Consultation De Minimis Assessment

Title:	Ban the keeping of laying hens, pullets and breeder layers in cages
Type of measure:	Secondary legislation
Department or agency:	DEFRA
Contact for enquiries:	Patricia.antunes1@defra.gov.uk
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This is a De Minimis Assessment, therefore has not been reviewed by the Regulatory policy committee (RPC).

Contents

1. Summary of proposal

1. This proposal includes:
   - From 2027, a ban on the building or bringing into service for the first time any enriched 'colony' cage system for the keeping of laying hens (including those in establishments with fewer than 350 birds) and any other caged systems used for pullets and breeder layers;
   - From 2027, a ban on the use of existing conventional 'battery' cages for the keeping of laying hens in establishments with fewer than 350 birds; and
   - From 2032, a ban on the use of existing enriched 'colony' cages for the keeping of laying hens (including those in establishments with fewer than 350 birds) and any other caged systems used for pullets and breeder layers.

2. The literature suggests that moving hens from enriched 'colony' cages into more extensive systems (i.e. barn or free-range systems) increases their freedom to exhibit normal behaviours[1][2][3][4]. Despite a significant transition away from supplying eggs from caged hens, in Q3 of 2025, over 45.9 million dozen eggs came from hens in enriched 'colony' cages, 17% of total throughput in UK packing stations[5]. The major retailers pledged in 2016 to stop selling shell eggs (with some extending this pledge to products containing liquid or powdered eggs) by the end of 2025. With this deadline for the pledge fast approaching, and the fact that the cage-free commitments typically only apply to the laying hen stage and not pullets or breeder layers, combined with the understanding that production method labelling will not be sufficient in improving the welfare of all laying hens, pullets and breeder layers, Government intervention is needed to transition away from remaining cages.

3. The aims of this policy proposal are to:
   i) Improve the welfare of laying hens, pullets and breeder layers in the UK by reducing confinement and ensuring that their behavioural needs are better met by requiring them to be in non-cage systems.
   ii) Reduce the impact on farmers during the transition to cage-free production by spreading the costs.

4. Following HMT Greenbook guidance, the Options Framework- Filter was used to develop a long list of options that were scored using the objectives and critical success factors to make a short list of options. The short list of options considered are:

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[1] Leyendecker, M & Hamann, Henning & Hartung, Joerg & Kamphues, Josef & Prof.Dr Neumann, Ulrich & Sürie, C & Distl, O. (2005). Keeping laying hens in furnished cages and an aviary housing system enhances their bone stability. British poultry science. 46. 536-44. 10.1080/00071660500273094.

[2] Louton H, Bergmann S, Reese S, Erhard MH, Rauch E. Dust-bathing behavior of laying hens in enriched colony housing systems and an aviary system. Poult Sci. 2016 Jul 1;95(7):1482-1491. doi: 10.3382/ps/pew109. Epub 2016 Apr 3. PMID: 27044875; PMCID: PMC4957303.

[3] Rodenburg, Bas & Tuyttens, Frank & Reu, Koen & Herman, L & Zoons, J & Sonck, Bart. (2008). Welfare assessment of laying hens in furnished cages and non-cage systems: An on-farm comparison. Animal Welfare 17 (2008) 4. 17.

[4] T. Shimmura, S. Hirahara, T. Azuma, T. Suzuki, Y. Eguchi, K. Uetake & Dr T. Tanaka (2010) Multi-factorial investigation of various housing systems for laying hens, British Poultry Science, 51:1, 31-42, DOI: 10.1080/00071660903421167

[5] Latest UK egg statistics - GOV.UK

- Option 1 – ban new cages 1st Jan 2027, ban all enriched 'colony' cage production and any other caged systems used for pullets and breeder layers by 1st Jan 2032.
- Option 2 – ban new cages 1st Jan 2027, ban all enriched 'colony' cage production and any other caged systems used for pullets and breeder layers by 1st Jan 2037.
- Option 3 – ban new cages 1st Jan 2030, ban all enriched 'colony' cage production and any other caged systems used for pullets and breeder layers by 1st Jan 2034.
- Option 4 – a complete ban on all enriched 'colony' cage production and any other caged systems for pullets and breeder layers production by 1st Jan 2030.

All the options above include a ban on conventional 'battery' cages from 1st Jan 2027 for all holding sizes.

5. Options 1 and 4 have more favourable Net Present Value (NPV) and Benefit Cost Ratio (BCR) compared to Options 2 and 3. The preferred option is Option 1 because it provides for an earlier ban on the instalment of new cages compared to Option 4 and therefore delivers better welfare outcomes sooner.

6. Table 1 shows the NPV, BCR, household, business, and environmental impacts for each option to the nearest £5m over 20-year appraisal period:

Table 1:

Options	Household benefits (£m)	**Sum of benefits (£m)**	Business costs (£m)	Environmental costs (£m)	**Sum of costs (£m)**	**NPV (£m)**	**BCR**
Option 1	£375	£375	£90	£35	£125	**£250**	**3.0**
Option 2	£170	£170	£55	£15	£65	**£105**	**2.6**
Option 3	£250	£250	£70	£25	£95	**£155**	**2.6**
Option 4	£510	£510	£110	£40	£150	**£360**	**3.4**

7. The consultation on this proposal will set out the options considered allowing for comments which will be reviewed in the final impact assessment.

2. Strategic case for proposed regulation

8. **Problem:** Caged systems[6] are detrimental to laying hen welfare and are still being used in the UK.

9. **Evidence:** Conventional 'battery' cages for use in laying hen production have been banned in the UK and throughout the European Union since 2012, as there is clear scientific evidence that they compromise laying hen welfare[7]. The EU ban targeted commercial scale producers and excluded keepers with less than 350 laying hens. The ban was implemented in England through The Welfare of Farmed Animals (England) Regulations 2007, with comparable legislation in Wales (the Welfare of Farmed Animals (Wales) Regulations 2007), Scotland (the Welfare of Farmed Animals (Scotland) Regulations 2010) and Northern Ireland (the Welfare of Farmed Animals Regulations (Northern Ireland) 2012). Three premises have been identified with fewer than 350 hens still using conventional 'battery' cages in the UK. Breeder layers and pullets are not currently within scope of the cage requirements in the Welfare of Farmed Animals (England) Regulations 2007, and their Welsh, Scottish and Northern Irish equivalents. Under voluntary farm assurance scheme rules, producers are not permitted to keep breeder layers in cages. We, therefore, assume that the impact of a ban on cages for these breeder layer producers will be minimal.

10. Whilst enriched 'colony' cages are a significant improvement on conventional 'battery' cages, they do not fully provide for the physical and behavioural needs of birds. Enriched 'colony' cages prevent hens from accessing the ground, limiting their ability to run, flap their wings, dustbathe, or forage. In Q3 of 2025, over 45.9 million dozen eggs came from hens in enriched 'colony' cages, that's 17% of total throughput in UK packing stations[8]. Scientific evidence indicates that deprivation of certain behaviours has a negative impact on hen mental well-being (e.g. by triggering abnormal/redirected behaviours[9], as the birds are unable to perform those for which they are strongly motivated) and hen physical development (e.g. limited opportunities to exercise inhibits the ability of birds to strengthen their bones[10]). The literature suggests that moving hens from enriched 'colony' cages into more extensive systems (i.e. barn or free-range systems) increases their freedom to exhibit these normal behaviours. The welfare consequences of confinement are also true for breeder layers and pullets in cages.

