IED (Industrial Emissions Directive): a directive for industrial livestock farming

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1. General concepts: revision of the Industrial Emissions Directive

1.1 Outcome of negotiations

At the end of November 2023, the European Commission, the Council of Ministers and the European Parliament reached an agreement on the revision of this directive, which concerns, among many other industries, factory farming. The following critical comments concern only the part relating to livestock farming (the new Chapter VIa).
The debate focused mainly on the criteria that decide whether or not a farm is subject to the rules of the directive.
In the end, cattle farms would be excluded, at least initially. The farming unions and the dairy lobby are triumphant. What follows is a defence of the idea that environmentalists have little to cry about, given the open and hidden flaws in the concept.
For pigs and poultry, the thresholds have been tightened, but not by nearly as much as the European Commission's initial proposal would have liked (proposed threshold of 150 LU for all farms). However, there has been significant progress and, above all, it is much more rational because it is now expressed in terms of LUs (Livestock Units). As far as pigs are concerned, this means that for the 350 LU threshold, the sum of the animals present will be taken into account: piglets, fattening pigs and breeding sows (which was not the case before[1]). For poultry, for which the threshold will be 280

[1] The threshold was worded as either 2,000 fattening pigs or 750 breeding sows, which could be interpreted in different ways by the Member States: either translate these thresholds into LUs and add up the LUs (which is the case in Germany), or consider that 1999 fattening pigs + 749 sows on the same farm would be below the threshold, which was the case for France unless the Prefect deemed that, in view of local environmental sensitivity, the farm would fall under the authorisation regime. This is due to the fact that France has mainly

LU (except laying hens at 300 LU), the difference in size between species will be better taken into account, whereas previously a chicken, a turkey or a quail etc. were counted individually for the same threshold of 40,000 animals. However, a guinea fowl is still treated in the same way as a quail or a pigeon. The threshold remains at 40,000 for chickens, which are by far the most numerous and remain the benchmark, reflecting the status quo. Indeed, the farming lobby (strongly supported by the majority EPP party) wanted the status quo.
There remains the concern about the inextricable knot formed by the dual objective of greater efficiency for the environment and human health on the one hand, and administrative simplification on the other, which means making it easier and quicker to obtain authorisations. The aim of streamlining procedures is therefore tantamount to lobbying by the industry, which wants nothing more than to be able to do whatever it wants without being hassled.

1.2 Preliminary remarks on the term 'factory farming'

The current IED applies to 'Intensive Rearing of Pigs and Poultry' which is assimilated to industrial plants, in other words : factory farming. What is meant by industrial livestock plants ? How do we define the different types of livestock farming? These questions are the subject of much debate.
The EPP party in the European Parliament denies the industrial nature of certain livestock farming activities and has sought (unsuccessfully) to remove the term 'industrial' from the texts.

Some players still equate the term 'industrial livestock farming' with the thresholds of the IED Directive, which have long been defined as at least 40,000 poultry, 2,000 fattening pigs or 750 sows. However, this criterion is an artefact, given that these thresholds are perfectly arbitrary and exchangeable, and that smaller farms or farms with ruminants can operate with exactly the same industrial methods and the same outlets, generating, proportionately, the same impacts.

Among the definitions in circulation is the equivalence with **"hors sol".** But here too, different representations coexist. For some, 'off-ground' means that the farm buys the feed and does not have sufficient **land to spread its manure**. In contrast, 'soil-based' means that the farm produces most of its animal feed and has the land needed to spread its manure under good conditions. But for others, 'off-ground' means **confinement of animals** that have no access to the open air. For many people too, there is a mixture or fusion between these two representations. Indeed, the Breton model has left its mark on people's minds. In other regions, such as the Grand Est, it is perfectly possible to have large, highly intensive livestock farms with animals in confinement or even in cages, while at the same time having useful crops and land for spreading manure and producing feed on the farm. This is indeed **industrial mixed farming**, even if some people would like to forget this reality by promoting an idealised model of mixed farming.

In France, the debate has been marked by the work of Jocelyne Porcher, who has provided an apt description of the industrial system in which the quest for performance and productivity at every level takes precedence, capital takes on a decisive role, work is deprived of sensitivity and meaning, and the animal is no more than raw material ('ore') for downstream industries and a windfall of profits for upstream industries. So the crucial element is the system.
There is no doubt that the term 'industrial' is appropriate for intensive mass production practices and that any numerical threshold remains arbitrary.
The very useful work of Jocelyne Porcher has encouraged the Confédération paysanne union to use its vocabulary to promote a Manichean vision of the **distinction between "élevage"** (livestock

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combined breeder-fattener farms, whereas the Netherlands, Denmark and Germany have specialised breeder or fattener farms.

farming), which is good and should be defended - this is what “paysans” (small-scale farmers) do, who have a relationship with their animals - , **and "animal production",** which is industrial and should be fought. This attractive dichotomy obviously has its reasons, but it also has its limits. It overlooks the fact that large farms can acquire certain good practices, and small farms can have bad practices (even if it's due to a lack of resources) and even cruel practices, and we get into the little game between the worst and the least worst. The utopia, the good one, remains a peasant one, with a human face. But this dichotomy also overlooks **the existing inextricable mix of industrial and peasant elements**. Industrial elements are omnipresent, and this is particularly obvious in the case of poultry. They all depend on hatcheries and selections carried out by a handful of industrialists at world level. Furthermore, it would seem pointless to declare war on any agri-food industry upstream or downstream. Even if complete autonomy and direct sales by small farms were to make significant progress, the disappearance of the industry is out of reach, and there is reason to hope that it will be transformed.

In conclusion, the term "industrial livestock farming" can be used in a variety of ways: economic, zootechnical, sociological, legal, etc., and it must always be placed in its proper context. In any case, this concept does not overlap with the thresholds of the IED Directive, which will now be discussed.

