**Factsheet & checklist**

**Sector: Farms for intensive rearing of poultry and pigs**

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**List of Acronyms**

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| BATs  BAT-AEL | Best Available Techniques  Emission Levels Associated with the Best Available Techniques |
| BREFs | Best Available Techniques Reference Document |
| EC  EFS BREF  ELV  EMS  E-PRTR  ETS  FCR | European Commission  Reference Document on Best Available Techniques on Emissions from Storage  Emission Limit Values  Environmental Management System  European Pollutant Release and Transfer Register  Emissions Trading System  Feed Conversion Ratio |
| IED | Industrial Emissions Directive 2010/75/EU |
| IMPEL | European Union network for the implementation and enforcement of environmental law |
| IPPC | Integrated Pollution Prevention and Control |
| IPPC A/B permit  IRPP  IRPP BREF | A/B integrated environmental permit (as defined in Law on Environment)  Intensive Rearing of Poultry or Pigs  Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs |
| MoEPP  PRTR | Ministry for Environment and Physical Planning  Pollutant Release and Transfer Register |
| RMCEI  SA-BREF | Recommendation 2001/331/EC of the European Parliament and the Council providing for minimum criteria for environmental inspections in the Member States  Reference Document on Best Available Techniques in the Slaughterhouses and Animal by-products Industries |
| SEI  WT-BREF | State Environmental Inspectorate  Reference Document on Best Available Techniques for the Waste Treatments Industries |

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# Introduction

This factsheet for pig & poultry farms contains a short description of this sector as it exists and operates in the Republic of Macedonia. It will be necessary to update this document if the situation in the sector evolves substantially.

To prepare and execute well the environmental inspection of facilities within this sector, this document provides information for inspectors about how this industry works, what are its main environmental impact and pollution abatement measures, and what are the key points for the inspection of these facilities, complemented by a practical inspection checklist. The goal is to facilitate the work of inspectors, ensuring a more uniform inspection approach and quality, and a level playing field for the operators.

Detailed information about production processes and Best Available Techniques (BATs) relevant for this sector can be found in the reference links and documents in Annex 1. This document provides a first introduction and is intended to be a practical tool for inspectors, and for that sake is kept brief.

# What are farms for intensive rearing of poultry and pigs?

For the purpose of this factsheet the expression farm is referred to the installations which may consist of one or more stationary technical units and of all the directly associated activities, in which the following activities are carried out:

* Rearing of poultry: The rearing of poultry is defined as the rearing cycle for the production of eggs or for the production of meat from chickens, turkeys, ducks, guinea fowl, etc., including parent stock and pullets.
* Rearing of pigs: The rearing of pigs is defined as the rearing of animals of the porcine species, of any age, kept for breeding or fattening.
* Rearing of sows: The rearing of sows is defined as the rearing of female pigs including mating, gestating and farrowing sows (including offspring) as well as replacement sows (which have been selected or purchased as replacement breeding stock and are part of the sow herd) and gilts that have been serviced.



## Production process

Livestock production mainly consists of converting feed into meat or eggs, and is usually performed in different phases. The objective is to achieve a high efficiency in the feed utilisation (feed conversion ratio, FCR), whilst respecting animal welfare and avoiding emissions that are harmful to the environment or to people. It is important to note that good environmental farm management is more likely to be practised if it is complementary to product quality rather than at the expense of it, since economic profitability and customer satisfaction are the main drivers for the activity.

The activities of livestock production include the following elements:

* The animal housing system, where animals for meat or egg production are kept for all or part of the year, is the main determinant of the activities of the farm, and includes the following elements:
  + The way the animals are stocked (cages, crates, free)
  + The system to remove and store (internally) the produced manure
  + The equipment used to control and maintain the indoor climate
  + The equipment used to feed, water and litter the animals
* The outdoor storage of manure
* The storage of feedstuffs
* The storage of dead animals
* The storage of other waste
* The loading and unloading of animals

## Poultry production

## Production of eggs

EU Council Directive 1999/74/EC of 19 July 1999 laying down minimum standards for the protection of laying hens[[1]](#footnote-1). In accordance with the Directive, since 2012 conventional battery cages have been banned and only enriched cages or alternative (non-cage) rearing systems are allowed, with much lower densities (birds/m2) than in the formerly commonly used cage systems.

The equipment in the housing can vary from manual systems to fully automated systems for indoor air quality control, feeding and drinking, manure removal and egg collection. Close to the housing or immediately attached are the feed storage facilities.

There are two rearing systems: cage systems and non-cage systems:

**In cage systems**, laying birds have one laying period of about 12–15 months, after a growing period of around 16–20 weeks. Birds are kept in tiered enclosures made from welded steel wire which are arranged in long rows with sloped floors to allow the eggs to roll to the front side of the cages, where they are removed by hand or on a conveyor belt. Hens are reared in enriched cages in a wide variety of group sizes. Groups of up to 10–12 birds are generally referred to as a 'small group', while 15–30 birds could be regarded as a 'medium-sized' group and above this number would be regarded as a 'large group'. There are a wide variety of enriched cages designs. Positioning and layout of equipment is important to allow proper use and thus contribute to bird welfare, hygiene and performance. The manure is collected on manure conveyor belts that are situated under each tier of cages. At the end of the belt, a cross-conveyor further transports the manure outside, normally to external storage. Closed manure storage can pose a sanitary risk; hence, manure is also transported directly to field heaps or external storage, or to other uses. They may have air-drying systems ventilating and drying the manure.

**In non-cage systems**, hens can walk around freely, such as in barn systems and free-range systems in which the hens also have continuous daytime access to open-air runs. In barn systems, hens are reared on a litter-covered solid floor in combination with a slatted floor. Often the floor is made of concrete, but other materials can be used as well. Manure accumulates either on the solid floor or under the slatted area for the 14-month laying period. Manure removal is generally mechanised using scrapers or belts, and air drying systems to ventilate and dry manure may be applied. These features allow for a more comfortable housing. However, higher ammonia and dust emissions may arise compared to cage systems, due to the presence of litter material and to increased animal activity, though this can be mitigated by the frequent removal of manure with belts or scrapers. Various housing designs are applied, such as variations of the basic schemes of:

* The deep litter system, also referred to as single-tier non-cage system or single level system, where the ground floor area is fully or partly covered with litter and may be combined with a slatted floor.
* The aviary system, also referred to as ‘perchery’ or multi-level system, where the ground floor plus one or more levels of perforated platforms, from which manure cannot fall on birds below.

Additional structures for non-cage systems can be classified as following:

* Covered veranda. This consists of an outside covered area, which is available to the birds during daylight hours. Covered verandas are connected to the hen house and can be built as additional elements to the house, or as a part of the main structure, covered by a roof extension
* Free range. Free ranges can be covered with grass. The birds have access to this area from houses via pop-holes in the wall and from the covered veranda, if present. They will use the area if they feel there is sufficient shelter. The shelter may be trees or bushes, or an artificial one.

Veranda and free-range housing variations are not intended to reduce ammonia emissions.

**Pullet rearing**. Good laying hens develop from healthy, well-bred chicks under effective housing and management in the rearing period. In order to facilitate a smooth start to the laying period, it is advisable to rear the pullets (young chickens below the age for laying eggs ) of laying hens in a system that is similar to the one they will be housed in during the laying period. The rearing period lasts about 16-18 weeks and is normally run in separate facilities because the microbial conditions of the adult environment would be too dangerous for young chicks. Pullets can be reared in simple deep litter housing on a bedded solid floor in closed, well insulated houses with forced ventilation and without functional areas. The manure is stored with the bedding and is removed at the end of the rearing period. A slatted floor covering no more than two thirds of the area can be included, allowing a deep pit underneath.

## Production of broiler meat

EU Directive 2007/43/EC[[2]](#footnote-2), laying down minimum rules for the protection of **chickens kept for meat production**, establishes rules for the protection of animals, aiming for a balance between animal welfare, health, economic and social considerations, and environmental impacts.