11. Phasing out caged systems, if not carefully managed, might lead to unintended welfare issues, at least in the short-term. Some evidence suggests that hens kept in barn and

[6] From here, the term "caged systems" is used to refer to enriched 'colony' cages for keeping laying hens and other caged systems used for pullets and breeder layers.
[7] Potori, Norbert & Sulewski, Piotr & Was, Adam & Mórawska, Martyna & Gebska, Monika & Malak Rawlikowska, Agata & Grontkowska, Anna & Szili, Viktor & Erdős, Adél. (2024). End of the Cage Age? A Study on the Impacts of the Transition from Cages on the EU Laying Hen Sector. Agriculture. 14. 111. 10.3390/agriculture14010111.
[8] Latest UK egg statistics - GOV.UK
[9] Weeks, C.A. and Nicol, C.J., 2006. Behavioural needs, priorities and preferences of laying hens. World's Poultry Science Journal, 62(2), pp.296-307.
[10] Tainika, B. and Şekeroğlu, A., 2020. Effect of production systems for laying hens on hen welfare. Turkish Journal of Agriculture-Food Science and Technology, 8(1), pp.239-245.

free-range systems are more likely to suffer from disease[11], keel bone fractures[12,13], injurious pecking[14] and excess mortality[15], although these issues are complex and multi-factorial.

12. There is evidence that mortality gradually drops as experience with alternative systems increases. Since 2000, each year of experience with cage-free aviaries was associated with a drop in cumulative mortality, with no differences in mortality between caged and cage-free systems in more recent years. These results suggest that mortality is not inherently higher in cage-free production and "illustrate the importance of considering the degree of maturity of production systems in any investigations of farm animal health, behaviour and welfare"[16].

13. **Need for intervention:** Remaining cage producers using cages may not have sufficient incentive from retailers, food services, or processed industries to transition away from cage production. In 2016, major UK retailers pledged to stop selling shell eggs from caged hens (with some extending this pledge to products containing liquid or powdered egg eggs) by end of 2025. However, there is no commitment to do the same for egg-based products and the commitments often only cover the system at the point the eggs are laid, not for pullets or breeder layers. In 2016, 41% of eggs in the UK retail sector were from caged laying hens down to 21% in 2024[17] and this percentage has continued to fall in 2025. Industry will sell cage products if there are some, even a small minority of consumers willing to buy them as they are cheaper than free range alternatives. In Section 7 we outline the net consumer welfare of a shift to cage-free egg production. Producers of egg products and the food service sector are likely to use the cheapest eggs because consumers are unable to make informed decisions to influence industry practices. Even if consumers had information regarding the method of production of products containing egg or eggs sold in the food service sector, some eggs would continue to be produced in cages. Government intervention is needed to remove all cages from egg production systems to improve the overall welfare of laying hens, pullets and breeder layers. For the rest of the document the term laying hens is used to also refer to pullets and breeder layers unless otherwise specified.

14. Similar to the UK, there are no specific requirements for pullets or breeder layers regarding husbandry system in the EU legislation. Enriched 'colony' cages are likewise still permitted in the European Union for laying hens, but their use varies by country.

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[11] Fossum O, Jansson DS, Etterlin PE, Vågsholm I. Causes of mortality in laying hens in different housing systems in 2001 to 2004. Acta Vet Scand. 2009 Jan 15;51(1):3. doi: 10.1186/1751-0147-51-3. PMID: 19146656; PMCID: PMC2652464.

[12] Käppeli S, Gebhardt-Henrich SG, Fröhlich E, Pfulg A, Schäublin H, Stoffel MH. Effects of housing, perches, genetics, and 25-hydroxycholecalciferol on keel bone deformities in laying hens. Poult Sci. 2011 Aug;90(8):1637-44. doi: 10.3382/ps.2011-01379. PMID: 21753197.

[13] Rodenburg, Bas & Tuyttens, Frank & Reu, Koen & Herman, L & Zoons, J & Sonck, Bart. (2008). Welfare assessment of laying hens in furnished cages and non-cage systems: An on-farm comparison. Animal Welfare 17 (2008) 4. 17.

[14] Sherwin, C.M., Richards, G.J. and Nicol, C.J. (2010) A Comparison of the Welfare of Layer Hens in Four Housing Systems in the UK. British Poultry Science, 51, 488-499. http://dx.doi.org/10.1080/00071668.2010.502518

[15] Weeks CA, Brown SN, Richards GJ, Wilkins LJ, Knowles TG. Levels of mortality in hens by end of lay on farm and in transit to slaughter in Great Britain. Vet Rec. 2012 Jun 23;170(25):647. doi: 10.1136/vr.100728. Epub 2012 Jun 7. PMID: 22678619.

[16] Schuck-Paim, C., Negro-Calduch, E. & Alonso, W.J. Laying hen mortality in different indoor housing systems: a meta-analysis of data from commercial farms in 16 countries. *Sci Rep* **11**, 3052 (2021). https://doi.org/10.1038/s41598-021-81868-3

[17] UK Egg Industry Data | Official Egg Info

While conventional 'battery' cages were banned in 2012 for laying hens only (for producers with more than 350 laying hens), enriched 'colony' cages remain legal under EU legislation. In the EU, Luxembourg and Austria have already banned all cages for laying hens, and Sweden has announced it is cage-free but without a legislated ban. In addition, Czechia, Slovakia, Slovenia, France, Denmark and Germany have either banned the installation of new cages and/or are already phasing out existing cages. Poland has the greatest number of hens in enriched 'colony' cages in Europe (as of 2023). The top three egg and egg product exporters by volume to the UK in 2024, were the Netherlands (43.8%), Poland (19.6%) and France (8.5%).

15. The EU Commission's Vision for Agriculture, published in Feb 2025[18], stated that the Commission will present proposals on cage reform based on the latest scientific evidence and consider the socio-economic impact on farmers, the agri-food chain, with species-specific transition periods[19]. In June 2025, the EU Commission published a Call for Evidence on their initiative to modernise EU animal welfare legislation, including the phasing out of cages, which closed on 16 July[20]. Since then, the Commission has launched a public consultation[21] on on-farm welfare including on phasing out the use of cages and aims for the first legislative proposals on cage reform to be announced in 2026[22].

16. **Gaps/harms:** There is growing consumer demand for cage-free eggs across retail and food service sectors. Aligning production with these expectations would strengthen public trust in domestic egg supply chains. This trust is vital for resilience, as it helps maintain consumer confidence during periods of disruption or crisis.

17. If Government doesn't intervene, caged systems will continue to be used in some egg production systems (including for pullet stage hens and for breeder layers), continuing the negative welfare outcomes for laying hens such as limiting their ability to run, flap their wings or dustbathe. There will continue to be a negative externality of consuming eggs produced from enriched 'colony' cages, in that the price paid by consumers does not account for the negative effects on the health of laying hens.