1.3. The current revision procedure

The IED Directive[2] defines the rules governing the authorisation and operation of polluting industrial facilities, including industrial livestock farms, at European level. The aim is clearly to maintain industrial livestock farming and to facilitate the granting of permits by simplifying administrative procedures while reducing the impacts.

In practice, in France, when there are plans for factory farms in our villages, we are all familiar with **public enquiries**, which result in a report from the investigating commissioner (rarely unfavourable), an opinion from the Coderst (Departmental Council for the Environment and Health and Technological Risks) which is very rarely unfavourable, and authorisation from the prefecture, which is usually granted, but is sometimes challenged in court by opponents, which, in the event of temporary success, leads to the factory farm being regularised after any minor adjustments, with a thicker dossier.
The aim of the IED, which regulates these procedures, was certainly to improve environmental protection. But **it has clearly failed**, given the widespread pollution of water and air, particularly in Brittany, and GHG emissions throughout Europe. The "Best Available Techniques" (BATs) for the environment that the IED Directive makes mandatory are defined through a long and complex consultation process. These BATs are set out in the conclusions of a BREF document[3] (for *'best reference'*); they are first listed (and numbered), and then briefly described in the second part of these conclusions. An in-depth examination of all the possible measures, whether rejected or retained in the conclusions, can be found in the voluminous body of the BREF. In fact, the measures retained as BAT constitute a list of methods to choose from, allowing operators to opt for the least restrictive. These environmental BATs are in no way concerned with animal welfare. For example, battery cages, full slatted floors and very high density rearing are perfectly compatible with the techniques proclaimed as "BAT" under the IED directive. This fact creates a lot of confusion.

At the end of November 2023, the revision of this directive was at an advanced stage. The general outline of a revision is as follows: the Commission draws up a roadmap, commissions impact studies,

[2] https://environment.ec.europa.eu/topics/industrial-emissions-and-safety/industrial-emissions-directive_en?prefLang=fr
[3] https://aida.ineris.fr/inspection-icpe/directive-relative-emissions-industrielles-ied/bref/document-reference-meilleures-0

consults the public and publishes a proposal. The Council (of agriculture ministers from the Member States) adopts a position, as does the European Parliament. This is followed by the trilogue, which consists of negotiating an agreement between the three institutions for a final legislative text.
COM's IED project is (obligatorily) based on an Impact Assessment (IA), which analyses the project by focusing on the economic benefits for the environment and health on the one hand, and on the costs for the administration and for businesses on the other. The cost/benefit balance of the regulatory project is favourable. This IA focuses on technical measures to reduce emissions, but it is not clear precisely what these measures are; this issue, which is of paramount importance, will be detailed below: **we will first look at the emission reduction measures currently in force, and then at the prospects under the Commission's proposal and the Impact Assessment - prospects that are vague but worrying**. Anticipating the conclusions to be drawn from our research, the approach has no vision of what a "sustainable" agriculture, food and livestock system might look like. The assessment remains 'business as usual', with a few technical improvements. It emphasises intensification and economies of scale for the benefit of large farms (is this a very Danish approach?).

The European Commission published its proposal in April 2022. Industrial livestock farming is dealt with separately in a brand new chapter VIa Article 70 a) to i). This draft is a balancing act between COM's desire to better protect the climate, the environment and human health, in line with the Green Pact for Europe, and its desire not to upset (or to upset as little as possible) the highly influential animal industries, while at the same time trying to lighten the administrative load, which is inefficient to boot. For livestock farming, the key points were as follows:

- **lowering the threshold for submission to the directive, initially proposed at 150 LU**[4] then 250 for all species combined
- **the inclusion of cattle in the** scope of the directive, which until now have not been covered, even though they make a major contribution to GHG and ammonia emissions
- **the drafting by COM, within 2 years, of operational rules** defining the practices and techniques to be implemented (to date the so-called BATs are defined in the so-called Seville process, with the drafting of reference documents known as BREFs) [5]
- **the operational rules take account of certain farming conditions**[6] but without explicitly mentioning animal welfare
- **Member States are given a great deal of flexibility** between 'authorisation' and 'registration', and the standard conditions applicable are drawn up by the Member State, subject to a consultation process; this simplification is referred to as 'tailor-made'.
- **a significant reduction in the amount of information required to** be presented when applying for an authorization, compared to current impact assessments
- **easy electronic access** for the public to authorisation files and inspection reports
- **more secure access to legal disputes**
- **more secure access to damage compensation**.

In its forecasts, the European Commission talks of ONE measure per farm, and in the measures mentioned it gives **pride of place to precision feeding and feed additives for cows**, the first additive having been approved[7] . However, these are choice measures for the intensification of livestock farming, and choice measures for keeping the system as it is. In fact, uncertainty reigns over future

[4] A livestock unit corresponds to a low-producingcow, or 2 sows, or 3 fattening pigs, or 143 chickens or 72 laying hens.
[5] https://aida.ineris.fr/guides/documents-bref/documents-bref-conclusions-mtd; https://aida.ineris.fr/sites/aida/files/documents-bref/IRPP_n%25202017302%2520CE%2520du%2520150217concMTD_AIDA.pdf
[6] Article 70i 1. *The operating rules shall take into account inter alia the nature, type, size and density of these installations and the specificities of pasture based cattle rearing systems, where animals are only seasonally reared in indoor installations.*
[7] Civil Dialogue Group Beef and Veal 16 September 2022

compulsory measures. The Commission is seeking to reassure both the industry and environmentalists. It promises consultation, but it is to be feared that the same power struggles will produce the same results and the same inefficiency.

The Council validated an agreement in March 2023 . The main changes introduced are as follows:

- **modification of the thresholds**: **350 LU** for cattle and pigs, 280 LU for poultry, and 350 LU for mixed farms, exemption for extensive farms and gradual application starting with the largest farms
- **more** national **flexibility in the** event of damage to health
- **in the event of a crisis, derogation from** the maximum emission limits associated with the Best Available Techniques.

