



# HOW TO BRING EUROPEAN ENVIRONMENTAL STANDARDS FOR UKRAINE'S LIVESTOCK PRODUCTION

*Analysis of harmonization of EU industrial farming standards in an Eastern Partnership state*



**ekodія**

**TRANSITION**

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Government of the Netherlands



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## List of abbreviations

BAT	Best Available Techniques
BREF	Reference Document on Best Available Techniques
EEA	European Environment Agency
EIA	Environmental Impact Assessment
IED	Industrial Emissions Directive
IPPC	Integrated Pollution Prevention and Control
NEC	National Emission Ceilings
NVZs	Nitrate Vulnerable Zones
PCA	Partnership and Cooperation Agreement
SEA	Strategic Environmental Assessment
SPZ	Sanitary Protection Zones

# 1. Pollution of the environment from intensive livestock production

**I**ntensive livestock production has – as an industry of its kind – number of potential negative environmental consequences. Besides the issue of animal welfare, feeding animals by meat and bone meal, the devastation of often valuable fertile soils by constructions or damage to traditional farming (that are not covered by this paper), industrial farms are dependent on extensive agriculture using artificial fertilizers that significantly pollute air, soil and water. Also, management of the manure and waste waters are of concern, just as air pollution by the facilities itself. The topic of this paper includes these questions of pollution of the environment from industrial farms and possibilities of its technical and legal regulation. In the EU, industrial farming is regulated by the Directive 2010/75/EU on Industrial Emissions that replaced the previous Directive 96/61/EC on Integrated Pollution Prevention and Control (IPPC). It also covers the issue of introduction of the Best Available Techniques (BAT). As the members of the Eastern Partnership promised to approximate their legal framework towards the EU, they should also improve regulation of industrial farming, benefitting from the experience of the EU countries.

Ukraine, as a country with extremely fertile black earth (chernozem) of the highest quality in all Europe, is largely focused on agriculture. Moreover, the sector, in recent years, is one of the few, if not the only, showing steady growth from a solely economic perspective, making a major share in total country's export structure, showing the new record of 44% in 2017<sup>1</sup>. Therefore, both domestic and international investors lay emphasis on the agriculture development and creating a favourable business climate, however, only handful of players, rather than different scale producers, really benefit from investments and state policy.

In last decades we observe in Ukraine rapid development of so-called agro-holdings – large scale producers, who managed to accumulate big financial and natural resources, becoming powerful players not only on the market but also having a significant political influence on different levels. The "success" image of such representatives of farming, in fact, overshadows long-term challenges of this economic sector, social and environmental consequences. Even though all kinds of agriculture – when speaking about large scale agricultural practices – bring specific pollution, industrial animal farming is the most problematic, especially if assessing the whole supply chain of the production.

The vivid example in nowadays' environmental impacts of Ukrainian agriculture is the chicken farming of the holding Mironivsky Hliboprodukt (MHP). The company is a monopolist on the Ukrainian market with about 60% share, it operates in four regions with production over half a million tons of meat per year (or 110 million slaughtered animals), and almost one quarter of it goes on export<sup>2</sup>. This makes the company the biggest poultry producer in whole Europe. Such a massive production brings of course also serious risks to the environment. The problem is also significant in its complexity. The company received huge loans from international financial institutions<sup>3</sup>, which should have helped the Ukrainian economy by strengthening the agriculture. Although thanks to these loans the company grows every year, we can hardly speak about benefits to the environment, neither to the local communities. Several visits of groups of non-governmental observers<sup>4</sup> witnessed not only serious violations of European environmental standards but even human rights violations. In several cases, the local anti-MHP activists faced different kinds of persecution: from following and verbal threats to physical attacks<sup>5</sup>.

1 Structure of Ukrainian export in first half of 2017 <http://www.me.gov.ua/News/Detail?lang=uk-UA&id=47a1ea1b-3b24-4932-afd7-5e05d7daa182&title=UkrainskiiEkспортUIKvartali2017-RokuZrisNa28->

2 According to MHP's website, the exports to the EU countries in 2015 amounted to 27 285 tons by 17 European countries.

3 For further information see the report of the CEE Bankwatch Network:

<https://bankwatch.org/sites/default/files/briefing-EBRD-MHPUkraine-01Feb2016.pdf>

4 <http://www.bankwatch.org/publications/black-earth> or <http://english.arnika.org/news/life-in-vinnitsia-is-highly-affected-by-massive-chicken-industry>

5 <https://bankwatch.org/publication/beatings-framings-and-industrial-chicken-farms-a-human-rights-briefing-on-mhp-projects-and-international-public-finance-in-ukraine> or <http://stop-persecution.org>.

Although the problems with the chicken giant aren't by far the only trouble with intensive farming, they uncover well the deficiencies in Ukrainian system of environment protection, enforcing progressive standards, and level of public participation. During the last years, CSOs were raising these issues, alongside with the wave of protest of rural residents, who have industrial animal farms operating on their lands, it reveals the growing problems related to such production, and a necessity for better regulation and leverages of influence. In the context of environmental safety and public participation, big expectation lies on the European integration process and obligations to meet European norms and standards. Nowadays, national legislation, including environmental regulation, is going through the transformation: gradually abolishing old legal norms, some inherited from the Soviet times, while adopting new ones, thus creating a window of opportunity to implement holistic policies capable to direct the industry towards sustainable solutions.

## 2. Regulation of livestock production in Ukraine

**B**oth EU and Ukrainian legislation must guarantee the protection of the environment, rational use of natural resources and public participation in the processes in environmental matters. Intensive livestock production recognised as an industry that has significant environmental impact and has to meet number of environmental regulations on the stage of planning, land acquisition and zoning, and in regards to emissions, natural resources consumption, waste generation and management during operation. However, both systems are very different concerning their real power to protect the environmental and public health.

### Legal regulation of industrial farming in the EU (example of the Czech Republic):

<i>Act on Environment</i>	1992
<i>Act on Nature and Landscape Protection</i>	1992
<i>Act on Environmental Impact Assessment (EIA)</i>	1992 (2001 comprehensive amendment)
<i>Act on Health Protection (noise emissions)</i>	2000 (2015)
<i>Act on Water</i>	2001
<i>Act on Waste Management</i>	2001
<i>Act on Integrated Prevention and Pollution Control (IPPC)</i>	2002
<i>Regulation of the European Parliament and of the Council no 1069/2009 *</i>	2009
<i>EU Directive 2010/75/EU on Industrial Emissions</i>	2010

\* Health rules as regards animal by-products and derived products not intended for human consumption and repealing Regulation (EC) No 1774/2002 (Animal by-products Regulation)

Article 50 of the Constitution of Ukraine says: "everyone has a right for the safe environment for one's life and health, as well as for compensation if such right was violated". This article of the main act of the state together with a number of international agreements and treaties in the sphere of environmental protection that have been ratified by Ukraine forms the basis of the national environmental legal system and governance.

Above mentioned documents and other acts within social, health & safety, spatial planning and economic spheres and their supporting bylaw documents define specific norms and procedures necessary for appliance by enterprises that cause an environmental and social impact. Moreover, coherent bylaw acts, actual administrative and technical capacity define whether law regulations will be properly fulfilled. Nevertheless, rather good coverage and declared values in the national legislation, in practice number of collisions and inconsistencies can be observed, such as during fact-finding missions of CSOs to the sites of industrial livestock farming in several regions of Ukraine. Ukrainian civil society raises a number of issues that obstruct implementation of environmental and social responsibility of the industry.

## Legal regulation in Ukraine:

<i>Act of Ukraine "On the Protection of Environment"</i>	1991
<i>Act of Ukraine "On the Air Protection"</i>	1992
<i>Act of Ukraine "On the Ecological Expertise"</i>	1995 – 2017 *
<i>Act of Ukraine "On the Environmental Impact Assessment" (EIA)</i>	2017
<i>Act of Ukraine "On the Soil Protection"</i>	2003
<i>Air Code of Ukraine</i>	1993
<i>Subsoil Code of Ukraine</i>	1994
<i>Water Code of Ukraine</i>	1995
<i>Land Code of Ukraine</i>	2001
<i>Act of Ukraine "On spatial planning"</i>	2011
<i>Act of Ukraine "On by-products of animal origin, not intended for human consumption"</i>	2015
<i>Act of Ukraine "On sanitary and epidemic well-being of the population"</i>	1994

\* changed to the EIA Act at the end of 2017

Another feature of the organisational process of environmentally hazardous production in Ukraine, in accordance with national legislation, includes **sanitary protection zones (SPZ)** between environmentally hazardous enterprises and settlement areas. The size of such zones is regulated by State Sanitary Rules for spatial planning and State Building Norms and depends on number of variables. In particular for animal farms (all kinds from family farm to industrial farm) measurements of SPZ mostly depend on the size of facilities, type (cattle, pig, poultry, etc.) and number of livestock and vary from 15 to 2,000 metres. Although, there are other important factors that can increase size of SPZ, including: proximity of nature protection sites, historical and cultural places, recreational sites, places with special status (e.g. area with radioactive pollution), as well as areas with specific physiographic characteristics, like vulnerable zones or prevailing wind direction, etc. All in all the SPZ can be multiplied by 3 times<sup>6</sup>. On the other hand, the size of SPZ can also be reduced by the decision of bodies of Ministry of Healthcare and on the ground; the SPZ size is rarely met and is a typical issue for the proper spatial planning of regions.

### Example

*The Act on by-products of animal origin, which supposedly should have regulated one of the biggest challenges of industrial animal farming – manure generation, storage and disposal. Although the Act was adopted in 2015 the supporting bylaws and technical replacements still haven't been established, thus even formally leaving the problem without an actual solution.*

<sup>6</sup> State Sanitary Rules for Planning and Building #173-96 <http://zakon3.rada.gov.ua/laws/show/z0379-96>

**In the Czech law, the same institute of protection is called „protected zone“.** The decision on the protection zone is regulated in Section 83 of the Building Act. The authority responsible for issuing such a decision is the local building office. This is a type of land-use decision. The protection zone decision protects the surroundings of the building from its negative effects. The decision on the protection zone is usually issued at the same time when a farm obtains its land-use decision, but can also be issued separately.

Within the protection zone it is possible to carry out all activities that will not be negatively influenced by the farm, which causes the establishment of the protection zone, eg. within the protection zone the agricultural production can be operated without any restrictions. However, it is not possible to construct and operate objects requiring protection such as permanent housing, recreation facilities, schools, hospitals or food industry.

The size and shape of the protection zone is carried out according to the methodology published in Acta Hygienica and Epidemiologica (AHM) No 8/1999. This methodology is based on the assessment of the effects of the most important factors for the range of emissions of the animal breeding.

