



**OIE AD HOC GROUP ON ANIMAL WELFARE AND
LAYING HEN PRODUCTION SYSTEMS¹**

Vitoria–Gasteiz (Spain), 6–8 March 2018

The OIE *ad hoc* Group on Animal welfare and laying hen production systems (the *ad hoc* Group) met for the second time at the Neiker Institute, Vitoria–Gasteiz (Spain), on 6–8 March 2018.

The members of the *ad hoc* Group and other participants at the meeting are listed at [Annex I](#).

1. Welcome and introduction

Dr Leopoldo Stuardo, Chargé de mission of the Standards Department, welcomed and thanked the *ad hoc* Group on behalf of the Director General for their agreement to work with the OIE on this important topic. Dr Stuardo thanked Dr Inmaculada Estévez for offering to host the meeting and for the in-kind contributions of the Institute. Dr Estévez thanked the OIE and its Director General for accepting to hold the meeting in the Neiker Institute in Vitoria.

Dr Stuardo asked Members to carefully consider all comments provided by OIE Member Countries and partner organisations in the working document presented for this meeting and reminded them of the need to provide a clear rationale, particularly when not accepting a comment.

Dr Stuardo indicated that the report of the meeting will be presented to the Terrestrial Animal Health Standards Commission (Code Commission) in September 2018, the Code Commission for its consideration and to decide on whether the chapter would be proposed for adoption in 2019.

The draft agenda was adopted without modifications. The adopted agenda is attached as [Annex II](#). Dr Stefan Gunnarsson, chair of the *ad hoc* Group, opened the meeting thanking the members for their dedicated work, and the Member Countries and partner organisations for sending their constructive comments.

2. Review of Member Countries comments on the draft chapter on Animal welfare and laying hen production systems

Comments were received from Australia, Canada, China (People's Republic of), Costa Rica, Guatemala, Japan, New Caledonia, New Zealand, Norway, Singapore, Switzerland, Thailand, USA, African Union Inter-African Bureau for Animal Resources (AU-IBAR), EU, the International Coalition for Animal Welfare (ICFAW) and the International Egg Commission (IEC).

Where OIE Member Countries and partner organisations made proposals without providing a scientific rationale, the *ad hoc* Group was not able to take these comments into consideration.

During the revision of the chapter and in response to several Member Countries comments, the *ad hoc* Group made various changes throughout the text to improve grammar, syntax, and clarity.

The *ad hoc* Group developed the revised draft Chapter 7.Z. which is attached as [Annex III](#) for consideration by the Code Commission at its September 2018 meeting.

¹ Note: This *ad hoc* Group report reflects the views of its members and may not necessarily reflect the views of the OIE. This report should be read in conjunction with the September 2018 report of the Terrestrial Animal Health Standards Commission because this report provides its considerations and comments. It is available at <http://www.oie.int/en/international-standard-setting/specialists-commissions-groups/code-commission-reports/meetings-reports/>

General comments

In response to a Member Countries general comment to include the word ‘pullet’ in the title, the *ad hoc* Group did not agree with the suggestion as it considered that the term ‘laying hen production systems’ includes pullets. The *ad hoc* Group did not agree with the general comment of a Member Country to include more detailed explanations of the concepts of indoor and outdoor systems, these are generally understood concepts.

Regarding the general comments of a Member Country of the need to clarify the terms ‘criteria’, ‘outcome-based criteria’, ‘measurable’, ‘outcome-based’ and similar terms, the *ad hoc* Group harmonised the use of these terms throughout the chapter. The use in this chapter is now in line with the new proposed Article 7.1.X. on ‘Guiding principles for the use of measures to assess animal welfare’.

In response to a general comment of a Member Country, the *ad hoc* Group mentioned that they consider pullets to be part of the scope of the chapter. The inclusion of pullets is important because of welfare concerns relating to this phase of production that must necessarily take place prior to production beginning. In addition, this production stage has a great impact on the adaptability potential of the adult layer and on the future production stages. Regarding the general comments of the same Member Country in relation to the approach of using animal-based measures, the *ad hoc* group agreed that resource-based and management-based measures could also be useful. Nevertheless, the OIE prioritises the outcome-based approach to facilitate the implementation of welfare standards at a global level. Finally, in relation to the possible inclusion of a section on humane on-farm killing methods for end-of-lay hens, the *ad hoc* Group noted that this aspect is covered in Chapter 7.6. of the *Terrestrial Code* and is mentioned in Articles 7.Z.24. (Humane killing of individual birds or flocks) and 7.Z.25. (Depopulation of pullet and layer facilities) of this draft chapter.

Regarding the general comment of a Member Country, the *ad hoc* Group did not agree that the whole chapter should be aligned with of the corresponding Chapter 7.X. on animal welfare in pig production systems but has nevertheless tried to align the draft chapter where appropriate.

Concerning the general comment of an Organisation in relation to the list of outcome-based measure, the *ad hoc* Group agreed that there is no intention to prioritise the criteria included in the draft chapter.

Article 7.Z.1. Definitions

The *ad hoc* Group did not agree with part of the comment of a Member Country to include the word ‘intended’ in the definition of ‘Laying hens’, as it is implicit in the definition that they are intended for human consumption. In the same definition the *ad hoc* Group agreed with the Member Country comments to delete the reference to village and backyard flock as it is included now in the Article related to the scope of the draft chapter.

Regarding the suggestion of a Member Country to add a reference to the parent stock used to produce fertilized eggs in the definition of ‘Laying hens’, the *ad hoc* Group did not agree with the suggestion but modified the scope for clarity. The *ad hoc* Group agreed with the Member Country on the importance of the welfare of this category of birds and recommended that the OIE consider developing a specific chapter on breeding poultry in the near future.

The *ad hoc* Group did not agree with the suggestion of a Member Country to add the word ‘commercially’ in the definition of end-of-lay hens, as it is already mentioned in the scope.

Article 7.Z.2. Scope

The *ad hoc* Group did not agree with the first part of the Member Country comments as the addition of the word ‘end-of -lay’ in the scope will narrow the intention of the scope and not reflect all practices found in various parts of the world. In the same definition the *ad hoc* Group agreed to include the reference to village or backyard flocks in Article 7.Z.2., in a slightly modified form.

The *ad hoc* Group did not agree with the proposal of a Member Country to restrict the scope of the chapter to exclude pullets, as it considers that the rearing period is of fundamental relevance from an animal welfare perspective.

