

European Union Reference Centre for Animal Welfare *Poultry SFA*

DELIVERABLE

D 2.1.2 – DESCRIPTION OF THE CONSIDERED VALIDATED INDICATORS AMONG THE IDENTIFIED ONES AND ASSOCIATED METHODOLOGY, BROILERS WELFARE ON FARM.



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1. Introduction

This document is part of the **sub-activity 2.1** "*Relevant animal welfare indicators*" and concerns to the priority area related to the broilers welfare on farm.

In this welfare issue, animal (ABI), resource (RBI) and management-based indicators (MBI) and its methods of assessment for each legal requirement are identified and described. The description of the methods is based on scientific publications or Competent Authorities' official inspection documents provided to the EURCAW-Poultry-SFA. There might be some methods not described in this document, the list is not exhaustive. The experts from the EURCAW-Poultry-SFA chose the most relevant ones according to their knowledge and the available scientific data.

Afterwards, the indicators and methods of assessment are evaluated according to their validity, feasibility and reliability (see definition below) in order to deliver to Competent Authorities (CA) useful information for official controls. However, some indicators are not developed in this document because their methodology will be part of the deliverable 2.2.2 output namely to propose better methods of animal welfare assessment for the legislative requirements most difficult to implement. Thus, they will be developed in future working programs.

Definitions

Legal requirement: a requisite of the EU legislation to be assessed during the official controls. Example: Directive 98/58 EC, Annex, Paragraph 10: *"Temperature, relative air humidity [...] must be kept within limits which are not harmful to the animals"*

Indicator: an occurrence, observation, record or measurement which has a proven relationship with the legal requirement, which can be:

- Animal-based indicator (ABI): a response of an animal or an effect on an animal used to assess its welfare. It can be taken directly on the animal or indirectly and includes the use of animal records. Example: huddling as ABI of cold stress and panting as ABI of heat stress.
- Resource-based indicator (RBI): an evaluation of a feature of the environment in which the animal is kept or to which it is exposed.
 - Example: Environmental temperature, humidity.
- Management-based indicator (MBI): an evaluation of what the animal unit manager or stockperson does, and which management processes or tools are used.
 Example: Protocol for activation of the ventilation system.

Iceberg indicator: indicator reflecting major welfare issues in an integrative manner in order to enable an initial overview on the welfare state.

Method for the assessment (= method): a form of evaluation of the indicators that might be used in the frame of the verification of the legal requirements.

Example: Examine groups of birds at up to 5 well-distributed locations. If birds are panting, count out 100 birds (do not disturb them and leave them sitting where they are) and estimate how many of the 100 birds are panting.



Validity: The extent to which an indicator is meaningful in terms of providing information on a legal requirement concerning an animal or a group of animals.

Reliability: The extent to which results are largely the same when the same observer repeats assessments after receiving reasonable training or the agreement between two or more observers after they have received reasonable training.

Feasibility: Capacity to be applicable to different housing systems or waterbath stunning equipment and at least have the potential to be applied in the field (on-farm or in slaughterhouse).

2. Methodology used

In this document, for each legal requirement ABI, RBI or MBI are identified and their method of assessment described and evaluated according the validity, reliability and feasibility. This information is summarized in tables where their validity, reliability and feasibility are scored according to information found in the scientific literature, the ranking of the CAs and the expert knowledge. The ranking exercise of the CAs was carried out during the first meeting between the EURCAW-Poultry-SFA and the CAs of MSs (available in deliverable D.1.1.3, annexes, 5, 6, and 7). We choose a rating method with three levels, as follow in table 1 below.



Table 1: Rating method used for the assessment of the validity, reliability and feasibility of the indicators

	Gap of knowledge	X (low)	XX (moderate)	XXX (high)
Validity	 No data found in literature 	 Literature shows low correlation between the legal requirement and the indicator/method And/or Average score from 0 to 	 Literature shows moderate correlation between the legal requirement and the indicator/method And/or 	 Literature shows high correlation (with causality link) between the legal requirement and the indicator/method. And/or
	 No data on ranking exercise from Cas No expert 	 2 (on a scale of 5) in CAs ranking exercise And/or Expert opinion with experience of poor level of validity. 	 Average score higher than 2 and lower than 4 (on a scale of 5) in CAs ranking exercise And/or Expert opinion with experience of moderate 	 Average score higher than 4 (on a scale of 5) in CAs ranking exercise And/or Expert opinion with experience of high level of
	opinion		level of validity	validity
Reliability	 No data found in literature 	 Literature shows low reliability And/or 	 Literature shows moderate reliability And/or 	 Literature shows high reliability And/or
	 No data on ranking exercise from CA 	 Average score from 0 to 2 (on a scale of 5) in CAs ranking exercise 	 Average score higher than 2 and lower than 4 (on a scale of 5) in CAs ranking exercise 	 Average score higher than 4 (on a scale of 5) in CAs ranking exercise
	 No expert opinion 	 And/or Expert opinion with experience of poor level of reliability 	 And/or Expert opinion with experience of moderate level of reliability 	 And/or Expert opinion with experience of high level of reliability
Feasibility	 No data found in literature 	• <i>Material needed:</i> High cost/low availability material (<i>e.g.</i> gas meter, dust meter)	 Material needed: moderate cost of the material (e.g. thermometer, hygrometer) 	 Material needed: no or low- cost material (e.g. tape measurer) And/or
	 No data on ranking exercise from CA 	 And/or Time to performed: More than 60 min And/or Ease to access: Difficult access or not possible in 	 And/or Time to be performed: 30-60 min And/or Ease of access: Not easy to 	 <i>Time to be performed:</i> less than 30 min <i>And/or</i> <i>Ease of access:</i> Easy to access and feasible in all kind of structure
	• No expert opinion	 more than one type of structure And/or Animal manipulation: Biological sampling (e.g. blood, swab) 	 access (<i>e.g.</i> to upper tiers) or not easy to apply in all farm/slaughterhouses And/or Animal manipulation: Some animal manipulation with no biological sampling (<i>e.g.</i> check foot pad) 	 And/or Animal manipulation: No animal manipulation



3. Broiler welfare on farm

3.1. Legal requirement: *"Animals shall be cared for by a sufficient number of staff"* (Directive 98/58/EC, Annex, Paragraph 1).

3.1.1. ABI: There is no specific ABI for this requirement.

3.1.2. RBI:

- <u>Number of employees in relation to farming area (m²)</u>
 - Description of the method: Calculate the usable surface to see its relationship with the number of staff. Result should be expressed in m² per number of employees
 - *Evaluation of the method:* The method is simple to calculate but there is a concern of the validity of the indicator because it is It is difficult to define what should be a sufficient number of staff

RBI	Validity	Feasibility	Reliability
Number of employees	Х	XXX	XXX

3.1.3. MBI: There is no specific MBI for this requirement.

3.2. Legal requirement: "The keeper of the chickens shall hold a certificate which is recognised by the competent authority of the Member State concerned, attesting to the completion of such a training course or to having acquired experience equivalent to such training" (Directive 2007/43 EC, Article 4).

3.2.1. ABI: There is no specific ABI for this requirement.

3.2.2. RBI: There is no specific RBI for this requirement.

3.2.3. MBI:

- Evidence of the certificate (including equivalence certificates)
 - Description of the method: Check the certificate of competence of the staff.
 - Evaluation of the method: The certificate is an evident proof to attest the completion of a training course, so the indicator has a full score of validity, feasibility and reliability.

МВІ	Validity	Feasibility	Reliability
Evidence of the certificate	ххх	ххх	ххх

3.3. Legal requirement: "The owner or keeper shall provide instructions and guidance on the relevant animal welfare requirements, including those concerning the methods of culling practised in holdings, to persons employed or engaged by them to attend to chickens or to catch and load them" (Directive 2007/43 EC, Article 4).



3.3.1. ABI: There is no specific ABI for this requirement.

3.3.2. RBI: There is no specific RBI for this requirement.

3.3.3. MBI:

- Written instructions and guidance provided to and signed by staff as proof of evidence.
 - Description of the method: Check the presence of written instructions and guidance provided and signed by the staff.
 - Evaluation of the method: The method is simple and straightforward, validity, feasibility and reliability are high.

MBI	Validity	Feasibility	Reliability
Instructions and guidance	ХХХ	ХХХ	ххх

3.4. Legal requirement: *"All chickens kept on the holding must be inspected at least twice a day. Special attention should be paid to signs indicating a reduced level of animal welfare and/or animal health"* (Directive 2007/43 EC, Annex 1, Paragraph 8).