This methodology takes into account the influences of breeding technology, shape of terrain, trees, frequency and direction of wind, etc. It also allows to take into account the used ventilation technology, the level of zoo-hygiene, where appropriate, the use of preparations limiting the release of ammonia and odour substances into the air. When designing the protection zone, land-use planning documents should also be taken into account. In particular, it is necessary to distinguish whether the farm is located in the production zone or residential zone.

### Example

*As other norms that are based on number of livestock there are no maximal number of livestock allowed on a farm, therefore, for instance, there can be no difference between SPZ of a farm raising 500,000 broilers, or 1.5 million broilers per production cycle, in both cases there will be SPZ of 1,200 metres.*

**Public participation** in the decision making (mainly in spatial planning) in Ukraine and obligatory Environmental Impact Assessment (EIA), even prescribed, for long period of time was not properly implemented or even ignored, thus significantly limiting rights of local communities on the stage of planning of potentially harmful economic activities. Even though, in 1999, Ukraine ratified Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, disclosure of environmental information in Ukraine for a long time and sometimes till present remains problematic, as up till 5 years ago materials of ecological expertise (predecessor of EIA) were considered confidential by many entrepreneurs,, or such that may contain commercial secret, therefore weren't accessible for the public. It required work of a number of Ukrainian CSOs and court cases to make access to environmental information open<sup>7</sup>. The quality and reliability of information on environmental matters is still an issue. Another question related to Aarhus Convention is public participation, as there is inconsistency with the Act "On Spatial Planning" that defines rather a narrow group of interested parties who can participate in decision-making processes on a specific project implementation (e.g. consultations and public hearings) including: registered residents, legal persons and juridical entities of the area where development is proposed. Such definition significantly limits access to participation and of course can't be counted as proper stakeholder engagement. This limitation is dismissed in the newly adopted Act on EIA, where absolutely any community or CSO representative can participate despite residence or registration status.

<sup>7</sup> Appeal on Regulations of the Ministry of Environment on the Procedure of Environmental Information Provision <http://epl.org.ua/law-posts/sprava-derzhavna-taiemnytsia/>

**Controlling and monitoring system** currently can be considered as probably the weakest part of the environmental regulation of the industrial production. There are number of preconditions that make this system impotent: alongside with having numerous inconsistencies in between the separate legislative acts that eliminate each other, going through the period of rather dramatic and long-term transformation of the whole system and approximation to the EU legislation, outdated technical capacities and insufficient number of working monitoring stations, in combination with corruption risks, unfortunately relevant for the country's governance, which together with lack of holistic and transdisciplinary solutions, undermines long-term environmental and social sustainability of the country.

Obviously, without relevant and actual information it is hard to estimate necessity of improvements. Monitoring and reporting on actual environmental performance of enterprises is something very difficult to execute with currently available legal framework and technical base. Even though, approximation process aimed to develop European standards in Ukraine, and need for sound monitoring and reporting system is not negotiable, unfortunately during present transition period reporting system losing its formal power, as since 2017 many enterprises are no longer obligated to provide information to the State Statistical Service<sup>8</sup>. Previously, each registered enterprise was obligated to report on their amounts and composition of air emissions, and in many cases such statistical data, even though suspected to be far from actual, was the only source of information on air pollution. Nowadays it is not clear when the new monitoring and reporting will start its operation, therefore there are concerns of creating a blind spot in terms of data on air pollution in the country.

Despite rather poor condition of monitoring system, there is currently big number of institutions who suppose to conduct monitoring activities, for instance, there are 15 bodies that monitor state of water<sup>9</sup>, slightly smaller number for air quality monitoring. The functions and capacities of the institutions are mixed, and despite of such big number of players technically only two of them are taking care of laboratory control: Hydrometeorological Center and State Water Agency. In accordance with plans of reforms of state monitoring system, there are intentions to shorten such lists of monitoring subjects to a few, it is suggested that state of water management will be monitored by Ukrainian Hydrometeorological Center (within the Ministry of Emergencies of Ukraine), State Water Agency and State Service of Geology & Mineral Resources. Such changes will take place within the implementation of the EU Water Framework Directive (discussed in next chapters), while something similar can be expected to take place in the upcoming years in the field of air quality monitoring.

The role and authority of the **State Environmental Inspection**, as a central executive body in the field of environmental protection and rational use of natural resources, is being significantly limited by the state policy on creating favourable conditions for business development, which is reflected in the number of laws and their amendments in favour of liberalization of the state control system in the area of economic activity<sup>10</sup>. Moreover, the inspection is currently under reformation<sup>11</sup> and there's still actual State moratoria<sup>12</sup> on inspections of enterprises that is being extended for several years in a row now, according to which there is limited number of scenarios, under which unscheduled inspections are possible: if the enterprise itself asks for inspection, if there is a court decision, in case of an emergency accident. Planned inspections are scheduled year in advance, and still, the enterprise has

8 Order of State Statistical Service of Ukraine #80 from 07.04.2017 on changes of air emissions data reporting <http://zakon3.rada.gov.ua/laws/show/z0545-17>

9 Decree of Cabinet of Ministers of Ukraine #815 from 20.07.1996 on Procedure of State Water Monitoring <http://zakon2.rada.gov.ua/laws/show/815-96-%D0%BF>

10 Law On Amendments to the Law of Ukraine „On the Basic Principles of State Supervision in the Sphere of Economic Activity“ regarding the liberalization of the system of state supervision in the field of economic activity <http://zakon5.rada.gov.ua/laws/show/1726-19>

11 Government web-portal - “The Government has adopted the Concept for the Reform of the State Supervision System in the Field of Environmental Protection” <https://www.kmu.gov.ua/ua/news/250029569>

12 Parliament newsletter ‘Golos Ukrainy’ - “Temporary Features of Implementation of State Supervision in the Field of Economic Activity” <http://www.golos.com.ua/article/282033>

a right not to allow inspectors to enter their facilities, for instance, there's some quarantine period established on a farm. In case of actual inspection being conducted, the results are being reported in a protocol of inspection. Such protocols are important sources of actual violations of environmental legislation; however, State Inspection often does not disclose protocols, referring to confidentiality of information and suggests asking enterprises for protocols directly. In our opinion, this is another example of a violation of the right to environmental information, and such practice can be appealed to a court.

When it comes to fines when violations are found during inspections – the current system also works in favour of “business as usual” as Ukraine has one of the lowest environmental fees and fines, which makes it way cheaper to pay fines than to change current methods of production and invest in the modernisation of an enterprise facilities. In accordance with Ukraine’s Code of Administrative Offenses<sup>13</sup>, maximum penalty for water and land pollution is UAH 272 (less than EUR10). According to the Minister of Environment of Ukraine<sup>14</sup>, the biggest fine for executive officials can be as high as UAH 1,700 (approx. EUR 50). However, criminal responsibility can be proven in the court and compensation for a caused harm set, and in such case penalties can be reasonably high but then it’s rather a rare scenario due to a number of issues related to the judicial system of the country.

Accountability and transparency are the issues that wanted to be addressed via ongoing reformation and approximation of the national and EU regulation. However, over-extended transition period creates additional ambiguity that may work in favour of the business and the stakeholders with private interests. However, legislation improvement is not the only tool to improve insufficient agricultural practices. Transparency, access to information, independent monitoring and control, effective fines, overall enforcement of the legislation and adequate space for public participation are other essential components of the functional system leading to a reduction of the pollution.

We expect that this paper will bring broader attention to the problem of industrial farming in Ukraine and its environmental consequences, and will contribute to improving the legislative standards and their enforcement. Moreover, it aims to serve the local communities as a guide to help them when defending their rights.

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13 Code of Administrative Offenses of Ukraine <http://zakon2.rada.gov.ua/laws/show/80731-10>

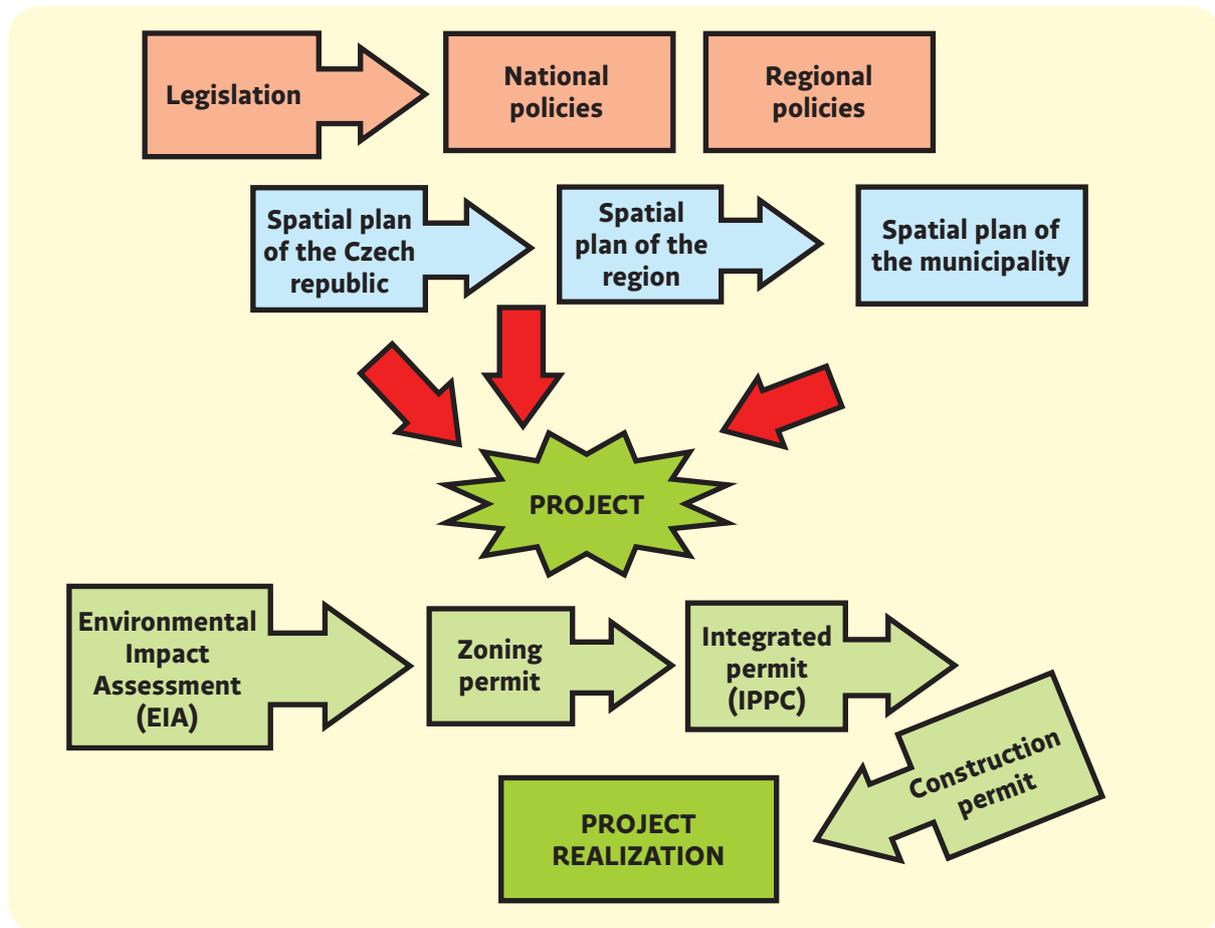
14 “Fines for of environmental legislation violations must be reviewed - Ministry” <https://news.dtkk.ua/state/other/43799>

### 3. Regulation of pollution from industrial farming in the EU

#### Public participation in the decision making process – from policy to individual project

##### Example of the Czech Republic:

According to the legislation, the public can participate in all parts of the decision making process – from policy making to issuing the construction permit for particular building, although details are regulated specifically by each individual act.