Flexibility and derogations are most often the condition for obtaining an agreement between the 27 Member States.

On 11 July 2023, the European Parliament voted a rather distressing text that maintains the status quo. It rejects the inclusion of cattle in the IED directive (in disagreement with the Commission and the Council) and rejects the extension of the scope of the directive by maintaining the current thresholds for the authorisation system, while adding an overall threshold of 750 LU. There is no mention of what the operating rules should contain, which the Commission will specify in a delegated act; all hopes and above all fears are permitted. On the other hand, the obligation to exchange views with the sector is included. Thus the result is likely to be the same as for decisions on Best Available Techniques as defined in the BREF conclusions: the sectors and Member States will be careful not to burden producers with constraints or undermine their sacrosanct "competitiveness". The future operating rules - the great unknown! - will be the subject of much debate and conflict, and will most certainly give way to power struggles.
The European Parliament did not seize the opportunity to anchor consideration of animal welfare in this directive. It therefore runs the risk of seeing the gap between the public and livestock farmers widen.
The vote in plenary was preceded by **two votes in committee**. The Agriculture Committee was at pains to deny, by playing on words, that livestock farming is an industrial activity, removed cattle from the directive, and generally restricted citizens' right to information. The Environment Committee voted in favour of a compromise and adopted the thresholds accepted by the Council.

While we may agree with the majority union that IED is an inappropriate legislative instrument for the livestock sector, it is not for the same reasons.

2. IED: claiming to be taking action on emissions, while continuing to support factory farming

2.1. The method

The principle of the IED directive is to impose good practice. The conclusions set out in the current *BREF (Best reference) Industrial pig and poultry farming (2017)* describe them, in the form of general principles to be respected and a menu of techniques deemed to reduce emissions. These include **an Environmental Management System, good internal organisation, nutritional management to reduce nitrogen and phosphorus excretion, rational use of water and energy, control of noise, dust and odour emissions from buildings, effluent storage and spreading, effluent treatment, monitoring of emissions and process parameters, and a focus on ammonia emissions.**

For emissions from livestock buildings, the BREF defines maximum emission limits associated with these BAT, known as NEA-MTD (Emission Levels Associated with Best Available Techniques), which are given for ammonia in kg NH3/place/year. This is a key point in the method.
How do you know if a farm is complying with these NEA-MTD? Because it is implementing BAT! It's as simple as that. In practice, this is assessed **using an emission factor based on the type of building and the techniques used.** The BATs give entitlement to reductions compared with the emissions of a "standard" system (which is defined as being bad, which makes it easier to reduce). In France, mandatory reporting of ammonia emissions of 10 t/year or more is carried out using software that incorporates emission factors based on systems, i.e. the type of building, the method of storage or processing of effluent, and the method of spreading; each stage has its own abatements based on the techniques applied. Emission factors are defined at Member State level (and their variability will be discussed below) and/or on the basis of values defined at international level[8] (with significant uncertainties). All you need to know is the emission factor that applies to the system in question, and multiply by the number of animals.
The categorisation of systems and the associated emission factors evolve in line with the scientific work carried out by the industry's technical institutes (in France). In France, emission factors have been refined and improved over the last decade. The industry's technical institutes have played a major role in these developments; although they have the technical skills, they are not neutral. For example, data on alternative pig-rearing systems are particularly poor, since the Institut Technique du Porc's mission was to defend the fully slatted floor system. Why consider more favourable emission factors for alternative systems (which have been discredited as 'niche markets') when the main objective is to defend the existing system in order to avoid costs for farmers and maintain or even develop production as it is?
The IFIP (Institut Technique du Porc) clearly states this[9] : *"It is therefore important that the new version of the BREF recognises the fully slatted floor (in its usual form) as a BAT: to this end, the IFIP is continuing its investigations by setting up various studies, the common objective of which is to show the advantages of a fully slatted floor with manure storage for the entire duration of the animals' presence, compared with systems combining a partial slatted floor and frequent slurry evacuation...".*
This is a fundamental, cross-cutting problem. The Technical Institutes (and indeed the Chambers of Agriculture) are stakeholders in numerous governance and research projects, often financed by public funds, but they are lobbying organisations. For example, the IFIP has regularly fuelled the blockade against improving animal welfare through so-called research work of no real interest, and by misinforming livestock farmers. The failure to comply with minimum protection standards for pigs is well known, and has been fuelled for decades by pseudo-studies by 'Merchants of Doubt'.
Another difficulty is technical. Highly standardised industrial systems are the best known. For alternative and innovative systems with open buildings, data are lacking, especially as alternative systems are highly diverse, and variations in seasons and meteorological conditions play a major role in open systems. Measuring the concentration of pollutants in a system with centralised exhaust air evacuation is far simpler than assessing emissions from a spacious system open to the open air.

2.2. The main BATs currently being promoted

What techniques can be used to reduce emissions from factory farms? The following is **a loose evocation of the main BAT currently proposed, for all species, and validated in the BREF that came into** force in 2017, without prejudging any new techniques to be validated in future (for cattle in particular). The Commission plans to draw up the **"operational rules"** that will define BAT within two years of the directive's adoption. However, it intends to build on what already exists. The list below includes **a number of disillusioned comments in italics in square brackets,** inspired by observations