The traditional housing for intensive broiler production is a simple, closed-building construction of concrete or wood with artificial lighting or artificial/natural light combination lighting systems, and thermal insulation. Forced ventilation (negative pressure principle) is applied by way of fans and air inlet valves. Naturally ventilated buildings are also used which are constructed with open side walls (windows with louvre-type curtains).

Broilers are commonly kept on litter spread over the entire floor area. Bedding can be made up of chopped straw or wood shavings, but also of shredded paper, rice husks or other material, which has to comply with the provisions (dry and friable on the surface) of Directive 2007/43/EC. The floor area is usually built as a solid concrete slab, but may also consist of a clay floor. The bedding is spread uniformly at the beginning of each growing period and the solid manure is removed (broiler litter) at the end of the growing period.

Modern housing is mainly equipped with controlled ventilation systems that allow climate control for animals, litter drying, and, ultimately, for channelling air to air treatment devices.

Broilers are kept at a stocking density of 13 to 26 birds per m2, depending on the duration of the fattening period and consequently of the live weight (LW) at slaughter. Typical bird weights and ages prior to slaughter are given below:

* 34-day cycle and final weight of 1.5 kg of LW per bird
* 40-day cycle and final weight of 2 kg of LW per bird
* 45–55-day cycle and final weight of 2.1 kg of LW per female bird or 3 kg of LW per male bird.

Houses can be combined with a veranda, where open side walls along the side of the house allow birds access to a covered, outside climate area for animal welfare reasons. Verandas are usually equipped with a base plate covered with some type of litter (scratching area) or ground covering. Verandas are often combined with free-range systems (made accessible from the twentieth day of the bird's life onward) where the animals have free access to an outside area during the daytime. This production system is especially common on organic farms or in special animal welfare programmes.

## Other poultry production sectors

Other poultry production sectors include the following:

* **Rearing of broiler breeders**. Broiler breeder farms raise parent stock which produces fertile eggs for broiler production. Housing is similar to that of broilers, additionally equipped with nests where eggs are laid, or they may be reared in cage systems.
* **Production of turkeys** for **meat** production. The most commonly applied turkey housing is a traditional housing construction, which is very similar to that used for the housing of broilers.
* **Production of duck**s generally for **meat** production although different breeds are used for **egg** laying. The commonly applied duck house is a traditional housing system and is similar to the broiler house.
* **Production of guinea-fowl.** Commercial breeding and the raising of guinea-fowl can be compared with that of turkeys. Guinea fowl are very different in their behaviour to chickens and need a lot of space.

## Pig production

Pig production is commonly divided into breeding sows (mating, gestating and farrowing sows) and fattening pigs where post-weaning (from 4 – 6 weeks of age up to 20 –30 kg of live weight), growing (to around 60 kg) and finishing phases can be distinguished. One farm can have a closed system (from farrow to finish) or can be specialised in one part of the cycle.

## Breeding sows (mating, gestating and farrowing sows)

Sows are housed in different systems depending on the phase of the reproduction cycle. Mating sows are kept in systems which facilitate easy contact between boars and sows. After mating or after pregnancy diagnosis, the sows are usually moved to a separate part of the housing for the period of gestation.

**Mating and gestating sows** can be housed individually or in groups, according to the provisions of the Directive 2008/120/EC laying down minimum standards for the protection of pigs[[3]](#footnote-3). Individual housing used to be the most widely used housing system within the EU. Housing systems include:

* Individual housing with a fully or partly slatted floor for mating and gestating sows
* Sow crates with a solid floor for mating and gestating sows
* Group housing with or without straw for mating and gestating sows
* Group housing with electronic feeders

**Farrowing sows.** Gestating sows are typically moved to farrowing accommodation three or seven days before the expected farrowing date (115 days after service). Sows remain in the farrowing crate or individual pen throughout lactation. The sows are often confined in their movement by farrowing crates, but loose-housing is also applied. In the EU as a whole, the use of farrowing crates throughout lactation is the predominant system. Fully slatted flooring is applied widely in the EU, as it is considered to be more hygienic and labour efficient than partly slatted or solid floors. The slurry is stored under the slatted floor of the crates either in a shallow manure pit, in which case it is removed frequently via a central system in the building, or in a deep pit, from where it is removed only at the end of the lactating period or less frequently.

## Fattening pigs

**Weaners.** After weaning, the sow is returned to service accommodation and the piglets (offspring of a sow from birth to weaning) are commonly moved immediately to the weaner accommodation. Piglets are typically weaned at 4-6 weeks of age. In accordance with Directive 2008/120/EC, no piglets shall be weaned from the sow at less than 28 days of age, unless the welfare or health of the sow or the piglets would otherwise be adversely affected. Weaners are commonly reared up to 30 kg live weight (range from 20 kg to 35 kg) in groups of varying sizes. Rearing is commonly done in groups of less than 20 animals, such as in small groups of the same litter (8–12 pigs per pen), but group sizes of up to 100 animals consisting of more litters are also common. A variety of housing systems are used. Weaners are typically reared either in conventional pens with partly or fully slatted floors or in flat decks (raised pens). Housing of weaners on fully or partly slatted floors is very similar to the housing of fattening pigs (growers/finishers). The fully slatted flooring is favoured for hygiene reasons as it separates piglets from their faeces and urine. However, fully slatted floors are not easily compatible with straw or other rooting materials. Manure is handled in the form of slurry and is mainly drained through a pipe discharge, where the individual sections of the manure channels are emptied via plugs in the pipes. The channels can also be drained via sluice gates. Channels are cleaned after removal of each group of pigs, often in connection with the cleaning of the pens, i.e. at intervals of six to eight weeks. For storage and removal of slurry, deep pit and frequent removal by vacuum systems are the most common techniques. Manure removal by scraper is also used.

**Growers/finishers.** From an average live weight of 30 kg (20–35 kg), pigs are moved to separate sections to be grown and finished for slaughter. It is common to use two (or three) housing stages with larger pens at each stage in the growing/finishing period, to make the most efficient use of space, but the housing facilities are very much the same (i.e. single-phase up to 110–120 kg, two-phase with a grower period up to 40–60 kg and a finisher period from 40–60 kg to 110–120 kg; Italy: 150–170 kg). There are many different construction techniques for the growing-finishing housing such as insulated concrete, composite panels, insulated brick, etc. Buildings are, in general, well insulated and may have supplementary heating. Ventilation can be natural or forced. Accommodation for fattening pigs may be fully slatted, partly slatted, litter-based with a scraped defecating area or deep bedded with straw or sawdust. Although there are national differences, housing with fully or partly slatted flooring (typically on concrete slats with 17 mm slot spacing) with a pen floor area of 0.7 m2 at the end of the finishing period predominates within the EU. In fully slatted accommodation, the slurry is collected in a manure pit under fully slatted floor. In partly slatted accommodation, slurry is collected in a channel or pit beneath the slatted part of the floor. In the litter-based housing systems (with a solid concrete floor), a bedding (>10–15 cm bedding) with materials such as straw, sawdust or a big-bale supply is applied to improve animal welfare.

## Production scheme

Storage of waste materials

Selection and

packaging of eggs

(only egg laying farms)

Landfill

Incineration

Storage of carcasses

Animal housing

Unloading & loading of animals

External processing

External treatment or application

Energy

Feed mixing

Feed storage

Feed milling/grinding

Feed purchase

Discharge

Feed purchase

Application on own land

Storage of residual products

On-farm manure treatment

Storage of manure/slurry

Waste water storage/treatment

# Sector description in the Republic of Macedonia



## The sector in Macedonia

### Intensive rearing of pigs

The globalization of markets has caused structural changes, especially in the agricultural sectors. The Republic of Macedonia, as a small developing country, has a less competitive industry and low production efficiency. As in many other countries, the domestic market is under increasing pressure by imports from more efficient countries that have lower costs of production. Some studies have already addressed the fact that highly efficient countries can dominate in the pig production market.