18. The risk of not proceeding with cage reforms is largely reputational as opposed to legal, as we will no longer be seen as being a world leader on animal welfare. There is strong public demand to improve the welfare of laying hens by ending the use of cages. Parliamentarians, animal welfare organisations and the public continue to press for reforms. There have been Parliamentary debates on 'Ending the Cage Age' in 2020[23], 2022[24] and 2025[25], triggered by Compassion in World Farming e-petitions. Other animal welfare NGOs including the RSPCA[26] [27] have their own campaigns. Animal welfare

[18] https://agriculture.ec.europa.eu/overview-vision-agriculture-food/vision-agriculture-and-food_en
[19] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52025DC0075
[20] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/14671-On-farm-animal-welfare-for-certain-animals-modernisation-of-EU-legislation_en
[21] On-farm animal welfare for certain animals: modernisation of EU legislation
[22] https://www.animalwelfareintergroup.eu/calendar/exchange-views-oliver-varhelyi-eu-commissioner-health-and-animal-welfare
[23] https://petition.parliament.uk/archived/petitions/243448
[24] https://petition.parliament.uk/archived/petitions/593775
[25] https://petition.parliament.uk/petitions/706302
[26] https://www.rspca.org.uk/getinvolved/campaign/farmcages
[27] https://politicalanimal.rspca.org.uk/england/issues/end-cages-for-farm-animals

NGOs are concerned that the UK is falling behind European countries that have already banned enriched 'colony' cages. There will continue to be significant criticism from MPs, animal welfare NGOs and the public, for failing to act in line with scientific evidence on the animal welfare impacts of these systems. The Scottish Government undertook a consultation to phase out enriched 'colony' cages earlier in 2024 to fulfil its commitment in its Programme for Government and, like the Welsh Government and Northern Ireland Executive, wish to phase out cages on a UK basis.

19. **Post-implementation review:** There have been no post-implementation reviews of existing regulation or any previous regulation in this area (the Welfare of Farmed Animals (England) Regulations 2007 and comparable legislation in Wales, Scotland and Northern Ireland).

3. SMART objectives for intervention

Policy objectives

20. The aims of this policy proposal are to:

I. Improve the welfare of laying hens, pullets and breeder layers in the UK by eliminating the use of caged systems in UK egg production. No new enriched 'colony' cage installations from 2027 and 100% of existing enriched 'colony' cages decommissioned by the latest 2032 for laying hens and the same for any other caged systems used for pullets and breeder layers. This should be achievable based on industry readiness, international precedents (e.g. Austria and Luxembourg), and stakeholder engagement.

II. Reduce the impact on farmers during the transition to cage-free production by spreading the costs. Disruption to egg producers (including pullet rearers and breeders) will be minimised by providing more time to remove existing cages, clear regulatory timelines and technical guidance to support financial decisions. This would mean UK egg production volumes remaining relatively consistent with historic trends after the enforcement of the policy. This should be achievable given current production trends moving towards cage-free production with regulation and that less than 20% of the industry will be impacted. This will support a smooth transition while maintaining domestic egg supply and compliance with animal welfare goals.

Intended outcomes

21. In the short term, the intended outcome is that farmers that wish to stay in the industry can transition to cage free production and that farmers learn to adapt and be productive using cage-free systems, which will improve the welfare of hens. The issue of enriched 'colony' cages for laying hens has been considered a totemic animal welfare issue for years, with consistently high interest from the public and key animal welfare NGOs, across e-petitions, public campaigns and parliamentary debates.

22. In the long term the intended outcomes are that the welfare of laying hens will increase creating a new, higher, minimum industry standard, with farmers confidently operating new cage free systems and finding ways to improve production whilst ensuring food security.

Alignment with HMG objectives

23. The animal welfare strategy for England was published on 22 December 2025[28]. It sets out the government's priorities for improving animal welfare, and the steps needed to deliver them. Removing the use of intensive confinement systems is an essential component of the government's plan to ensure all farmed animals have a life worth living, and that as many animals as possible have a good life. Ending the use of cages is therefore a priority for this government and there is a commitment to consult on phasing out enriched 'colony' cages.

24. Regarding the HMG growth objective, the policy aims to make improvements in animal welfare in the egg production sector while taking into consideration the impact on farmers and market production. This policy may have some short-term growth impacts, for example, increases in demand in construction, but the primary objective is to improve animal welfare.

25. The UK Government's recently published the Food Strategy for England[29]. Our proposal links with Outcome 5 of the food strategy: Food supply is environmentally sustainable, with high animal welfare standards, and waste is reduced. Additionally, well-managed cage-free systems can contribute to more sustainable farming practices, enhancing the long-term viability of the sector.

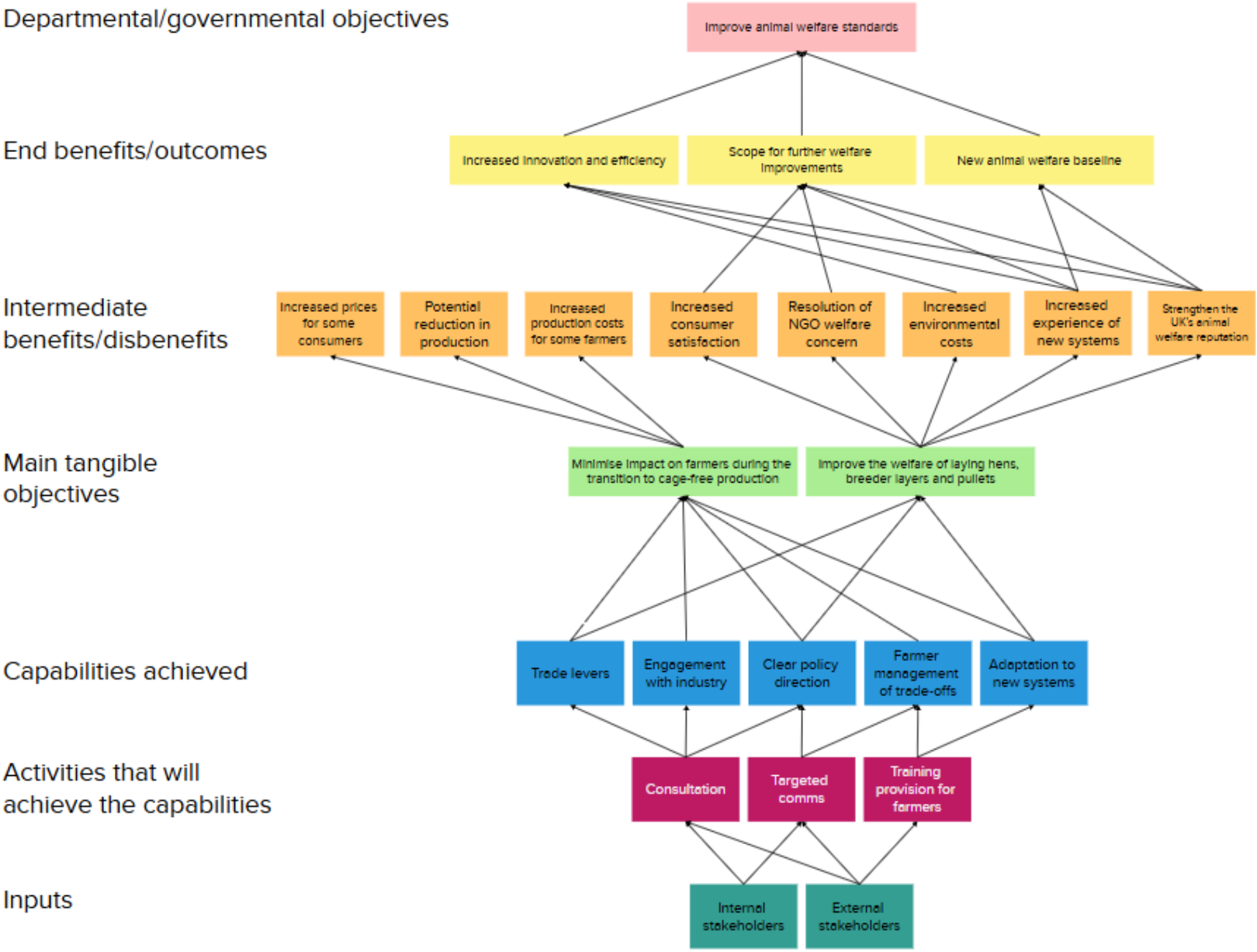
26. Our proposal also links with Outcome 7 of the food strategy: Resilient domestic production for a secure supply of healthy food. Transitioning to cage-free systems supports the modernisation of domestic egg production, helping it remain viable and competitive. By investing in higher welfare systems, producers can access premium markets and maintain stable demand, which further supports long-term resilience.