3.4.1. ABI: There is no specific ABI for this requirement.

3.4.2. RBI: There is no specific RBI for this requirement.

3.4.3. MBI:

- Records of frequency of inspections/ keeper's feedback on inspections.
 - *Description of the method:* Check the records to verify that the farmers have inspected the animals twice a day.
 - *Evaluation of the method:* The records should be an evident proof that the inspection was carried out so the indicator should have a full validity and reliability.

MBI	Validity	Feasibility	Reliability
Records of frequency of inspections	ХХХ	ххх	ХХХ

3.5. Legal requirement: "Chickens that are seriously injured or show evident signs of health disorder, such as those having difficulties in walking, severe ascites or severe malformations, and are likely to suffer, shall receive appropriate treatment or be culled immediately" (Directive 2007/43 EC, Annex I, Paragraph 9).

3.5.1. ABI on farm: The different ABIs that can be used on farm are the following:

• <u>Difficulties in walking: (can be assessed by scoring the walking ability; "Gait Score")</u>

Gait score

Description of the method (Welfare Quality 2009): Gather approximately 150 birds at random using a catching pen. For very flighty birds it may be necessary to catch small pens of birds. Each bird is individually encouraged to walk out of the pen and is scored as it does so. Birds are classified according to these criteria:



- 0. Normal, dextrous and agile
- 1. Slight abnormality, but difficult to define
- 2. Definite and identifiable abnormality
- 3. Obvious abnormality, affects ability to move
- 4. Severe abnormality, only takes a few steps
- 5. Incapable of walking.

For each bird caught, the gait score will be recorded. The flock average gait score can be calculated by multiplying the number of birds in each gait score category, then dividing the total number of birds scored.

Evaluation of the method: Lameness is one of the major issues in broiler production in particular in the case of heavy broilers, as reported in EFSA (De Jong et al., 2012), therefore it is an important indicator to evaluate the broiler's welfare. The method described is used in several private animal welfare assessment schemes (e.g. compassion in world farming) and is very useful to get an objective report. However, it is time consuming and may cause crowding of the animals within a flock and requires training. Using a 3-point scale by grouping category 0-1 and 2-4 versus a 5-scale score could probably improve feasibility. In addition, the main gap is the lack of thresholds to check the compliance with the requirement once the gait score is obtained.

- Injured birds *
- Cannibalized birds *
- Undersized animals *
- Dead animals *

For description and evaluation of the method see "Transect walk method" below.

The presence of birds suffering from these troubles or dead show that birds have not been treated adequately or culled.

Flock register consultation to examine:

- a) Weight gain.
- b) Mortality.

Animals that are under treatment should be seen in a dedicated pen (infirmary).

- 1) Transect walk method (Marchewka et al., 2013)
 - Description of the method: The indicators above can be assessed with the transect walk method.

This method distinguishes individuals with visible severe welfare issues and provides a quick estimation of general flock health and welfare status giving. It does not require direct contact with animals, only visual to evaluate indicators such as lameness, immobility, back dirtiness, sickness, agonizing, or dead birds.

The transect walk methodology is based on the idea of the walk-through used for broiler care and line transect methodology used in wildlife biology. The method



consists of standardized walks divided in randomly set paths covering the full area of the house. The length considered is about of 13 m divided in five 2.5 m wide bands. Transects are numbered from 1 to 5 (1 and 5 being wall and 2, 3, and 4 central transects). Transect walks should be performed in random order, in both directions, starting at the entrance wall and at the opposite of the entrance wall, alternatively.

• Evaluation of the method:

The method described above has a large potential and it could be seen as a prospective approach to on-farm welfare assessment, showing good inter-observer reliability and reduced time and personnel requirements. Because the method is based on daily care farm routine, it may be easier to understand and to accept by prospective assessors and producers. However, it requires accurate training to ensure repeatability. In addition, there are no thresholds to check the compliance with the requirement, this is an open norm.

There are no thresholds to check the compliance with the requirement.

ABI	Validity	Feasibility	Reliability
Difficulties in walking	XXX	ХХХ	XXX
Injured birds	XX	ХХХ	XXX
Undersized animals	XX	ХХХ	XXX
Cannibalized birds	ХХ	XX	ХХ
Dead animals	ХХ	XX	ХХ

3.5.2. RBI: There is no specific RBI for this requirement.

3.5.3. MBI:

• <u>Presence of standard operating procedures (SOPs) for identifying and treating suffering</u> <u>animals and conformity of the culling methods with Reg. 1099/2009.</u>

We do not have a standard method of assessment for this indicator in our knowledge.

The SOPS in conformity to Reg. 1099/2009, should have a full score of feasibility and reliability. Concerning the validity, the MBI is not enough to assess the compliance because the requirement is about culling animals in suffering while the indicator is just about having SOPs, so that we are not sure that the procedures will be followed.

MBI	Validity	Feasibility	Reliability
Presence of SOPs	Х	XXX	XXX

3.6. Legal requirement: *"A veterinarian shall be contacted whenever necessary"* (Directive 2007/43 EC, Annex I, Paragraph 9).

3.6.1. ABI: There is no specific ABI for this requirement

3.6.2. RBI: There is no specific RBI for this requirement.



3.6.3. MBI:

• <u>Inspection of animals</u>: Flock health issues with no evidence of veterinarian consultation/intervention, *i.e.* sudden rises in mortality, respiratory syndromes, intestinal disorders etc.

We do not have a standard method for the assessment of this requirement in our knowledge.

- <u>Inspection of records:</u> Flock health issues with no evidence of veterinarian consultation/intervention, *i.e.* sudden rises in mortality, respiratory syndromes, intestinal disorders etc.
- <u>Register consultation:</u>
 - *Description of the method:* Check veterinary visits and prescriptions.
 - *Evaluation of the method:* The consultation of the records and the register with the veterinary visits and prescriptions can be assessed as an indicator with a full validity, feasibility and reliability.

MBI	Validity	Feasibility	Reliability
Inspection of animals	XX	XXX	XX
Inspection of Records	XXX	XXX	XXX
Register consultation	XXX	XXX	XXX

3.7. Legal requirement: "Animals must be fed a wholesome diet which is appropriate to their age and species and which is fed to them in sufficient quantity to maintain them in good health and satisfy their nutritional needs" (Directive 98/58 EC, Annex, Paragraph 14).

3.7.1. ABI:

On farm:

- <u>Flock weight uniformity</u> (see the method below).
- <u>Growth rate</u> (according to genetic providers' manuals).
- <u>Walking ability (with a gait score)</u>:
 - *Description of the method* (Webster *et al.,* 2008): The visual inspection of walking ability (i.e., gait scoring) offers the advantage of allowing a non-invasive evaluation of a large number of birds in a short period of time.
 - The systems used define 6 categories (from 0 to 5) of walking abnormality on an ordinal scale of severity.
 - It has been developed a real time, 3-point (3PT) gait scoring system that is currently being used on commercial farms in USA.
 - The 3PT systems seeks to identify broilers as having no impairment of walking ability (score 0), having obvious impairment but still ambulatory (score 1) and having severe impairment and not able to walk without great difficulty (score 2).
 - The 3PT gait-scoring systems was compared with the adaptation of the 6-point Kestin gait scoring system.



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The Kestin gait-scoring system (adapted from Kestin et al) includes 6 different points: 0: broilers with detectable abnormality

- 1: broilers with detectable but unidentifiable abnormality.
- 2: broilers with identifiable abnormality that has little effect on overall function.
- 3: broilers with identifiable abnormality which affects ability to move about (*e.g.*, limp, jerky or unsteady stride, or splaying of a leg).
- 4: broilers with severe impairment of function but still capable of walking.
- 5: broilers with complete lameness and cannot walk.
- Evaluation of the method: The 3PT and Kestin (6-point) gait-scoring systems had good intersystem agreement when used on commercial farms. Both the 3PT and Kestin gait-scoring systems were found to have substantial observer reliability, but between-observer agreement was somewhat greater for the 3PT system on commercial farms.

The simplicity of the 3PT system may promote observer reliability for gait scoring commercial poultry flocks.

- <u>Feather cleanliness.</u>
 - Description of the method (Welfare Quality[®], 2009): Walk slowly inside the house catching the birds one by one (10 in the same location). Examine the breast of the birds using a recording sheet according to a precise classification (scoring from 0 to 3).