Pig production is one of the most important agricultural sub-sectors in the Republic of Macedonia, with a long tradition of production and a constant level of consumption. Starting from the farms, the livestock is sold on the market for consumption as fresh pork and for use in the processing industry and slaughterhouses for production of meat and different meat products.

In recent years the country has experienced a continuous decline of the number of pig farms and pork supply. There are many reasons for this: high feed costs, small land area available for production, traditional technology and equipment used to perform the activities, lack of education of farmers and increased utilization of inputs for pork meat production. In order to increase the profitability and to be more competitive in the market, the farmer has to focus more on the production efficiency and sustainability of the sector.

Livestock production, slaughterhouses and processing industry are key contributors to the agricultural and the domestic economy. Especially pork production is very important for consumption by domestic and foreign population. Unfortunately, during the period of economic transition, pig production was low and inefficient. As a result, at the end of this period, many of the existing nationally owned industrial pig companies were closed, while some of them have changed their structure to private pig farms.

The production structure in the agricultural sector consists mainly of small family holdings and due to the support to agriculture the number of commercial family farms in this sector is constant. Companies that have an organized way of arranging pig reproduction and pig production comprise around 40% of the total number of pigs in the country. The other 60% are owned by individual producers.

Considering last five years, pig production takes the third place in terms of number of heads as compared to other livestock in the country. The highest number of animals goes to sheep, while the second and fourth place belongs to cattle and goat respectively.

The present situation in this sector is 190,000 pigs (this number includes all categories of pig). Main pig breeds are Landrace, Yorkshire, Duroc and theirs crosses. The sector used to be dominated by socially owned production units associated with the State Owned Agricultural Enterprises and in varying stages of privatization. There are 4 big and 4 medium size production units, all former state owned and currently privatized. In the private sector a number of smaller production units emerge, typically with 40-60 sows; together they produce 8,709 t pork meat.

More sophisticated systems (furrowing-to-finishing) are found in the former socially owned and now privatized intensive farms. Private smallholders have little knowledge and experience with pig production and there is little outside support. Most of the feeding components are imported (corn, additives and any protein source).

Current aims are genetic improvement of pig production, and introduction of SEUROP standard.

Agria and Edinstvo are biggest pig farms in the country.

### Intensive rearing of poultry

The main sector in poultry breeding is fowl breeding, with egg production as main product. There are approximately 3.3 million layers (including layers in rearing) in Macedonia. Egg production was 425 million. There are layer farms in all parts of the country. Most egg production occurs in large farms (100,000-500,000 birds), still associated with the transformed State Owned Agricultural Enterprises. In the private sector, farms are typically small with flocks of 1,000-3,000 birds.

The production system is intensive, comparable to the production system in the West countries. The preferred breed is Iza Braun, supplied by the national parent stock farm/hatchery. Layers are reared for 18 weeks in separate houses before being transferred into layer houses (20,000 birds per house in the large farms). Production is 310 eggs per housed hen. Feed conversion is 150 grams of feed.

Veze Shari is the largest producer of eggs in country. Other farms are Agripro, Salmak etc.

## Applicable legislation

On the ‘Legislation’ section of the website of the State Environmental Inspection (SEI) (<http://www.sei.gov.mk/page_en.asp?ID=2>) there is relevant legislation available.

The relevant legislation includes the following main laws:

* Law on Environment
* Law on Inspection Supervision
* Law on Waters
* Law on Nature Protection
* Law on Protection from Environmental Noise
* Law on Ambient Air Quality
* Law on Waste Management
* Law on Management of Batteries and Accumulators and Waste Batteries and Accumulators
* Law on Management of Packaging and Packaging Waste
* Law on Management of Electrical and Electronic Equipment and Waste Electrical and Electronic Equipment
* Law on Genetically Modified Organisms
* Law on Control of Emissions of Volatile Organic Compounds Resulting from Use of Petrol
* Law on Administrative Procedure
* Law on Misdemeanor
* Criminal Code Law on Criminal Procedure
* Law establishing a State Commission for decisions in the second instance in the area of the inspection supervision and misdemeanor procedures

Additionally, on the website of the Ministry of Environment and Physical Planning (<http://www.moepp.gov.mk>) there are also links to relevant primary and secondary legislation provided. Information about secondary legislation like Rulebooks is available on the website of the Official Gazette ([www.slvesnik.com.mk](http://www.slvesnik.com.mk)).

Finally, other legislation typical the sector has to be taken into account as well, e.g. the one related to animal welfare (Law on animal protection and welfare) or the Law on animal by-products.

# Key environmental issues of the sector

## Preliminary considerations about applicable BREFs & BATs. General BATs in IRPP BREF

**Note: the Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs (IRPP BREF) is still under preparation and the text and data that are shown in this chapter are those included in the final draft of the Reviewed IRPP BREF, delivered in August 2015. (most probably the document will be adopted by the EU only in 2016, including the Implementing Decision of the Commission establishing the BAT Conclusions for the sector, after this factsheet has been delivered (December 2015)).**

The scope of the BAT conclusions for IRPP is described in the introduction on chapter 5 of the IRPP BREF. These BAT conclusions concern the following activities specified in Section 6.6 of Annex I to Directive 2010/75/EU, and in the Section 6.6 of the Ordinance on determining the activities of the installations requiring an integrated environmental permit, i.e., adjustment permit with an adjustment plan and time schedule for submission of application of adjustment permit with an adjustment plans (Official Gazette of Republic of Macedonia no. 89/05), namely:

6.6. Intensive rearing of poultry or pigs:

(a) with more than 40 000 places for poultry

(b) with more than 2 000 places for production of pigs (over 30 kg), or

(c) with more than 750 places for sows.

In particular, these BAT conclusions cover the following on-farm processes and activities:

* Nutritional management of poultry and pigs
* Feed preparation (milling, mixing and storage)
* Rearing (housing) of poultry and pigs
* Collection and storage of manure
* Processing of manure
* Landspreading of manure
* Storage of dead animals

Dead animals are treated as animal by-products not intended for human consumption. The treatment of dead animals is not addressed in the IRPP BREF; it is covered in the Reference Document on BAT in the Slaughterhouses and Animal by-products Industries (SA BREF). As mentioned in the document, the animal by-products industry handles all of the raw materials that are not directly destined for human consumption. The use and disposal routes permitted are governed by the Law on animal by-products („Official Gazette of the Republic Macedonia” No. 113/07, 144/14 и 149/15) and related secondary legislation*.* BAT Conclusions are not still available. The document includes general BAT in section 5.1 and additional BAT for animal by-products installations in section 5.3. For instance, Section 5.2.1 includes additional BAT for fat melting, Section 5.3.2 includes additional BAT rendering, Section 5.3.5 includes additional BAT for bone processing and Section 5.3.7 includes additional BAT for the incineration of animal by-products.

**General BAT conclusions** (Section 5.1 of the IRPP BREF): The sector specific or process specific BAT conclusions included in Sections 5.3 (rearing of poultry) and 5.2 (rearing of pigs) apply in addition to the general BAT conclusions mentioned below:

* Section 5.1.2 of the IRPP BREF prescribes BAT 2 on good housekeeping in order to prevent or to reduce the environmental impact and improve the overall performance. It includes the following techniques:
  + (b) Educate and train staff
  + (c) Prepare an emergency plan for dealing with unexpected emissions and incidents
  + (d) Regularly check, repair and maintain structures and equipment
* Section 5.1.3 of the IRPP BREF prescribes BATs on nutritional management. BAT 3 is prescribed in order to reduce the total nitrogen excreted and consequently ammonia emissions while meeting the nutritional needs of the animals. BAT-associated total nitrogen excreted is given in a table. It also prescribes BAT 4 in order to reduce the total phosphorus excreted. BAT-associated total phosphorus excreted is also given in a table. The BAT-associated total nitrogen and phosphorus excreted levels may not be applicable to organic livestock production and to the rearing of poultry species not indicated in the abovementioned tables (e.g. guinea fowl). The associated monitoring is described in BAT 24.