[8] EMEP/EEA and UNECE
[9] IFIP: News on pig farming March 2009

of impact studies submitted in France for industrial livestock farming projects. It is striking to see the ease with which the applicants tick the boxes for the minimum BAT; it can sometimes seem like an exercise in reciting reassuring formulas on paper, apart from the spreading plan, which is always a cumbersome exercise that appears to be well mastered. Here, then, is a brief summary of techniques for reducing emissions, for all species, with a few comments in italics. **The precise list can be found in the Conclusions of the BREF**, first in table form with the lists of numbered techniques and their applicability, then in more descriptive form. The detailed evaluation of existing techniques and the scientific data on their impacts form the corpus of the BREF. It should be noted that the scientific studies and measures presented by the various Member States and organisations during the preparatory work follow a variety of methods. It is therefore rare to have data that are truly comparable. The available data are the basis of the binding conclusions published in the EU's Official Journal. In the final drafting of these conclusions, the technical expertise and responsiveness, and in particular the experience, of the participants around the table play a considerable role. Representatives of the technical institutes can reject certain constraints or relativize them by adding applicability clauses, and those of the Member States can defend their sectors. Here are some results:

- Energy savings are prized *[but industrial systems are inherently energy-intensive, and some emission reduction techniques are very energy-intensive]*.
- As for ammonia emissions, **precision feeding** is the technique of choice; it reduces nitrogen and phosphorus excretion while maximising productivity *[and multiphase feeding is done anyway, so for economic reasons, it's the easiest solution to tick the emissions reduction box, by reducing excreta. Incidentally, the BREF does not even call for a reduction in the import of soya from deforestation, even though everyone knows that this is what needs to be done. This shows once again that the IED approach is not very relevant for the agro-ecological transition].*

  Some additives are used for this purpose *[the desired effect of additives is to enhance the efficiency of foodstuffs, in other words to stimulate growth (under an environmental alibi) but without resorting to banned antibiotics. This is, for example, the aim of copper and zinc, which are now regulated because of the risks to soils, but are still popular; others, such as pre- and probiotics, seem more harmless. The additives are used to mitigate health risks due to pushing for high performance under strong constraints]*.

  The novelty would concern **cattle,** but in the end they are not covered by the IED directive. *see further in the cattle paragraph].*
- The techniques used **for livestock buildings** are :
    - reduce the emitting surface *[This may encourage reducing the surface area per animal and therefore increasing animal density].*
    - dry, clean surfaces *[Pigs: this means taking account of behaviour to direct excretion to a particular area, which is not the usual technical approach. Cows: this is impossible in buildings, whereas grazing is very advantageous; scraping systems can be dangerous].*
    - evacuate slurry frequently *[Pigs: in the public enquiries, this statement was regularly presented with total vagueness as to the actual frequency, with different frequencies for different buildings for different categories of animals... who controls ?!].*
    - in the case of animal welfare and 'pigs on straw' : there are no recommandations. *[to do well and keep the straw clean, you need a low density and a lot of straw; this is an extremely rare and demanding system; the current BREF accepts higher emissions for pigs on straw but does not include any approach to reducing emissions in alternative systems with better welfare levels. Various systems have a litter area and a limited slatted area].*
    - allow the urine to drain in such a way as to separate urine and faeces *[the aim is to prevent the urease contained in the faeces from generating ammonia from the urea contained in the urine. Rapid separation, with urine drainage, is the technique of choice in 'animal welfare' piggeries, particularly in Germany, with different functional zones and a straw-bedded rest area].*
    - phase separation techniques, V-scraping *[industrial process].*
    - cooling the effluent *[the industrial process is energy-intensive; for alternative farms with a courtyard, the first step is to provide shade].*
    - Dry droppings (laying hens in cages and aviaries) *[this is the basic requirement, although it is not systematically imposed by the Préfets].*
    - have a non-leaking watering system *[this is basic].*

- ventilate well so as to keep the litter as dry as possible (broiler poultry) *[this is essential to reduce the incidence of pododermatitis (claws rotted by damp, ammonia-laden litter); it's always a compromise - and an economic one! - between air quality, litter quality, temperature control and energy costs].*
- various air-washing techniques *[these are very effective but costly techniques, and in poultry they have never been made compulsory but 'not applicable' because of the cost; in themselves they do not improve the quality of the indoor air breathed by animals and employees; air-washing is incompatible with open buildings (pigs and poultry), which are nevertheless essential for reasons of animal welfare; air-washing should not even exist insofar as confinement farming should not exist].*

- **Effluent storage:**
  - covering the pits [*this is a basic requirement, although it is not systematically imposed by the Prefects; in particular, the large lagoons, the predominant system in Spain, have escaped the obligation – this is one more violation of the principle of level playing field].*
  - avoid leaks *[a matter of course].*
  - avoid mixing [*odour issue].*
  - methane recovery, torches
  - acidify effluent *[see below].*
- **Spreading:**
  - by drag hose *[heavy investment; yet there are subsidies in the name of the environment! which amounts to a new externality in which industrial livestock farming monopolises public money in a 'polluter paid' way].*
  - by injection into the soil *[investment, idem].*
  - rapid incorporation into the soil *[the current rule is already 4 hours, but with a possible derogation to 12 hours - and who will monitor this? The highest emissions occur in the first few hours. To go quickly, you have to work with two tractors].*
  - acidification *[preferred by the Danes, rejected by French farmers and environmentalists].*
- **Special effluent treatment :**
  - composting *[also creates emissions (which is often overlooked); mainly reduces the volume to be transported for spreading].*
  - composting with the marketing of a standardised fertiliser *[common for poultry, avoids the need for a land application plan].*
  - biogas plant with land application of digestate *[major controversy surrounding biogas plants and their impacts; highly contested process due to obvious excesses and increasing competition for biomass resources; greenwashing and intellectual fraud surrounding its real environmental assessment and its promotion; high public funding to support factory farming; it is a gas produced by animal suffering].*
  - The biological treatment of liquid manure, very widespread in Brittany, is no longer validated by the BREF *[it consists of sending nitrogen into the air, essentially in the form of N_2 which is harmless but represents an immense waste, with the aim of reducing the quantities of nitrogen to be spread in order to be able to install more pigs in Brittany, while at the same time producing mineral fertiliser at a high cost in terms of fossil energy - this absurdity was heavily subsidised in order to be able to add more pigs in a context of polluted water].*