4. Description of proposed intervention options and explanation of the logical change process whereby this achieves SMART objectives.

27. The preferred option is to ban the installation of cages in egg production from 2027 with all cages banned from 2032. The preferred option meets the first objective by ensuring no laying hens continue to experience low welfare associated with cages with all farms moving to higher welfare egg production methods. This option meets the second objective by trying to make the transition more affordable by allowing farmers to spread the cost of investing in new capital, adapt to new practices and negotiate new contracts. This option provides the best balance in meeting the policy objectives by improving laying hen welfare as soon as possible whilst given industry sufficient time to transition compared to other options.

28. The following theory of change outlines how the intervention will achieve the objectives.

[28] Animal welfare strategy for England - GOV.UK
[29] https://www.gov.uk/government/publications/a-uk-government-food-strategy-for-england/a-uk-government-food-strategy-for-england-considering-the-wider-uk-food-system#annexes


Departmental/governmental objectives
Improve animal welfare standards
End benefits/outcomes
Increased innovation and efficiency
Scope for further welfare improvements
New animal welfare baseline
Intermediate benefits/disbenefits
Increased prices for some consumers
Potential reduction in production
Increased production costs for some farmers
Increased consumer satisfaction
Resolution of NGO welfare concern
Increased environmental costs
Increased experience of new systems
Strengthen the UK's animal welfare reputation
Main tangible objectives
Minimise impact on farmers during the transition to cage-free production
Improve the welfare of laying hens, breeder layers and pullets
Capabilities achieved
Trade levers
Engagement with industry
Clear policy direction
Farmer management of trade-offs
Adaptation to new systems
Activities that will achieve the capabilities
Consultation
Targeted comms
Training provision for farmers
Inputs
Internal stakeholders
External stakeholders

5. Summary of long-list and alternatives

Summary of long-listing appraisal

29. The critical success factors (CSFs) consider what is needed to successfully deliver the objectives in Section 3 as well as constraints and dependencies. Based on the five basic CSFs from HMT Greenbook and working with key stakeholders the following CSFs were identified.

Meeting strategic fit and business need	How well the option: • Fits with the Government's ambition to continue to improve farm animal welfare. • Reduces confinement and ensures that the freedom to express normal behaviour, one of the Five Freedoms developed by the Farm Animal Welfare Committee (now known as the Animal Welfare Committee), is better met for birds currently in caged systems.
Potential value for money	How well the option optimises social value considering: • The benefits from animal welfare to society, • Economic costs to business and households, • Environmental costs/benefits
Achievability	How well the option matches the ability of farmers to deliver the required changes within the proposed timeframe for example financial and planning implications, taking into consideration other pressures on the industry.
Affordability	How well the option could be financed and considers sourcing constraints.

30. A workshop was conducted between economists and policy leads in on-farm welfare that have regular engagement with industry. We developed viable options by considering the logical sequence of the option choices (scope, solution, delivery, implementation and funding) as set out in HMT Greenbook. To develop our shortlisted options, we considered if the long list options would meet the objectives, CSFs and the outcome of a high-level SWOT analysis. If an option didn't pass the objectives, it was rejected straight away, if the option met the objectives but not the CSFs it would be rejected. The table below demonstrates the options considered for each option choice and how they were appraised to get to our short-listed options.

Alternatives considered and why they were discarded.

Scope

31. For the scope option choice, we considered which businesses/industries could be covered by the policy. This stage focuses on the 'who' is the policy directly aimed at not the 'how' therefore we did not score our scope options against the second objective. Any option that did not meet the other objectives was rejected and not assessed against the critical success factors. Only the option to target the policy at all holdings or including all industries at the end of the supply chain were carried forward.

	Scope		
Option	**Intermediate option - All farms with caged laying hens**	**Do minimum - Only Food services and food manufacturing – aiming the policy at the industries that are not as transparent on where their eggs/egg products come from.**	**Do maximum - All industries where eggs and egg products are sold (retail, food service and food manufacturing)**
Does it meet SMART objectives?	Yes – By directing the policy at farmers who directly influence animal welfare, the policy should have the biggest impact on the wellbeing of laying hens in the UK.	No – This is only a partial solution, as currently there are still eggs produced from caged hens that are being sold in the retail sector which wouldn't be covered by this policy. The limited scope prevents all laying hens from benefiting from improved animal welfare.	Yes – With the policy targeted at the end of the supply chain it would result in **all** egg products supplied in the UK being from cage free laying hens. The UK doesn't produce as many eggs as the population consumes so imports would also be impacted.[30] Banning the sale of caged eggs and egg products would be an ambitious option as it goes beyond the commitments made by most other countries.
Does it meet Critical Success Factors?	Yes- This option maximises benefits to animal welfare therefore meeting government ambition. Consumers have shown a strong preference for cage free production by purchasing free range products where this information is available on shell eggs sold in retail. This has been confirmed by numerous studies[31], where UK consumers have consistently shown strong support for cage-free production. We therefore expect this consumer preference would also apply for egg products, as well as eggs sold in food service sector. Most shell eggs in retailers are from free range systems which demonstrates that farmers can produce free range-eggs profitably. It can be affordable to transition to free range, but we need to consult industry to be certain this is the case in the food service and egg products sectors.	Partially – It would continue to improve animal welfare by targeting the industries with less transparency on what type of eggs are used in their products. These industries receive the largest proportion of eggs from caged laying hens and it's estimated that around 10% of demand is met by non-shell eggs produced in the UK, We will need feedback on the consultation to confirm. Any exit from the market might result in an increase in imports of low welfare egg products, which doesn't achieve governments objectives.	Yes- This option maximises benefits to animal welfare by including the imports of eggs from caged laying hens which reduces any potential risk that farmers are undercut by imports from countries which continue to allow cage production. The financial impact will be small in sectors where the cost of eggs makes up a small proportion of overall costs be it processed foods with egg as one of several ingredients or hospitality. Furthermore, as most shell eggs in the retailer sector are free range eggs impact on retail prices are likely to be limited. Similarly to option one, it can be affordable to transition to cage free systems, but we need to consult industry.