With reference to the suggestion of some Member Countries to include a new paragraph to encourage the provision of some specific resources, the *ad hoc* Group did not agree with the proposal, as this belongs in the recommendations section and not in the scope section. The *ad hoc* Group agreed to consider this suggestion later in the draft chapter.

The *ad hoc* Group did not agree with the comments of a Member Country to include a sentence regarding access to outdoor areas. Recommendations regarding outdoor areas are developed in the next section related to the different production systems.

The *ad hoc* Group did not agree with the suggestion to delete the last part of the first sentence of the description of Indoor Systems, as there are systems without environmental control in various parts of the world. Nevertheless, the *ad hoc* Group added the word 'mechanical' to clarify the kind of environmental control referred to in the scope.

Concerning the request of a Member Country to further clarify the description of indoor and outdoor areas, the *ad hoc* Group amended the description of indoor areas to emphasise that in these systems there is no designated outdoor area of any kind.

The *ad hoc* Group did not agree with the suggestion of some Member Countries to include additional text at the end of the description of the outdoor areas, as the proposed text was a recommendation rather than a description of the system.

Article 7.Z.3. Criteria and measurables for the welfare of pullets and laying hens

The *ad hoc* Group noted and agreed with the request of a Member Country to harmonise this chapter, whenever possible, with the draft chapter on animal welfare and pig production systems.

The *ad hoc* Group acknowledged that the terms criteria and measurable are not synonymous. The *ad hoc* Group revised the text to reflect that measurables (or outcomes) are associated with the animal welfare criteria (or standards).

The *ad hoc* Group agreed with the suggestion of a Member Country and an Organisation to add further text as to the importance of the criteria used when monitoring animal welfare. Nevertheless, the *ad hoc* Group reworded the proposal in a different way to that suggested.

The *ad hoc* Group agreed with a Member Country to add the word 'management', as another consideration to be included when assessing the welfare of the pullets and hens in different production systems.

The *ad hoc* Group agreed, following the proposal of some Member Countries, to add 'bone and foot problems' and 'behaviours' as examples of criteria to be measured. Also, the *ad hoc* Group agreed to add a sentence to highlight that age is not the only factor that could provide an indication of abnormalities.

In response to a Member Country comments, the *ad hoc* Group reworded the third paragraph of Article 7.Z.3. to improve its clarity.

The *ad hoc* Group did not agree to replace the word 'and' with 'or' to be consistent with the modifications made to the title of Article 7.Z.3.

1. Behaviour

The *ad hoc* Group agreed with a Member Country suggestion to add that behaviour can be an indicator of good animal welfare and to note that the opportunities to display different behaviours are affected by the existing variations in their physical and social environments.

The *ad hoc* Group agreed with a Member Country comment to be consistent in the use of the word 'hens' rather than 'chicken' throughout the text and made the necessary adjustments.

a) Dust bathing

In reference to a comment of some Member Countries to include a sentence that dust bathing could only be performed in housing systems without cages, the *ad hoc* Group did not agree with this proposal as the *ad hoc* Group considered this is a behaviour where expression is independent of the type of production system.

In response to comments from some Member Countries, the *ad hoc* Group did not agree to delete the reference to parasites in relation to the effect of dust bathing and added a new scientific reference to support this statement. The *ad hoc* Group however agreed to the addition of 'feather lipids' to the purpose of the dust bathing behaviour.

The *ad hoc* Group did not agree with several proposals from some Member Countries to modify the article on dust bathing to add references to the sequence in which this behaviour is displayed as it considered these amendments to be too detailed.

b) Fear behaviour

The *ad hoc* Group agreed with a Member Country proposal to include some indications of the consequences of fear behaviour such as traumatic injuries or suffocation. The *ad hoc* Group also agreed to add a reference regarding 'injurious feather pecking' as a consequence of fear behaviour and agreed to include the scientific reference provided to support this statement.

In response to some Member Countries comments to add a reference to the effect of providing enrichment material to prevent fear behaviour the *ad hoc* Group did not agree to include this aspect in this section. The *ad hoc* Group indicated that environmental enrichments are included in other parts of the draft chapter such as nesting, perching and dust bathing, etc.

The *ad hoc* Group did not agree with the proposal by a Member Country to edit the first sentence of the paragraph on fear behaviour but rather modified the paragraph to improve its coherence.

c) Feeding and drinking behaviour

The *ad hoc* Group agreed with the suggestion of a Member Country and an Organisation to include text to highlight that changes in feeding behaviour may indicate management problems. In the same point the *ad hoc* Group did not agree to add a new sentence related to the displacement of pullets and hens in relation to the location of drinkers and feeders, as according to the *ad hoc* Group this idea is already implicit in the text.

The *ad hoc* Group agreed with a Member Country comment that drinking behaviour would not always be reduced during heat stress, nor increased during cold stress, and therefore modified the text accordingly.

d) Foraging activity

The *ad hoc* Group agreed with a Member Country to indicate that foraging material is not necessarily only litter. The word 'litter' was replaced with 'substrate'.

Concerning a suggestion of a Member Country and an Organisation to indicate that foraging is a natural and highly motivated behaviour, the *ad hoc* Group indicated that scientific studies on preferences for different foraging materials and the strength of motivation for birds to access different substrates using a variety of methods have provided conflicting results (see Cooper and

Albentosa, 2003). Early work using operant techniques to obtain access to litter for pecking and scratching suggested that hens placed little value on access to foraging material (for example Dawkins and Beardsley, 1986; Faure, 1991), although Gunnarsson *et al.* (2000a) found that hens would key peck to obtain access to straw and suggested that hens place a high demand for a litter substrate. Recent work measuring the strength of preferences of hens to access different substrates by passing through weighted doors from a home pen with wire flooring showed that neither the frequencies nor durations of time spent on sand, wood shavings, peat moss or wire floors differed; as weight on the doors increased, hens' visits to the different resources decreased at similar rates (de Jong *et al.*, 2007).

References cited:

COOPER, J.J. and ALBENTOSA, M.J. (2003) Behavioural priorities of laying hens. *Avian and Poultry Biology Reviews* 14: 127–149.

DAWKINS, M.S. and BEARDSLEY, T. (1986) Reinforcing properties of access to litter in hens. *Applied Animal Behaviour Science* 15: 351–364.

FAURE, J.M. (1991) Rearing conditions and needs for space and litter in laying hens. *Applied Animal Behaviour Science* 31: 111–117.