Other BAT and techniques non included in the IRPP BREF, which are applicable as good practices and/or as obligations under EU and national regulation on storage of dangerous substances, flammable liquids, solid substances etc.

* Liquid storage: in pages 265/267 of the Reference Document on Best Available Techniques on Emissions from Storage (EFS BREF) it is prescribed that BAT is to apply secondary containment measures (double wall tanks, monitored bottom discharge, liquid-tight reservoir that contain all or a part of the hazardous liquids stored etc) to aboveground and underground tanks containing flammable liquids or liquids which pose a risk for significant soil pollution or a significant pollution of adjacent watercourses. Liquid fuels such as diesel fuels can be stored in farms for intensive rearing of poultry and pigs as a fuel in boilers for heating systems.
* Storage of packaged dangerous substances: in page 267 of EFS BREF is is prescribed that BAT is to store packaged dangerous substances in a building and/or an outdoor storage area covered with a roof.
* Storage of solids: The main solid storage in farms for intensive rearing of poultry and pigs is feed. Biomass is been increasingly used as a fuel in boilers for heating systems. In page 274 of EFS BREF is prescribed that BAT is to store solids using, for example, silos, bunkers, hoppers and containers, to eliminate the influence of wind and to prevent the formation of dust by wind. Feed and biomass are mainly stored in silos in farms for intensive rearing of poultry and pigs.



## Air

Farm processing of manure may give rise to emissions to air.

Section 5.1.12 of the IRPP BREF prescribes BAT 19 regarding on-farm processing of manure, in order to reduce emissions of nitrogen, phosphorous, odour and microbial pathogens to air and water and facilitate manure storage and/or landspreading.

### Dust

Dust emissions arise from animal housing, milling and grinding of feed, feed storage, solid manure storage and application, heaters in buildings and small combustion installations

Section 5.1.8 of the IRPP BREF prescribes BAT 11 in order to reduce dust emissions.

### Odour

Odour emissions arise from animal housing, storage of manure and land spreading of manure.

Section 5.1.9 of the IRPP BREF prescribes BATs regarding odour emissions. BAT 12 is to set up, implement and regularly review an odour management plan, as part of the environmental management system (EMS) (BAT 1) in order to prevent or to reduce noise emissions. BAT 13 is to use one or a combination of the techniques given with the same purpose as in BAT 12.The associated monitoring is in BAT 26.

### Pollutant substances

4.2.3.1. Ammonia (NH3) emissions from intensive agricultural systems, such as dairy farming and intensive animal husbandry, including IRPP farms, are the main source of ammonia emissions to air, whose deposition is one of the major drivers of soil eutrophication and acidification in Europe, and as a consequence, of biodiversity loss in Europe. In addition to the effects of long-range pollutant transport, ammonia has major effects at a local scale, with emission and receptor areas often closely located in the rural landscape and natural habitats. Animal housing, storage, processing and land spreading of manure.

Section 5.1.10 of the IRPP BREF prescribes BATs regarding emissions from solid manure storage. BAT 14 is prescribed in order to reduce ammonia emissions to air from the storage of solid manure.

Section 5.1.11 of the IRPP BREF prescribes BATs regarding emissions from slurry storage. BAT 16 is prescribed in order to reduce ammonia emissions to air from a slurry tank. BAT 17 is prescribed in order to reduce ammonia emissions to air from an earth-banked storage (lagoon) of slurry.

Section 5.1.13 of the IRPP BREF prescribes BATs regarding manure spreading. BAT 21 is prescribed in order to reduce ammonia emissions to air from the application of slurry to land. BAT 22 is prescribed in order to reduce ammonia emissions to air from the application of manure to land.

Section 5.1.14 of the IRPP BREF prescribes BAT 23 regarding the emissions from the whole production process. In order to reduce ammonia emissions from the whole production process for rearing of poultry and pigs, BAT is to estimate/calculate the reduction of ammonia emissions of the whole production process using the BAT implemented on the farm.

**Poultry**

BAT 31 of IRPP BREF gives a number of techniques to reduce ammonia emissions to air from an animal house for laying hens, broiler breeders or pullets. BAT is to use one or a combination of the techniques given. One of them is the use of an air cleaning system such as wet acid scrubber, two-stage or three-stage air cleaning system or bioscrubber. BAT-associated emission levels (BAT-AEL) for ammonia emissions to air from an animal house for laying hens are given in the table 4.1. The associated monitoring is described in BAT 25. The BAT-AEL may not be applicable to organic livestock production.

BAT 32 of IRPP BREF gives a number of techniques to reduce ammonia emissions to air from an animal house for broilers. BAT is to use one or a combination of the techniques given. One of them is the use of an air cleaning system such as wet acid scrubber, two-stage or three-stage air cleaning system or bioscrubber. BAT-associated emission levels (BAT-AEL) for ammonia emissions to air from an animal house for broilers with a final weight of up to 2.5 kg are given in the table 4.1. The associated monitoring is described in BAT 25. The BAT-AEL may not be applicable to organic livestock production as well as to farming types such as extensive indoor, free range, traditional free range and free range-total freedom as defined in the European Commission Regulation (EC) 543/2008.

BAT 33 of IRPP BREF gives a number of techniques to reduce the emissions to air from an animal house for ducks. BAT is to use one or a combination of the techniques given. One of them is the use of an air cleaning system such as wet acid scrubber, two-stage or three-stage air cleaning system or bioscrubber. There are not BAT-associated emission levels (BAT-AEL) for ammonia emissions to air from an animal house for ducks given.

BAT 34 of IRPP BREF gives a number of techniques to reduce the emissions to air from an animal house for turkeys. BAT is to use one or a combination of the techniques given. One of them is the use of an air cleaning system such as wet acid scrubber, two-stage or three-stage air cleaning system or bioscrubber. There are not BAT-associated emission levels (BAT-AEL) for ammonia emissions to air from an animal house for turkeys given.

Table 4.1: BAT-AEL for ammonia emissions to air from an animal house for poultry

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **BAT-AEL for ammonia emissions to air from an animal house for poultry** | | | | |
| **Parameter** | **Type of housing** | | **BAT-AEL**  **(kg NH3/animal place/year)** | |
| Ammonia expressed as NH3 | Laying hens: Cage housing system | | 0.02 – 0.08 | |
| Laying hens: Non-cage housing system | | 0.02– 0.13 (1) | |
| (1) For existing plants using BAT 31.b0, the upper end of the BAT-AEL is 0.25 kg NH3/animal place/year. | | | | |
|  | | | | |
| **Parameter** | | **Animal category** | | **BAT-AEL (1) (2)**  **(kg NH3/animal place/year)** |
| Ammonia expressed as NH3 | | Broilers with a final weight of up to 2.5 kg | | 0.01 – 0.08 |
| (1) The BAT-AEL may not be applicable to the following types of farming: extensive indoor, free-range, traditional free-range and free-range - total freedom, as defined in Commission Regulation (EC) 543/2008.  (2) The lower end of the range is associated with the use of an air cleaning system. | | | | |

**Pigs**

BAT 30 of IRPP BREF gives a number of techniques to reduce ammonia emissions to air from an animal house for pigs. BAT is to use one or a combination of the techniques given. The techniques include the following:

* + Use a housing system applying one of the following principles:
    - Reduce emitting surface
    - Increase the frequency of slurry (manure) removal to external storage
    - Separation of urine and faeces
    - Keep bedding clean and dry
  + Slurry cooling
  + Use an air cleaning system
  + Slurry acidification
  + Use of floating balls in the manure channel

BAT-associated emission levels (BAT-AEL) for ammonia emissions to air from an animal house for pigs are given in the table 4.2. The associated monitoring is described in BAT 25. The BAT-AEL may not be applicable to organic livestock production.