Figure 1: Evaluation of feather cleanliness (Source: Welfare Quality[®], 2009)

Evaluation of the method: The method described above is very valid to assess the plumage cleanliness as an indicator of bird's welfare. Plumage cleanliness is important for thermoregulation and when the feathers soiled by litter, they may lose their protective properties, having negative effects on welfare of birds (Greene et al., 1985; Welfare Quality[®], 2009).



- <u>Feather integrity</u>: We do not have a standard method of assessment for this indicator in our knowledge.
- <u>Faeces appearance</u>: We do not have a standard method of assessment for this indicator in our knowledge.

At slaughter:

- <u>Emaciated animals</u>: We do not have a standard method of assessment for this indicator in our knowledge.
- <u>Flock weight uniformity.</u>
 - Description of the method (Toudic, 2007):The flock weight uniformity can be measured in two ways:
- 1. The coefficient variation (CV %) measures the variation (spread) of body weights within the flock. The lower the CV%, the less variable a flock is.
- *CV%* = (Standard Deviation × 100) / Average body weight.
- 2. The uniformity (%) measures the evenness of body weights within a flock. The higher the uniformity, the less variable a flock is.
- Calculating uniformity: ideal body weight range is +/- 10% of average sample weight.

GRADING USING UNIFORMITY

WHAT IS THE UNIFORMITY? (+/- 10%)

Uniformity	2 or 3-way Grade
65%-80%	2-way grade
65% or lower	3-way grade

>80% 65-80% <65%

• *Evaluation of the method:* The flock uniformity is generally assessed visually and subjectively. The standard method only gives a very partial picture of the characteristics of the population. The use of "Coefficient of variation" (CV) is generally preferred and there are some online systems that calculate this automatically.

ABI	Validity	Feasibility	Reliability
Flock weight uniformity	XX	XX	XX
Growth rate	XX	XX	XX
Walking ability	Х	XX	XX
Feather cleanliness	XX	XX	XX
Feather integrity	Gaps of knowledge		
Feather appearance		Gaps of knowledge	



Emaciated animals	Gaps of knowledge		
Flock uniformity	Х	XX	XX

3.7.2. RBI:

- <u>Inspection of feed labels:</u> We do not have a standard method of assessment for this indicator in our knowledge.
- Inspection of feed program (in relation to the rearing period according to nutritional requirements guidelines: We do not have a standard method of assessment for this indicator in our knowledge.

RBI	Validity	Feasibility	Reliability
Inspection of feed labels	Cons of knowledge		
and feed program	Gaps of knowledge		

3.7.3. MBI: There is no specific MBI for this requirement.

3.8. Legal requirement: *"All animals must have access to feed at intervals appropriate to their physiological need"* (Directive 98/58 EC, Annex, Paragraph 15).

3.8.1. ABI: There is no specific ABI for this requirement.

3.8.2. RBI:

- Check of the setting of the automated feed distribution system (control unit).
- We do not have a standard method for the assessment of this requirement in our knowledge.

The control of the equipment settings to feed animals can be considered as an indicator with a full validity, feasibility and reliability to assess if the animals have access to feed.

RBI	Validity	Feasibility	Reliability
Equipment settings		Gaps of knowledge	

3.8.3. MBI:

- Flock register consultation:
 - Description of the method: Check the heck farm technician's feeding instructions.
 - *Evaluation of the method:* Consulting records can be considered as an indicator with a full validity, feasibility and reliability to assess if the animals have access to feed.

MBI	Validity	Feasibility	Reliability
Flock register	VVV	VVV	vvv
consultation	^^^	~~~	~~~



3.9. Legal requirement: *"Feed shall be either continuously available or be meal fed and must not be withdrawn from chickens more than 12 hours before the expected slaughter time"* (Directive 2007/43 EC, Annex I, Paragraph 2).

3.9.1. ABI: There is no specific ABI for this requirement.

3.9.2. RBI:

- Check the settings of the automated feed distribution system (control unit).
- We do not have a standard method for the assessment of this requirement in our knowledge.

RBI	Validity	Feasibility	Reliability
Equipment settings	Gaps of knowledge		

3.9.3. MBI:

- <u>Consultation of transport document reporting withdrawal time.</u>
 - *Description of the method:* Check the records.
 - *Evaluation of the method:* The consultation of records can be considered as an indicator with a full validity, feasibility and reliability to assess if the feed is continuously available to animals.

MBI	Validity	Feasibility	Reliability
Consultation of transport document reporting withdrawal time	ХХХ	ХХХ	ххх

3.10. Legal requirement: *"All animals must have access to a suitable water supply or be able to satisfy their fluid intake needs by other means"* (Directive 98/58 EC, Annex, Paragraph 16 - Directive 98/83/CE, Annex II).

3.10.1. ABI: There is no specific ABI for this requirement.

3.10.2. RBI:

• <u>Water cleanliness</u>. We do not have a standard method of assessment for this indicator to our knowledge.

RBI	Validity	Feasibility	Reliability
Water cleanliness		Gaps of knowledge	

3.10.3. MBI:

• <u>Evidence of water quality controls</u>. We do not have a standard method of assessment for this indicator to our knowledge.

MBI	Validity	Feasibility	Reliability
Evidence of water	Cans of knowledge		
quality controls		Gaps of knowledge	



3.11. Legal requirement: "Drinkers shall be positioned and maintained in such a way that spillage is minimised" (Directive 2007/43 EC, Annex I, Paragraph 1).1

3.11.1. ABI:

• <u>Animals' drinking posture</u>. We do not have a standard method of assessment for this indicator to our knowledge.

Manufactures and suppliers of drinking systems provide guidance on how to position and maintain the drinking systems based on animals posture while drinking. This will ensure good access to the birds and minimize spillage. A correct animal's drinking posture is a good indicator to assess if the drinkers are positioned and maintained correctly.



Figure 2. Guidance on how to position and maintain the drinking systems

ABI	Validity	Feasibility	Reliability
Animals' drinking	Gaps of knowledge		
posture			

3.11.2. RBI:

- <u>Check litter wetness below the drinker lines.</u> (See the method to assess litter quality reported below).
- <u>Check the presence of water and the proper functioning of watering equipment (leak-free</u> and not clogged drinkers). We do not have a standard method for the assessment of this indicator in our knowledge.

RBI	Validity	Feasibility	Reliability
Checking litter wetness	vv	VVV	vv
below the drinker lines	~~	~~~	~~
Checking the presence			
of water and proper	Gaps of knowledge		
functioning			

3.11.3. MBI: There is no specific MBI for this requirement



3.12. Legal requirement: *"All chickens shall have permanent access to litter which is dry and friable on the surface"* (Directive 2007/43 EC, Annex I, Paragraph 3).

3.12.1. ABI:

On farm:

- Feather cleanliness. (See point above 3.7.1)
- <u>Dust bathing behaviour (Meluzzi *et al.*, 2008)</u>. We do not have a standard method of assessment for this indicator to our knowledge.

At slaughter:

- Footpad dermatitis (Greene *et al.,* 1985; Algers *et al.,* 1989; Mayne, 2005; Allain *et al.,* 2009; Shepherd and Fairchild, 2010). See the description below 3.42.1.
- Hock burns (de Jong et al. 2014).
 - *Description of the method*: The classification of the measures of hock burns is completed according to the following description:
 - 0 = no lesions (no visible lesions)
 - 1 = mild lesions (brown lesion up to 5 mm)
 - 2 = severe lesions (black lesion with more than 5 mm).
 - *Evaluation of the method:* The method described above is very valid to assess hock burns as clinical indicators that can be used at slaughterhouse to identify welfare problems.

ABI	Validity	Feasibility	Reliability
Feather cleanliness (on farm)	xx	xx	х
Dust bathing behaviour (on farm)	Gaps of knowledge		
Footpad dermatitis (at slaughter)	ХХХ	XXX	ХХХ
Hock burns	XX	XX	XX

3.12.2. RBI:

- <u>Litter quality</u>
 - *Description of the method:* There are several methods to assess the litter quality, for example ClassyFarm (Vinco *et al.* 2018) or the Welfare Quality[®] (2009): which are described below.
- ClassyFarm (Vinco *et al.* 2018)

To perform the litter evaluation the inspector must assess litter in 3 selected points of approximately 1 square meter at 6–7 m from the entrance of the shed (one in the middle of the barn, one under the feeder and one under the drinker line). In each evaluation point, the assessor should give a score (1-10), describing the wetness and the friability of the bedding material based on the provided checklist. The mean between the three values identifies the litter's final scores.