GUNNARSON, S., MATTHEWS, L.R., FOSTER, T.M. and TEMPLE, W. (2000a) The demand for straw and feathers as litter substrates by laying hens. *Applied Animal Behaviour Science* 65: 321–330.

DE JONG, I.C., WOLTHUIS-FILLERUP, M. and VAN REENEN, C.G. (2007) Strength of preference for dustbathing and foraging substrates in laying hens. *Applied Animal Behaviour Science* 104: 24–36.].

Also regarding the suggested addition of a new sentence at the end of this point to indicate the *influence* of housing on the opportunities to display foraging behaviour, the *ad hoc* Group did not agree as it is already considered in the behaviour section.

The *ad hoc* Group agreed with the suggestion of a Member Country to include a sentence referring to the positive animal welfare outcomes of performing foraging behaviour.

e) Injurious feather pecking and cannibalism

The *ad hoc* Group did not agree with the suggestion of some Member Countries and an Organisation to add a new sentence with a reference to the relationship of the lack of enrichment material and injurious feather pecking, as scientific results are not sufficiently conclusive to justify this addition. The *ad hoc* Group considered that this suggestion should be considered in the recommendations part of the chapter.

In relation to a Member Country comment, suggesting to add a sentence indicating that injurious feather pecking could also be spread to other pullets and hens of the flock, the *ad hoc* Group did not agree to include the text, as it is already considered in Article 7.Z.19.

The *ad hoc* Group partially accepted the suggestion of a Member Country to include death as a consequence of injurious feather pecking but did not agree to include 'adding enrichment material', as a way to prevent this negative behaviour. Article 7.Z.19. lists some management methods that may reduce the risk of occurrence of injurious feather pecking and cannibalism.

f) Locomotory and comfort behaviours

The *ad hoc* Group agreed to change the title of this section to 'Locomotory and comfort behaviours', as the word 'Locomotory' implies more than solely movement, and include a broader description of physical movement, including exercise.

The *ad hoc* Group agreed with the suggestion of a Member Country to add preening as an example of comfort behaviour. The Group also agreed to add, with modification, a new sentence to support the idea of the importance of exercise, and its benefits in term of animal welfare outcomes.

The *ad hoc* Group agreed with the additions suggested by a Member Country relating to the importance of light level on the opportunities to display these behaviours and with the inclusion of additional information concerning the use of this behaviour to detect welfare and health problems. Nevertheless, the *ad hoc* Group decided to include these suggestions in the chapeau of the behaviour section.

Concerning the proposal of a Member Country to delete the second paragraph of this section, the *ad hoc* Group agreed with this proposal and moved it to the end of the chapeau of the behaviour section.

The *ad hoc* Group agreed with the suggestion of an Organisation on the value of having some text related to the required social spacing and included it in the introductory paragraph of the behaviour section, along with the scientific references provided.

g) Nesting

The *ad hoc* Group did not agree with a Member Country suggestion to add references to the characteristics of the nest as this is already considered in Article 7.Z.12.

The *ad hoc* Group agreed with a Member Country and an Organisation on the importance of the housing system in the ability to display nesting behaviour and included it in the chapeau of the behaviour section.

h) Perching

In reference to the suggestion of some Member Countries to include a sentence that perching could be only performed in housing systems without cages, the *ad hoc* Group did not agree with this proposal as this is an important behaviour independent of the type of production system.

i) Sleeping and resting

The *ad hoc* Group agreed to add 'sleeping and resting' to the list of criteria as important behaviours to be considered.

j) Social behaviour

The *ad hoc* Group partially agreed with a Member Country comment and replaced the words 'help in' with 'aiding'. Nevertheless, the *ad hoc* Group did not agree with the same Member Country to add an indication to the damage to plumage and flesh because of resource competition, as this indication is already included in the section concerning feather pecking.

k) Spatial distribution

The *ad hoc* Group did not agree with a Member Country to add an indication of heightened fear level, as this indication is better located in the sections corresponding to space allowance and matching the birds to the housing and production system.

l) Thermoregulatory behaviour

Concerning the proposal of a Member Country to delete the text referring to piling on top of each other in relation to thermoregulatory behaviour, the *ad hoc* Group agreed with this suggestion as 'piling' is sufficiently covered by the word 'huddling' in the same paragraph.

The *ad hoc* Group did not take any action concerning the suggestion of a Member Country to add the word 'hen' in relation to piling on top of each other, as the text was deleted in accordance with other Member Countries comments.

m) Vocalisation

The *ad hoc* Group did not agree with the suggestion of a Member Country to add a sentence to indicate that different levels of vocalisation can indicate the presence of disease, as vocalisation could be an unspecific response. Nevertheless, the *ad hoc* Group made some modifications to the current wording to improve the clarity of the text.

2. Body condition

Concerning the suggestion of a Member Country to modify the current text of this section, the *ad hoc* Group partially agreed, and included a sentence on the potential problems with health, housing and management. Nevertheless, the *ad hoc* Group agreed to add a sentence dealing with the potential that feather cover could have in hiding problems related to body condition.

The *ad hoc* Group did not agree to add the new sentence suggested by a Member Country concerning the relation of body condition and the commercial breed standards, as this aspect is included in the general part of the recommendations section.

3. Eye conditions

In relation to several comments from some Member Countries on the section regarding eye condition, the *ad hoc* Group amended the text to make the wording less restrictive and to indicate that an eye condition like conjunctivitis could also indicate disease.

4. Foot problems

Several comments from Member Countries and an Organisation suggested the modification of the first and second paragraphs of point 4. on foot problems. The *ad hoc* Group agreed with the suggestion to add a sentence regarding the impact of poorly designed perches and poorly maintained litter on the presence of foot problems. Also, the *ad hoc* Group partially agreed to delete the second sentence about the impact of excessive claw growth, broken claws and toe injuries, but they moved it to the first paragraph for clarity and completeness of the text.

The *ad hoc* Group disagreed with a Member Country proposal to add 'pododermatitis' as a problem related to prolonged contact with wet litter, as the *ad hoc* Group consider that 'contact dermatitis' includes both, 'bumblefoot' and 'pododermatitis'.

In response to a Member Country comment to add a sentence to indicate the importance of the risk of bumblefoot due to contact with manure, the *ad hoc* Group agreed to include manure as one of the risk factors for foot problems but did not agree to include bumblefoot as it was included in 'contact dermatitis'.

5. Incidence of diseases, infections, metabolic disorders and infestations

The *ad hoc* Group did not agree with the proposal of a Member Country to add red mite infestation as an important cause of mortality in laying hens as it considered it was too specific, bearing in mind that this could be one among many other types of infestation.