[30] UK Egg Industry Data | Official Egg Info

[31] Consumer perceptions of free-range laying hen welfare - the University of Bath's research portal

Notes on strengths and weaknesses	Strength - This option covers all eggs sold domestically and for exports. Weakness - This option does not prevent imports of eggs from caged hens. This option does not fully address the information failure of consumers knowing which type the production system is used for the eggs in egg products or catering options. .	Strength – Targets the sectors with the greatest use of eggs from caged laying hens. Weakness – It won't benefit all laying hens in cages in the UK.	Strength - This option captures all eggs and egg products sold in the UK ensuring a level playing field between UK farmers and imports. Weakness - In absence of clear labelling on all products containing eggs, it will be near impossible to enforce in a diverse food sector with hundreds of egg products, in particular in relation to imported products.
Going forward, or rejected?	Preferred way forward – Meets all objectives and CSFs.	Rejected – This option does not have universal application to all hens, limiting welfare improvements and does not provide a clear message to producers of what is acceptable welfare practices.	Carried forward – This option is carried forward as it would improve welfare for all hens domestically but is not the preferred option due to potential import enforcement challenges.

Solution

32. We considered the different solutions for the options carried forward from the scope choices, all farms and all industries selling egg products. During the workshop we considered options based on potential impact to animal welfare, technologies available, enforcement possibilities and best practice. At this stage only the option to ban cages in farms results in the largest impact on animal welfare but also the easiest to enforce. The other options considered are various methods of informing consumers of current production methods which will require consumers as well as retailers and food services changing their behaviour to influence a reduction in supply of eggs from caged hens. There are several factors that influence consumption including availability, price and information. There is significant uncertainty around whether these options could ensure all hens are in a cage free system within an acceptable period. For these reasons we are not carrying forward non-regulatory options into the short list.

	Solution				
Option	**Require that industry publish what systems are used to produce the eggs they source on their company websites**	**Require animal welfare labels on products containing eggs and on restaurant menus**	**Ban on all cages across farms in the UK**	**Consumer information campaign on different production methods**	**Consumer information campaign on supermarket pledge.**

Does it meet SMART objectives?	No - This option would rely on consumers visiting company websites before making purchasing decisions which if time consuming, which might not happen. In turn sufficient consumers would have to reject products produced with caged eggs for this option to lead manufactures to change their eggs to cage free eggs. The transition to cage free egg production would most likely be slow, not adopted by the whole market and conflicting with the first objective to improve animal welfare.	No – Animal welfare labelling allows consumers clear view of the welfare standards of the products they consume. Greater transparency on labels could help in shifting demand and influencing retailers' behaviours too. However, some consumers may be price sensitive and not purchase cage free egg products resulting in not all production moving to cage free.	Yes – A ban on all farms means all laying hens will benefit from improved animal welfare. However, this option has the greatest impact on farmers because it directly affects all farms still using cages. All other options considered at this stage would not create sufficient change to animal welfare therefore we will explore options under the implementation choices that reduces impact to farms and carry this option forward.	No - Not all egg products state if they are from cage free production so consumers may either maintain or reduce overall consumption resulting in no change in production methods and therefore laying hens welfare. This option might have minor impact on farmers.	No – This option has the same limitations as the option on consumer information on production methods. Additionally, the retail sector mostly supplies free range shell eggs so the ban will only impact a small number of farms therefore laying hens. The cost to farmers maybe small as if they cannot supply retailers, they can supply other industries such as the food service and manufacturing.
Does it meet Critical Success Factors?	No - Assuming the transition to cage free production is slow, this would meet affordability and achievability factors for farmers. However, it doesn't meet the strategic fit of Government and the magnitude of the welfare benefits achieved would be highly uncertain making it difficult to assess if it would deliver value for money.	Yes – Farmers can adapt their production based on consumer demand so changes in production should be proportionate, affordable and achievable. Research shows consumers are willing to pay more for cage free eggs[32], so this option may provide value for money if the benefits to consumers outweigh the costs of updating labels.	Yes – This option has a strong strategic fit with government ambition and potential value for money as benefits are maximised from improving welfare for all hens despite potentially having the largest environmental costs. This option can still ensure an affordable and achievable approach for farmers and will be tested as part of the consultation.	Partially- It is uncertain how consumers will react to the campaign and therefore help meet government's strategy and be value for money. It could either be affordable and achievable for farmers if there is a slow shift in practice or if consumers reduce consumption suddenly it could have large negative impacts on farmers to adapt.	No – Whilst this option has the same shortfalls as the previous option, it also will only impact production of eggs to supermarkets not the entire industry.

[32] Provision of a method for the economic valuation of animal welfare benefits suitable for use in policy appraisal - Main Report January 2025.pdf

Notes on strengths and weaknesses	Strength – Potentially an affordable option for farmers. Weakness – Expect it to have a minimum impact on improving animal welfare.	Strength - consumers would have the information readily available and easily accessible to decide what to consume, labelling of animal welfare has already been tested through consultation so we have some evidence of public opinion to inform policy design. Weakness – Existing mandatory method of production labelling for shell eggs has helped enable a significant market shift, from 32% free-range retail sales in 2004 to around 70% today. If the aim is to have no laying hens in cages, then this option would not be enough to lead to a 100% market shift away from eggs in cages.	Strength – Largest positive impact on animal welfare. Weakness – The policy may result in increased demand for cheaper low welfare caged egg imports.	Strength – Does not require regulation. Weakness- It's difficult to predict consumers' and industry's reaction and impact on farmers.	Strength – Does not require regulation. Weakness – This option has minimum improvement in animal welfare as not addressing the sector most likely using mostly caged eggs. It's also difficult to predict consumers reaction and impact on farmers.
Going forward, or rejected?	Rejected	Rejected	Preferred way forward	Rejected	Rejected

Implementation

33. The next step in the options framework filter is to consider who is best placed to deliver the options. The only option carried forward from the solution choices (ban on all farms) can only be delivered through central government therefore we have not conducted an analysis on different delivery options or assessed it against objectives, CSFs or a SWOT analysis conducted.

34. The implementation choices below have been considered based on a ban on cage use in all egg farms in the UK as it was the only option to be carried forward based on solution and scope. We have also considered the options consulted on by the Scottish government. The focus of the implementation was on how the option could be delivered that meets the second smart objective, which has been challenging to consider in previous option choices, whilst not significantly compromising improvements in animal welfare,

the first objective. Many options were considered, for ease we have split them into two tables, with the first table covering the options that were rejected and the second table the options carried forward.