When the wetness and/or the friability score is below 5, the requirement is not met and the result is "Inadequate"; when both the scores are between 6 and 8, the result is "Adequate"; when both the scores are 9 or 10, the result is "Optimal".

Score	Friability Description	Wetness Description
1	Completely caked	Wet litter, water is appearing by pressure on the litter of the total area
2	80-90 % area caked	Wet litter, water is appearing by pressure on the litter beneath drinkers
3	70-80 % area caked	Wet litter, no water is appearing by pressure on the litter
4	60-70 % area caked	Wet litter dark coloured. Litter can be pressed into ball-shape
5	50-60 % area caked	Wet litter, dark coloured. Larger ridges*** beneath drinkers
6	40 % area caked	Almost dry litter, small ridges** beneath drinkers. Litter between drinkers and feeders is still friable
7	30 % area caked	Almost dry litter, dark coloured beneath drinkers and in other areas light coloured, ridge formation just started* beneath drinkers
8	10 % area caked	Almost dry litter, light coloured, no ridges beneath drinkers
9	Friable litter, small caked Areas	Dry litter, light coloured
10	Friable litter, no caked Areas	Very dry litter (only observed at start)

Table2: Description of the visual scores for friability and wetness

*just started ridges: slightly visible

**small ridges: well visible beneath drinking line

***larger ridges: well visible, overmatching the drinker rim

- Welfare Quality® (2009): Look at the number of locations in the house (minimum 4, maximum 6) to check whether there is a big variation in litter thickness across the house. If so, check if you detect areas uniform or different in appearance; if areas are different, then ensure that you sample using the method described from these areas of differing litter to reflect overall variability in the house. Completely dry and flaky (*i.e.*, moves easily with the foot)
 - a) 1 Dry but not easy to move with foot



- b) 2 Leaves imprint of foot and will form a ball if compacted, but ball does not stay together well.
- c) 3 Sticks to boots and sticks readily in a ball if compacted.
- d) 4 Sticks to boots once the cap or compacted crust is broken.
 - Evaluation of the method: The method above should assess if the litter quality is good or not using the different scorings. It is very important because poor litter quality may indicate difficulties in managing reflecting skin and foot lesions. However, the inspector should find some difficulties to evaluate objectively the litter quality using just the different scorings and therefore the reliability between observers is moderate.

RBI	Validity	Feasibility	Reliability
Litter quality	XXX	XXX	XX

3.12.3. MBI: There is no specific MBI for this requirement.

3.13. Legal requirement: "Materials to be used for the construction of accommodation, and in particular for the construction of pens and equipment with which the animals may come into contact, must not be harmful to the animals and must be capable of being thoroughly cleaned and disinfected. Accommodation and fittings for securing animals shall be constructed and maintained so that there are no sharp edges or protrusions likely to cause injury to the animals" (Directive 98/58 EC, Annex, Paragraphs 8-9).

3.13.1. ABI:

• <u>Injuries related to the environment</u>. We do not have a standard method of assessment for this indicator to our knowledge.

ABI	Validity	Feasibility	Reliability
Injuries related to the	Cons of knowledge		
environment		Gaps of knowledge	

3.13.2. RBI:

• <u>Inspection of the shed (*i.e.*, presence of sharp edges or protrusions)</u>. We do not have a standard method of assessment for this indicator to our knowledge.

RBI	Validity	Feasibility	Reliability
Inspection of the shed	Gaps of knowledge		

3.13.3. MBI: There is no specific MBI for this requirement.

3.14. Legal requirement: "The freedom of movement of an animal, having regard to its species and in accordance with established experience and scientific knowledge, must not be restricted in such a way as to cause it unnecessary suffering or injury" (Directive 98/58 EC, Annex, Paragraph 7).

Member States shall ensure that the maximum stocking density in a holding or a house of a holding does not at any time exceed 33 kg/m². When a derogation is granted under paragraph 3, the maximum



stocking density in a holding or a house of a holding does not at any time exceed 39 kg/m². When the criteria set out in Annex V are fulfilled, Member States may allow that the maximum stocking density referred to in paragraph 4 be increased by a maximum of 3 kg/m² (Directive 2007/43 EC, Article 3).

3.14.1. ABI: There is no specific ABI for this requirement. **3.14.2. RBI:**

- <u>Stocking density</u> (kg/m2). <u>Stocking density</u> (kg BW/m2) (Italian amendment Decree)
 - Description of the method:
 - 1. Calculate usable area ("Useable area' means a littered area accessible to the chickens at any time"): calculate the surface of the inside of the barn.
 - 2. Weigh 25 birds selected randomly from the flock and divide the result by 25 in order to have the medium live weight of the birds.
 - 3. Get the exact number of the birds present (birds housed minus deaths and culls) and multiply by the medium weight in order to have the total live weight of the animals present in the barn.
 - 4. Divide the total live weight of the animals by the total usable area.
 - *Evaluation of the method:* Referring to the plans of the farm is not sufficient, visit inside the barn is needed to check the dimensions and withdraw the surface that cannot be considered as usable area. It is recommended to use an electronic tool for length measurement.

RBI	Validity	Feasibility	Reliability
Stocking density	XX	XXX	XX

3.14.1. MBI:

- <u>Check for presence of documentation supporting stocking density used.</u>
 - Description of the method: Check the documents.
 - *Evaluation of the method*: The inspection of records can be considered as an indicator with a full validity, feasibility and reliability to assess the stocking density used and if animals have the rightful freedom of movement.

MBI	Validity	Feasibility	Reliability
Presence of documentation on stocking density	ххх	ххх	xxx

3.15. Legal requirement: *"Feeding equipment must be designed, constructed and placed so that contamination of food and the harmful effects of competition between the animals are minimised"* (Directive 98/58 EC, Annex, Paragraphs 14, 15 and 17).

3.15.1. ABI:

• <u>Back scratches due to crowding around the feeders</u>. We do not have a standard method of assessment for this indicator in our knowledge).



• Flock uniformity. (see description of the method above 3.1.7.1)

ABI	Validity	Feasibility	Reliability
Back scratches	Gaps of knowledge		
Flock uniformity	XX	XXX	XXX

3.15.2. RBI:

- Feeder space/bird.
 - Description of the method (Welfare quality, 2009): Calculate the total number or length of available feeders according to feeder type. Firstly, the assessor should note down the type of feeder (pan, track or chain) to be able to interpret the feeder space per bird- round feeder or a straight feeder.
 - *Evaluation of the method:* Referring to the plans of the farm it is not sufficient, calculation of the length of the number of the available feeders is needed. It is recommended to use an electronic tool for length measurement.
- <u>Inspection of feeders</u> (correct positioning and cleanliness of feeder and feed). We do not have a standard method of assessment for this indicator in our knowledge).

RBI	Validity	Feasibility	Reliability
Feeder space/bird	XX	XX	XX
Inspection of feeders	Gaps of knowledge		

3.15.3. MBI: There is no specific MBI for this requirement.

3.16. Legal requirement: "Watering equipment must be designed, constructed and placed so that contamination of water and the harmful effects of competition between the animals are minimised" (Directive 98/58 EC, Annex, Paragraphs 16 and 17).

3.16.1. ABI:

• <u>Competition between animals trying to reach the drinker</u>. We do not have a standard method of assessment for this indicator to our knowledge.

ABI	Validity	Feasibility	Reliability
Competition between	Gaps of knowledge		
animals			

3.16.2. RBI:

- <u>Drinker space per bird</u>: calculate the total number drinkers in the house according to drinker type and to the number of birds in the house (Welfare Quality[®], 2009).
 - *Description of the method:* Calculate the total number drinkers in the house according to drinker type.

Nipples: Calculate nipples per meter and then multiply by total track length.

Cups: Calculate number of cups per meters and then multiply by total track length.

Bell drinkers: count the number of bell drinkers.



Troughs: calculate the centimetres of trough drinkers

Get the exact number of birds delivered

• *Evaluation of the method:* Referring to the plans of the farm it is not sufficient, calculation of the length of the number of the available drinkers is needed. It is recommended to use an electronic tool for length measurement.