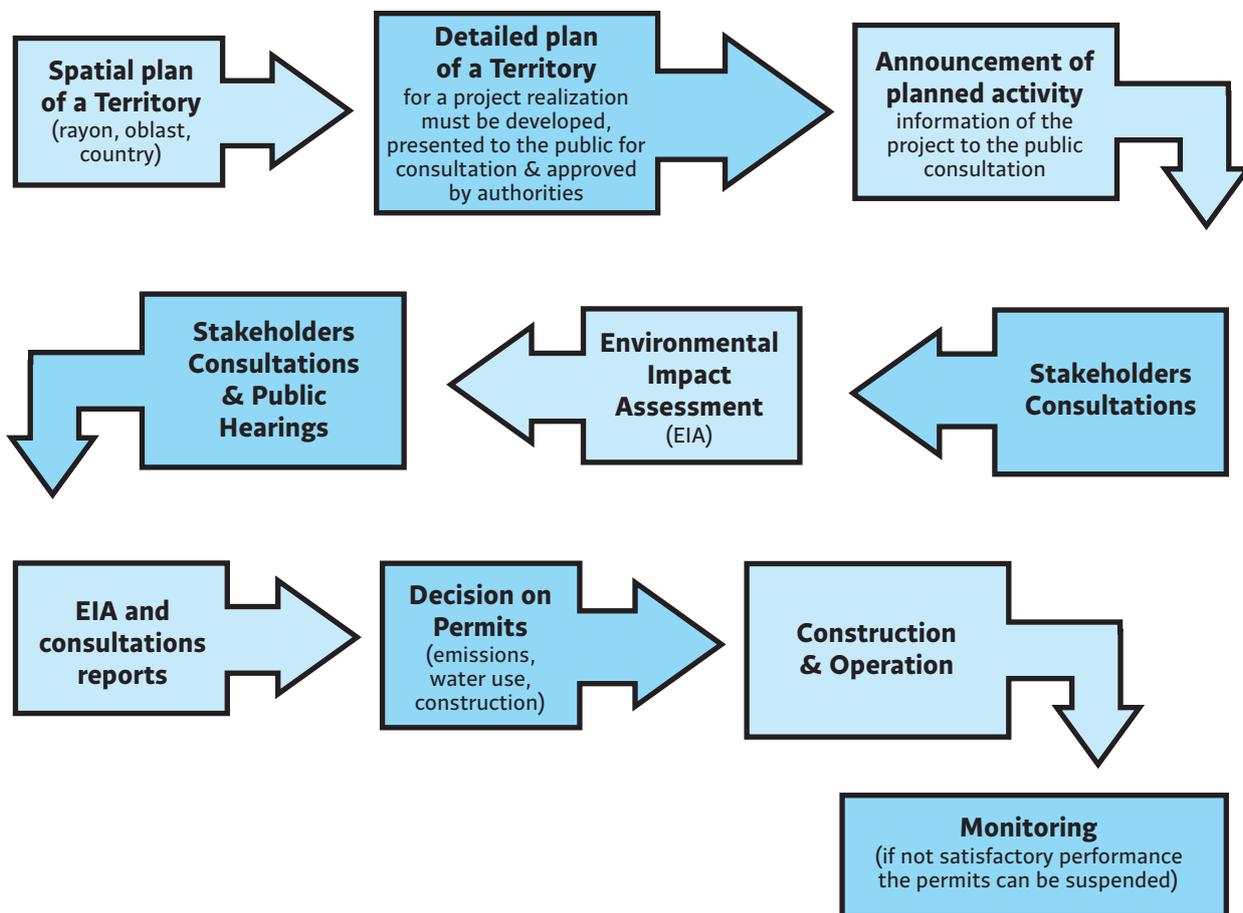


##### Ukrainian scheme

##### (in accordance with the Act of EIA, since 18. 12. 2017):

The project of specific economic activity must be in line with a spatial plan of a concrete territory (rayon, region, country) and development plan of the territory; if so, detailed plan of the territory for a proposed industrial facilities should be presented to the public for consultation. On the next stages of a project development according to the Act of EIA (since 18 Dec 2017), a developer must notify planned activity to the public consultation including information of the project, following with the stakeholders consultations, EIA (actual assessment), stakeholders consultations & public hearings, EIA and consultations reports, decision on permits (emissions, water use, construction), construction and operation and monitoring of the operation in the end (the permits can be suspended if the performance is unsatisfactory)<sup>15</sup>.

<sup>15</sup> One of the connected problems is land acquisition timing. Logically an entrepreneur should not be interested in getting/renting a land plot before obtaining necessary permits, due to possible risks of



### 3.a Environmental Impact Assessment

The EIA (Environmental Impact Assessment) Directive (85/337/EU) applies to a wide range of defined public and private projects (defined in Annexes I and II of the Directive<sup>16</sup>). The directive has been in force since 1985 and until today it has been amended three times. It represents a key document, which steps in the relationship of investor or developer with the administration, the public, and, most importantly – the environment.

Environmental impact assessment can be undertaken for individual projects, such as a dam, motorway, airport, factory or livestock farm), based on Directive 2011/92/EU (i. e. the amended version – known as ‘Environmental Impact Assessment’ – EIA Directive), or for public plans or programmes based on Directive 2001/42/EC (known as ‘Strategic Environmental Assessment’ – SEA Directive).

A common principle of these Directives is to ensure that plans, programmes and projects likely to have significant effects on the environment are made subject to an environmental assessment, prior to their approval or authorisation, alternatives considered and mitigation measures designed. Consultation with the public is a key feature of the procedure. The Environmental Assessment Directives aim to provide a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation of projects, plans and programmes with a view to reducing their environmental impact. They ensure public participation in decision-making and thereby strengthen the quality of decisions. The projects and programmes co-financed by

not receiving positive decisions, however, in reality, in Ukraine rent agreements are typically signed before the whole procedure has started, even if planned construction isn’t envisaged by the spatial plan of the territory. As of now many entrepreneurs haven’t been hesitant about decision-making process in their favour, probably because of business making culture that have been working for decades.

16 <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0031>

the EU (Cohesion, Agricultural and Fisheries Policies) have to comply with the EIA and SEA Directives to receive approval for financial assistance. Hence the Directives on Environmental Assessment are crucial tools for sustainable development<sup>17</sup>.

We could summarize the crucial parts of the process in following stages:

1. Scoping – the investor or developer may request the competent authority to say what should be covered by the EIA information to be provided by the developer. This is also the stage when the public can demand an oral hearing.
2. EIA reporting – the developer must provide information on the environmental impact, present variants of the project and suggest mitigation measures.
3. Consultations with the environmental authorities and the public – the environmental authorities and the public (and the affected Member States in a case of transboundary impact) must be informed and may submit comments.
4. Independent environmental impact review, carried out by an external expert hired by the public authority and consulted with the public and other stakeholders again.
5. Decision of the competent authority – the competent authority decides, taken into consideration the results of consultations.
6. Informing the public & possible reactions – the public is informed of the decision afterwards and can challenge the decision before the courts<sup>18</sup>.

In most of the European countries, the EIA is an open process, in which the public should play a very important role. For example in the Czech Republic, all assessed projects together with their descriptions, statements and visible stages of the assessment process can be found on the EIA information system webpage<sup>19</sup>. Anyone can search for the project of his or her interest, find all available information, submit the comments and participate at oral hearing and public consultations.

However, in the case of Ukrainian integrated permitting process, the situation is slightly different. We describe the situation of EIA Act in Ukraine in Chapter 7.

In order to prevent confusion, it may be important to mention the basic differences between EIA and SEA processes, and also the IPPC. As it may have been clarified in the previous text, the Strategic Environmental Assessment is being prepared for conception and strategic documents such as spatial development rules and documents or spatial plans, whereas the EIA is a process connected with a concrete building intent. IPPC includes many conditions of the operation of the concrete enterprise, followed by the building permit etc.

## 3.b Requirements of the Directive on Industrial Emissions

Intensive livestock farming significantly contributes to emissions of pollutants to air, soil and water – from animal housing, by spreading fertilizers, manure production, wastewater, etc. Regulation of big farming started in the EU after acceptance of the Directive 96/61/EC on Integrated Pollution Prevention and Control (IPPC), newly replaced by the Directive on Industrial Emissions.

The Directive on Industrial Emissions (IED) 2010/75/EU<sup>20</sup> is the main EU instrument regulating pollutant emissions from large industrial and agricultural installations. The key instrument for achieving its goals (i. e. higher level of protection of human health and the environment taken as a whole by reducing harmful industrial emissions across the EU) is obligatory application of so-called

17 [http://ec.europa.eu/environment/eia/index\\_en.htm](http://ec.europa.eu/environment/eia/index_en.htm)

18 <http://ec.europa.eu/environment/eia/eia-legalcontext.htm>

19 [https://portal.cenia.cz/eiasea/view/eia100\\_cr](https://portal.cenia.cz/eiasea/view/eia100_cr) or <https://www.mzp.cz/ippc>

20 see the full text of the directive here: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32010L0075>

best available techniques (BAT), which are being set by Decision 2017/302. Industrial installations undertaking the industrial activities listed in Annex I of the IED are required to operate in accordance with a permit granted by the authorities in the Member States, which should contain conditions set in accordance with the principles and provisions of the IED<sup>21</sup>.

**The objectives of the Directive are based on five pillars:**

1) *Integrated approach* – the permits must take into account the whole environmental performance of the plant, covering e.g. emissions to air, water and soil, generation of waste, use of raw materials, energy efficiency, noise, prevention of accidents, restoration of the site upon closure, and also influence on protection of animals and human health and the environment as a whole.

2) *Use of best available techniques (BAT)* – the permit conditions including emission limit values must be based on BAT. In praxis, the BATs are being defined and set through an exchange of information between the experts from the Member States, industry and environmental organisations and the Commission, which is coordinated by the European IPPC Bureau<sup>22</sup>. This process results in so-called BAT Reference Documents (BREFs)<sup>23</sup> and the conclusions contained in the BAT are being adopted by the Commission as Implementing Decisions. The BAT represents the most advanced technologies and the most efficient way of their operation.