  Grazing does not feature in the BREF, as cattle are not concerned, but it deserves a mention. It reduces ammonia emissions through the separation of urine and faeces and the rapid infiltration of urine *[since ruminants were not concerned, this was never taken into consideration; the mechanism of action is certainly the same for pigs, although free-range pigs do not, in practice, reach the IED thresholds ; the stocking rate in the paddocks is likely to be relatively high, so the challenge is to have large enough plots or to alternate them frequently; if free-range and grazing are ever developed for pigs, these issues will be topical].*

Certain widely applicable obligations, such as covering slurry pits and rapid incorporation of slurry spread on fields, will undoubtedly reduce certain emissions. But they still need to be implemented, which in reality should have been done years ago. This is one of the reasons for doubting the IED method, which is torn between the search for efficiency and resistance to the additional costs of production. What's more, **such improvements will do nothing to resolve the other impacts**: the

excess nitrogen within the system, the use of too much land to feed animals, the pesticides that go with it, the collapse of biodiversity, the impact of world trade, animal distress, etc.
What we need to remember is that **all the techniques listed under "BAT"** (N.B.: grazing and free range are not included) **are adapted to mass industrial livestock farming** - which is in fact the aim. These BATs will be recognized as inappropriate the day the aim is to move away from mass livestock farming because of its many disadvantages and externalities. **The perverse thing about the IED method is that it is based on limiting emissions per animal, but does not include any limits in terms of animal densities, concentration and intensification**. It's exactly like reducing (a little) the pollution from each car so that more cars can drive even more.
In conclusion, the IED Directive ignores planetary limits, whether in terms of excess nitrogen, greenhouse gases or the use of land for animal feed.
It focuses on reducing emissions per individual animal, without taking into account the impact of the sum of the animals on a farm, or the sum of the animals in a territory. Yet it is the mass of animals that poses a problem for the environment, and it is the extreme productivity of animals that increases their distress, albeit hypocritically in the name of the environment: they have to produce more and more while eating (and costing) less.
The IED Directive ignores the specific characteristics of living organisms, and in particular their sensitivity.
It completely fails to address the urgent need for sobriety: radical sobriety is certainly imposed on animals by all the deprivations they suffer, but for humans the waste of animal protein remains immense and unjustifiable.

2.3. Calculating ammonia emissions

One of the advantages of the IED directive is that it requires **monitoring of emissions and environmental performance**. But it is important to remember that this is a simple software calculation exercise. The number of animals is multiplied by the emission factor corresponding to the category of animals and the category of system used.
In truth, calculating ammonia emissions is a subject in itself. It's complex, and sometimes disconcerting. In fact, the administrative obligation is threefold:

- The industrial facility must comply with the NEA-MTD (see 3.2.1.1.) and must monitor its emissions. As for monitoring in the installations, the conclusions of the BREF describe the methods authorised under 4.9: mass balance between animal production and excretions, successive concentrations in effluents, analysis of effluents, application of a volatilisation coefficient, measurement of the concentration in the air renewal rate, estimation using emission factors, etc.
  The emission factor is by far the easiest and most common method.
- The industrial facility must report its emissions if they exceed 10t NH3 per year.
- Each Member State must report its national emissions at European level. This is the purpose of the EMEP/EEA *air pollutant emission inventory guidebook*, the latest version of which dates from 2019-2020.
  To provide a very simplified summary, this guide focuses on emissions of ammonia, nitric oxide, NMVOC (non-methane organic volatile compounds) and fine particles.
  It presents three methods for calculating ammonia and nitric acid emissions:
  - Tier 1: the number of animals (on average) is multiplied by emission factors that include the housing, storage and spreading stages, and may differentiate between liquid and solid effluent.
  - tier 2: the material flow is tracked throughout the process, which requires more data to be entered than in the tier 1 calculation. For ammonia, we use TAN (total ammonia nitrogen). The first step (step 1) is to define homogeneous sub-categories of animals. The second (step 2) involves calculating the total excretion by the animals, and so on up to step 15. The guide

presents Tier 2 emission factor values. These emission factors are taken from various sources. They are in fact sometimes surprising. For example, all cattle are shown as having spent 180 days in the barn and a (low) emission factor for grazing. All poultry are shown as spending 365 days in the building. Therefore, this method does not take into account the differences between types of soil, frequency of removal and type of management of slurry or manure, cleaning etc etc. - these data are not widely available - but takes a rough average.

- Tier 3 must be more precise than Tier 2. Further development in tier 3 allows the introduction of abatement techniques and the use of emission factors specific to a Member State, and therefore to be closer to the usual conditions. Estimates of the reduction in ammonia emissions resulting from abatement techniques can be found in UNECE (2007). We can assume that these approaches are no longer up to date, given the acceleration of environmental emergencies. This is a far cry from the ambitions of the Green Deal!

Uncertainties remain very high, particularly for grazing cattle.

It should be noted (see Appendix 1.3.2) that emissions from slurry or stored manure show impressive variability. In Table A1.11, this variability is such that it casts serious doubt on the credibility of these calculations. Thus, from various publications, the weighted averages of ammonia emission factors for stored effluents, as a % of incoming TAN, are (Table A1.11): 7 (dairy cattle manure) and 38 (beef cattle manure); 11 (pig slurry) and 63 (pig manure); 5 (layer droppings) and 27 (broiler droppings). Such discrepancies deserve some explanation...

The emission factors used in different Member States (table A.1.12) also diverge in a surprising way :

Czech researchers have compared approaches to authorising and estimating ammonia emissions between Member States[10] . The differences are astonishing; Denmark and the Netherlands have extraordinarily low emission factors. If this is really due to technologies that are so much more modern and efficient, it would have been useful to provide some technical explanations (widespread use of air washing? acidification of slurry? what about poultry?) in order to be credible.