RBI	Validity	Feasibility	Reliability
Drinker space per bird	XX	XXX	XXX

3.16.3. MBI:

• <u>Presence of SOPs regarding drinkers' management</u>. We do not have a standard method of assessment for this indicator to our knowledge.

MBI	Validity	Feasibility	Reliability
Presence of SOPs			
regarding drinkers'	Gaps of knowledge		
management			

3.17. Legal requirement: *"Where necessary sick or injured animals shall be isolated in suitable accommodation with, where appropriate, dry comfortable bedding"* (Directive 98/58 EC, Annex, Paragraph 4).

3.17.1. ABI:

• Presence of sick or severely injured animals in the flock, neither managed nor isolated

(See the Transect walk method described above to assess this requirement).

ABI	Validity	Feasibility	Reliability
Presence of sick or severely injured animals in the flock	ххх	ххх	ххх

3.17.2. RBI:

• <u>Presence of a suitable accommodation</u>. We do not have a standard method of assessment for this indicator to our knowledge.

Recovery pen is not used in broiler production as severely injured animals are always culled

• <u>Presence of sick or injured animals in the isolated area</u>. We do not have a standard method of assessment for this indicator to our knowledge.

RBI	Validity	Feasibility	Reliability
Presence of a suitable accommodation.		Gaps of knowledge	
Presence of sick or injured animals in the isolated area.	Gaps of knowledge		



3.17.3. MBI:

• <u>SOPs for the set up and management of the accommodation</u>. We do not have a standard method of assessment for this indicator to our knowledge

.MBI	Validity	Feasibility	Reliability
Records		Gaps of knowledge	

3.18. Legal requirement: "[...] temperature, relative air humidity [...] must be kept within limits which are not harmful to the animals" (Directive 98/58 EC, Annex, Paragraph 10).

Ventilation shall be sufficient to avoid overheating and, where necessary, in combination with heating systems to remove excessive moisture" (Directive 2007/43 EC, Annex I, Paragraph 4).

1.18.3. ABI:

Panting (high effective temperature).

Definition: "Breathing rapidly and in short gasps" (Welfare Quality[®], 2009).

- Description of the method (Welfare Quality[®], 2009): To assess if the temperature environment is not comfortable for the birds, examine groups of broilers at up to 5 well-distributed locations. If birds are panting, count out 100 birds and estimate how many of them are panting.
- *Evaluation of the method:* The method described above is fundamental to inspect visible signs of panting; the birds often can sit upright, open their beck and often make visible respiratory movements.
- Huddling (low effective temperature).

Definition: "Birds grouping together into tight groups, sitting closely alongside each other, often in 'clumps' with areas of empty space in between" (Welfare Quality[®], 2009).

- Description of the method (Welfare Quality[®], 2009): To evaluate if thermal environment is not comfortable for broilers, examine groups of birds at up to 5 welldistributed locations. If birds are clearly huddled together, estimate what proportion of the flock is affected by huddling.
- *Evaluation of the method:* Huddling is less common than panting, as birds are usually kept adequately warm due to their stocking density and their production of metabolic heat. It is however possible for birds to get cold in cold weather or if the house temperature falls due to high ventilations rates. So that the method described above it is very important to verify if the birds are huddled, as a sign of discomfort.
- <u>Shivering (low effective temperature, extreme case)</u>. We do not have a standard method of assessment for this indicator in our knowledge. The inspection is especially visual and sensitive.

Definition: "Shaking slightly and uncontrollably" (Strawford et al., 2011).

• <u>Changes in the spatial distribution of birds (OIE, 2015)</u>. We do not have a standard method of assessment for this indicator to our knowledge.



- <u>Ammonia burns on the breast</u>. We do not have a standard method of assessment for this indicator to our knowledge.
- <u>Footpad dermatitis (Weaver and Meijerhof, 1991)</u> (See description below point 3.1.42.1).

ABI	Validity	Feasibility	Reliability
Painting	XX	XXX	XXX
Hudding	XX	ххх	ХХХ
Shivering		Gaps of knowledge	
Changes in the spatial distribution of birds		Gaps of knowledge	
Ammonia burns on the breast		Gaps of knowledge	
Foodpad dermatitis	XX	XXX	XXX

2.18.3. RBI:

- <u>Temperature measurements in the barn or recordings in the control panel.</u>
- Humidity measurements in the barn or recordings in the control panel.
- <u>Temperature Humidity Index (THI)</u>. We do not have a standard method for the assessment of these indicator in our knowledge.

RBI	Validity	Feasibility	Reliability
Temperature and			
humidity		Gaps of knowledge	
measurements, THI			

3.18.3. MBI:

• <u>SOPs in use for environmental control</u>. We do not have a standard method of assessment for this indicator to our knowledge.

MBI	Validity	Feasibility	Reliability
SOPs	Gaps of knowledge		

3.19. Legal requirement: "Requirements for the use of higher stocking densities: The owner or keeper shall ensure that each house of a holding is equipped with ventilation and, if necessary, heating and cooling systems designed, constructed and operated in such a way that: [...]; (b) the inside temperature, when the outside temperature measured in the shade exceeds 30° C, does not exceed this outside temperature by more than 3° C; (c) the average relative humidity measured inside the house during 48 hours does not exceed 70 % when the outside temperature is below 10° C" (Directive 2007/43 EC, Annex II, Paragraph 3).

3.19.1. ABI: There is no specific ABI for this requirement.



3.19.2. RBI:

- <u>Design and functioning of ventilation, heating and cooling systems</u>. We do not have a standard method of assessment for this indicator to our knowledge.
- <u>Temperature and humidity recordings or temperature and humidity measurements in different spots.</u>
 - Description of the method: Check the temperature and humidity measurements
 - *Evaluation of the method:* Checking the temperature and humidity measurements in the barn is the higher proof to assess if the level of temperature and humidity is correct for animals.

RBI	Validity	Feasibility	Reliability
Design and functioning			
of ventilation, heating	Gaps of knowledge		
and cooling systems.			
Temperature and			
humidity	XXX	XXX	XXX
measurements, THI			

3.19.3. MBI:

• <u>Statement of the environment control system supplier, that the system satisfies the</u> <u>requirements</u>. We do not have a standard method of assessment for this indicator to our knowledge.

MBI	Validity	Feasibility	Reliability
Statement of the			
environment control		Gaps of knowledge	
system supplier			

3.20. Legal requirement: "[...] gas concentrations must be kept within limits which are not harmful to the animals" (Directive 98/58 EC, Annex, Paragraph 10).

3.20.1. ABI:

- Eve damage in the form of conjunctivitis, keratoconjunctivitis (Ritz *et al.*, 2004) or blindness (Kristensen and Wathes, 2000). We do not have a method to assess this indicator in our knowledge.
- <u>Dyspnoea (Carlile, 1984)</u>. We do not have a standard method of assessment for this indicator to our knowledge.
- <u>Flock register consultation to check the frequency of respiratory pathologies</u> (Ritz *et al.,* 2004).
 - *Description of the method:* Check the records to verify the frequency of respiratory pathologies.
 - *Evaluation of the method:* We cannot have the certainty that respiratory pathologies are caused by high level of gas concentration._The link between these troubles and



the ambiance may be difficult to prove. In addition, determine the amount of respiratory troubles which indicates a problem is complicated; therefore it is an indicator with a low validity while it has a high level of feasibility and reliability.

ABI	Validity	Feasibility	Reliability
Eye damage	Gaps pf knowledge		
Dyspnea	Gaps of knowledge		
Flock register			
consultation for	Х	XXX	XXX
respiratory pathologies			

3.20.2. RBI:

- <u>Sensorial evaluation of ammonia concentration (eyes or nose irritation, after at least 5</u> <u>minutes inside).</u>
 - Description of the method (DGAL/SDSPA/2017-998): Stay at least 5 minutes in the barn and proceed of a sensorial evaluation of ammonia concentration (*i.e.*, evaluate your eyes/nose irritation). If you have a stinging sensation in the nose or eyes, the ammonia concentration is too high.
 - *Evaluation of the method:* This indicator is not valid or reliable because of the considerable sensibility difference existing between people, and difference in time for a same person. However, it requires limited amount of time and no materials so the feasibility of this indicator is high.
- Instrumental measuring of gases at broiler head height. (CO₂ and NH₃ concentrations)
 - Description of the method
 - Method from the French Competent Authority methodology for broilers (DGAL/SDSPA/2017-998) Take 5 representative measures of CO₂ and NH₃ with specific devices.CO₂ measures need to be taken at animals' height, away from heating materials, prefer to take the measures in feeding and drinking areas. When it is possible, try to take into account the air system (linked to the ventilation system).NH₃ measures need to be taken at animals' height (wait approximately one minute for each measure), away from the building entrance or wet areas (nipple drinkers, water leaks), prefer to take the measures in feeding areas. When it is possible, try to take into account the air system (linked to the ventilation system). Calculate the average of the 5 measures for each gas.
 - *Evaluation of the method:* It is important to take care of waiting for the stabilisation of each measure with the device. According to the Competent Authorities, this indicator is highly valid and reliable (respectively grades of 4/5 and 4.7/5). The feasibility is slightly lower with 3.5/5.