3) *Flexibility* – the directive allows competent authorities in specific cases some flexibility to set less strict emission limit values. Such extraordinary cases are defined only in terms of disproportionately higher costs compared to the environmental benefits due to the geographical location or the local environmental conditions or the technical characteristics of the installation. The decision of more moderate emission limit values shall be always justified properly by the competent authority. On the other hand, the authority should also demand stricter regulations for a specific kind of enterprise.

4) *Environmental inspections* – each Member State is obliged to set up a system of environmental control and draw up inspection plans accordingly. The directive requires a site visit to take place at least every 1 to 3 years.

5) *Public participation* – as in other cases of environmental protection legal instruments (i. e. the Aarhus Convention), the IED secures a right to participate in the decision-making process, and

### **BAT (Best Available Techniques)**

- *the most effective and advanced stage in the development of activities and their methods of operation that indicates the practical suitability of particular techniques for providing the basis for emission limit values and other permit conditions designed to prevent and, where that is not practicable, to reduce emissions and the impact on the environment as a whole*
- *techniques – includes both the technology used and the way, in which the installation is designed, built, maintained, operated and decommissioned*
- *available techniques – means those developed on a scale, which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably accessible to the operator*
- *best – means most effective in achieving a high general level of protection of the environment as a whole*

21 <http://ec.europa.eu/environment/industry/stationary/ied/legislation.htm>

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

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

also the right on information about consequences of the process, and the Member States shall also secure access to permit applications, permits and the results of the monitoring of releases.

Emission data reported by the Member States are also made accessible through European Pollutant Release and Transfer Register (E-PRTR)<sup>24</sup>, which provides the public environmental information on major industrial activities<sup>25</sup>.

### 3.b.1 IED and industrial livestock farming

Concerning livestock farming, the Directive determines procedures and limits for assessing farms as follows:

- a) Farms with space for more than 40,000 pieces of poultry
- b) Farms with space for more than 2,000 pieces of pigs for slaughter (over 30 kg); or
- c) Farms with space for more than 750 of sows

As of 15 Feb 2017 the European Commission accepted Decision 2017/302<sup>26</sup>, by which Best Available Techniques (BATs) for these farms are set. The whole decision should lead to a better regulation of practices and management of such facilities and help national authorities across the EU to lower their impact on the environment. The new specifications defined by the EU in the beginning of 2017 stem from the review of Best Available Practices Reference Document for the intensive rearing of poultry and pigs (IRPP), so-called IRPP BREF. Nutritional management (for example preparation of fodder and its storage), animal rearing or management of manure (collection and preservation of manure or its landspreading) are the main farm processes and activities affected by the document. An important innovation is, that for the first time at the EU level, the BAT conclusions set limits for ammonia emissions to air from animal housing<sup>27</sup> and for excretions of nitrogen and phosphorus for six categories of pigs and poultry. Such regulation should lead not only to further reducing of the environmental impact of animal farms, it should also contribute to the implementation of the new National Emission Ceilings (NEC) Directive, the Nitrates Directive and the Water Framework Directive. We describe goals and requirements of these documents further in this paper.

Those new standards on resources and emissions (including BAT) should help national authorities across the EU to lower the impact of bigger pig and poultry farms on the environment through setting up of a technical basis, which creates a legal frame to set permit conditions. The conditions must be reconsidered by the authorities and updated, if necessary, within four years. Even those conditions, which will set the permit requirements at the lowest end, should lead to significant reduction of ammonia (and other substances) emissions. Also, environmental issues such as dust, odour or noise are part of the new BAT conclusions.

The Decision defines more than 30 Best Available Techniques conclusions for different kinds of topics. They cover not only the emission levels and other environmental performance of several (production) techniques but also include standards for how the technology is used and the way in which the installation is designed, built, maintained, operated and decommissioned. Among others and above mentioned, we can also draw attention to recommendations regarding specific pollutants emissions (such as nitrogen or phosphorus), water use efficiency, wastewater treatment, efficient use of energy, whole production process emissions, monitoring of emissions and specific BAT for intensive rearing of pigs and poultry, including specific conclusions for houses that rear broilers,

24 <http://prtr.ec.europa.eu/>

25 <http://ec.europa.eu/environment/industry/stationary/ied/legislation.htm>

26 See the full decision here: [http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L\\_.2017.043.01.0231.01.ENG&toc=OJ:L:2017:043:FULL](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2017.043.01.0231.01.ENG&toc=OJ:L:2017:043:FULL)

27 According to European Environmental Agency, agriculture is responsible for 94 % of ammonia emissions, which has negative effects on aquatic ecosystems, forests and to some extent also to crops and other vegetation.

turkeys or ducks. The Decision also specifies connections to further documents BREF (e.g. monitoring recommendations)<sup>28</sup>. As the decision consists of detailed descriptions of these specific BAT (and therefore is very extensive), we can only refer to have a look at the links below when searching for concrete recommendations. Nevertheless, we have picked up several examples of BATs related to intensive animal farming, so we can have a more exact idea of their content.

## EXAMPLES: Best Available Techniques for poultry and pig farms (as defined by the Decision 2017/302)

Each BAT contains several recommendations together with descriptions and possible applicability.

### 1) BAT on housekeeping (BAT 2):

In order to prevent or reduce the environmental impact and improve overall performance, BAT is to use all the techniques given below.

	Technique	Applicability
a)	Proper location of the plant/farm and spatial arrangements of the activities in order to: reduce transport of animals and materials (including manure); ensure adequate distances from sensitive receptors requiring protection; consider the potential future development capacity of the farm; prevent the contamination of water.	May not be generally applicable to existing plants/farms.
b)	Educate and train staff, in particular for: relevant regulations, livestock farming, animal health and welfare, manure management, worker safety; manure transport and landspreading; planning of activities; emergency planning and management; repair and maintenance of equipment.	Generally applicable.
c)	Prepare an emergency plan for dealing with unexpected emissions and incidents such as pollution of water bodies. This can include: a plan of the farm showing the drainage systems and water/effluent sources; plans of action for responding to certain potential events (e.g. fires, leaking or collapsing of slurry stores, uncontrolled runoff from manure heaps, oil spillages); available equipment for dealing with a pollution incident (e.g. equipment for plugging land drains, damming ditches, scum boards for oil spillages).	Generally applicable.
d)	Regularly check, repair and maintain structures and equipment, such as: <ul style="list-style-type: none"> <li>• slurry stores for any sign of damage, degradation, leakage;</li> <li>• slurry pumps, mixers, separators, irrigators;</li> <li>• water and feed supply systems;</li> <li>• ventilation system and temperature sensors;</li> </ul> silos and transport equipment (e.g. valves, tubes); <ul style="list-style-type: none"> <li>• air cleaning systems (e.g. by regular inspections).</li> <li>• This can include cleanliness of the farm and pest management.</li> </ul>	Generally applicable.
e)	Store dead animals in such a way as to prevent or reduce emissions.	Generally applicable.

<sup>28</sup> <http://eippcb.jrc.ec.europa.eu/reference/mon.html>

## 2) BATs on solid manure storage (BAT 14 + 15)

In order to reduce ammonia emissions to air from the storage of solid manure, BAT is to use one or a combination of the techniques given below.

	<i>Technique</i>	<i>Applicability</i>
a)	<i>Reduce the ratio between the emitting surface area and the volume of the solid manure heap.</i>	<i>Generally applicable.</i>
b)	<i>Cover solid manure heaps.</i>	<i>Generally applicable when solid manure is dried or pre-dried in animal housing. May not be applicable to not dried solid manure in case of frequent addition to the heap.</i>
c)	<i>Store dried solid manure in a barn.</i>	<i>Generally applicable.</i>

In order to prevent, or where that is not practicable, to reduce emissions to soil and water from the storage of solid manure, BAT is to use a combination of the techniques given below in the following order of priority.

	<i>Technique</i>	<i>Applicability</i>
a)	<i>Store dried solid manure in a barn.</i>	<i>Generally applicable.</i>
b)	<i>Use a concrete silo for storage of solid manure.</i>	<i>Generally applicable.</i>
c)	<i>Store solid manure on solid impermeable floor equipped with a drainage system and a collection tank for the run-off.</i>	<i>Generally applicable.</i>
d)	<i>Select a storage facility with a sufficient capacity to hold the solid manure during periods, in which landspreading is not possible.</i>	<i>Generally applicable.</i>
e)	<i>Store solid manure in field heaps placed away from the surface and/or underground watercourses where liquid run-off might enter.</i>	<i>Only applicable to temporary field heaps that change location each year.</i>

Some of the BATs defined by the Decision 2017/302 contain much broader description of concrete techniques to reduce emissions or pollution. Therefore, when looking for specific conclusions or recommendations, have a look directly to the text of the Decision (footnote no. 16).

## 3.c Requirements of Nitrates Directive

Agriculture significantly influences the quality of ground and surface waters. With the intention to reduce the pollution, so-called „Nitrates Directive“ (91/676/EEC) was accepted in the EU in 1991. It's one of the earliest pieces of EU legislation aimed at pollution controlling and water quality improving; it forms an integral part of Water Framework Directive and creates one of the key instruments in the protection of waters against agricultural pressures and an introduction of good practice, as well as defines areas requiring more care, etc.

Although nitrogen is a vital nutrient that helps plants and crops to grow, it is harmful to people and nature in high concentrations. Almost all nitrates are soluble in water. Contamination of drinking water by these substances may lead to serious health damages – so-called blue baby syndrome (methemoglobinemia)<sup>29</sup> is one of the best known in relation to this kind of pollution -- and also to various cancers, adverse reproductive outcomes (especially neural tube defects), diabetes, and thyroid conditions<sup>30</sup>. Excessive amounts of nitrates in water contribute to the formation of algae and cyanobacteriums. The agricultural use of nitrates in organic and chemical fertilizers has been currently

29 <https://www.healthline.com/health/methemoglobinemia#acquired-methemoglobinemia4>

30 find more on nitrogen health risks at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3068045/>

## EXAMPLE: Farms permitting in the Czech Republic

*Industrial farms in the Czech Republic are subject to so-called integrated permitting – a procedure opened for the participation of the public. Since 2003, the authorities issue one permit instead of several single-media permits and documents. Integrated approach improved transparency of requirements and binding conditions. The integrated permit replaces (among others):*

- *air protection permit (emission limits) including binding operating regulations*
- *water protection permit including accident rules (water protection)*
- *waste management permit*
- *permit for extraction of groundwater*
- *permit for discharging of wastewater*
- *noise requirements*
- *energy efficiency requirements (energy audit conclusions)<sup>1</sup>*

*During the permitting procedure, an expert certified by the Ministry of Environment or the specialized independent state agency CENIA prepares expert review of the proposed facility and its operation. All permits and expert reviews are publicly available on the website of Ministry of Environment<sup>2</sup>. A report about observance of recommended procedures is available on the website of Ministry of Agriculture<sup>3</sup>. Such praxis allows anybody to be informed about the situation and how the BAT conclusions are being fulfilled.*

1 Full list of administrative acts replaced by integrated permit was released by the Ministry of Environment and can be found for example [here>>>](#)

2 <http://www.mzp.cz/ippc>

3 <http://eagri.cz/public/web/mze/zivotni-prostredi/zncisteni-zivotniho-prostredi/integrovana-prevence-a-omezovani/zpravy-studie-k-vyrobnim-cinnostem/tps-kategorie-6-6/analyza-bat-kategorie-6-6-velkochovy.html>

a major source of water pollution in Europe. In the early 1990s (i. e. after the adoption of the Directive) the mineral fertiliser consumption faced a progressive reduction for the first time and the situation stabilized in the 2000s. However, farming still remains responsible for over 50% of the total nitrogen discharge into surface waters<sup>31</sup>.