Table 2. NH_3 emission factors for selected livestock in kg NH_3·animal place^{-1}·year^{-1}.

Livestock	Manure Type	DK	GE	IT	NL	FI	GB	CR
Dairy cows	Slurry Manure	13.55	67.05	44.44	11.70	29.46	29.34	24.50
Other cattle	Slurry Manure	3.44	26.71	20.43	4.30	11.66	13.17	14.50 13.70
Fattening pigs	Slurry Manure	1.22	9.54	5.09	1.00	4.91	6.76	8.30/5.50 [1]
Sows	Slurry Manure Outdoors			10.52		10.47	7.95	11.90/19.70 [2]
Laying hens	Litter Droppings	0.21 -	0.62	0.22	0.13	0.25	0.25	0.27
Broilers	Litter	0.07	0.26	0.15	0.03	0.18	0.42	0.21
Turkeys	Litter	0.52	1.44	0.35	0.97	0.29	0.66	0.73
Ducks Geese	Litter Litter	0.01	0.31 0.39		0.20	0.20	0.24	

[1] piglets; [2] gestating sows.

[10] Kunes, R.; Havelka, Z.; Olsan, P.; Smutny, L.; Filip, M.; Zoubek, T.; Bumbalek, R.; Petrovic, B.; Stehlik, R.; Bartos, P. A Review: Comparison of Approaches to the Approval Process and Methodology for Estimation of Ammonia Emissions from Livestock Farms under IPPC. *Atmosphere* **2022**, *13*, 2006. https://doi.org/10.3390/atmos13122006

2.4. How do green house gases (GHGs) fit in ?

Theoretically, they should now be included in the IED. In fact, that was the reason for trying to include cattle. And the climate emergency is gathering pace.
For the moment, we are dealing with a **strong focus on ammonia**, a major and formidable pollutant because of the fine particles generated and the acidification and eutrophication of the environment. **In the BREF currently in force, methane emissions play virtually no role**. Ruminants, the main emitters, are not yet concerned. Given the scale of greenhouse gas emissions, it is more than appropriate that ruminants should also be concerned. As for **N_2O**, another powerful greenhouse gas emitted by livestock farms, at the time the data on livestock manure management was insufficient and too complex for N_2O to be taken into account other than as a reference to collateral effects.
This is no longer acceptable when it comes to soil emissions of N_2O. This is **one of the major flaws in the IED directive.** Emissions of N_2O occur in soils following the application of nitrogen fertiliser, whether mineral or organic. **A part of N_2O emissions is therefore generated by the spreading of manure, but another very significant part is produced by diverse crops grown for animal feed and fertilised with mineral fertilisers.** Indeed, two-thirds of the cereals used in Europe are used for animal feed. But these N_2O emissions are currently excluded from the scope of the IED directive and will remain excluded, as will the impacts in terms of land use and biodiversity. However, the complexity of chemical reactions in soils means that the only practical way of tackling these emissions is to reduce nitrogen inputs, which implies a change of system, in the direction of sobriety and decreasing animal production.
Similarly, **the scope of the IED directive does not take into account the downstream impacts, which cannot be dissociated from animal production**, i.e. processing, conservation, packaging, transport, etc. These downstream impacts are much higher for animal products (milk and meat) than for plant products. Once again, authorisations for industrial livestock farms are based on favourable biases linked to the compartmentalisation of approaches. This is detrimental to the construction of a sustainable food system.
However, with climate issues coming to the fore and the arrival - perhaps one day? - of cattle, new BATs for the climate will have to be defined.
The impact assessment that forms the basis of the proposed revision shows **a very favourable cost-benefit ratio. But on the basis of which BATs ?**
The few answers that have been found to this crucial question will be set out in the chapter dealing with cattle. However, to close this general chapter on the IED Directive, let us anticipate the conclusions that will be supported later. To reduce methane emissions from cattle, the Commission is relying on feed additives and the intensification of breeding practices. **The IED directive does not contain the slightest reflection on what would be sustainable farming methods and a sustainable food system.** The text does, however, provide for account to be taken of the specific features of grazing livestock systems when drawing up operating rules (which will have to define the equivalent of BAT). We can deduce from this that there will be no obstacle to grazing, but that the absence of grazing is also considered to be a normal situation.

2.5. Cattle in the IED directive : what measures are being considered ?

It seems that, for the time being, cattle remain outside the scope of the IED directive, although this situation may change in the future. However, a brief overview of the option of subjecting cattle to the IED directive could be interesting and even revealing.

What new measures could be introduced for cattle?
With the arrival of cattle in the future FDI, methane, a powerful GHG, would become crucial. The CAPRI model gives an indication of what to expect in terms of future 'Best Available Techniques'. The

CAPRI model for reducing agricultural emissions also seems to be largely behind the Commission's work. A JRC report[11] cites the reduction techniques for livestock farming taken into account by CAPRI. These are **industrial and intensification techniques**: **biogas plants, low-nitrogen feed, linseed feed additive, nitrate feed additive, genetic improvement to increase the productivity of dairy cows and feed efficiency, vaccination against methanogenic bacteria in the rumen**. The Commission is betting heavily on **molecules that modify rumen digestion so as to reduce methane production**[12] ; an initial substance has been approved by Europe.

However, a well-documented review of options for reducing enteric methane in cattle[13] , carried out with the support of the FAO (LEAP programme), shows that of the many substances and techniques reviewed (everything and anything!), none is at the same time clearly effective, has no negative environmental impact upstream or downstream, is non-toxic, attractively priced, feasible for grazing, etc. They all need more research, perhaps a life-cycle analysis to clarify matters, incentives and acceptability. All of them need more research, perhaps a Life Cycle Analysis to clarify matters, incentives, acceptability... In fact, the hope in this field is always to discover the miracle molecule that will increase animal productivity (as do certain drugs that have now been banned...) while reducing greenhouse gases, since it is only the economic benefits in terms of productivity that would motivate farmers to pay high prices for these substances - unless they were given subsidies or carbon credits for doing so, which is exactly what is envisaged.