Implementation – rejected options

Option	Within one year from the regulation being made, ban new cages only and a natural phase out for existing cages.	Within five years from regulation being made, ban all cages in large farms and ten years for small farms.	Ban all cages within the first year of the regulation being made.	Ban the use of cages ten years from the regulation being made.
Does it meet SMART objectives?	No - More space is needed per bird in a cage free system as they cannot be stacked as in a cage system. Farmers will either need to build more barns and/or buy more land. Purchasing land, planning permissions and building barns take time and are expensive. Feedback from industry suggests that enriched 'colony' cages can last up to 20 years. If cages are installed just before the ban, it can take 20 years to see a cage free system. Farmers might also change their behaviour and instead repair existing cages to avoid the ban, this will not maximise animal welfare.	No - This option was considered in developing the long list as a possibility to reduce the impact on farms with 350 hens or less and consider the distributional impact of the regulatory change. Most producers are small farms (see the SaMBa section below) therefore giving them a longer time to transition will prolong the suffering of most laying hens. Given small farms make up most of the market it doesn't seem necessary to create exemptions or a longer transition for most of the market. We can expect their views to be reflected in the consultation and inform the final policy intervention.	No - It would be very costly and difficult for the industry to transition given how long it takes to find land, buy and build on it. It would be difficult to show the second objective, reducing impact on farmers, was taken into consideration. The outcome would be a lot worse as mandating all cages in a year to be removed, could impact production. If a farmer needs to use existing barns for a cage free system, the hens will need to be moved to allow the removal of the cages, and any other adaptation needed to be compliant.	No - The long lead time will prolong the low animal welfare standard currently experienced by caged hens some of which are still in conventional 'battery' cages. Given banning caged hens has been heavily debated and championed over the years for example by retailers, we assume that the industry has had the opportunity to consider and make plans for a potential transition.
Does it meet Critical Success Factors?	Partially- To allow for a natural transition for existing cages, the benefits for all hens will be gradual and could be argued as too slow but would make it affordable and achievable for farmers.	Yes – The transitions period is achievable and expected to be affordable for farmers, but this will be tested at consultation. This option would remove all hens from cages which is an improvement on animal welfare and a strategic fit with Government ambition.	No – Not considered achievable or affordable for farmers.	Yes - This option would remove all hens from cages which is an improvement on animal welfare and a strategic fit with Government ambition but potentially at a slower rate than other options considered.

Notes on strengths, weaknesses	Strength – Allows farmers to maximise the use of current assets whilst still ensuring transition out of cages at the end of asset life. Weakness – Potentially slow improvements in animal welfare.	Strength – Meets CSFs. Weakness – The policy is likely to prolong suffering for most hens as the majority are small farms.	Strength – Quick transition could mean more hens experience higher welfare sooner. Weakness – Doesn't meet CSFs.	Strength – Meets CSFs. Weakness – Long lead time means more hens will experience low levels of welfare before improvements are made.
Going forward, or rejected?	Rejected – doesn't meet objectives	Rejected – doesn't meet objectives	Rejected – doesn't meet objectives	Rejected – doesn't meet objectives

Implementation – options carried forward

Option	**Immediate ban on the use of conventional 'battery' cages, a 2027 ban on the instalment of new cages, leading to a 2032 ban on enriched 'colony' cage production for laying hens and any other caged systems used for pullets and breeder layers.**	**Immediate ban on the use of conventional 'battery' cages, a 2027 ban on the instalment of new cages, leading to a 2037 ban on enriched 'colony' cage production for laying hens and any other caged systems used for pullets and breeder layers.**	**Immediate ban on the use of conventional 'battery' cages and align with options from Scotland's consultation – Ban all new enriched 'colony' cages for laying hens and any other caged systems used for pullets and breeder layers by 2030 and remove the existing cages by 2034.**	**Immediate ban on the use of conventional 'battery' cages and align with options from Scotland's consultation - Ban all-existing cages by 2030.**
Does it meet SMART objectives?	Yes – This option balances improving the welfare of as many hens as soon as possible, the amount of time and potentially costly process transitioning to new egg production systems (including for pullet rearers and breeders).	Yes – For the same reasons as the previous option.	Yes – For the same reasons as the previous two options.	Yes – This option improves the welfare for all hens within the same timeframe. The short phase out period shows strong determination to improve animal welfare as soon as possible. It does provide some time for farmers to transition and spread the capital cost of doing so.
Does it meet Critical Success Factors?	Yes- It aligns with the strategic fit and business need. The option optimises social value by trying to maximise animal welfare benefits whilst managing economic costs to businesses. The transition	Yes – This option does meet all CSFs but compared to the previous option, maybe deliver lower value for money. The longer transition means it takes longer for all hens to see an improvement in welfare, even if costs are spread out over a	Yes – This option does meet all the CSFs but the delay of the introduction of the ban on new cages delays benefits materialising with lesser impact on costs compared to option one.	Yes – This option meets all CSFs. It will deliver the most benefits but at a greater cost to industry because of existing cages being banned sooner than the other options considered.

	should be achievable and affordable for farmers.	longer time they don't fall as much as the welfare benefits.		
Notes on strengths, weaknesses, opportunities and threats	Strength – Five years should provide time for business planning and transition to a new system. Weakness -Some inefficiency if cages still have economic life.	Strength – Costs can be spread over a longer time, more than other options considered. Having a longer transition period may ensure more farms stay in the industry. Weakness – The longer phase out period means hens suffer for longer.	Strength - It is halfway between a five year and a ten-year phase out period of existing cages so it benefits farmers more than the preferred option. Weakness - Results in longer suffering for hens as the ban is introduced later than the preferred and 10-year transition option.	Strength – This option is good for hens' welfare as farmers may not invest in new cages or repair existing ones if they need to remove them so soon after. Weakness - If farmers have a short period to transition all their operation, it a large upfront cost and potentially drive-up local land prices due to increase in demand.
Going forward, or rejected?	Preferred way forward	Carried forward	Carried forward	Carried forward
Which is Do minimum, preferred, do maximum	Preferred option	Do minimum – meets objectives, least expensive, slowest rate of animal welfare improvement	Other viable option – Still meets objectives and CSFs, but hens would be in cages for longer than the preferred option and cheaper than the do maximum.	Do maximum – most expensive, quickest animal welfare improvement

35. When we created the funding option choices, we considered what solutions would cost and how it would be paid for. For example, we had estimates for a ban from a previous impact assessment, so we had an estimate of cost to society. Going through the long list appraisal exercise this funding option is the only viable option. Section 6 below outlines the costs of the preferred option.

6. Description of shortlisted policy options carried forward.

Summary of shortlisting appraisal

36. By taking the preferred solution of banning the use of cages for laying hens, pullets and breeder layers in farms in the UK and the implementation options carried forward from the long list above, the following short-listed options were developed. The short list of options is comprised of four options with transition periods.

37.

a. Option 1 – ban new cages 1st Jan 2027, ban all enriched 'colony' cage production for laying hens and any other caged systems used for pullets and breeder layers by 1st Jan 2032.
b. Option 2 – ban new cages 1st Jan 2027, ban all enriched 'colony' cage production for laying hens and any other caged systems used for pullets and breeder layers by 1st Jan 2037.
c. Option 3 – ban new cages 1st Jan 2030, ban all enriched 'colony' cage production for laying hens and any other caged systems used for pullets and breeder layers by 1st Jan 2034.
d. Option 4 – a complete ban on all enriched 'colony' cage production for laying hens and any other caged systems used for pullets and breeder layers by 1st Jan 2030.