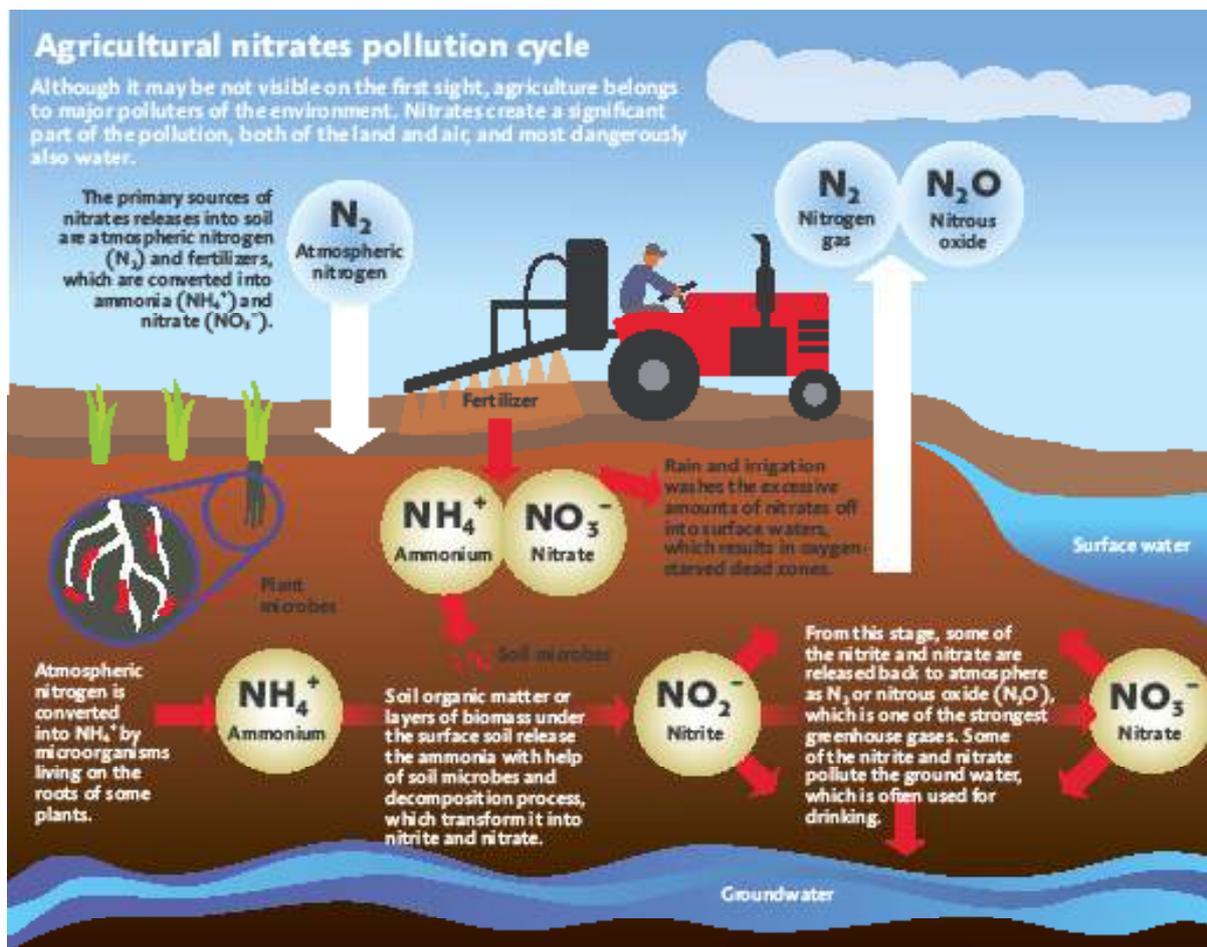
Nitrates Directive is applied in so-called “vulnerable zones” defined as a territories with:

- a) surface water or groundwater, especially used or designed as a source of drinking water, in which concentrations of nitrates exceeds 50 mg/l or they can achieve such amount, or
- b) surface water, which is endangered with deterioration of water quality caused by high concentration of nitrates from agricultural source.

Definition of vulnerable zones is subject to examination and possible adjustments in up to 4-year intervals<sup>32</sup>. The economy in vulnerable zones is guided by so-called Action Programmes of Nitrates Directive. Even action programmes are subject to review and possible adjustments in up to 4-year intervals.

31 <http://ec.europa.eu/environment/pubs/pdf/factsheets/nitrates.pdf>

32 Reports on implementation of the Nitrates Directive can be found here: <http://ec.europa.eu/environment/water/water-nitrates/reports.html>



The implementation of Nitrates Directive can be described in 5 steps:

1. Identification of water polluted, or at risk of pollution (vulnerable zones)
2. Designation as "Nitrate Vulnerable Zones" (NVZs)
3. Establishment of Codes of Good Agricultural Practice to be implemented by farmers on a voluntary basis<sup>33</sup>
4. Establishment of action programmes to be implemented by farmers within NVZs on a compulsory basis
5. National monitoring and reporting<sup>34</sup>

<sup>33</sup> The Codes should include:

- measures limiting the periods when nitrogen fertilizers can be applied on land in order to target application to periods when crops require nitrogen and prevent nutrient losses to waters;
- measures limiting the conditions for fertilizer application (on steeply sloping ground, frozen or snow covered ground, near water courses, etc.) to prevent nitrate losses from leaching and run-off;
- requirement for a minimum storage capacity for livestock manure;
- crop rotations, soil winter cover, and catch crops to prevent nitrate leaching and run-off during wet seasons

<sup>34</sup> Member States are required to report every 4 years on: Nitrates concentrations in groundwaters and surface waters; eutrophication of surface waters; assessment of the impact of action programme(s) on water quality and agricultural practices; revision of NVZs and action programme(s); Estimation of future trends in water quality. We focus on some reporting and monitoring examples in Chapter 4 of this paper.

## EXAMPLE: Vulnerable zones in the Czech Republic

Vulnerable zones in the Czech Republic were defined in 2003. In 2016, the third revision took place already. The same revisions have taken place also on action programs (action programs are announced by the Czech government in form of government regulation). More information is available on [www.nitrat.cz](http://www.nitrat.cz), which is being updated regularly and offering current legislation, FAQ's or information contacts as well as public seminars on Nitrates Directive.

The Czech Republic has processed the principles of correct agricultural practice focused on water protection against nitrate pollution from agricultural sources e.g. in the study called Principles of good agricultural practice focused on water protection against nitrates pollution from agricultural sources<sup>1</sup>. Basic principles of this study became a key document in the legislation approximation process of the Czech Republic to the EU regarding the field of nitrates. The material includes information on:

- Purpose of the principles – creation of the principles is a direct requirement of the Nitrates Directive. The aim is obvious – to reduce emissions of nitrates into surface and groundwaters.
- Operation of the principles – respecting of the principles is voluntary in the Czech Republic. However, in the vulnerable zones, the principles are an integral part of Action programme and therefore its observance is obligatory for the farmers. The Action programme (i. e. compulsory ways of agricultural management in vulnerable zones) is set by the decree 103/2003 Sb., based on authorization of Section 33 of the Act 254/2001 Sb. on waters.
- Unsuitable periods for manuring – it's requested for the mineral nitrate fertilizers not to manure in the period from November to January.
- Use of manure in sloping land, waterlogged, flooded or frozen land or land covered by snow – the principles set a maximum amount of nitrogen per hectare on sloping lands or restrict manuring on certain types of frozen lands.
- Conditions for use of manure close to surface waters – one of the conditions includes e.g. a necessity of natural vegetation in the distance of at least one meter from the bank line.
- Other principles defined in the study relate for example also to storage of manure and fertilizers and bulky feed, use of manure, cultivation of land and restrictions of the period without plant cover, manuring plans and evidence of manure use and watering procedures.

Such document provides quite a complex guide for efficient water protection against nitrates pollution within the frame of agricultural practices. However, as the Research Institute of Crop Production (VURV – an expert institution of the Czech Ministry of Agriculture) claims the process of implementation of the principles into praxis is a long time process, and although in many cases the situation improved, in some it remained the same or worsen. We describe the ways of monitoring, reporting and demanding of the observance of good agricultural praxis in Chapter 5.