The whole complex is a case of gigantic interests on the part of the animal feed industry (and the whole upstream field crop industry, including agrochemicals) and the dairy industry. It also reveals a perverse form of research against nature - remember the animal meal fed to cows - which is sinking huge sums of money into avoiding the inevitable reduction of the cattle herd, which is subject to a lucrative industry.

Reducing livestock numbers is the only rational, effective and efficient response to cattle emissions, while at the same time enabling the transformation of cattle farming towards systems that are much more respectful of animals, biodiversity and planetary limits.

Elsewhere in the huge complex of AI documents is **another** perplexing **table**[14] with emission reduction measures, also from GAINS. It includes effective and expensive technologies, focuses on basic nutritional techniques, and includes such **absurdities** as incinerating poultry droppings, and for cows, replacing hay with maize, and reducing PM10 dust by replacing hay with silage. The least we can say is that such a compartmentalised approach to environmental impacts does a great disservice to the quest for a sustainable agricultural and food system. It is also diametrically opposed to production systems considered to be of superior quality (hay milk, etc.) and to organic farming, despite the fact that organic farming is very much supported.

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[11] Source : *JRC,Technical report : Modelling environmental and climate ambition in the agricultural sector with the CAPRI model*. page 22 : table : Technological GHG emission mitigation options included in CAPRI

[12] The minutes of the CDG Pigmeat meeting on 14 November 2022 report what the Commission representative said: *Estimated methane emission reductions from cattle are based on a nutrition technique that reduces enteric emissions by 10%. This is a minimal estimation. DG SANTE approved in April 2022 the use of a feed additive that reduces enteric methane by 25; furthermore, scientific publications report higher emission reduction potentials (c. 36-50%). For pigs, methane reduction is estimated at just over 35%. Detailed assessment of specific feeding techniques for both types of animals will validate such potential savings. Ammonia emission reductions have been estimated at 12% for cattle, around 7% for pigs, and approximately 20% for poultry.* These reductions are all relative; it always depends on what you are comparing them to; the worse the baseline, the better the expected reduction.

[13] Karen Beauchemin et al :Current enteric methane options, J.DairySci. 105 :9297-9326, 2022

[14] Ricardo : Technical assistance on industrial emissions. Assignment #7 Updating of available information... with regards to aspects of intensive agriculture page 91-95

Furthermore, in Appendix 2 of the AI, **labour productivity is** included as a favourable factor for economies of scale, which would mean that each worker would produce even more animals (or kilos of meat...). Today, this logic is one of the keys to insensitivity and callousness towards animals and suffering at work (e.g. one worker for 2,000 pigs). Livestock farming is not an attractive profession. In the midst of productivism, it's a good sign that many humans no longer want to do it.

In conclusion, the information that the IA provides on the concrete measures likely to generate the emission reductions accepted in the cost/benefit calculations, is not only poor but also highly questionable. The European Commission should be looking more closely at the methods used in these successive reports; these methods are contributing to the obstacles to a real transition towards a sustainable food system.

As already mentioned above, the **real sustainability issues** of food self-sufficiency on farms, grass in the ration, carbon storage in meadows and biodiversity are ignored in this CAPRI list, not to mention decent jobs in rural areas. The powerful and highly skilful biogas, blue-white-heart, genetics and biotechnology lobbies will emerge as major profiteers from the race for carbon profits. A tiny glimmer of hope? The Commission has made special provisions for cattle that are grazed (Article 70 i). Without harming confined industrial livestock farming, without the slightest desire to get out of it? At a time when the Water Agencies are trying to develop grass-based industries, CAPRI's premises are out of step with Europe's needs in terms of climate, biodiversity and water quality.
If we were to refer to EMAS (Best environmental management practice for the agriculture sector - crop and animal production[15]) - which the IA does not do - we would find perfectly productivist elements, alongside the emphasis on grassland cattle production linked to nature protection with adapted hardy breeds. This would be in line with the Commission's provision for specific operational rules for grazing cattle, but that doesn't mean we don't need to look critically at intensification and mass production.

2.6. Administrative simplification and environmental efficiency: opportunity or illusion?

One of the main objectives of the IED Directive is to simplify administrative procedures. The aim is to make smaller farms, and therefore many more, subject to the constraints of the directive, while at the same time facilitating procedures, in other words - and this is the political objective! - to make it simpler and quicker to set up and expand factory farms, at a lower administrative cost.
As for the desire to simplify authorisation procedures, France is sometimes cited as an example for its registration system, which is in fact a simplified procedure for herds below the threshold of the current IED directive. Registration is governed by a standard prefectoral decree. It requires a spreading plan, but says **nothing about air emissions** (apart from a brief, incantatory and perfectly hollow formula). So this is definitely an example of what not to do.
It is hard to believe that this will lead to less administrative burden and greater efficiency. In France, the November 2021 report by the Cour des Comptes (French Court of Auditors) clearly demonstrated[16] **the failure of controls on** agricultural installations classified for environmental protection. Worse still are the inadequate controls on minimum animal protection standards. Minimalist and ambiguous standards encourage this failure.