6. Injury rate and severity

The *ad hoc* Group did not agree with a Member Country suggestion to add the words ‘the extent of’, in reference to injury rates and severity during production, as it is covered by the word ‘severity’.

Concerning the comment of a Member Country and an Organisation to include the importance of husbandry management in the control of injuries, the *ad hoc* Group agreed with the proposal and modified the text accordingly. In the same paragraph, the *ad hoc* Group did not agree with the suggestion of an Organisation to include keel bone deformation as an example of the consequences of bad husbandry management, as the scientific evidence provided is not sufficiently conclusive.

7. Mortality, culling and morbidity rates

The *ad hoc* Group agreed with the suggestion of a Member Country on the importance of using records for the analysis of trends and to take relevant actions concerning mortality, culling and morbidity rates. In the same point, the *ad hoc* Group did not agree with a Member Country suggestion to replace the term ‘expected’ with ‘generally accepted’ when referring to the range within which mortality, culling and morbidity rates should be. The *ad hoc* Group considered this could imply accepting rates that otherwise could be ameliorated.

8. Performance

The *ad hoc* Group agreed with a Member Country suggestion to add text to improve the clarity of the point referring to egg quality.

The *ad hoc* Group did not agree with the proposal of a Member Country to delete the first two sub-clauses of this section as pullets are within the remit of the draft chapter. The *ad hoc* Group did not agree with the same Member Country proposal to include reference to subclinical disease which could affect the performance of the flock as it did not add clarity to the current text. The *ad hoc* Group also did not agree to include the size of the egg as an indicator, because this can be related to many other factors.

9. Plumage condition

The *ad hoc* Group did not agree with the suggestion of a Member Country to qualify as ‘inappropriate’ environment and production system affecting the plumage condition, as the term was considered subjective.

Concerning the suggestion of a Member Country to include the words ‘a less than optimal’, in reference with environment and production system, the *ad hoc* Group did not agree to include it as it was considered a value judgment.

The *ad hoc* Group did not agree with the comment of a Member Country and an Organisation to add a sentence about the effect of the high cage stocking density, as this is more a recommendation, and is considered in other sections. Furthermore, when reviewing the references given in the rationale of the comments, the *ad hoc* Group agreed that they are not fully supportive of the comments.

In response to some modifications proposed by a Member Country to improve the clarity of the paragraph on plumage condition, the *ad hoc* Group added the words ‘with illness, or’, to improve the readability of the text.

10. Water and feed consumption

Concerning the modifications proposed by several Member Countries on the points related to water and feeding consumption and the importance of considering heat or cold stress and the resulting crowding of birds at feeders and drinkers when there is a problem with the supply, the *ad hoc* Group agreed and modified the text.

Article 7.Z.4. Recommendations

The *ad hoc* Group decided to include a new introductory paragraph in Article 7.Z.4. to emphasise the fact that the welfare of pullets and hens is affected by management factors. Also, the *ad hoc* Group rewrote the introductory part of the article to improve its readability. These modifications also considered some of the Member Countries comments on this part of the chapter.

The *ad hoc* Group, in response to a Member Country comment on including more detailed information on the outcome-based (animal-based) criteria for each production system, did not agree to modify the text as there are important regional variations, all of which need to be considered.

Article 7.Z.5. Location, design, construction and equipment of establishments

The *ad hoc* Group agreed with a Member Country suggestion to include the design of establishments in the title of this article.

In relation to the suggestion of a Member Country to add a new sentence to encourage only systems in which priority behaviours can be performed, the *ad hoc* Group indicates that this is already considered in the second paragraph of the article.

The *ad hoc* Group agreed with a Member Country to add a sentence highlighting the importance of promoting good welfare. Nevertheless, the Group agreed partially with the same Member Country to delete the reference to ‘avoid injuries and pain’.

In response to a Member Country comment to add a sentence in relation to the need to have a contingency plan in place, the *ad hoc* Group agreed with this suggestion and modified the text accordingly.

The *ad hoc* Group decided to replace the word ‘outcome-based’ with ‘animal-based’ in the heading containing the list of measurables to be considered to assess the effectiveness of the recommendations, in order to be consistent with other animal welfare draft chapters that are currently in preparation.

Following the comment of a Member Country, the *ad hoc* Group reviewed the consistency between the terminologies used in Article 7.Z.3. and the ones used in the list of measurables after each recommendation throughout the chapter.

Regarding the request of a Member Country to explain the criteria for the order of the animal-based measurable, the *ad hoc* Group indicated that the proposal is to have them in alphabetical order and revised the text to ensure consistency with this approach.

Article 7.Z.6. Matching the birds and the housing and production system

The *ad hoc* Group did not agree with some Member Countries comments to include a new paragraph in relation to the aspects which influence feather pecking, as it is considered in Article 7.Z.19. in the recommendations about feather pecking.

The *ad hoc* Group did not agree with a Member Country comments to include a new paragraph on opportunities for hens to perform the full range of their natural behaviours, as it does not belong to this section. Nevertheless, the *ad hoc* Group considered this comment in the modifications of Article 7.Z.5. Location, design, construction and equipment of establishments.

Article 7.Z.7. Socking density (Space allowance)

The *ad hoc* Group agreed with a Member Country suggestion to change the heading of Article 7.Z.7. to Space Allowance for consistency with the definition in the Glossary of the *Terrestrial Code*.

The *ad hoc* Group did not agree with some Member Countries comments to include text in the first paragraph to highlight that access to resources should be without competition, as the term ‘adequate access’ already indicates no or low competition for resources. In the same paragraph, the *ad hoc* Group did not agree with a recommendation for minimum space, as it was too restrictive. Finally, the *ad hoc* Group did not agree with the suggestion to add a paragraph on limiting the size of the groups as in fact group size *per se* does not appear to be a problem when isolated from the effects of density or pen area (See Estevez *et al.*, 2007).

The *ad hoc* Group agreed with the suggestions of some Member Countries to highlight the importance of the usable space but did not agree to add a reference to the needs and availability of the resources, as it is already considered in the previous paragraph of this article.

In relation to the suggestion of a Member Country and an Organisation to add dustbathing and foraging as animal-based measurables in this recommendation, the *ad hoc* Group agreed with the proposal, as these behaviours could be affected by poor management or by space allowances.