Table 4.2: BAT-AEL for ammonia emissions to air from an animal house for pigs

|  |  |  |
| --- | --- | --- |
| **BAT-AEL for ammonia emissions to air from an animal house for pigs** | | |
| **Parameter** | **Animal category** | **BAT-AEL (1)**  **(kg NH3/animal place/year)** |
| Ammonia expressed as NH3 | Mating and gestating sows | 0.2 – 2.7 (2) (3) |
| Farrowing sows (including  suckling piglets) with crates | 0.4 – 5.6 (4) |
| Weaners | 0.03 – 0.53 (5) (6) |
| Fattening pigs | 0.1 – 2.6 (7) (8) |
| (1) The lower end of the range is associated with the use of an air cleaning system.  (2) For existing plants using BAT 30.a0 in combination with nutritional measures, the upper end of the BAT-AEL is 4.0 kg NH3/animal place/year.  (3) For plants using BAT 30.a6, 30.a7 or 30.a11, the upper end of the BAT-AEL is 5.2 kg NH3/animal place/year.  (4) For existing plants using BAT 30.a0 in combination with nutritional measures, the upper end of the BAT-AEL is 7.5 kg NH3/animal place/year.  (5) For existing plants using BAT 30.a0 in combination with nutritional measures, the upper end of the BAT-AEL is 0.7 kg NH3/animal place/year.  (6) For plants using BAT 30.a6, 30.a7 or 30.a8, the upper end of the BAT-AEL is 0.7 kg NH3/animal place/year.  (7) For existing plants using BAT 30.a0 in combination with nutritional measures, the upper end of the BAT-AEL is 3.6 kg NH3/animal place/year.  (8) For plants using BAT 30.a6, 30.a7, 30.a8 or 30.a16, the upper end of the BAT-AEL is 5.65 kg NH3/animal place/year. | | |

4.2.3.2. NOx (NO + NO2) are associated with combustion processes. Heaters in buildings and small combustion installations in IRPP farms may give rise to NOx emissions.

There are no specific BATs described in the IRPP BREF regarding NOx emissions into air.

### Greenhouse gases (CH4, N2O and CO2)

Greenhouse gases emissions from IRPP farms contribute to global warming. Emissions of CH4 and N2O from livestock production are regulated as part of the Kyoto Protocol under the United Nations Framework Convention on Climate Change. CH4 emissions arise from animal housing, storage of manure and manure processing. N2O emissions arise from animal housing, storage, treatment and land spreading of manure. CO2 arise from animal housing, energy used for heating and transport on farm and biogenic CO2 that may be emitted in the field.

The emissions of greenhouse gases are not regulated in IED but in other relevant European policy instruments like the EU Emissions Trading System (ETS), and therefore BREFs do not include BATs for the prevention or reduction of these emissions. However, Section 5.1.6 of the IRPP BREF prescribes BAT 8 in order to use energy efficiently (see Section 4.8.1 of this factsheet), which contributes to the reduction of the emissions of the greenhouse gases.

## Noise and vibrations

Noise can be an important source of disturbance for humans when installations are located close to residential areas. Sources of noise are associated with housing (including the system to remove and store the manure and the equipment to control and maintain the indoor climate and the equipment to feed and water the animals), unloading and loading of animals, manure spreading and milling and grinding of feed.

Section 5.1.7 of the IRPP BREF prescribes BATs regarding noise emissions. BAT 9 is to set up and implement a noise management plan, as part of the environmental management system (EMS) (BAT 1) in order to prevent or to reduce noise emissions. BAT 10 is to use one or a combination of the techniques given with the same purpose as in BAT 9.

## Waste water and surface water

In the installations for intensive rearing of pigs and poultry, waste water is usually the result of manure run off, wash water after cleaning of animals, cleaning and disinfecting of buildings and farmyards and waste water from flue-gas treatment by wet scrubbing. These emissions contain nitrates and phosphates, which contribute to eutrophication, particularly phosphates, and high levels of biochemical oxygen demand and suspended solids. Waste water from the installations must be treated before discharge and emission limit values as established by the corresponding Competent Authorities are included in permits. Monitoring requirements are also included. Manure spreading is also a key issue regarding the emissions to surface water and they include nitrogen compounds and phosphates as main concern, but also K and Na, heavy metals (especially Cu and Zn) and antibiotics and other pharmaceuticals. Manure and slurry storage, as well as on-farm processing of manure may also give rise to emissions to surface water.

Section 5.1.5 of the IRPP BREF prescribes BATs regarding emissions from waste water. BAT 6 is prescribed in order to reduce the generation of waste water and BAT 7 in order to reduce emissions to water from waste water.

Section 5.1.10 of the IRPP BREF prescribes BATs regarding emissions from solid manure storage. BAT 15 is prescribed in order to prevent or reduce emissions to soil and water from the storage of solid manure.

Section 5.1.11 of the IRPP BREF prescribes BATs regarding emissions from slurry storage. BAT 18 is prescribed in order to prevent emissions to soil and water from slurry collection, piping and from a tank and/or an earth-banked storage (lagoon).

Section 5.1.12 of the IRPP BREF prescribes BATs in on-farm processing of manure is used. BAT 19 is prescribed regarding emissions of nitrogen, phosphorous, odour and microbial pathogens to air and water and facilitate storage and /or landspreading.

Section 5.1.13 of the IRPP BREF prescribes BATs regarding manure spreading. BAT 20 is prescribed in order to prevent or reduce emissions of nitrogen, phosphorous and microbial pathogens to soil and water from the spreading of manure. Accordingly, a Plan for manure spreading must exist and must be implemented. It must include all the techniques given in the BAT. In it, all the plots of arable land where the manure will be spread must be identified, independently of their location (on-farm or off-farm).

## Soil and groundwater

Manure spreading is the key activity regarding the emissions to soil, groundwater and surface water and, as mentioned in the previous subsection, they include nitrogen compounds and phosphates as main concern, but also K and Na, heavy metals (specially Cu and Zn) and antibiotics and other pharmaceuticals. Manure and slurry storage, as well as on-farm processing of manure may also give rise to emissions to soil, groundwater and surface water.

Section 5.1.10 of the IRPP BREF prescribes BATs regarding emissions from solid manure storage. BAT 15 is prescribed in order to prevent or reduce emissions to soil and water from the storage of solid manure.

Section 5.1.11 of the IRPP BREF prescribes BATs regarding emissions from slurry storage. BAT 18 is prescribed in order to prevent emissions to soil and water from slurry collection, piping and from a tank and/or an earth-banked storage (lagoon).

Section 5.1.13 of the IRPP BREF prescribes BATs regarding manure spreading. BAT 20 is prescribed in order to prevent or reduce emissions of nitrogen, phosphorous and microbial pathogens to soil and water from the spreading of manure. As mentioned in Section 4.4 a Plan for manure spreading must exist and must be implemented. It must include all the techniques given in the BAT. In it, all the plots of arable land where the manure will be spread must be identified, independently of their location (on-farm or off-farm).

## Waste

Manure and slurry are not considered waste but a fertilizer, unless its final destination is not direct landspreading nor on-farm processing and the operator, as holder, discards or intends to do so or is required to discard. In this case it will be handled as waste and transferred to an authorised waste management company with a permit to manage manure and slurry upon release of signed transfer notes.

Most important specific non-hazardous waste production in poultry and pig farms include dead animals which must be treated as animal by-products as mentioned in Section 4.1. Duty of care relates to everyone who handles waste, from the person producing the waste to the person who finally disposes of or recovers it. Waste must be kept secure so it does not leak, spill, or blow away and can only be given to an authorised person (e.g. a registered waste carrier and an authorised waste management company as final destination) and be transferred with the release of signed transfer notes. Treatment of waste should follow the waste hierarchy framework (reduction, reuse, recovery, disposal) and it applies principles of proximity (treatment of waste as close as possible) and of precaution (immediate application of cost-effective measures to prevent environmental degradation).