1 [www.agroporadenstvi.cz/poradenstvi/Nitrat/ZSZP.pdf](http://www.agroporadenstvi.cz/poradenstvi/Nitrat/ZSZP.pdf)

## 3.d Other directives focused on intensive cattle and poultry farming

### 3.d.1. Water Framework Directive

Limitations on water pollution by nitrates include Water Framework Directive 2000/60/ES<sup>35</sup>, under which EU countries strive to improve the quality in each river basin. European citizens consider the danger of water pollution one of the biggest environmental threats. Therefore, the European Commission has made water protection one of the priorities of its work<sup>36</sup>. Because of that, consultations with the citizens are one of the crucial elements in the implementation of the goals of the Directive<sup>37</sup>. In order to provide a complex and brief introduction and overview of key aspects of the Directive implementation, the Commission has defined twelve “Water Notes”<sup>38</sup>. They contain information on common strategy in water protection, identification and assessing of endangered waters, management of different water kinds or chemical pollution of waters. See the table of water notes and their description below:

#### 12 Water information notes

1.	<a href="#"><u>Joining forces for Europe's shared waters – Coordination in international river basin districts</u></a>	<i>This water note sets up a common international strategy and management plan for international waters and river basins. As a first step, it defines the necessity of common administrative structures for effective management of shared waters.</i>
2.	<a href="#"><u>Cleaning up Europe's waters – Identifying and assessing surface water bodies at risk</u></a>	<i>Definition of low pollution levels, identification of water bodies at risk, improvement of the status of European water bodies</i>
3.	<a href="#"><u>Groundwater at Risk – Managing the water under us</u></a>	<i>Management of groundwater, identification of groundwaters at risk, sustainability of groundwater use, designation of groundwater bodies, preparation of management plans</i>
4.	<a href="#"><u>Reservoirs, Canals and Ports – Managing artificial and heavily modified water bodies</u></a>	<i>Definition and management of heavily modified water bodies, which may not be able to fulfil the standards set by the Water Framework Directive (ca 15%)</i>
5.	<a href="#"><u>Economics in Water Policy – The value of Europe's waters</u></a>	<i>Economic principles and methods for the management of Europe's waters, environmental costs &amp; benefits, efficient use of water resources, economic analysis</i>
6.	<a href="#"><u>Monitoring programmes – taking the pulse on Europe's waters</u></a>	<i>Monitoring programmes, methods &amp; monitoring focus</i>
7.	<a href="#"><u>Intercalibration – a common scale for Europe's waters</u></a>	<i>Basic requirements for measuring the health of surface water ecosystems</i>
8.	<a href="#"><u>Pollution – Reducing dangerous chemicals in Europe's waters</u></a>	<i>Identification of specific pollutants (priority substances) and its reduction strategy</i>

35 See the full directive here:

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02000L0060-20141120>

36 See the history of water protecting measures by the European Commission here:

[http://ec.europa.eu/environment/water/water-framework/info/intro\\_en.htm](http://ec.europa.eu/environment/water/water-framework/info/intro_en.htm)

37 See the detailed information and guidepost here:

[http://ec.europa.eu/environment/water/water-framework/index\\_en.html](http://ec.europa.eu/environment/water/water-framework/index_en.html).

38 See all the water notes here: [http://ec.europa.eu/environment/water/participation/notes\\_en.htm](http://ec.europa.eu/environment/water/participation/notes_en.htm)

9.	<b><u>Integrating water policy – linking all EU Water legislation within a single framework</u></b>	<i>Interconnection of EU’s water protection legislation (partly focused also on the links with the Nitrates Directive)</i>
10.	<b><u>Climate change – Addressing floods, droughts and changing aquatic ecosystems</u></b>	<i>Climate change consequences and adaptation measurements in the context of water management</i>
11.	<b><u>From rivers to the sea – Linking with the new Marine Strategy Framework Directive</u></b>	<i>Interconnection with marine environment and ecosystems, marine strategies for the Member States with sea coasts</i>
12.	<b><u>A Common Task – Public Participation in River Basin Management Planning</u></b>	<i>Definition and role of public participation in water protection, interconnection with public rights defined by the Aarhus Convention, cooperation with stakeholder organisations and public consultations</i>

The absence of such broad and international water protection strategy is a significant deficiency in Ukraine. However, the goals of the Water Framework Directive should be set and implemented even on the national level.

### 3.d.2. Air emissions

Industrial farms are also a significant source of air pollution, in particular by ammonia and odour. Reduction of emissions of this substance is part of the Clean Air Programme of the EU. One of the key legislative instruments to achieve its objectives by 2030 is the National Emission Ceilings (NEC) Directive 2016/2284/EU on the reduction of national emissions of certain atmospheric pollutants. This Directive sets national reduction commitments for several pollutants including ammonia. One of the commitments of the European policy is to lower the ammonia emissions by 2030 by 19% (which is the least ambitious emissions reduction plan out of the five mentioned pollutants). The other substances, which are defined by the EU National Emission Ceilings include, among others, sulphur dioxide, volatile organic compounds, nitrogen oxides and fine particulate matter

The implementation of the national emissions reduction goals is set by several steps. By March 2019, each EU Member State is required to produce a National Air Pollution Control Programme, which should be – together with the Commission evaluation of those programmes – available online. The original National Emission Ceilings Directive (2001/81/EC), which was replaced by the mentioned Directive 2016/2284/EU, should be transposed to national politics by drawing up of National Programmes, which includes information on adopted and envisaged policies and measures and quantified estimates of their effects on the emissions in 2010. The Member States were required to send updated National Programmes to the Commission by the end of 2006 if required in order to ensure compliance by 2010. In order to enhance comparability of the reports of the Member States, the Member States were requested to base their programmes on the “Recommendations on developing and reporting National Programmes under the National Emission Ceilings Directive” drawn up by the Working Group on Implementation of the CAFE-programme. The updated national programmes were assessed in the Evaluation of 2006 National Programmes and the results fed into the revision of the NEC Directive.

Other steps defined by the implementation process that had to be taken by the Member States included annual reports of national emission inventories by the Member States and (in the period before 2010) their projections for 2010 to the European Commission and the European Environment Agency (EEA). As other requirements of the original NEC directive, also the reporting obligations were superseded by the Directive 2016/2284/EU. The data on reporting and detailed information about the NEC Directive are available on EEA webpage. Regular reviews of national emission inventories by the Commission, assisted by the EEA are part of the requirements as well as applications for emission inventory adjustments by the Member States.

In relation to the animal farming, the Directive 2016/2284/EU has provisions on, for example: – manure – reducing emissions from manure storage, ensuring farms have sufficient manure storage capacity to spread manure only during periods that are suitable for crop growth, reducing emissions from the animal housing by at least 20% compared to the reference method, reducing emissions from manure, by using low protein feeding strategies, etc.

While caring about the small and micro farms the Directive ensures that impact from the necessity to lower the emissions from livestock farming is fully taken into account. In measures taken under national air pollution control programmes aimed at preventing emissions in the agricultural sector are eligible for financial support, in particular measures by farms requiring significant changes of practices or significant investments, the Commission should facilitate access to such financial support and to other available Union funding. The Member States may, for instance, exempt small and micro farms from those measures where possible and appropriate in view of the applicable reduction commitments.

Though this Directive, the EU advises its Member States to consider supporting the shift of investments to clean and efficient technologies and innovation.

## 4. Common agricultural EU policy, grant policy

**T**he common agricultural policy is applied in the EU and farmers are financially supported; the objective is to keep agricultural production and to reduce its negative impact on landscape and environment.

The common agricultural policy has two pillars. First one contains direct payments, second one contains rural development programs. Direct payments for farmers are bonded to fulfill many requirements of the "cross compliance mechanism", which links direct payments to compliance by farmers with basic standards concerning the environment, food safety, animal and plant health and animal welfare, as well as the requirement of maintaining land in good agricultural and environmental condition. Programs of rural development also fall under reminders in case of so-called strategic EIA (SEA) and also under approvals of the European Commission (each country prepares its own programme). The farmers and entrepreneurs can fund for example modernization of agricultural holdings from rural development programs. Basic requirements for direct payment grant are defined by Council regulation nr. 73/2009.

Article 1 of the regulation specifies the establishments of the regulation as follows:

- a. common rules for direct payments;
- b. an income support scheme for farmers („single payment scheme“);
- c. a transitional simplified scheme of income support for farmers in the new Member States, defined by article 2. g („single area payment scheme“);
- d. support schemes for farmers producing rice, starch potatoes, protein crops, nuts, seeds, cotton, sugar, fruit and vegetables, sheepmeat and goatmeat and beef and veal
- e. a framework to enable the new Member States as defined in Article 2(g) to complement direct payments.

Statutory management requirements for farming defined by this regulation (Article 5) include:

- a. public health, animal and plant health;
- b. environment;
- c. good animal welfare.

The regulation contains requirements of all directives that have to be fulfilled by the recipient of funds. It contains both perspectives – obligatory requirements for farming (Annex II, contains links to each directive) and also requirements for keeping good standards of rural and environmental soil condition (Attachment III).

Another Council regulation (No 1698/2005) specifies conditions of support for rural development by the European Agricultural Fund for Rural Development (EAFRD). It specifies the requirements for rural development in each country and its operations (relates to the second pillar of fund policy).

## 5. Monitoring of the environment

All EU directives mentioned in this paper contain some kind of own monitoring mechanism; its implementation is essential for the functional system of environmental protection. Besides that, all EU countries have independent Environmental Inspectorate that is authorized to control compliance of the facilities with issued integrated environmental permits, issue fines or even order temporary or permanent termination of the facility's operation.

Coming out from the basics, the European Pollutant Release and Transfer Register (E-PRTR) is one of the key instruments both for the state authorities and for the public that serves and provides data on pollution in the EU. The current version of the register covers data from more than 30,000 industrial facilities covering 65 economic activities across Europe. Each facility is obliged to report data concerning the amounts of pollutant releases to air, water and land as well as off-site transfers of waste and of pollutants in wastewater from a list of 91 key pollutants including heavy metals, pesticides, greenhouse gases and dioxins. This database is available for the public and everybody can search for a facility or factory of his/her interest, and therefore the PRTR is a key contribution to transparency and public participation in environmental decision-making.

However, in many countries outside the EU, this data is not available for public or it does not exist at all. In Ukraine, the data is partly available via the website [prtr.org.ua](http://prtr.org.ua), operated by a local NGO – the state approach to public accessibility of the data remains still quite lukewarm.

The IPPC annual reporting mechanism is another important tool for environmental monitoring, which is set by the Directive on Industrial Emissions (IED). The industrial facilities are obliged to report on the observance of the IED requirements in specific terms – e.g. when a new environmental permit is being updated, new installations are required to do so before starting operation. The Member States are also obliged to report on the implementation of the Directive annually.

### EXAMPLE: Baseline reports in the Czech Republic

*Operators of facilities with integrated permission in the Czech Republic are required to process so-called baseline report since 2014. It comes out from the European directives (in particular the IED) together with the amendment of the Act on IPPC (No. 69/2013 Sb.), which takes over the requirements of the directive. The key purpose of the report is to get relevant information on the state of the environment in the area to date of the processing of the baseline report to make it possible to compare it with the final state after the end of operation. This should secure putting the area into original condition. If the management of an IPPC facility includes use, production or emission of hazardous substances that should cause contamination of land or groundwater in the place of the facility the operator process the baseline report, which should contain information needed for the determination of the state of land and contamination of the groundwater by dangerous substances. Since 2014, the operators are also obliged to use unified format of annual report on fulfilment of integrated permission requirements, which was elaborated by the Ministry of Agriculture. This report also includes requirements on processing of the baseline report.*

*The baseline report has to be submitted to the permitting authority before the*

*start of operation. In the case of existing installations, it has to be submitted before the submission of request on change of integrated permission (i.e when the the integrated permission is updated). The broader the report is the better – in this way the operator can avoid the obligation of additional research.*

*There are several possible outputs of the report:*

- 1. If there is no pollution discovered, no indicators neither monitoring is set.*
- 2. If an already existing pollution was found, the report contains recommendations to continue on current monitoring.*
- 3. If there are potential risks identified, a proposal of monitoring is being processed. Also, the regional authority or the Environmental Inspectorate can add the proposed monitoring system as a requirement for the integrated permission.*

Payment for pollution is one of the instruments used in the EU that is implemented within the Czech legal system. Although the payments are related mostly to heavy industry and energetic, some of the fields relate also to industrial farming, especially payments for water and air pollution. Effectively used environmental taxes should therefore also contribute to the reduction of pollution of water and air.