New Article proposal

Regarding a proposal from a Member Country and an Organisation to add a section on environmental enrichment, the *ad hoc* Group did not agree, considering that throughout the text of the chapter, the main forms of environmental enrichment for poultry are mentioned in detail, such as perches, dust bathing, and foraging areas.

Article 7.Z.8. Nutrition

The *ad hoc* Group did not agree with a Member Country suggestion to include a new paragraph regarding the consequences of poor access to feed, as this is covered in the first sentence of the first paragraph.

Regarding the proposal of a Member Country to add 'debris' as one of the components that feed should be free of, the *ad hoc* Group agreed to include it and modified the text accordingly.

The *ad hoc* Group agreed with a Member Country to add text to emphasize the importance of inspection of watering and feeding systems.

The *ad hoc* Group agreed with several Member Country proposals to include egg quality, body and plumage condition to the list of animal-based measurables to be considered when dealing with the recommendations on nutritional aspects.

Article 7.Z.9. Flooring

The *ad hoc* Group did not agree with a Member Country suggestion to add a new paragraph in relation to the type of flooring, as it was considered too detailed and the essential element is that the kind of floor must be suitable for pullets and hens.

The *ad hoc* Group did not agree with the suggestion of a Member Country to modify the first paragraph of this article, as it was considered unnecessary and did not add clarity to the text. Nevertheless, the *ad hoc* Group decided to move the first paragraph to the end of the second paragraph to improve its readability.

In reference to a comment of some Member Countries to include a sentence that the design of the slope could only be applicable in housing systems without cages, the *ad hoc* Group did not agree as it considers this is an important aspect to consider independent of the kind of production system.

Regarding the proposal of a Member Country to modify the second paragraph of this Article, the *ad hoc* Group agreed to add maintenance as it is an important aspect to consider in relation to the slope of the floor. Also, the *ad hoc* Group modified the text to be consistent with other modifications made throughout the Chapter, in particular, the use of the words 'pullets and hens'.

In reference to a comment of some Member Countries to include a sentence that the provision of dry litter material could only be applicable in housing systems without cages, the *ad hoc* Group did not agree with this proposal as this is an important aspect to consider independently of the kind of production system used.

Concerning the provision of dry litter material, the *ad hoc* Group did not agree with some Member Countries, to include a reference to the depth of it, as it considers that this recommendation applies to dust bathing.

The *ad hoc* Group did not agree with a proposal of a Member Country to qualify the provision of dry litter material as a need. The scientific literature suggests that hens are moderately motivated to access substrate, but not to the same extent as the strong motivation they show to access a nest or perch. Nevertheless, references to the advantage of providing litter to hen welfare (e.g. reduced feather pecking) are cited in other sections.

The *ad hoc* Group agreed partially with the comments of some Member Countries and an Organisation to modify the third paragraph of this article. To address this comment, it deleted the reference to dust bathing and foraging from the recommendation for clarity and did not agree with a suggestion regarding the management of the use of litter material, as it was considered too restrictive.

The *ad hoc* Group did not agree with a Member Country to delete dust bathing and foraging from the list of animal-based measurables, as both are important criteria when considering the impact of flooring conditions.

Article 7.Z.10. Dust bathing areas

In reference to a comment of some Member Countries to include a sentence that dust bathing could only be applicable and encouraged in housing systems without cages, the *ad hoc* Group did not agree with this proposal as this is an important aspect to be considered independent of the kind of production system used.

The *ad hoc* Group, regarding the comments of some Member Countries and an Organisation, agreed to modify the text of this article, adding a new first paragraph at the beginning of the article to integrate the importance of the concept of friable and dry material, highlighting its use for displaying dust bathing behaviour.

The *ad hoc* Group did not agree with the suggestion of a Member Country to add a new sentence at the end of the recommendation to avoid the use of feed as a dust bathing substrate. The *ad hoc* Group considered it was too specific because there are a variety of feedstuffs which could also be used as a substrate for dust bathing.

Article 7.Z.11. Foraging areas

The *ad hoc* Group did not agree with the edits proposed by a Member Country as it was considered that they did not add clarity to the text.

Regarding some Member Countries and an Organisation comments concerning the use of adequate foraging material, the *ad hoc* Group agreed to modify the text of the article by adding a new paragraph to integrate the use of suitable material, which should be considered to be friable and dry. It also added the word 'activity' in the text of the article and in the list of animal-based measures, to be consistent with the language use in Article 7.Z.3.

Article 7.Z.12. Nesting areas

The *ad hoc* Group did not agree with the proposal of a Member Country to include a new sentence to indicate the physical characteristics of the nesting area, as it was considered too detailed.

Regarding the suggestion of some Member Countries to include references to the adequate number of nesting areas and the kind of substrate to be provided, the *ad hoc* Group did not agree, as the first one is covered by the words 'undue competition' and the second is included in the design aspects.

The *ad hoc* Group did not agree to add a new sentence in relation to the suitability of the type of nesting areas, as it is already included in the current text.

The *ad hoc* Group did not agree with the proposal of an Organisation to include a new sentence to highlight the fact that nesting is a natural and highly motivated behaviour, as this is already considered in Article 7.Z.5.

Concerning the recommendation of some Member Countries suggestion to add a reference to egg production in the list of animal-based measurables for the recommendations related to nesting areas, the *ad hoc* Group agreed and included mis-laid or floor eggs in the examples, under performance criteria in Article 7.Z.3.

Article 7.Z.13. Perches

In reference to a comment of some Member Countries to include a sentence that perches could only be applicable and encouraged in housing systems without cages, the *ad hoc* Group did not agree as this is an important aspect to be considered independent of the production system used.

The *ad hoc* Group did not agree with the suggestion of some Member Countries to add a sentence about allowing safe navigation, as this is intrinsic to the considerations of perch design and location aspects.

The *ad hoc* Group agreed with several modifications proposed by some Member Countries and an Organisation. The *ad hoc* Group added a reference to the elevation of the perches and a new sentence to recommend that perches should be well positioned to minimise faecal fouling. Finally, the *ad hoc* Group made several modifications to the first paragraph of this article to improve its clarity.

Concerning the proposal of a Member Country to change 'keel bone deformation' with 'skeletal abnormalities', the *ad hoc* Group preferred to add the word 'other harms' to include the example of the potential problems caused by problems related to the perches that are not in the current text.

The *ad hoc* Group agreed to delete the second paragraph of this article, as the modifications proposed and its content were consistent with the changes done in the previous paragraph.

The *ad hoc* Group agreed with a Member Country suggestion to include plumage condition in the list of animal-based measurables as it is associated with faecal matter potentially falling on birds below.