Examples of farm wastes that are classified as hazardous include waste oil, asbestos, lead acid batteries, gases in pressure containers (including halons) containing dangerous substances and agro-chemicals containing dangerous substances, or packages containing hazardous substances (e.g. agro-chemicals, medicines, substances for the treatment of water). Sharp wastes whose collections and disposal is subject to special requirements in order to prevent infection (18 02 02\* code in the European List of Wastes) and cytotoxic and cytostatic medicines (18 02 07\* in the European List of Wastes) are specific hazardous wastes of the intensive pig and poultry farms. Hazardous wastes must be collected and stored separately and shall not be mixed among them or with non-hazardous waste or other substances and materials. They must be kept secure so they do not leak, spill, or blow away and with compliance with the regulations. They must be transferred, accompanied by the supporting documents to an authorised waste management company.

There are no BATs included in the IRPP BREF regarding waste, except those referred to dead animals, in BAT 2, prescribed in order to prevent or reduce the environmental impact and improve the overall performance. BAT is to use all the techniques given, including e. ‘Store dead animals in such a way as to prevent or reduce emissions’

In the Reference Document on BAT for the Waste Treatments Industries (WT BREF) good practices related to waste management and storage are included such as the following:

* BAT n.57: Have a waste management plant
* BAT n.58: Maximize the use of re-usable packaging
* BAT n.59: re-use drums (to collect waste) when they are in a good working state. In other cases, they are to be sent for appropriate treatment

## Storage of hazardous substances

Many hazardous substances are used in intensive rearing of poultry and pigs, although there are no specific BATs in the IRPP BREF. Correct management implies appropriate storage management in order to avoid leaks, spills, incidents or accidents, which may mainly pollute soil or water. Main hazardous substances stored include fuels (mainly persisten hydrocarbons), biocides (insecticides, fungicides, medicines and disinfectants).

In order to detect any likely soil and groundwater pollution at an early stage, the operator should have established a relevant monitoring of the storage of hazardous substances including monitoring of tanks, pipes, pits, etc.

In the Reference Document on BAT for the Waste Treatments Industries good practices related to storage and handling included such as the following:

* BAT n.24 b): Ensuring that the storage area drainage infrastructure can contain all possible contaminated run-off and that drainage from incompatible wastes cannot come into contact with each other.
* BAT n.24 d): Handling odorous materials in fully enclosed or suitably abated vessels and storing them in enclosed buildings connected to abatement.
* BAT n.24 g): equipping tanks and vessels with suitable abatement systems when volatile emissions may be generated, together with level meters and alarms. These systems need to be sufficiently robust (able to work if sludge and foam is present) and regularly maintained

## Safety

In the IED no conditions and prescriptions about safety aspects like storage of hazardous substances are given, so there are not BATs regarding this issue in the BREFs.

The Seveso-III Directive (2012/18/EU) on the control of major-accident hazards involving dangerous substances is not applicable in this case as the hazardous substances present in farms are always below the qualifying quantities set in the Annex I of that Directive.

In the Republic of Macedonia the Seveso-III Directive has not yet been transposed, only Seveso-II Directive (1996/82/EC) has been transposed so far (Chapter XV of the Law on Environment developed by the Rulebook on the content of major-accident prevention policy, the Rulebook on the content of the Safety Report, the Rulebook on information on safety measures and the manner of treatment of persons likely to be affected by a major accident, the Rulebook on the content of the internal and external emergency plans as well as manner of their approval and the Rulebook on the hazardous substances, limit values (thresholds) for the presence of hazardous substances and the criteria or properties by which a substance shall be classified as hazardous)

## Administrative organisation / Internal control

### Environmental management system

Section 5.1.1 of the IRPP BREF describes the Environmental Management System (EMS) (Section 5.1.1, BAT 1), with a special point of attention for the following features:

* Implementation of a noise management plan (see BAT 9)
* Implementation of an odour management plan (see BAT 12)

Other features included are:

4. Implementation of procedures paying particular attention to:

(b) training, awareness and competence

(g) maintenance programmes

(h) emergency preparedness and response

5. Checking performance and taking corrective action, paying particular attention to:

(b) corrective and preventive action

BAT is also to incorporate both features in the EMS

### Self-monitoring and reporting

Section 5.1.15 of the IRPP BREF prescribes BATs regarding the monitoring of emissions and process parameters. BAT 24 is to monitor the **total nitrogen and the total phosphorus excreted in manure** using one of the techniques given in a table with at least the frequency given in the same table. BAT 25 is to monitor **ammonia emissions to air** using one of the techniques given in a table with at least the frequency given in the same table. BAT 26 is to periodically monitor **odour emissions to air**. BAT 27 is to monitor **dust emissions** using one of the techniques given in a table with at least the frequency given in the same table. BAT 28 is to monitor, **ammonia, dust and/or odour emissions from an animal house equipped with an air cleaning system** by using all of the techniques given in a table with at least the frequency given in the same table. BAT 29 is to monitor process parameters at least once a year of **water consumption, electric energy consumption, fuel consumption, number of incoming and outgoing animals, feed consumption and manure generation.**

## Other environmental issues

### Energy consumption and efficiency

Section 5.1.6 of the IRPP BREF prescribes BAT 8 in order to use energy efficiently. BAT is to use a combination of the following techniques:

1. High efficiency heating/cooling systems
2. Optimisation of heating/cooling systems and ventilation systems and management
3. Insulation of the walls, floors and/or ceilings of animal houses
4. Use of energy-efficient lighting
5. Use of heat exchangers
6. Use of heat pumps for heat recovery
7. Heat recovery with heated and cooled littered floor (combideck system)
8. Apply natural ventilation

See Section 4.8.2 of this factsheet (BAT 29)

### Natural resources management

Section 5.1.4 of the IRPP BREF prescribes BAT 5 in order to use water efficiently. BAT is to use a combination of the following techniques:

1. Keep a record of water use
2. Detect and repair water leakages
3. Use high-pressure cleaners for cleaning animal housing and equipment
4. Select suitable equipment (e.g. nipple drinkers, round (or bell) drinkers, water troughs (or cup drinkers)) for the specific animal category while ensuring water availability (*ad libitum*)
5. Verify and (if necessary) adjust on a regular basis the calibration of the drinking water equipment
6. Reuse uncontaminated rainwater as cleaning water

### Impact of ammonia and phosphorus emission in the natural habitats and wildlife

Atmospheric nitrogen deposition from sources such as intensive livestock rearing (NH3) and industry, traffic and household heating (NOx) is one of the main threats to terrestrial ecosystems in Europe due to the soil eutrophication and acidification processes that it produces. A direct correlation has been found between increased nitrogen deposition above critical loads in terrestrial natural habitats and plant species richness. The control of ammonia emissions into air from intensive rearing of poultry and pigs is therefore critical to keep terrestrial natural habitats in a good conservation state. Measures to control ammonia emissions are referred to in Section 4.2.3.1.

Phosphorous emissions to water are the main driver of freshwater ecosystems eutrophication. As in the case of ammonia emissions regarding terrestrial ecosystems, the control of phosphorous emissions into water from intensive rearing of poultry and pigs is therefore critical to keep freshwater ecosystems in a good conservation state. Contrary to nitrogen compounds, which are released into air (ammonia) and into surface water, soil and groundwater (e.g. nitrates), phosphorous compounds are not released into the air, but only to surface water, soil and groundwater. As mentioned above, one of the BATs related to this issue, included in the corresponding IRPP BREF Section on ‘Nutritional management’, is the BAT 4 aimed to reduce the total phosphorous excreted, while meeting the nutritional needs of the animals and it consists of using a diet formulation and a nutritional strategy which includes one or a combination of the techniques given in the corresponding document (e.g. multiphase feeding with a diet formulation adapted to the specific requirements of the production period)

On the other hand, BAT 20, included in the corresponding IRPP BREF Section on ‘Manure landspreading’, is aimed to prevent or, where that is not practicable, to reduce emissions of nitrogen, phosphorus and microbial pathogens to soil and water from the spreading of manure to land, which includes all the techniques given in the corresponding table of the document (e.g. Assess the manure receiving land to identify risks of run-off, taking into account: soil type, conditions and slope of the field; climatic conditions; field drainage and irrigation; crop rotations; water resources and water protected zones ).