RBI	Validity	Feasibility	Reliability
Eye damage	Х	XX	Х
Dyspnoea	Х	XXX	XXX
Flock register			
consultation for	Х	XXX	XXX
respiratory pathologies			



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Sensorial evaluation of ammonia concentration	Х	ХХХ	х
Instrumental measuring of gases	ххх	хх	ххх

3.20.3. MBI: There is no specific MBI for this requirement.

3.21. Legal requirement: "Requirements for the use of higher stocking densities: The owner or keeper shall ensure that each house of a holding is equipped with ventilation and, if necessary, heating and cooling systems designed, constructed and operated in such a way that: (a) the concentration of ammonia (NH₃) does not exceed 20 ppm and the concentration of carbon dioxide (CO₂) does not exceed 3000 ppm measured at the level of the chickens' heads" (Directive 2007/43 EC, Annex II, Paragraph 3).

3.21.1. ABI:

- <u>Ocular abnormalities (signs of eye irritation)</u>. We do not have a standard method of assessment for this indicator in our knowledge.
- <u>Keratitis (Miles *et al.,* 2006)</u>. We do not have a standard method of assessment for this indicator in our knowledge).

ABI	Validity	Feasibility	Reliability
Ocular abnormalities		Gaps of knowledge	
Keratitis		Gaps of knowledge	

3.21.2. RBI:

• <u>Gas concentrations measured at broiler head height with a measure tool</u>. We do not have a standard method of assessment for this indicator to our knowledge.

RBI	Validity	Feasibility	Reliability
Gas concentrations	Consister Standard		
measured		Gaps of knowledge	

3.21.3. MBI:

 <u>Description in SOPs of design, construction and operation of the ventilation and where</u> necessary heating and cooling systems, for ensuring to meet the environmental parameters requested. We do not have a standard method of assessment for this indicator to our knowledge.

MBI	Validity	Feasibility	Reliability
SOPs		Gaps of knowledge	

3.22. Legal requirement: "[...] dust levels must be kept within limits which are not harmful to the animals" (Directive 98/58 EC, Annex, Paragraph 10).

3.22.1. ABI: There is no specific ABI for this requirement.



3.22.2. RBI:

- Visual inspection and sensorial evaluation (stinging, irritation, visibility...) of dust level.
- <u>Dust sheet test (Welfare Quality®, 2009).</u>
 - Description of the method: To assess the dust level use a sheet of black A4 size paper. Put the paper onto a clip board and place it above bird height on a horizontal surface. Position the paper when first entering the house and then remove the sheet at the end of the assessment. Write with a finger on the paper to get an impression of the amount of dust on the paper. Classify the dust level found as follow: a none; b) little; c) thin covering; d) lost of dust; e) paper colour not visible.
 - Evaluation of the method: The dust sheet test is an indicator with an intermediate level of validity, reliability and feasibility to assess the dust level.

RBI	Validity	Feasibility	Reliability
Visual inspection and			
sensorial evaluation of	XX	XX	XX
dust level			
Dust sheet test	XX	XXX	XX

3.22.3. MBI:

- <u>Flock register consultation to check the frequency of respiratory pathologies</u> (Al Homidan *et al.,* 2003)
 - <u>Description of the method</u>: Check the register to verify the frequency of respiratory pathologies
 - *Evaluation of the method:* The link between these troubles and the ambiance may be difficult to prove. In addition, determine the amount of respiratory troubles which indicates a problem is complicated. Furthermore, the flock register must be complete. Because of these difficulties, the validity of this indicator is low whereas feasibility and reliability of the register consultation are high.

MBI	Validity	Feasibility	Reliability
Flock register consultation	х	ххх	ххх

3.23. Legal requirement: "All buildings shall have lighting with an intensity of at least 20 lux during the lighting periods, measured at bird eye level and illuminating at least 80% of the usable area. A temporary reduction in the lighting level may be allowed when necessary following veterinary advice" (Directive 2007/43 EU, Annex I, Paragraph 6).

3.23.1. ABI:

At slaughter:

• <u>Abnormal size of the eyes (Blatchford *et al.*, 2009; Deep *et al.*, 2010)</u>. We do not have a standard method of assessment for this indicator to our knowledge.



ABI	Validity	Feasibility	Reliability
Abnormal size of the		Caps of knowledge	
eyes		Caps of knowledge	

3.23.2. RBI:

- <u>Light intensity</u> (inspectors read a document out at arms' length, at bird eye level in several areas). We do not have a standard method of assessment for this indicator to our knowledge.
- <u>Instrumental evaluation by use of a lux meter in case of doubt</u>. We do not have a standard method of assessment for this indicator to our knowledge.

RBI	Validity	Feasibility	Reliability
Light intensity	Gaps of knowledge		
Instrumental evaluation	Gaps of knowledge		

3.23.3. MBI: There is no specific MBI for this requirement.

3.24. Legal requirement: "Animals kept in buildings must not be kept either in permanent darkness or without an appropriate period of rest from artificial lighting. Within seven days from the time when the chickens are placed in the building and until three days before the foreseen time of slaughter, the lighting must follow a 24-hour rhythm and include periods of darkness lasting at least six hours in total, with at least one uninterrupted period of darkness of at least four hours, excluding dimming periods" (Directive 98/58 EU, Annex, Paragraph 11 - Directive 2007/43 EU, Annex I, Paragraph 7).

3.24.1. ABI: There is no specific ABI for this requirement.

3.24.2. RBI: There is no specific RBI for this requirement.

3.24.3. MBI:

- <u>Inspection of records/central unit when light program is automated</u>. We do not have a standard method of assessment for this indicator to our knowledge.
- <u>Farmer's feedback</u>. We do not have a standard method of assessment for this indicator to our knowledge.

MBI	Validity	Feasibility	Reliability
Inspection of records	Gaps of knowledge		
Farmer's feedback	Gaps of knowledge		

3.25. Legal requirement: *"The sound level shall be minimised. Ventilation fans, feeding machinery or other equipment shall be constructed, placed, operated and maintained in such a way that they cause the least possible amount of noise"* (Directive 2007/43 EU, Annex I, Paragraph 5).

3.25.1. ABI:

- <u>Panic reactions after a loud sudden noise (*e.g.*, piling up in the corners)</u>. We do not have a standard method of assessment for this indicator in our knowledge.
- <u>Smothering</u>. We do not have a standard method of assessment for this indicator in our knowledge.



ABI	Validity	Feasibility	Reliability
Panic reactions after a loud sudden noise		Gaps of knowledge	
Smothering		Gaps of knowledge	

3.25.2. RBI:

• <u>Instrumental evaluation of sound level</u>. We do not have a standard method of assessment for this indicator to our knowledge.

Indicator	Validity	Feasibility	Reliability
Instrumental evaluation of sound level		Gaps of knowledge	

3.25.3. MBI: There is no specific MBI for this requirement.

3.26. Legal requirement: "All surgical interventions carried out for reasons other than therapeutic or diagnostic purposes which result in damage to or the loss of a sensitive part of the body or the alteration of bone structure shall be prohibited" (Directive 2007/43 EU, Annex I, Paragraph 12).

3.26.1. ABI:

• <u>Animals with prohibited mutilations</u>. We do not have a standard method of assessment for this indicator to our knowledge.

ABI	Validity	Feasibility	Reliability
Animals with prohibited mutilations		Gaps of knowledge	

3.26.2. RBI: There is no specific RBI for this requirement.

3.26.3. MBI: There is no specific MBI for this requirement.

3.27. Legal requirement: "Beak trimming may be authorised by Member States when other measures to prevent feather pecking and cannibalism are exhausted. In addition, Member States may authorise the castration of chickens" (Directive 2007/43 EU, Annex I, Paragraph 12).