Concerning the suggestion of some Member Countries to include keel bone problems to the list of animal-based measurables, the *ad hoc* Group indicates that it is already covered within the injury rate measurable.

Article 7.Z.14. Outdoor areas

The *ad hoc* Group did not agree with the suggestion of a Member Country to develop a new section on covered outdoor areas or winter gardens, as this recommendation was considered too detailed and it is not applicable to all the production systems around the world.

Concerning a comment of some Member Countries to include a sentence that outdoor areas could only be applicable and encouraged in housing systems without cages, the *ad hoc* Group did not agree with this proposal as the *ad hoc* Group considered this is an important aspect to be considered independent of the kind of production system used.

The *ad hoc* Group did not agree with the suggestion of a Member Country to modify the first paragraph of this article as the proposed modifications were already considered by the rewording made by the *ad hoc* Group.

Concerning a comment of some Member Countries to delete the reference for management of outdoor areas, the *ad hoc* Group did not agree with this proposal as this is an important aspect to be considered independent of the kind of production system used.

The *ad hoc* Group did not agree with the suggestion of a Member Country to include a reference to the attack from predators as this aspect is already covered by Article 7.Z.29. (Protection from predators).

Several suggestions were received from Member Countries to modify the third paragraph of this article. The *ad hoc* Group did not agree as most of them were too detailed or the suggestions were already included in the current text. Nevertheless, the *ad hoc* Group agreed with a Member Country and an Organisation to replace the words 'swampy conditions' with 'standing water' to improve the clarity of the text.

The *ad hoc* Group did not agree to include changes in foraging behaviour in the list of animal-based measurables in this article, but they added the word 'activity' after foraging to be consistent with previous modifications.

The *ad hoc* Group did not agree with a Member Country to include a new animal-based measurable concerning the percentage of use of the outdoor areas, as the spatial distribution covers this and it was deemed too difficult to measure.

Article 7.Z.15. Thermal environment

Concerning various suggestions from some Member Countries to modify the first paragraph of this Article, the *ad hoc* Group agreed to add a reference to the necessary range of the thermal conditions to be maintained; added the word 'thermal' to specify that this condition is important to determine the comfort zones and finally included 'air velocity' as one of the aspects that can affect the thermal comfort zones. The *ad hoc* Group considered that the suggestion to add an indication concerning large temperature fluctuation was already included in the current text and therefore did not agree to include it.

The *ad hoc* Group did not agree with a Member Country suggestion to edit the second paragraph of the article as it considered that the proposed text does not correspond to this section.

The *ad hoc* Group agreed, with the suggestion of a Member Country to add a recommendation that system failures should be detected and corrected before causing a welfare problem.

Article 7.Z.16. Air quality

The *ad hoc* Group agreed with a Member Country suggestion to have a reference to the importance of the housing system to the air quality, and agreed to replace the word 'waste' with 'noxious' when referring to gases with potential harm.

Regarding the proposal of a Member Country to add a new sentence at the end of the second paragraph of this article, the *ad hoc* Group did not consider that the text improves its clarity.

The *ad hoc* Group did not agree to the suggestion of a Member Country to delete the word 'routinely' as the idea behind this wording is to give some flexibility in determining the ammonia level. In the same point, the *ad hoc* Group did not agree with the same Member Country to add different values at which birds could detect hazardous ammonia levels as the scientific reference provided did not support the proposed modifications.

The *ad hoc* Group did not agree with the suggestion of some Member Countries to replace the word 'artificial' with 'mechanical or a powered', or to add a reference to the regular check of the systems. Nevertheless, the *ad hoc* Group decided to delete this part of the text as it is already covered by Article 7.Z.26. (Contingency Plans).

Article 7.Z.17. Lighting

The *ad hoc* Group agreed with the proposal of a Member Country to add a sentence regarding the impact of lighting to stimulate the onset of laying. Nevertheless, they did not agree with the same Member Country to add a recommendation on the influence of the use of perches as it was considered too specific.

Regarding the suggestion of a Member Country to replace the word 'homogeneously' with 'appropriately', the *ad hoc* Group did not agree with the suggestion as the main difficulty of the management of light is to achieve homogeneity. Regarding a comment from the same Member Country, the *ad hoc* Group did not agree to include the word 'behaviour' in this paragraph as 'normal development' includes the behaviour of the birds.

The *ad hoc* Group did not agree with a Member Country and an Organisation suggestion to add more detail regarding light management as it was considered too detailed and restrictive.

The *ad hoc* Group did not agree with the comments of some Member Countries to delete the reference to moulting, as this management tool is widely used, and the examples given do not help to clarify the paragraph. Nevertheless, the *ad hoc* Group made some modifications to improve the readability of the text.

The *ad hoc* Group agreed with a Member Country suggestion to add plumage condition as an important animal-based measurable for lighting recommendations.

Proposal for new article

Regarding the proposal of an Organisation to develop a new article on Genetic Selection, the *ad hoc* Group did not agree, as these aspects are already covered in Article 7.Z.6. (Matching the birds and the housing and production system) and in other sections such as the recommendations on feather pecking.

Article 7.Z.18. Noise

The *ad hoc* Group agreed to amend the text according to the suggestion of a Member Country, however with some modifications.

Regarding the proposal of a Member Country and an Organisation to add a new sentence on the desensitisation to novel noises, the *ad hoc* Group did not agree as this is already covered in the first two sentences of the paragraph.

The *ad hoc* Group agreed with the suggestion of an Organisation to add mortality rate as an important animal-based measurable for noise recommendations.

Article 7.Z.19. Prevention and control of injurious feather pecking and cannibalism

Regarding the comment of a Member Country to delete the word 'injurious' from the beginning of the paragraph, the *ad hoc* Group did not agree as feather pecking always occurs to a certain degree, but what is important is to control injurious feather pecking, as this is what is considered to cause pain and distress.

Concerning the first bullet point of this Article, the *ad hoc* Group did not agree with a Member Country comment to include reference to the level and distribution of this problem, as what is important is the type and frequency of the feather pecking. Also, as light distribution is considered in the management aspects and it did not include a reference in this regard.

The *ad hoc* Group agreed with some Member Countries and an Organisation of the importance of genetics in the propensity to conduct injurious feather pecking and modified the text in the second bullet point.

The *ad hoc* Group agreed to amend the text to expand the definition in line with the suggestion of some Member Countries, albeit in a modified form to that proposed.