Another broad scale of environmental monitoring and reporting is defined by the water protection legislation (which includes also the monitoring requirements of the Nitrates Directive).

### **EXAMPLE: Water and nitrates monitoring in the Czech Republic**

*In the case of Czech Republic, the monitoring of water pollution has many levels, mostly coming out from the European legislation. Except the 4 years examinations, reviews and reporting described by the Nitrates Directive, the local authorities execute regular inspections, which follow the requirements of the Directives and integrated permission and in case of lacking any of the obligations the authority can impose a fine on the operator. As a second step, also the state donation could be shortened.*

*An interesting option is offered by the Research Institute of Crop Production, which contributes to the application of the Nitrates Directive and, among others, runs information website on nitrates [www.nitrat.cz](http://www.nitrat.cz). Within its own research, the Institute offers so-called "Nitrate audit" to the enterprises. In other words, in cooperation with the operator, the Institute can elaborate a report on the application of the Nitrates Directive within the enterprise's operation, which should help the operator to pass the regular inspection visit with no difficulties. The data from this informal stage of monitoring is elaborated continuously and further presented as anonymized average values. The results contribute to improvements in the Action programme, adjustments of donations from the Ministry of Agriculture and also to the Institute's remarks towards the European Union. As such data comes from a broad and representative sample of enterprises, it has a significant role on negotiations with the EU, which should secure optimal conditions coming out from the land*

*and climatic characteristics of the Czech Republic, used technologies and ways of management.*

*The monitoring of the Action Programme of the Nitrates Directive in the Czech Republic consists of:*

- verification research on the fulfilment of requirements of the Action Programme in agricultural enterprises in Vulnerable Zones (approx. 30 – 40 enterprises)*
- evaluation of the development of the volume of land nitrate from the point of grown crops, used agro-technologies and the course of windiness*
- terrain research in agricultural enterprises in Vulnerable Zones (approx. 300 enterprises)*
- monitoring of the influence of management under the Action Programme on the quality of waters in the pilot territory of Vulnerable Zones*
- evaluation of the influence of agricultural management, land and climatic conditions and the course of windiness on the quality of waters in the monitored measuring profiles and in 360 partial river basins in the CZ*
- examination of nitrate flows in Vulnerable Zones and modelling of nitrate motion in land and water for the purposes of prediction of further development of water quality*
- monitoring of the development of management manners in Vulnerable Zones on the basis of the data from Czech Statistical Office, Evidence of land according to user-defined relationships and Evidence of farm animals*

*The monitoring is coordinated by the Research Institute of Crop Production in cooperation with workers from the Research Institute of Agricultural Techniques and Research Institute of Water Management.*

*The Ministry of Environment is a general guarantor of waters monitoring (following the Act on Waters No. 254/2001 Sb.), but independent monitoring of the water streams could be done also by the Water Management Bureau of the Czech Republic, which is authorized for Nitrates Directive monitoring, and also the Hydro-Meteorological Council does monitoring of water streams, which is added to general monitoring of the Nitrates Directive.*

A good source of data on air pollution is also provided by the Hydro-Meteorological Institute. Its measuring stations provide continual data on pollution presented on the publicly available website in real time.

## **EXAMPLE:** **Environmental Inspectorate in the Czech Republic**

*The Environmental Inspectorate of the Czech Republic belongs to the Ministry of Environment; its director is appointed by the minister. It has 10 regional branches and in 2016, it employed 539 collaborators, 395 of which were inspectors.*

### *Overview of the performance of the Inspectorate (2016)*

15,833	inspections
40	average inspections per one inspector
10,260	decisions issued
7,999	expert opinions and comments (e.g. to EIA documentation, etc.)

*A substantial part of work of the Inspectorate is related to the facilities under Industrial Emissions Directive and integrated permitting.*

### *Inspections of facilities falling under integrated permitting (2016)*

1,301	inspections
640	regular (planned) inspections of PRTR facilities
133	decisions on fines and mitigation measures
456,000	euro total sum of fines (ranging from 148 to 41,000 euro)

*The IED requires the state inspection at least once per 3 years, the minimum period between two inspections is 1 year. The reason of these inspections is to check compliance of the facility's operation with issued permit. A major part of inspections is planned, part is based on reports from the public, part on investigations of the media; the Inspectorate also responds to accidents. There were 1,297 facilities obliged to report to PRTR in 2016 in the Czech Republic – and the number of facilities falling under integrated permitting is virtually the same. In fact, it means that each facility can most probably expect the state inspection once per two years. This system ensures that permitted conditions are followed and environmental impact of the facilities does not increase these permitted levels. Besides this, also the regional council can execute a review of the integrated permit obligatory conditions.*

*Unfortunately, so far the protocols from the inspections are publicly accessible only on written request in the Czech Republic. Bulgaria publishing protocols on-line on its PRTR website may be taken as an example of the best practice.*

## 6. Approximation process in Ukraine

**B**ilateral relations between the European Union and Ukraine were established in the mid '90s when the European Communities and their Member States and Ukraine signed Partnership and Cooperation Agreement (PCA) that entered into force in 1998. According to this agreement, Ukraine made a commitment for the gradual improvement of national legislation in accordance with standards of the EU. 'Environment' was defined as one of the priority spheres for this process. Later, in 2005, Action Plan Ukraine-EU was adopted within European Neighborhood Policy, where approximation process of national legislation to European norms and standards was mentioned for the first time. In 2007 the negotiations on Association Agreement between Ukraine and the EU had started, and ultimately was signed in 2014 and entered into force several months ago – on 1st of September 2017, however, activities regarding transformation of environmental protection sphere described in Annex XXX to Chapter 6 of the Agreement, in particular the implementation process began from 1st of November 2014.

The approximation of Ukrainian legislation to the EU politics in the field of environmental protection is realized in accordance with the Annex XXX, with the process divided into three periods:

- first 2014-2017;
- the second period of approximation and implementation will take place in 2018-2021;
- till the end of 2024 activities on the legislation implementation will prevail.

The first period of approximation came to an end in 2017, and according to plans of implementations, the major part of the EU Directives, is supposed to be completed until the end of the year. A number of crucial directives in regards to environmental regulation of economic activities and industries, even though with significant delays, have been applied or about to get so, however, a big part of crucial activities on transposition of environmental directives haven't been completed during the first period. On 25th of October 2017, the Government of Ukraine adopted the resolution that assigns new implementation plans and activities, nevertheless, the new plans weren't publicly released as of the end of January 2018.

Besides the EU directives and policies described in previous chapters of this paper, it is worth to mention several documents that will determine environmental regulation in Ukraine in coming years, and that correspond with other upcoming directives approximation.

**The Act "On the Environmental Impact Assessment" (EIA)** was adopted in May 2017 and entered into force on 18th of December 2017 and will replace current Act on Ecological Expertise. Together with another Act on Strategic Environmental Assessment (SEA), these normative acts correspond with EU Directives 2011/92/EU (2014/52/EU) on EIA and 2001/42/EU on SEA. The later one still hasn't been adopted, however it is on the list of normative acts that require urgent consideration by the Parliament of Ukraine.

The acts were about to be adopted together at the first place in 2016, however they were vetoed by the president in autumn last year. These events raised concerns of many politicians and CSOs, blaming the political lobby and pressure from representatives of big industrial groups, especially coming from agricultural holdings and particular industrial meat producers. The veto and recommendations on the act improvements delayed the implementations of the new environmental regulations, which gave opportunity for businesses to accomplish their plans till the end of 2017 for construction of many new facilities, doubtful from the perspective of environmental and social implications. This can be also observed on the example of MHP rush to start constructions of new poultry houses and related facilities in several regions of Ukraine, despite number of concerns and even lawsuits in regards to such developments.

Ultimately the EIA act has entered into force and has number of significant advantages comparing to previous legislation covering the topic. Firstly, the act defines the list of specific economic activities that are obliged to conduct EIA. Two groups of animal farming facilities stand out among rest.

First group for obligatory EIA that requires transboundary assessment for animal farming of next capacities:

- >60,000 poultry pieces & >85,000 broilers;
- >3,000 pigs (30 kg) & 900 sows.

Second group of animal farming facilities:

- >40,000 poultry;
- >1,000 pigs & 500 sows;
- >1,000 cattle;
- >2,000 fur animals.

These new capacities significantly differ from those defined previously by Ukrainian legislation as highly hazardous economic activities and were not obliged for examination on potential transboundary impacts. Thus, the act sets even (or lower for pig farms) minimal production capacities for animal farms as set in the IED 2010/75/EU.

Other advantages of the EIA act include – assurance of proper, transparent public participation and decision-making process in local communities, free access to information and establishment of public register of environmental impact assessments in the Internet (<http://eia.menr.gov.ua/>).

## Water and Nitrates Directives

Implementation of the Water Framework Directive was also expected to improve significantly environmental governance in the area. For decades, there was no proper management or monitoring of water resources and their pollution control, especially in regards to diffusive sources of pollution, resulting in a very poor condition of the water bodies. The plan of approximation of the directive implies introduction of changes into the Water Code, number of bylaws and structural changes. As of today, implementation process of the Water Directive can be considered as one of the most successful among other directives aimed on better environmental governance. Implementation process of these directives, together with EIA & CEO directives was widely supported by the EU-funded project “Support to Ukraine in approximation of the EU environmental acquis” – APENA.

In 2016, the ‘Act on introduction of integrated approaches to water resources management in accordance with basin principal’ was adopted and in May 2017, Decree of the Government approved ‘The procedure for developing a river basin management plan’. Other changes currently taking place include the establishment of river basins, sub-basins and their management plans in accordance with physical boundaries of water catchment areas and transboundary cooperation and coordination of the management plans for most of the river basins. It is estimated that between 8,000 to 12,000 massifs of future monitoring network will be allocated there and it is supposed to start its operation from 2019.

At the end of 2017 geoportal Water Resources of Ukraine was presented in a test regime (<http://map.davr.gov.ua:44481/>) with basic information of river basins and water bodies of the country. It is planned that water monitoring data will be added to the portal once such system is established. Moreover, the Ministry of Environment has the intention to merge Water Resources geoportal with the broader platform “Open Environment”, which is planned to be developed in coming years.