3.27.1. ABI: There is no specific ABI for this requirement. **3.27.2. RBI:**

- <u>Records of authorization.</u>
 - Description of the method: Check the records of authorization
 - Evaluation of the method:

This is a specific indicator about the authorization of the Member State; checking the records of authorization have a full score of validity, feasibility and reliability.

RBI	Validity	Feasibility	Reliability
Records of	VVV	vvv	VVV
authorisation.	~~~	^^^	^^^

3.27.3. MBI: There is no specific MBI for this requirement.



3.28. Legal requirement: "In such cases, if [beak trimming] shall be carried out only after consultation and on the advice of a veterinarian and shall be carried out by qualified staff on chickens that are less than 10 days old. [...] The castration shall only be carried out under veterinary supervision by personnel who have received a specific training" (Directive 2007/43 EU, Annex I, Paragraph 12).

3.28.1. ABI:

- Beak trimming quality (length of the portion of beak trimmed, neuromas).
 - Description of the method (Welfare Quality[®], 2009):

Examine the beak trimming on both sides according to the following classification presented:

- a) 0: No trimming and no abnormalities
- b) 1: Moderate to light trimming with moderate to no abnormalities.
- c) 2: Severe trimming with clear abnormalities.

Fig3. : Beak trimming classification (Welfare Quality®, 2009):



- *Evaluation of the method:* The method described above has a relevant validity to assess the beak trimming quality.
- Mortality (related to castration since when castration is performed there may be an increase in mortality in relation to the quality of the intervention). We do not have a standard method of assessment for this indicator to our knowledge.

ABI	Validity	Feasibility	Reliability
Beak trimming quality	XX	XXX	XXX
Mortality	Gaps of knowledge		

3.28.2. RBI:

- <u>Inspection of veterinarian attestation about castration</u>. We do not have a standard method of assessment for this indicator to our knowledge.
- <u>Inspection of a documentary proof of a castration training course</u>. We do not have a standard method of assessment for this indicator to our knowledge.



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RBI	Validity	Feasibility	Reliability
Inspection of records			
(veterinarian attestation			
about castration or		Gaps of knowledge	
castration training			
course)			

3.28.3. MBI:

• <u>Keeper's feedback</u>. We do not have a standard method of assessment for this indicator to our knowledge.

MBI	Validity	Feasibility	Reliability
Keeper's feedback		Gaps of knowledge	

3.29. Legal requirement: *"Adequate lighting (fixed or portable) shall be available to enable the animals to be thoroughly inspected at any time"* (Directive 98/58 EC, Annex, Paragraph 3).

3.29.1. ABI: There is no specific ABI for this requirement. **3.29.2. RBI:**

- <u>Possibility to see the animals.</u> We do not have a standard method of assessment for this indicator to our knowledge.
- <u>Presence of specific devices</u>. <u>We do not have a standard method of assessment for this</u> <u>indicator to our knowledge</u>.

RBI	Validity	Feasibility	Reliability
Possibility to see the	Gaps of knowledge		
animals			
Presence of specific	Gaps of knowledge		
devices			

3.29.3. MBI: There is no specific MBI for this requirement.

3.30. Legal requirement: *"All automated or mechanical equipment essential for the health and wellbeing of the animals must be inspected at least once daily"* (Directive 98/58 EC, Annex, Paragraph 13).

3.30.1. ABI: There is no specific ABI for this requirement.

3.30.2. RBI:

• <u>Visual control of proper functioning of feeders, drinkers, ventilation and alarm system</u>. We do not have a standard method of assessment for this indicator to our knowledge.

RBI	Validity	Feasibility	Reliability
Visual control		Gaps of knowledge	

3.30.3. MBI:

• Documentary inspection of records



• Description of the method:

Some farmers write a short comment after every inspection of equipment as they are required by their own guides to good management practice. Check the records of the inspections.

• Evaluation of the method:

The inspection of records is an indicator with a full score of validity, feasibility and reliability to comply the legal requirement.

• <u>Keeper's feedback</u>. We do not have a standard method of assessment for this indicator to our knowledge.

MBI	Validity	Feasibility	Reliability
Documentary inspection of records	ххх	ххх	ххх
Keeper's feedback	Gaps of knowledge		

3.31. Legal requirement: *"Where defects are discovered, these must be rectified immediately, or if this is impossible, appropriate steps must be taken to safeguard the health and well-being of the animals"* (Directive 98/58 EC, Annex, Paragraph 13).

3.31.1. ABI: There is no specific ABI for this requirement.**3.31.2. RBI:** There is no specific RBI for this requirement.**3.31.3. MBI:**

- <u>Evidence of maintenance intervention</u>. We do not have a standard method of assessment for this indicator to our knowledge.
- <u>Presence of SOPs regarding management of emergency situations</u>. We do not have a standard method of assessment for this indicator to our knowledge.

MBI	Validity	Feasibility	Reliability
Evidence of			
maintenance	Gaps pf knowledge		
intervention			
SOPs	Gaps of knowledge		

3.32. Legal requirement: "In the event of failure of the [ventilation] system an alarm system must be provided to give warning of breakdown. The alarm system must be tested regularly" (Directive 98/58 EC, Annex, Paragraph 13).

3.32.1. ABI: There is no specific ABI for this requirement. **3.32.2. RBI:**

- <u>Visual inspection of proper functioning of the alarm system</u>. We do not have a standard method of assessment for this indicator to our knowledge.
- Documentary inspection of records of regular testing of the alarm system.



- Description of the method: Check the records.
- *Evaluation of the method:* The inspection of records to assess the functioning of alarm system does not have a real validity; the level of feasibility is high, and the level of reliability is intermediate.

RBI	Validity	Feasibility	Reliability
Visual inspection			
functioning of alarm	Gaps of knowledge		
system			
Documentary inspection	Х	XXX	XX

3.32.3. MBI: There is no specific MBI for this requirement.

3.33. Legal requirement: "Where the health and well-being of the animals is dependent on an artificial ventilation system, provision must be made for an appropriate backup system to guarantee sufficient air renewal to preserve the health and well-being of the animals" (Directive 98/58 EC, Annex, Paragraph 13).

3.33.1. ABI: There is no specific ABI for this requirement.

3.33.2. RBI:

• <u>Inspection of presence and adequacy of backup system</u>. We do not have a standard method of assessment for this indicator to our knowledge.

RBI	Validity	Feasibility	Reliability
Inspection		Gaps of knowledge	

3.33.3. MBI:

• <u>SOPs</u>. We do not have a standard method of assessment for this indicator to our knowledge.

MBI	Validity	Feasibility	Reliability
SOPs		Gaps of knowledge	

3.34. Legal requirement: *"The owner or keeper of the animals shall maintain a record of any medical treatment given and of the number of mortalities found to each inspection. The register of the medical treatments must be retained for a period of at least five years"* (Directive 98/58 EC, Annex, Paragraph 5).

3.34.1. ABI: There is no specific ABI for this requirement. **3.34.2. RBI:**

- Documentary inspection
 - Description of the method: Check the records
 - *Evaluation of the method:* The inspection of the documents is an indicator of the medical treatment given and of the number of mortalities, but we can not have the assurance that the owner of the keeper has registered all the data. The RBI has an intermediate level of validity, feasibility and reliability.

RBI	Validity	Feasibility	Reliability
Inspection	XX	XX	XX

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3.34.3. MBI: There is no specific ABI for this requirement.

3.35. Legal requirement: "The owner or keeper shall maintain a record for each house of a holding of: (a) the number of chickens introduced; (b) the useable area; (c) the hybrid or breed of the chickens, if known; (d) by each control, the number of birds found dead with an indication of the causes, if known as well as the number of birds culled with cause; (e) the number of chickens remaining in the flock following the removal of chickens for sale or for slaughter" (Directive 2007/43 EC, Annex I, Paragraph 11).

3.35.1. ABI: There is no specific ABI for this requirement. **3.35.2. RBI:**

- <u>Documentary inspection.</u>
 - Description of the method: Check the records.
 - *Evaluation of the method*: The inspection of records is an indicator with a full score of validity, feasibility and reliability to comply the legal requirement.