The *ad hoc* Group did not support the suggestion of a Member Country to add a new point to the management methods as there was no justification to support the proposal.

The *ad hoc* Group did not support the suggestion of a Member Country to replace the word 'diet' with 'kind' as 'diet' refers to more than simply 'kind' and is therefore a broader term.

The *ad hoc* Group did not support the suggestion of an Organisation to amend the term 'adapting diet' as the word adapting covers not only type and form of feed but also refers to the way in which the diet is adapted. There was also no text proposed for the *ad hoc* Group to consider.

Regarding some Member Countries and an Organisation comments, about adding new bullet points regarding the provision of enrichment material and outdoor access to prevent injurious feather pecking, the *ad hoc* Group did not agree noting that the list is not an exhaustive one and some of the management measures that can prevent injurious feather pecking have already been included in the recommendations regarding dust bathing and perching.

In response to the request of a Member Country for clarification, the *ad hoc* Group noted that use of the word 'treatment' is a more general and neutral term, and therefore allows for yet undiscovered, less aggressive techniques, to be used without having to amend the OIE chapter. The modalities of beak treatment are covered in more detail in Article 7.Z.21. (Painful interventions).

Regarding the proposal of a Member Country to add two new bullet points in this article, the *ad hoc* Group did not agree as the scientific reference did not support the statement in relation to minimise the infestation (red mite), and the additional proposed bullet point is already considered in Article 7.Z.6.

Regarding the comment from a Member Country proposing the deletion of the bullet point related to the introduction of males the *ad hoc* Group deleted the text based on the scientific reference provided.

The *ad hoc* Group did not agree with the comment of a Member Country on the need to add the removal of the aggressors, to the management methods for control of injurious feather pecking, mainly because of the difficulties in identifying and removing the aggressors specifically.

The *ad hoc* Group agreed with the suggestion of a Member Country to improve the wording of the third paragraph of this article, and leave the possibility open for a therapeutic beak treatment to be used as a last course of action.

The *ad hoc* Group did not agree with the proposal of a Member Country to add a sentence at the end of the fourth paragraph. Beak treatment is covered within painful interventions and the recommendation is in the framework of an emergency and not as a routine action.

The *ad hoc* Group agreed with the suggestion of a Member Country to include culling rate in the list of animal-based measurables regarding the recommendations for the control of injurious feather pecking.

Article 7.Z.20. Moulting

Regarding the comments of some Member Countries to limit the use of moulting or discouraging its use, the *ad hoc* Group indicated that moulting takes place as a natural process. However, when it is induced it should be done in such way as to not harm the birds. The *ad hoc* Group is aware of the potential animal welfare problems that this process could lead to, and encourages Member Countries to use techniques that will prevent bird distress and suffering.

Article 7.Z.21. Painful interventions

Regarding some Member Countries and an Organisation comments, regarding the first paragraph of the article on painful interventions, the *ad hoc* Group made extensive revisions to improve clarity and to be consistent with the modifications made in the previous article. The *ad hoc* Group also deleted the reference to personnel as this is considered further in Article 7.Z.27. Nevertheless, the *ad hoc* Group considers that it is not necessary to mention any specific method, as other methods could be proved to be more efficient.

Concerning the second paragraph of this article, the *ad hoc* Group agreed to delete it, as it was considered repetitive. Nevertheless, part of the paragraph was integrated as a modification of the first paragraph. Also, the *ad hoc* Group highlighted the fact that the beak treatment should be done with the minimum amount of beak removal necessary to avoid other welfare problems.

The *ad hoc* Group did not agree with the comment of a Member Country to indicate the amount of beak that should be removed, as it was considered too specific.

Article 7.Z.22. Animal health management, preventive medicine and veterinary treatment

The *ad hoc* Group agreed with a Member Country comment to add a sentence, to consider the normal behaviour of the birds as an aid to identifying ill-health conditions. Also, the *ad hoc* Group decided to include some modifications to improve the readability of the paragraph.

The *ad hoc* Group did not agree with the suggestion of a Member Country to add an indication of the faecal structure as an indicator of ill-health as it was considered too specific. Also, the *ad hoc* Group did not agree to add a new sentence regarding the plumage condition, as this is already considered in the relevant article.

Regarding the suggestion of a Member Country to include the training of personnel, the *ad hoc* Group considered that this is already covered in Article 7.Z.27.

The *ad hoc* Group agreed with the comment of a Member Country to improve the clarity of the text of the second paragraph of this article and revised it accordingly.

The *ad hoc* Group agreed with a Member Country to include body condition in the list of animal-based measurables to be considered under the recommendations for animal health management, preventive medicine and veterinary treatment.

Article 7.Z.23. Biosecurity

No comments from Member Countries.

Article 7.Z.24. Humane killing of individual birds or flocks

The *ad hoc* Group agreed with a Member Country to add the word 'euthanasia' as an example of an animal that needs to be killed in a humane way according to Chapter 7.6. of the OIE *Terrestrial Code*.

The *ad hoc* Group did not agree with a Member Country to delete this article as it is not enough to just include reference to Chapter 7.6. as this chapter should also be read independently, highlighting the importance of managing euthanasia well is essential.

Article 7.Z.25. Depopulation of pullet and laying hen facilities

The *ad hoc* Group agreed to include a new paragraph in this article to clarify the differences with Article 7.Z.24. on Humane killing of individual birds or flocks, but also to indicate that both articles should be read together.

The *ad hoc* Group agreed with some Member Countries suggestion to include some indication of the way to conduct catching of the pullets and hens but considered these proposals were better included in Article 7.Z.28. (Inspection and handling).

The *ad hoc* Group did not agree to include some recommendations by a Member Country and an Organisation on the distance that the pullets and hens should be carried as it was considered too detailed.

Regarding the suggestion of a Member Country to add a reference to Chapter 7.3., the *ad hoc* Group agreed with the proposal.

Regarding the suggestion of a Member Country to add an additional sentence after the reference to Chapter 7.3., the *ad hoc* Group did not agree as it was considered to be too specific and is also covered in Article 7.Z.28. (Inspection and handling).

The *ad hoc* Group did not agree to include several examples of animal-based measurables for this article, as the proposals are more in line with the content of the chapeau of this article rather than animal-based measurables for this article.

The *ad hoc* Group did not agree with the proposal of a Member Country to delete this article, since the new introductory paragraph to the article is an improvement in terms of clarity and this article is different to the recommendations of Article 7.Z.24.

