needs (e.g. vicinity of sensitive receptors, size of the farm)	Applicable to animal houses equipped with natural ventilation





Draft BAT conclusions in D2 – Example 2 (9/9)

NH<sub>3</sub> emissions from a housing system for weaning pigs (kg/animal place/year)



## Links/differences between IRPP BREF and NH<sub>3</sub> guidance

- **NH<sub>3</sub> Guidance document is reference for D2 IRPP BREF:**
  - Description of techniques, e.g. laying hens, farrowing sows, storage of slurry, slurry acidification, manure land spreading
  - Indication of reference systems, e.g. enriched cages, fully-slatted floor with deep pit
  - Ammonia emission reduction, e.g. enriched cages, aviary systems, air cleaning systems, slurry acidification, irrigation
  - Associated costs, e.g. enriched cages, manure land spreading, irrigation
  - Applicability of techniques, e.g. phase feeding, enriched cages, band spreader
  - Example plants, e.g. slurry acidification

## Links/differences between IRPP BREF and NH<sub>3</sub> guidance

- **Techniques in draft BAT conclusions in Draft 2 of IRPP BREF are generally similar to those in NH<sub>3</sub> guidance**
- **Reference system are not included in draft BAT conclusions**

Deriving of emission levels	
D2 of IRPP BREF	Draft NH <sub>3</sub> Guidance
Emission levels derived from measurements and emission factors for different configurations	Emission levels associated to reference systems + NH <sub>3</sub> reduction (%)

## Challenges of the IRPP BREF review

- **Assessment of 2737 comments made to D2**
- **Deriving of BAT-AELs and BAT-AEPLs. Data representativeness and reliability**
- **Monitoring of BAT-AELs and BAT-AEPLs: applicability of direct/indirect measurement and emission factors**
- **Reference system in the BREF: abatement efficiency and economic costs associated with the techniques**
- **Implementation of whole-farm approach**
- **Balance between emissions and animal welfare**



## References

### **Industrial Emissions Directive 2010/75/EU:**

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:334:0017:0119:en:PDF>

### **Commission Implementing Decision 2012/119/EU on the 'Sevilla' process:**

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:063:0001:0039:en:PDF>

### **BREF documents:**

<http://eippcb.jrc.ec.europa.eu/reference/>



# Thank you for your attention

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