In addition, all the options above include a ban on conventional 'battery' cages from 1st Jan 2027 for all holding sizes.

38. The preferred option amongst the long list was option 1 which would see a prohibition on installing new cages for the use of egg production from the 1st Jan 2027, and a prohibition on the use of any caged systems in egg production by 1st Jan 2032. This was the preferred option as it strikes a balance between the objectives of improving the welfare of as many laying hens as possible whilst ensuring its achievable and affordable for most farmers. A cost-benefit analysis (CBA) was conducted to assess the value for money of the preferred option. This section covers the costs, benefits and assumptions used in the analysis and the sensitivity analysis conducted. The outputs from the CBA and key risks are outlined in Section 7 and the analysis and evidence summary for all the short-listed options in Annex 1.

Assumptions

	Assumption	**Source**

<table>
<tr><td>Egg production forecast</td><td>A steady growth rate of 1% a year.</td><td>Based on official Defra statistics[33], year on year growth in egg production has averaged 1% over the last 5 years.</td></tr>
<tr><td></td><td>Decreases in cage system production will be made up by non-cage production methods and that supermarkets will meet the retailer pledge to stop selling eggs from caged hens by end 2025.</td><td>This does not mean that eggs from laying hens in enriched ‘colony’ systems will stop being produced. Based on discussion with industry stakeholders and Compassion in World Farming’s Egg Track Europe 2024 report[34]. Meeting the cage free pledge is tested in the sensitivity analysis in Annex 1, as 28 out of the 39 companies included in the Egg Tracker are classed as “leaders” or “in progress” in relation to meeting the cage free pledge.</td></tr>
<tr><td></td><td>Some farmers might opt to switch to a barn production, but the majority will switch to free range which is more popular with consumers. This table shows the transition assumptions in the do nothing and preferred option.
<table>
<tr><th></th><th>Baseline</th><th>Option 1</th></tr>
<tr><td>% remain in enriched ‘colony’ production</td><td>55%</td><td>0%</td></tr>
<tr><td>% of enriched ‘colony’ to barn conversion</td><td>15%</td><td>20%</td></tr>
<tr><td>% of enriched ‘colony’ to barn new capacity</td><td>15%</td><td>20%</td></tr>
<tr><td>% of enriched ‘colony’ to FR conversion</td><td>15%</td><td>20%</td></tr>
<tr><td>% of enriched ‘colony’ to FR new capacity</td><td>0%</td><td>40%</td></tr>
</table></td><td>Based on what’s currently supplied in the retail sector. This assumption is tested as part of the sensitivity analysis in Annex 1.</td></tr>
</table>

[33] https://assets.publishing.service.gov.uk/media/6880c380f47abf78ca1d3535/PackerShellEggDataset_250724.ods
[34] EggTrack 2024 EU Spotlight: Progress and Challenges in Cage-Free Transition

Conversion time loss	It takes at least 3 months to refurbish or build a new barn we use an estimate of 6 months to make the switch to non-cage production systems.	Desk research suggests it takes between 8 – 13 weeks to receive planning permission. We expect that these systems would be unable to produce eggs as the production systems will be unusable during the conversion process. This assumption will be tested as part of the consultation.

Monetised costs

39. Conversion time loss

Some farmers might need to undergo significant refurbishment or build new barns to change their production systems. To calculate the cost of downtime to convert, we assume that in the first year of the ban, egg producers (including pullet rearers and breeders) transitioning away from caged systems, will cease production for 6 months. In the conversion year of option 1, businesses switching to free range systems will save on production costs but will also lose revenue in this time. In total this is a loss in profit of £7.8m, which we calculate by multiplying the profit per enriched egg with the quantity produced in 2031, and taking 6 months. This assumption will be tested as part of the consultation.

40. Conversion costs

This includes investments in buildings, equipment, and land needed to increase or maintain hen capacity to produce the same number of eggs as in the baseline. Data comes from a report commissioned by the British Free Range Egg Producers Association (BFREPA) on the likely impacts of the commitments made by retailers for 2025 including costs for farmers to transition from enriched 'colony' production systems to barn or free range for laying hens. Facilities currently with cages will have to remove these cages and invest in the infrastructure for non-cage systems. They can either become barn, free range, or organic farms, or exit the market. The report estimated that the one-off capital cost of converting from an enriched 'colony' cage to a British Lion code barn or free range

would cost £16 per hen in 2020 prices[35], in 2025 prices this is £19 per hen. Some farms may decide to build new barn or free-range facilities, which is estimated as £42 per hen in 2025 prices.

41. These costs are then applied to the egg production forecast for the baseline scenario and short-listed options to calculate the net cost to business. In the baseline scenario, we use annual average growth rates over the last 5 years (2020-2024) to forecast a 1% increase in annual egg production per year for the next 20 years. We also forecast changes in the production methods of eggs as enriched production has contracted by an average of 12% per year, while free range has grown at 7% per year. Due to volatility in barn production, we keep this at the 2024 level which is 67m dozen eggs, and so as the total quantity of eggs produced rises, the percentage of the market supplied by barn is diluted.

42. For the shortlisted options, we anticipate all enriched production to transition to barn or free range, as in the assumptions table from the year of the ban on all cages. We deduct the cost of the baseline from the cost of the option to give the net cost of the policy. We test these costs and forecasts in the sensitivity analysis which still returns a positive BCR.

43. <u>Production costs:</u>
There are slightly increased production costs for eggs from laying hens in non-cage systems. The report commissioned by BFREPA assesses the production costs for each system which includes hen cost at 20 weeks, feed costs, labour costs, manure disposal costs, general costs, and other costs. In 2025 prices these costs total 5.8p per egg for enriched 'colony' cage eggs, 7.0p for barn eggs, and 8.0p for free range eggs. There is a greater increase in the cost of production if producers switch to free range eggs, rather than to barn eggs. Production costs are calculated using the following formula:

Annual production (excluding capital) cost per system = Annual egg production forecast * pence per egg excluding housing (* GDP deflator)

The table below shows the additional total production cost across the 20-year appraisal period before deflation for laying hens only. The production costs are the same regardless of if it's a new barn system or one that was converted from enriched colony production. Production costs are zero for enriched eggs typically demanded by retailers that committed to go cage free as in every scenario they met the commitment to end supply from 2025. Organic production costs are zero as it's assumed that there is no increase in the production of organic eggs and therefore costs, due to any of the shorted options.

[35] Update on the Impacts of Retailers' Non-Cage Commitments for Eggs – BFREPA August 2020. The British Lion Code of Practice is a food safety scheme with over 90% of UK eggs produced under the British Lion scheme. Any transition to cage free production will most likely be to the British Lion code standard.