Article 7.Z.26. Contingency plans

The *ad hoc* Group agreed with a Member Country on the need for consistency with other animal welfare chapters and with the implications involved in a response to unexpected situations and proposed to change the title of the article to 'Contingency plans'.

Regarding the suggestion of a Member Country to include the development of a fire safety plan as part of the contingency plan, the *ad hoc* Group agreed with the proposal and made some modifications to the wording.

The *ad hoc* Group did not agree with the comments of a Member Country to include specific indications relevant to environmentally controlled housing. The *ad hoc* Group considered that the suggestions were too detailed. Nevertheless, they made some amendments to the first paragraph of the text to improve its readability.

The *ad hoc* Group partially agreed with a Member Country comment on device testing and included a reference regarding the need for the testing of safe-fail alarms.

Concerning the suggestion of an Organisation to include a new sentence regarding some methods that cause prolonged suffering to the birds, the *ad hoc* Group did not agree to add it, as these recommendations are not part of a contingency plan. Nevertheless, the *ad hoc* Group included the reference to Chapter 7.6. Killing for disease control purposes, to highlight the use of accepted killing methods only.

Article 7.Z.27. Personnel competency

The *ad hoc* Group agreed to make a proposal to the Code Commission to reorder the articles of the chapter, to be consistent with the new OIE animal welfare and production systems chapters.

Article 7.Z.28. Inspection and handling

The *ad hoc* Group agreed to make some important modification in Article 7.Z.28. to consider the comments from several Member Countries and an Organisation. The *ad hoc* Group agreed to include more explicit references to the identification of problems with the facilities and the need to detect and correct malfunctioning equipment.

The *ad hoc* Group did not agree with the comment of a Member Country to replace the word 'quietly' with 'calmly', as the *ad hoc* Group considered that 'quietly' does not mean in silence and the idea of 'calmly' is considered the point of view of the inspector, rather than from outcomes in the pullets and hens.

Article 7.Z.29. Protection from predators

The *ad hoc* Group agreed with the proposal of a Member Country to add a new sentence with a recommendation for building the facilities to prevent access of predators and wild birds. The *ad hoc* Group also noted that this does not mean the achievement of zero predators entering the facilities as it is an unrealistic expectation in commercial facilities.

The *ad hoc* Group did not agree with the suggestion of a Member Country regarding the recommendation to include well-maintained fences and provision of overhead covers, as these conditions are included in the 'design' recommendations.

The *ad hoc* Group did not agree to add the words ‘changes to’, in relation to comfort behaviours requested by a Member Country, as it does not improve the current text.

Reordering of the articles

Following some Member Countries comments, the *ad hoc* Group decided to propose for the Code Commission’s consideration a new order of the articles. This proposal is presented as Appendix IV.

3. Programme for further work after this meeting

The *ad hoc* Group were informed that the report, including the amended draft chapter, will be discussed during the September 2018 meeting of the Code Commission. At that meeting the Code Commission will decide if the chapter is in a suitable condition to be presented for adoption during the OIE General Session in May 2019. The OIE Headquarters will contact the Members of the *ad hoc* Group if some additional work will be required after the Code Commission meeting in September 2018.

4. Other business

The OIE would like to thank the Neiker Institute to support the development of this meeting, exceptionally held outside the OIE Headquarters in Paris.

Dr Gunnarsson closed the meeting and thanked all the members of the *ad hoc* Group for their productive and dedicated work. Furthermore, he thanked Stuardo with the OIE team, and Prof. Estevez and the Neiker Institute for excellent organisation and hosting of the meeting.

.../Annexes

OIE AD HOC GROUP ON ANIMAL WELFARE AND LAYING HEN PRODUCTION SYSTEMS

Vitoria–Gasteiz (Spain), 6–8 March 2018

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OIE AD HOC GROUP ON ANIMAL WELFARE AND LAYING HEN PRODUCTION SYSTEMS

Vitoria–Gasteiz (Spain), 6–8 March 2018

Adopted agenda

1. Welcome and introduction
 2. Consideration of Member Country's comments on draft Chapter 7.Z. 'Animals welfare and laying hen production systems' and amend text as appropriate
 3. Programme for further work after this meeting
 4. Draft a report of the *ad hoc* Group meeting
 5. Other business
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[Note: this Annex has been replaced by Annex 15 to the report of the meeting of the OIE Terrestrial Animal Health Standards Commission which was held on 11–20 September 2018.]

**OIE AD HOC GROUP ON ANIMAL WELFARE AND
LAYING HEN PRODUCTION SYSTEMS**

Votoria - Gasteiz, 6–8 March 2018

Proposal to reorder the Chapter articles

- 7.Z.1. Definitions
 - 7.Z.2. Scope
 - 7.Z.3. Criteria and measurables for the welfare of pullets and hens
 - 7.Z.4. Recommendations
 - 7.Z.5. Location, design, construction and equipment of establishments
 - 7.Z.6. Contingency plans (7.Z.26.)
 - 7.Z.7. Protection from predators (7.Z.29.)
 - 7.Z.8. Space allowance (7.Z.7.)
 - 7.Z.9. Nesting areas (7.Z.12.)
 - 7.Z.10. Perches (7.Z.13.)
 - 7.Z.11. Flooring (7.Z.9.)
 - 7.Z.12. Dust bathing areas (7.Z.10)
 - 7.Z.13. Foraging areas (7.Z.11.)
 - 7.Z.14. Outdoor areas
 - 7.Z.15. Matching the birds and the housing and production system (7.Z.6.)
 - 7.Z.16. Personnel competency (7.Z.27.)
 - 7.Z.17. Inspection and handling (7.Z.28.)
 - 7.Z.18. Nutrition (7.Z.8.)
 - 7.Z.19. Air quality (7.Z.15.)
 - 7.Z.20. Thermal environment (7.Z.15.)
 - 7.Z.21. Lighting (7.Z.17)
 - 7.Z.22. Prevention and control of injurious feather pecking and cannibalism (7.Z.19.)
 - 7.Z.23. Moulting (7.Z.20.)
 - 7.Z.24. Noise (7.Z.18.)
 - 7.Z.25. Biosecurity (7.Z.23.)
 - 7.Z.26. Animal health management, preventive medicine and veterinary treatment (7.Z.22.)
 - 7.Z.27. Painful interventions (7.Z.21.)
 - 7.Z.28. Humane killing of individual birds or flocks (7.Z.24.)
 - 7.Z.29. Depopulation of pullet and laying hens facilities (7.Z.25.)
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