Agriculture, and especially animal farming, has one of the biggest consumption of freshwater resources for its production needs. Nowadays, in Ukraine water use without special permission and/or exceeding established limits represents a widespread practice among producers. Therefore, creating

effective monitoring and compliance system should be a priority task. Pollution from agriculture is another issue aiming to be addressed via Integral part of Water Directive – directive on the protection of waters against pollution caused by nitrates from agricultural sources (91/676/EEC). This is one of few 'environmental' directives in charge of which are Ministry of Environment together with the Ministry of Agriculture. The main objectives are: to define and map the 'vulnerable zones' (described in previous chapters) and to establish action plan for the zones management, including BATs and monitoring.

As of the end of 2017, additional documents were developed by APENA: draft of the Methodology of Nitrate Vulnerable Zones Identification and draft of the Code of Best Available Techniques. Currently, these draft documents are in consideration process coordinated by the Ministries of Environment and Agriculture, and they are expected to be approved in 2018. Next application steps of the Nitrates Directive will be revised and updated in the new governmental EU-UA approximation plan.

## Directive on Industrial Emissions (IED) 2010/75/EU

World Health Organisation estimates that Ukraine has alarming rates of death because of the air pollution (see chart below).



The IED requires strong collaboration between governmental structures. The Ministry of Environment is a main responsible body for the implementation process, however, Ministries of Energy, Health and other state agencies are taking vital part in the introduction of IED to national policy. Yet, very disappointing is the fact that Ministry of Agriculture is not involved in this process as industrial agriculture is one of the top polluters in certain regions of the country.

Like many others, this legislation approximation to the directive is significantly delayed. According to the initial implementation plan, the process should have been completed within the first period of legislation approximation (2014–2017); in reality the process is way behind the schedule. In November 2017, the government approved the National Plan for reducing emissions from large combustion plants that was initially planned to be supported in January 2016 (Implementation

timeline)<sup>39</sup>. The directive is planned to find its reflection in the respecting legislation on Integrated Permit, which as well will define special governmental structure for monitoring and control.

The Ministry of the Environment reported that currently the draft of Concept of the environmental permits system reformation and technical edition of the Act on System of Environmental Permits have been developed<sup>40</sup>. However, proposed act draft was not fully developed; some experts are warning that the suggested act may have a number of provisions that don't correspond with the norms of the Constitution and other acts of Ukraine<sup>41</sup>.

Nevertheless, some of the IED regulations, like capacities of industrial farming, already have found their application in the recently adopted EIA act, and likewise this Directive 75 also highly rely on transparency and public participation in the integrated permit issue.

Essential part of the IED as was described in the previous chapters is introduction of the **Pollutant Release and Transfer Registers (PRTR)**. The protocol on PRTR also known as Kyiv Protocol to the Aarhus convention was adopted at the conference of the convention parties in May 2003 in Kyiv. In early 2016, the act on ratification of the PRTR protocol was signed. Open data from such PRTR would be a significant step forward to quality environmental monitoring development in the country, however, yet there still is no actual information available. So far, there was an attempt to create such web resource by CSO – prtr.org.ua, an effort to fulfill governmental function of environmental information disclosure. The web resource, however, is not complete both in terms of polluting substances and polluters, and hasn't been updated in the recent years. Therefore, there is still an urgent demand for such registers system to function properly.

Other relevant changes within agriculture sector on a policy level include developing concepts and strategies. In cooperation with international partners, taking place in recent years, Single Comprehensive **Strategy for agriculture and rural development for 2015-2020** has been developed – an attempt to launch a holistic approach to the reform of the sector, at least strategically, creating framework partially applying European achievements and experience, including CAP (Common Agricultural Policy). The strategy – one of the first documents within agri-policy that distinguishes need for the development of rural areas, environmental protection and necessity of minimal environmental standards, thus covering social and environmental issues of the sector, not solely economic objectives. However, despite work of foreign and national experts over the strategy, it was left on the paper and never came to be realised or approved in full, instead, it was transformed into so-called Strategy 3+5, which extracted the “most important” priorities: land reform (open land market), state support to farmers and reformation of state enterprises.

In 2017, additionally, Government approved the **Strategy for Farming Households and Cooperatives Development (2018-2020)**, aiming at establishing state support for small agribusiness in rural areas. Recognising small and medium farming and their cooperation as a potentially more sustainable way of production and professional fulfilment for millions of people, it is essential to create a strong alternative to the industrial way of food and particularly meat production in the country. In the coming year, the Ministry of Agriculture is going to develop the **Strategy for livestock production till 2030**, which has to correspond with the aims of above mentioned strategies including focus on small farms and cooperatives, however, it also will be crucial to include new and upcoming environmental requirements that may ensure economic viability and proper environmental and social responsibility of agriculture in Ukraine.

39 Plan of Implementation of Directive 2010/75/EU on Industrial Emissions

40 Answer from the Ministry of Environment on official information inquiry from NGO Ecoaction

41 'Ukraine and the Association Agreement. Monitoring of Obligations' 2016 [http://ucep.org.ua/wp-content/uploads/2016/12/Zvit\\_2\\_UCEP\\_WEB.pdf](http://ucep.org.ua/wp-content/uploads/2016/12/Zvit_2_UCEP_WEB.pdf)

# 7. Conclusions and recommendations

Coming out from above mentioned, there are several conclusions and recommendations for Ukrainian authorities and other stakeholders that should lead to better environmental performance and control not only of industrial farms but in many cases of all polluters. Following these points, Ukraine may step forward towards bigger transparency, better access to information, independent monitoring and control, effective fines, overall enforcement of the legislation and adequate space for public participation in environmental decision making.

## 1/ Faster EU approximation

The government should respect international obligations of Ukraine and follow the set up schedule of transposition of the EU legislative framework. Stronger protection of environment has positive effects also on economy. Clear requirements and progressive regulation stimulates business and attracts responsible entrepreneurs.

However, the approximation process in Ukraine faces many complications that have to be challenged as soon as possible. One of the problems is that the EU legislation and connected directives might have too vague and free interpretation in a national context; also, there are basically no formal consequences for failing of the approximation process. In the Agreement there is nothing about membership of Ukraine in the EU, thus compliance of the directives requirements is basically voluntary for Ukrainian party and there are no controlling mechanisms like those used for the EU Member States.

Progress with implementation (transposition) of EU directives into Ukrainian legislation highly depends on existence of supporting projects and their coalitions with CSOs (*there was a relative success with EIA and Water directive caused by work of the handful of CSOs who worked with respected experts from EU supported projects, whilst ministries having struggles reaching agreements*); additionally, current technical, material and human resources capacity is too low to make changes actually happen timely and efficient (e.g. outdated or total absence of facilities that could conduct modern analysis and monitoring etc.). Another problem is enormous pressure coming from big businesses and related interested parties, which don't want to change existing and convenient system for their business flourish. In general, there is rather a hostile attitude to changes as a number of stakeholders groups are considering such reformatations as additional bureaucratic and material burden, rather than a chance for better governance establishment.

All these facts represent serious threats for the successful and effective process of Ukrainian legislation approximation to the EU. Therefore, there should be also political pressure from the EU and international partners for transparent and timely legislation reforms, with further support of technical realisation of written norms and standards as it doesn't seem feasible to establish proper environmental governance systems with currently available material base.

## 2/ Adaptation of BREFs

Ukraine should as soon as possible translate and adapt BREFs for the most polluting industries, including livestock production and farming. Responsible governmental body and system of documents official approval have to be clearly defined. Although the EU directives are not fully transposed so far, the permitting authorities, as well as stakeholders of the decision-making process, could start referring to BREFs existing in the official language.

### **3/ Functional State Inspection**

The Environmental Inspectorate has to be independent again. It should be excluded from the authority of the Regions and made belonging to the Ministry of Environment, as in all EU countries. Regions are often under the political, financial and informal influence of the large business, and operation of the Inspectorate is heavily paralysed.

### **4/ Publishing information online**

Recently launched online database for EIA procedures is a good step forward and an example that should be followed, so all interested stakeholders have easy access to information, the public can timely and effectively participate in decision making, and the process is generally more transparent. Upcoming geoportal on water resources will accumulate data of water monitoring in coming years. Later, similar systems for integrated permitting should be developed too, altogether with proper PRTR register of Ukraine, which will be regularly updated with actual data from wide monitoring network.

### **5/ Enforcing collaboration between responsible governmental structures**

As the EU Directives are aimed to solve complex issues, thus, there is a necessity for better intersectoral cooperation between all connected institutions (governmental, local councils, CSO's, financial institutions, etc.), working together on holistic approaches and decisions. Insufficient institutional communication and collaboration significantly inhibit also the approximation process.

### **6/ Support of local and ecological farming & environmental education**

There should be a stronger public support for ecological farming and local agricultural cooperatives, which has to be followed by broader public education about environmental and social consequences of industrial farming. Public support for local and ecological farming should also make the production of those farms more accessible for the consumers. Similarly, there should be systematic outreach campaigns and educational programs for authorities, executives, business, CSOs and other stakeholders.

# 8. Main sources of information

## List of directives and important information sources:

Summary and guidepost on information sources on the IPPC Directive – [http://ec.europa.eu/environment/archives/air/stationary/ippc/general\\_guidance.htm](http://ec.europa.eu/environment/archives/air/stationary/ippc/general_guidance.htm)

Directive on Industrial Emissions – <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32010L0075>

Summary article on Directive on Industrial Emissions – <http://ec.europa.eu/environment/industry/stationary/ied/legislation.htm>

BAT Reference Documents (BREF) – <http://eippcb.jrc.ec.europa.eu/reference/>

BAT on intensive poultry and pig farming: <http://eippcb.jrc.ec.europa.eu/reference/irpp.html>

Decision 2017/302 on best available techniques for industrial farms – [http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L\\_.2017.043.01.0231.01.ENG&toc=OJ:L:2017:043:FULL](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2017.043.01.0231.01.ENG&toc=OJ:L:2017:043:FULL)

European Pollutant Release and Transfer Register (E-PRTR) – <http://prtr.ec.europa.eu/>

Ukrainian PRTR – <http://prtr.org.ua>

Fact Sheet of the Nitrates Directive – <http://ec.europa.eu/environment/pubs/pdf/factsheets/nitrates.pdf>

Water Framework Directive – <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02000L0060-20141120>

Summary of Water Framework Directive and guidepost – [http://ec.europa.eu/environment/water/water-framework/index\\_en.html](http://ec.europa.eu/environment/water/water-framework/index_en.html)

12 Water Notes – [http://ec.europa.eu/environment/water/participation/notes\\_en.htm](http://ec.europa.eu/environment/water/participation/notes_en.htm)

Directive on the reduction of national emissions of certain atmospheric pollutants – [http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L\\_.2016.344.01.0001.01.ENG&toc=OJ:L:2016:344:TOC](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2016.344.01.0001.01.ENG&toc=OJ:L:2016:344:TOC)



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