# The inspection



## Preparation before inspection

### Decide on type/duration of inspection

The inspection team shall decide on the type of inspection and on the resources, including staff and equipment, which will be assigned to the task. Examples of inspection types can be routine inspection of all production processes or targeted inspection of problematic areas on the basis of complaints or in case that there are indications that critical emission limit values (ELV) cannot be met.

The following aspects should be taken into account:

* Complexity and duration of the installation - the more complex it is the more inspectors that may be needed
* Time of inspection - for safety reasons it is recommended that at night two inspectors should conduct inspection;
* For non-routine inspection, especially conducted upon a complaint and problematic situation, it is advisable to direct two inspectors to it;
* Weather condition as well as the time of a year - some additional equipment might be needed (e.g. torches, protective clothes, etc.).
* The resources needed (man-power/equipment, safety precautions)
* In relation to the previous point, it is recommended to have a **check-list of the equipment** needed (including safety gear, sampling equipment in case sample taking is required, laptop if available and convenient…).

### Desk study

The collection and evaluation of existing information about the installation is critical for the success of the inspection since it allows the easier formulation of targeted questions for the interview of the operator and the concrete investigation of those unit operations which show the highest potential for not complying with the conditions set in the decision on the EIA or surpassing the set ELV in the environmental permit. **Examples of** **information to be collected** are listed below:

1. Reports of previous inspections of the site
2. Maps
3. Environmental Impact Assessment (decision, study, monitoring plan, monitoring reports)
4. Application for the permit
5. Environmental permit/s
6. Environmental reports submitted by operators, including monitoring reports
7. Complaints received about the installation
8. IRPP BREF document
9. PRTR and other registers such as register of polluting substances into air, register of waste producers and managers
10. Information on installation to be inspected received from other competent authorities
11. Information available on the website of the operator

On the basis of the evaluation of the collected information **the following has to be prepared**:

* A comprehensive questionnaire which will be used for the operator’s interview
* A **check list** to facilitate the inspection (see next subsection).
* An outline of the “critical” ELV (i.e. those parameters which significantly contribute to the pollution load coming out of the installation)
* The list of BATs (according to the issued permit) which the operator should have installed and operated
* The list of documentation to be provided by the operator (e.g. self-monitoring records, annual reports submitted to the authorities)
* The inspection minutes and report templates (tailor-made for the installation) to be filled in at the end of the inspection
* **Agenda of the inspection** (see next subsection).

### Templates for agenda of the inspection and checklist

**You can use** as starting, **partially completed, checklist template** the one **in Annex 4**, which is **tailored to this sector**.

A **short agenda** can be a **very useful** tool that will help to conduct an inspection. Providing an operator with it in advance may result in more smooth coordination of the inspection from his/her side, simply because the operator will be aware of how many resources and people they will have to allocate to the inspection. Preparing such a document before an inspection is not time-consuming, you can **use the template of inspection agenda in Annex 2**.

### Prior operator notification

* Routine inspections. The operator shall be previously notified of routine inspections as provided in the Law on Inspection Supervision.
* Non-routine inspections. There is not an obligation to notify operators of non-routine inspections. Therefore, in case of inspections carried out to verify if the operator is in line with environmental regulations, as a consequence of complaints by citizens or for other reasons, it is not recommended to notify operators previously.

## On-site inspection

### General considerations to take into account

The aim of the inspection will be to **check compliance** of the operator **with** the operating/environmental conditions set in the issued **permit**.

1. Identify yourself . Clearly introduce yourself and show your identification card at the beginning of each inspection.
2. Explain purpose of visit.
3. The operating/environmental conditions set in the issued **permit will be the „guidance”** throughout the inspection.
4. If necessary take **samples**, and/or define the samples that should be taken by a certified laboratory.
5. **Always record your inspection with photographs and/or videos**, they are fundamental as a proof in Court.

#### Best Available Techniques (BATs)

It must be checked that all BATs that are prescribed in the permit are present and that the corresponding Emission Limit Values are met. For installations falling under the scope of the IED, if a necessary BAT-Associated Emission Level (BAT-AEL) is not in the permit it must be checked if there is an explanation as prescribed by the article 15.4 in the IED[[4]](#footnote-4). If there is no (good) explanation, feedback to the permit writer and the operator must be given. If a BAT prescribed in the permit is present, works properly but the ELV is not met, possible alternatives can be discussed with the permit writer and the operator.

### 5.2.2. Main questions for inspection

The major points of interest for inspection for the activities related to intensive rearing of poultry and pigs are the following:

* Ammonia emissions into air from housing, from manure storage, from on-farm manure treatment and from spreading of manure. Check compliance with BATs set in the permit. There are no BAT-AEL in the IRPP BREF.
* Odour emissions into air from housing, from manure storage, from on-farm manure treatment and from spreading of manure. Check compliance with BATs set in the permit.
* Dust emissions into air from housing, milling and grinding of feed, feed storage, solid manure storage and application. Check compliance with BATs set in the permit.There are no BAT-AEL in the IRPP BREF.
* Manure storage. Check compliance with BATs set in the permit.
* Landspreading of manure. Check compliance with BATs and conditions set in the permit.
* Air abatement techniques for ammonia, odour and dust emissions from animal housing. Check compliance with BATs and conditions set in the permit. Check parameters such as hours of functioning in pumps, electricity cosumption, waste water production and acidity in air scrubbers (end of pipe techniques to control emissions)
* Waste water treatement
* Surface water
* Soil and groundwater
  + Signs of spills releases from tanks, pipes, hoses, and pumps during loading and unloading of products and the storage hazardous substances.
  + Take samples if necessary
* Storage of dead animals

### Obstruction by the operator

It may happen sometimes that an operator does not want to have an inspector in his/her factory and closes the door for him/her. If this is the case you are entitled to call a state administration body for assistance/police.

But this is not the only way an operator can obstruct your job. Other ways may include such things as:

* Not providing information explaining at the same time that all is confidential
* Trying to ask you for giving them a few additional days for preparation of information that is needed
* Trying to discourage inspectors from visiting "difficult" places such as for example areas where waste is improperly stored.

It must be kept in mind that an obstruction by an operator is considered to be a misdemeanor.

## After the inspection

### Inspection reporting

After the inspection, according to EU best practices, the inspector has to draft a final inspection report. A template for such report has been delivered within this Twinning project and is available at SEI’s website (see Annex 1 for more information). The main contents of such a report are the following:

1. Baseline of the inspection

* Inspection basis (permit, legal regulations)
* Competent inspection authority, cooperating inspection authorities
* Kind of installation (e. g. slaughterhouse, meat processing)
* Operator (Name of the company)
* Address
* Date of inspection
* Length of inspection time
* Scope of the inspection (e. g. integrated inspection, media that were inspected, parts of the installation that were inspected)
* Kind of inspection (regular, extraordinary, control)

1. Inspection’s results

* No or only minor non-compliances
* Significant or relevant non-compliances
* Serious or important non-compliances

1. Recommended corrective measures

* Minor corrective measures
* Significant or major corrective measures
* Serious or important corrective measures

### Inspection recording

The inspection report and any other additional material used for the preparation of the inspection should be stored and made accessible to any relevant authorities for their information.