[15] Joint Research Centre at the European Commission, 2015
[16] Cour des Comptes : Supervision and control of facilities classified for environmental protection (IDPE) in the agricultural sector. November 2021
https://www.ccomptes.fr/system/files/2022-05/20220509-S2021-2244-encadrement-controle-ICPE.pdf

2.7. IED and animal welfare: distress prevails

With the exception of a possible and rare system on straw for pigs (which would entitle them to higher emissions on animal welfare grounds), there is **no consideration of animal welfare in the conclusions of the BREF currently in force.** The regulations must be complied with, that's what is written, and nothing more. It's enough to have written it down somewhere to pretend to respect standards and (what a swindle!) animal welfare. But on the one hand, the regulations are very poorly respected and there are very few penalties for non-compliance, and on the other hand, these minimum standards are totally inadequate, as anyone with the slightest interest in the issue would know. The dramatic inadequacy of current standards is obvious. The EFSA's recent opinions confirm this sad observation. Hen cages (whether fitted out or - quite legally - bare cages for pullets, even if they are 30 animals per m^2), cages that immobilise sows, full slatted floors (pigs or ducks), unsustainable densities (pigs and poultry)... all these systems have their "BATs". This leads farmers to believe that their techniques are the 'best', when in fact they are detestable from an animal welfare point of view. What's more, in the 2017 version of the BREF, the relentless efforts of our NGOs succeeded in obtaining a subtle nuance in the definition of BATs: it is no longer "full slatted floors" as such that are declared BATs (as the Institut Technique du Porc wanted), but such and such a technique *"in the case of full slatted floors"*. The result is the same: slatted floors and resting areas, which are inherently uncomfortable, cages, high densities, etc. are authorised, with so-called “BAT”. It's an example of the legalisation of mistreatment. **This encourages confusion for farmers**, and technical advice for farmers does all it can to maintain the state of confusion.

As a result, **the IED Directive means that animal welfare is simply irrelevant to the authorisation procedures for factory farms**. The denial is such that even flagrant non-compliances (such as systematic tail docking and the absence of appropriate investigation and manipulation materials for pigs, or the absence of litter and scratching and pecking areas for hens) do not constitute the slightest obstacle to the authorisation of farms by the Prefects.
This reinforces the general disinformation and the atmosphere of denial and lies that surround animal welfare issues. The more sincere insights that do emerge are relegated to niche markets. Once again we see **the absence of any objective for a truly sustainable agricultural and food system**, given that concern for animals is a powerful potential lever for more sustainable systems.

3. Conclusion. Towards a sustainable food system ?

3.1 Why so much pessimism?

IED is a legislative instrument that is ill-suited to preserving the environment and a liveable future.
The pig and poultry industries, and in particular those targeting exports (dairy and meat products), have every interest in seeing this directive rapidly secure the status quo of authorisation procedures, or even facilitate them, before more lucid, responsible and coherent legislation implements the Green Deal and the Farm to Fork text. Unfortunately, certain populist right-wing forces wish to weaken the Green Deal and Farm to Fork.
The determination and implementation of so-called Best Available Techniques (BATs) demonstrate the ability of industrial sectors to prevent incisive environmental constraints. As a general rule, practices that are used anyway (for a variety of reasons, including animal health and neighbourliness) or that cause little inconvenience to farmers are accepted as BATs.
My assertion is this: **what drives environmental protection and practices forward are the regulatory constraints on water, air and climate. It's not the IED directive.**

The IED directive acts as if factory farming were something normal and necessary. **Any talk of a sustainable or even ethical food system is classified as irrelevant and off-topic in an authorization procedure**. It is understandable that it is difficult for an industrial sector to question itself and accept the ecological transition and the path towards carbon neutrality. We all know that we need to move away from fossil fuels, that the plastic society is unsustainable, that we need to reinvent mobility... and no one can imagine that this will be easy. **The animal sectors are worryingly lagging behind in terms of awareness**, debate about the future, and the transition itself.

Another particularly worrying point is the Commission's promise to subsidise compliance with IED standards through CAP aid. So, once again, the CAP would be funding something that shouldn't even exist, namely the mass production of animals to maintain a food system that is not sustainable at all and is built on animal distress.

Behind the regulatory lock lies **a great brutality towards living beings**. Masses of animals are exploited, mistreated and transported, all legally, thanks to the IED directive, as if they were insensitive material goods. The end result is the mass killing of all these animals. This reality deserves to be put on the same level as the great historical (even prehistoric) massacres due to hunting, such as the slaughter of the bison on the American prairies or certain species extinctions. In parallel with its instinct to kill, which surpasses all other species, the human species has the instinct to have ever larger herds and at the same time (in the modern version) ever more productive herds with ever more technical means, which is precisely what the IED Directive supports and promotes. The instinct to own large herds was originally linked to food and survival issues. There was also emotional attachment to these herds. This has given rise to important cultural traditions of great diversity. But the IED directive is the expression of a certain culture and ideology that is profoundly production-oriented, giving a modern camouflage of legitimacy to the Great Massacre.

3.2. Why a little optimism

The situation is worrying. The IED Directive could have been transformed to make its contribution to a better world. This would have been achieved by anchoring the following binding objectives in the text of the directive, in particular but not only in Article 70i on operational rules:

- **animal welfare** (in the true sense of the word) with the reduction of animal densities and extensification

- **agro-ecology and biodiversity** by including feed production in the scope of IED and including the phasing out of pesticides

- **compliance with the Green Deal for Europe** and all its elements (which have sadly come under attack), including a healthy and sustainable food system for all, carbon neutrality, the restoration of nature, etc.

- **consideration of employment** (increasing the number of jobs per animal instead of increasing the number of animals per job)

- **reciprocity with regard to imports**.

The opportunity to incorporate these objectives into the IED directive has been missed.
Now that the main door is closed, there are still opportunities to bring these principles in through windows, when **it comes to defining the operating rules**.

The 2 years planned to draw up these rules - the new BAT - will also see work on **revising all the legislation concerning the protection of farm animals**. To exclude animal welfare from the IED approach would be frankly shameless. Will there be a race to the finish where progress on animal protection is systematically held back?

We are also beginning to think about the **new CAP**. Will it, at last, finance the transition in the light of the environmental emergency? Will it fund the continuation of industrial livestock farming or its abandonment?

It is just as important and vital to get away from the cruel war against animals as it is to get away from fossil fuels and pesticides. The IED directive should contribute to this, instead of locking in an unsustainable and cruel system of wasting animal protein, crops and land.