RBI	Validity	Feasibility	Reliability
Documentary inspection	XXX	XXX	XXX

3.35.3. MBI: There is no specific MBI for this requirement.

3.36. Legal requirement: "Those records [Directive 2007/43 EC, Annex I, Paragraph 11] shall be retained for a period of at least three years and shall be made available to the competent authority when carrying out an inspection or when otherwise requested" (Directive 2007/43 EC, Annex I, Paragraph 11).

3.36.1. ABI: There is no specific ABI for this requirement. **3.36.2. RBI:**

- Documentary inspection.
 - Description of the method: Check the records.
 - *Evaluation of the method:* The inspection of records is an indicator with a full score of validity, feasibility and reliability to assess the legal requirement.

RBI	Validity	Feasibility	Reliability
Documentary inspection	XXX	XXX	XXX

3.36.3. MBI: There is no specific MBI for this requirement.

3.37. Legal requirement: *"Member States shall encourage the development of guides to good management practice which shall include guidance on compliance with this Directive. The dissemination and use of such guides shall be encouraged"* (Directive 2007/43 EC, Article 8)

3.37.1. ABI: There is no specific ABI for this requirement.

3.37.2. RBI:



- Documentary inspection.
 - *Description of the method:* Check the records.
 - *Evaluation of the method:* The inspection of records is an indicator with a full score of validity, feasibility and reliability to assess the legal requirement.

Indicator	Validity	Feasibility	Reliability
Documentary inspection	XXX	XXX	XXX

3.37.3. MBI: There is no specific ABI for this requirement.

3.38. Legal requirement: "No other substance, with the exception of those given for therapeutic, or prophylactic purposes or for the purposes of zootechnical treatment as defined in Article 1(2)(c) of Directive 96/22/EEC (1), must be administered to an animal unless it has been demonstrated by scientific studies of animal welfare or established experience that the effect of that substance is not detrimental to the health or welfare of the animal" (Directive 98/58 EC, Annex, Paragraph 18).

3.38.1. ABI: There is no specific ABI for this requirement.

3.38.2. RBI:

- Documentary inspection:
 - *Description of the method*: Check veterinary prescription in the flock register and for other products (with no veterinary prescription) check packaging and package leaflet.
 - *Evaluation of the method*: The documentary inspection is a proof about a correct use of substances, even if we cannot have the absolute certainty. The indicator has an intermediate score of validity and reliability and a full score of feasibility.

RBI	Validity	Feasibility	Reliability
Documentary inspection	XX	XXX	XX

3.38.3. MBI:

• <u>Reports of self and official controls (sampling birds, water, feed, and environment)</u>. We do not have a standard method of assessment for this indicator to our knowledge.

MBI	Validity	Feasibility	Reliability
Reports	XX	XXX	XX

3.39. Legal requirement: "Requirements for the use of higher stocking densities (>33 kg/m²): The owner or keeper shall maintain and have available in the house compiled documentation describing in detail the production systems. In particular it shall include information on technical details of the house and its equipment such as: (a) a plan of the house including the dimensions of the surfaces occupied by the chickens; (b) ventilation and, if relevant, cooling and heating system, including their location, a ventilation plan, detailing target air quality parameters, such as airflow, air speed and temperature; (c) feeding and watering systems and their location; (d) alarm systems and backup systems in the event of



a failure of any automated or mechanical equipment essential for the health and well-being of the animals; (e) floor type and litter normally used" (Directive 2007/43 EC, Annex II, Paragraph 2).

3.39.1. ABI: There is no specific ABI for this requirement.**3.39.2.** RBI: There is no specific RBI for this requirement.**3.39.3.** MBI:

- Documentary inspection of the written procedure.
 - Description of the method: Check the records.
 - *Evaluation of the method:* The inspection of records is an indicator with a full score of validity, feasibility and reliability to assess the legal requirement.

MBI	Validity	Feasibility	Reliability
Record inspection	XXX	XXX	XXX

3.40. Legal requirement: "Criteria for the use of increased stocking density (up to 42 kg/m^2): Criteria: (a) the monitoring of the holding carried out by the competent authority within the last two years did not reveal any deficiencies with respect to the requirements of this Directive, and (b) the monitoring by the owner or keeper of the holding is carried out using the guides to good management practice referred to in Article 8, and (c) in at least seven consecutive, subsequently checked flocks from a house the cumulative daily mortality rate was below 1 % + 0,06 % multiplied by the slaughter age of the flock in days" (Directive 2007/43 EC, Annex V, Paragraph 1).

3.40.1. ABI: There is no specific ABI for this requirement.

3.40.2. RBI: Record inspection (results of CA monitoring).

3.40.3. MBI: Documentary inspection

- *Description of the method:* Check the records.
- *Evaluation of the method:* The inspection of records is an indicator with a full score of validity, feasibility and reliability to assess the legal requirement.

MBI	Validity	Feasibility	Reliability
Documentary inspection	XXX	XXX	XXX

3.41. Legal requirement: "In the case of stocking densities higher than 33 kg/m2, the documentation accompanying the flock shall include the daily mortality rate and the cumulative daily mortality rate calculated by the owner or keeper and the hybrid or breed of the chickens. [...] These data as well as the number of broilers dead on arrival shall be recorded, indicating the holding and the house of the holding" (Directive 2007/43 EC, Annex III, Paragraph 1).

3.41.1. ABI:

At slaughter:

- <u>Daily mortality rate</u>. We do not have a standard method of assessment for this indicator to our knowledge.
- <u>Cumulative daily mortality rate</u>. We do not have a standard method of assessment for this indicator to our knowledge.



• <u>Dead on arrival</u>. We do not have a standard method of assessment for this indicator to our knowledge.

ABI	Validity	Feasibility	Reliability
Daily mortality rate		Gaps of knowledge	
Cumulative mortality		Cape of knowledge	
rate	Gaps of knowledge		
Dead on arrival		Gaps of knowledge	

3.41.2. RBI:

- <u>Documentary inspection.</u>
 - *Description of the method:* Check the records.
 - *Evaluation of the method:* The inspection of records is an indicator with a full score of validity, feasibility and reliability to assess the legal requirement.

RBI	Validity	Feasibility	Reliability
Record inspection	XXX	XXX	XXX

3.41.3. MBI: There is no specific ABI for this requirement.

3.42. Legal requirement: "In the context of the controls performed under the Regulation (EC) No 854/2004, the official veterinarian shall evaluate the results of the post-mortem inspection to identify other possible indications of poor welfare conditions such as abnormal levels of contact dermatitis, parasitism and systemic illness in the holding or the unit of the house of the holding of origin" (Directive 2007/43 EC, Annex III, Paragraph 2).

3.42.1. ABI:

At slaughter:

- Footpad dermatitis (FPD).
 - Description of the method:

FPD scoring of 100 feet

To evaluate the severity of foot-pad dermatitis lesions, the scoring system is based on a 3- point scale (Berg, 1998). The foot-pad lesions are assigned to three different classes:

- 0 = No remark; no lesions, only mild hyperkeratosis, no discoloration or scars;
- 1= Mild lesions; superficial lesions, erosions, papillae and discoloration of the footpad, affecting less than 50% of the total area;
- 2 = Severe lesions; deep lesions, ulcers, and scabs, affecting more than 50% of the total area (*i.e.*, lesions extending from the footpad to toes)

Final score: Score 0x0 + Score 1 x 0,5 + Score 2 x 2 x 100

100 (feet)

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Figure 4. : The foot-pad lesions different classes.



GROUP 0

GROUP 1





- Evaluation of the method: In general footpad dermatitis scoring systems are not standardized and final scores may differ slightly making difficult to compare results of different studies. Several experiments showed that the origin of contact dermatitis in broilers is multifactorial and its prevalence may be high. (Meluzzi et al., 2008)
- Flock uniformity (see description of the method above point 3.1.7.1).
- Breast burn: breast burn was defined as present when one or more breast burns were observed as having a brownish-coloured scab (erosion) (Greene et al., 1985). We do not have a standard method of assessment for this indicator to our knowledge.
- Breast blisters: Breast blisters were defined as present when this was equal to or larger than 0.5 cm2 (Allain et al., 2009).

We do not have a standard method of assessment for this indicator to our knowledge.

ABI	Validity	Feasibility	Reliability
FPD	ххх	ххх	ХХ
Flock uniformity	хх	хх	ХХ
<u>Breast burn.</u>	Gaps of knowledge		
Breast blisters	Gaps of knowledge		

3.42.2. RBI: There is no specific RBI for this requirement.

3.42.3. MBI: There is no specific MBI for this requirement.



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