# Annex 1: Useful references & links

Website of the State Environmental Inspectorate, with useful materials, including inspection manual, factsheets and checklists:

[www.sei.gov.mk](https://correoweb.xunta.es/owa/redir.aspx?SURL=zVRbwB2lla06GpQpTAA3lfQ_azTUB1rWn_Et1LySS8JVdu05ggfTCGgAdAB0AHAAOgAvAC8AdwB3AHcALgBzAGUAaQAuAGcAbwB2AC4AbQBrAA..&URL=http%3a%2f%2fwww.sei.gov.mk)

Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs (Final Reviewed Version 08-2015):

<http://eippcb.jrc.ec.europa.eu/reference/BREF/IRPP_Final_Draft_082015_bw.pdf>

Inspection guidance book for intensive piggeries. A practical book with guidance on activities on a pig farm. March 2013. European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL):

<http://impel.eu/projects/ippc-pig-farming/>

Videos about pig rearing:

* Family-size pig rearing in northern Germany: <https://www.youtube.com/watch?v=s2tjd06a7Sc>
* Industrial-size pig rearing in Germany: <https://www.youtube.com/watch?v=N3Dt98IwOsE>

Videos about poultry rearing:

* Enrichment Cages. Alternative System for Laying Hens: <https://www.youtube.com/watch?v=pYNzUN9c9AM>
* Enriched Cages for Laying Hens and EGG PRODUCTION: <https://www.youtube.com/watch?v=pnw1rfZA0vA>

# Annex 2: Template for an inspection agenda

**AGENDA FOR THE INSPECTION**

*Name of the company*

*Data of the inspection*

*n. of IPPC A/B permit*

This Agenda for the inspection defines and plans the in situ activities; it defines the type of investigations to be performed (identification of key environmental issues) and how to investigate the defined topics (administrative or technical check by means of direct inspection on the plant). The Agenda is delivered to members of the inspection team and the operator during the preliminary meeting .

***Composition of Inspection Group***

The Inspection Group (IG) is composed of the following technical officials :

*Name – Administration* (Leader of the IG)

*Name – Administration*

xxx

xxx

**Timing and execution of the inspection**

The inspection will be conducted according to the following program:

***Day/month/year***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Subject** | | **Activities** | **Time** | **Who / Staff needed** |
| Step 1 | Opening meeting | | Presentation of the Agenda and the inspection team  Presentation and current status of the plant (production capacity and planimetry to check differences with the authorized layout) by the Operator | 9.00 | IG Leader  Legal responsible of the plant  Representative of the plant in charge of environmental issues |
| Step 2 | Administrative inspection | | *xxxxx* | 11.00 | *xxx* |
| Step 3 | Site visit | | Check BAT Application | 12.00 | Representative of the plant in charge of environmental issues |
| Lunch 13.30 -14.30 | |
| Step 4 | Site visit | | Waste storage | 14.30 | Representative of the plant in charge of environmental issues |
| Step 5 | Site visit | | Water treatment plant | 15.00 | Representative of the plant in charge of environmental issues |
| *Step xxx* | *xxx* | | *xxx* | *xxx* | *xxx* |
| Step xx | Minutes of the inspection | | Drafting and projecting the minutes of the inspection. | 16.00 | Legal responsible of the plant |
| Step xx | Conclusive meeting | | Conclusions | 17.30 | Legal responsible of the plant  Representative of the plant in charge of environmental issues |

***Documents to be prepared by the operator***

* Updated planimetry of the plant, indicating:
* Water discharge points
* Air emissions points
* Waste storage areas
* *xxxxxx;*
* Environmental Management System certificate.
* Analysis certificate provided by certified laboratory of last monitoring analysis.
* Communication to Competent Authority related to Incidents.
* *xxxxx.*

# Annex 3: Sector terminology

**Barn**

A general name for a farm building used for housing livestock, storing machinery or crops, etc.

**Bedding**

Material placed on the floors of livestock houses with solid floors or partially slatted floors to provide some comfort to the animals and to absorb moisture and urine. Commonly straw, chopped straw, sawdust, wood shavings, sand, peat. Rubber or plastic mats may also be provided for animals to lie on.

**Channel**

A long watertight compartment often constructed beneath a slatted or gridded floor in a building designed to collect faeces and urine as slurry or liquid manure prior to discharging under gravity to longer-term storage. A gate valve or sluice gate may be built into the channel to provide short-term storage. Commonly used in housing for fattening pigs.

**Crate**

A small pen or container for livestock, allowing very restricted movement.

**Deep litter**

Faeces or droppings and urine mixed with large amounts of bedding (e.g. straw, sawdust, wood shavings) and accumulated over a certain time on the floors of buildings

**Deep pit**

A bellow-ground, watertight compartment for collecting and storing liquid manures or slurry or poultry droppings.

**Floor design**

The floor of a pen or a housing system can be designed as a solid (concrete) floor with the use of bedding material, or a slatted floor. The slats can be made of metal, concrete or plastic.

**Fully slatted floor**

A floor where the whole area is slatted.

**Multiphase feeding**

Feeding in which the nutrient content of the diet is adjusted to the different requirements, as well as to the different feed intake of the animals in the different growth phases.

**Nipple drinkers**

Nipple drinkers are often used in automatic watering systems designed to provide water on demand to broilers or laying hens. Nipple drinkers have various designs. Usually, they are made of a combination of plastic and steel and are placed underneath the water supply pipe. A pressure control system is installed at the beginning of each pipe, with a water gauge to measure consumption.

**Partially or partly slatted floor**

A floor that is partly solid and partly slatted. Commonly used in pens for housing pigs and designed so that the animals defecate and urinate on the slatted part.

**Pen**

A small enclosure for livestock, within a house or outdoors.

**Round (or bell) drinkers (for birds)**

Round drinkers are small, circular plastic containers of different designs (e.g. bell-shaped designs) depending on the type of bird or the system they are applied to. They are usually attached to a winch line and can be pulled up. They work on low pressure and are easily adjustable.

**Slatted floor**

A metal, concrete or plastic floor with slots that allow faeces and urine from livestock and other liquids to pass through into a channel or pit beneath.

**Sluice gate**

A gate or valve that is opened or closed by sliding in supporting grooves e.g. to control liquid flow in a channel.

**Slurry**

Faeces and urine mixed or not with some bedding material and some water during management to give a liquid manure with a dry matter content up to about 10% that flows under gravity and can be pumped.

**Solid floor**

A continuous surface which allows full contact with and support to the lower surface of the animal foot

**Veranda**

Covered areas with open side walls along the side of poultry houses that allow animals access to outside climate for animal welfare reasons. It is eventually equipped with a base plate covered with some type of litter (scratching area) or ground covering. Veranda is often combined with free range poultry systems

**Water troughs (or cup drinkers)**

Containers (cups) providing water which are placed on or below the water supply pipe. Cups are either filled with water all the time or filled when a metal strip is touched by an animal. Other valves can also be used to trigger water delivery, e.g. a floating ball for young poultry that cannot force valves to open. Cup drinkers are placed in groups or in lines and can minimise stagnant water.

# Annex 4: Inspection checklist for intensive rearing of poultry and pigs

1. This Directive is transposed in the Macedonian Law on animal protection and welfare (Official Gazette of the Republic of Macedonia no. 149/13.10.14) [↑](#footnote-ref-1)
2. This Directive is transposed in the Macedonian Law on animal protection and welfare (Official Gazette of the Republic of Macedonia no. 149/13.10.14) [↑](#footnote-ref-2)
3. This Directive is transposed in the Macedonian Law on animal protection and welfare (Official Gazette of the Republic of Macedonia no. 149/13.10.14) [↑](#footnote-ref-3)
4. Art.15.4 of the IED states the following:

   The competent authority may, in specific cases, set less strict emission limit values than BAT-AELs. Such a derogation may apply only where an assessment shows that the achievement of emission levels associated with the BATs as described in BAT conclusions would lead to disproportionately higher costs compared to the environmental benefits due to:

   (a) the geographical location or the local environmental conditions of the installation concerned; or

   (b) the technical characteristics of the installation concerned.

   The competent authority shall document in an annex to the permit conditions the reasons for the application of the derogation including the result of the assessment and the justification for the conditions imposed.

   The ELVs set in accordance with the derogation shall, however, not exceed the ELVs set out in the Annexes to the IED, where applicable.

   The competent authority shall in any case ensure that no significant pollution is caused and that a high level of protection of the environment as a whole is achieved.

   The competent authority shall re-assess the application of the derogation as part of each reconsideration of the permit conditions pursuant to Article 21 of the IED. [↑](#footnote-ref-4)