Table 1: Total production cost by production method

Total production cost	Enriched retailer committed	Enriched non-committed retailer	Enriched non-retailer	Barn Converted	Barn New	Free Range Converted	Free Range New	Organic	Total
Option one	£0	-£62.9m	-£164.7m	£62.1m	£127.7m	£67m	£23m	£0	£52.1m
Option two		-£29.9m	-£78.3m	£14.8m	£25.5m		£67.9m	£0	£31.6m
Option three	£0	-£40.7m	-£106.7m	£20.1m	£37.5m	£43.2m	£93.3m	£0	£46.7m
Option four	£0	-£72.3m	-£189.3m	£47.9m	£58.6m	£90.1m	£139.4m	£0	£74.4m

Table 22: Production cost for laying hens and pullets - deflated and in real prices

	Option one (preferred)	Option two	Option three	Option four
Production costs	£40.6m	£20.7m	£32.3m	£56.0m

44. Global warming potential:

Egg production in non-cage systems produce more CO2 equivalent emissions compared to enriched 'colony' cage systems. This is due principally to lower productivity and lower number of birds per m^2 in non-cage systems. The global warming potential for each egg production system is taken from academic papers[36].

For barn, FR, & organic: https://www.researchgate.net/publication/51902692_Predicting_the_environmental_impacts_of_chicken_systems_in_the_United_Kingdom_through_a_life_cycle_assessment_Egg_production_systems

For colony cage: https://www.researchgate.net/publication/260381678_The_effects_of_welfare-enhancing_system_changes_on_the_environmental_impacts_of_broiler_and_egg_production

[36] For barn, FR, & organic: https://www.researchgate.net/publication/51902692_Predicting_the_environmental_impacts_of_chicken_systems_in_the_United_Kingdom_through_a_life_cycle_assessment_Egg_production_systems

Table 3 : CO2 equivalent emissions by production method

	Cage	Barn	Free range	Organic
Tonnes of CO2 per egg	0.000175	0.000214	0.000210	0.000212

When these values are applied to the number of eggs produced in the four production systems across the assessment period, we can derive an estimate for the additional tonnes of CO2e emitted per year for each option compared to the baseline.

Table 4: Additional emissions compared to baseline

		Compared to the baseline			
	Baseline (Do nothing)	Option one (preferred)	Option two	Option three	Option four
Tonnes of CO2 over 20 years	70.2m	+ 165,000	+ 75,000	+ 113,000	+ 181,000

Multiplying these values by the latest forecasts for the price of carbon[37] for each year gives us the environmental cost of each shorted option in the table below.

Table 5 5: Environmental costs - real present prices

	Option one (preferred)	Option two	Option three	Option four
Additional environmental impact	£52.2m	£24.3m	£36.4m	£57.1m

Monetised benefits

45. Improved animal welfare

For colony cage: https://www.researchgate.net/publication/260381678_The_effects_of_welfare-enhancing_system_changes_on_the_environmental_impacts_of_broiler_and_egg_production

[37] As set out by the Department for Business, Energy, and Industrial Strategy

Research commissioned by Defra estimated the willingness-to-pay (WTP) of households for welfare improvements for 6 species of farm animals including laying hens and established a measurement method to compare welfare between egg production systems [38]. The expert panel, consisting of 13 animal welfare experts, scored laying hens out of 100 with 100 being highest welfare possible. The estimated welfare scores were 32 for laying hens in cages, 44 for barns, and 51 for Free range laying hens. Factors such as feeding, housing conditions, health, natural behaviours and the whole life of laying hens (including as pullets) were considered in developing the welfare score. A nationally representative survey of approx. 3,000 participants was conducted that asked a person per household how much they would be willing to increase their annual spend on food for improvements in welfare scores of laying hens. Households were on average willing to pay £4.44 per year for a 1-point improvement in welfare for all laying hens up to score of 51 where diminishing contributions occur. Given willingness to pay studies can be considered subjective, that consumers preferences can change over time and contexts, sensitivity tests are done on how much lower the WTP values could be before there is no net benefit to society from the policy. i.e. the costs are equal to the benefits. The results of the sensitivity analysis are in Annex 1.

The table below shows the welfare score provided by the expert panel for the dominant cage system – enriched 'colony' cages and two alternative non-cage systems. To monetise the improvements in laying hens' welfare, we first take the difference in welfare scores between enriched 'colony' cages and the two non-cage systems. A household's willingness to pay to see a switch from colony to barn production is £4.44 x 12 = £57.72. The same method is used to calculate a household's willingness to pay to see a switch from colony to free range production. These figures represent one household's WTP and assume all laying hens move from cage to barn or free range which is not the case. Therefore, we multiplied the household's WTP by the total number of UK households (28,400,000[39]) to presents the whole societies willingness to pay for this policy shown in the final column.

Table 6: Monetised benefits calculation in present prices

Production system	Animal welfare score	Difference in welfare score to colony cage	One household's willingness to pay	Annual WTP to move from cages (UK)
Colony cage	32	-		-
Barn	44	12	£57.72	£1,639m
Free range	51	19	£88.80	£2,522m

[38] Provision of a method for the economic valuation of animal welfare benefits suitable for use in policy appraisal - Main Report January 2025.pdf
[39] https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families/bulletins/familiesandhouseholds/2023#:~:text=There%20were%20an%20estimated%2028.4,for%20which%20data%20are%20available)

But not all laying hens are in cages and laying hens will move to either a barn or free-range system. Approximately 21% of laying hens were in cage production systems in 2024 and use the change in production from table two adjust the household benefits accordingly for each option.

The table below summarises the monetisable benefits and costs for each option. All options present a positive net present value and benefit cost ratio. Whilst option 4 present the largest NPV it also presents that largest cost to business, therefore keeping in mind the objective to help farmers transition the preferred option is option one with lower business costs but second largest NPV.

Table 7: NPV (£m) and BCR, for business and households under each option

Options	Household benefits (£m)	**Sum of benefits (£m)**	Business costs (£m)	Environmental costs (£m)	**Sum of costs (£m)**	**NPV (£m)**	**BCR**
Option 1 (preferred)	£375	£375	£90	£35	£125	£250	3.0
Option 2	£170	£170	£55	£15	£65	£105	2.6
Option 3	£250	£250	£70	£25	£95	£155	2.6
Option 4	£510	£510	£110	£40	£150	£355	3.4

SaMBA and medium-sized business impact

46. To consider the impact of the policy on small, micro and medium sizes businesses we needed to first understand the structure of the market and the most common egg production methods.

47. Based on a sample from the Farm business Survey[40], on average layers poultry farms had 4.4 FTE equivalents workers in 2023/24, thus most farms could be considered small or micro businesses based on the number of employees. The average laying poultry farm is a SMB therefore the preferred option does not have a disproportionate impact on these businesses.

[40] FBS Farm Business Survey - Figures come from an ad hoc request for laying hen farms.

48. When conventional ‘battery’ cages were banned in 2012 for holdings with more than 350 hens, some farmers reduced their stock to fall below this threshold to avoid the ban and not transition. To avoid such behaviour, compromising animal welfare and meeting the policies objectives, exemptions will not be made.

49. To exempt small and micro businesses (SMBs) from the scope of the policy would result in exempting most farms which would reduce the impact of our policy improving animal welfare for all hens. Instead, we considered a phased approach in the introduction of the policy would allow businesses to transition in a manner that allows the costs of the transition to be minimised. Moreover, we are not specifying what production systems farmers must use after caged systems are banned, instead farmers are able to choose which alternative system they move to (barn, free-range, organic) depending on their own businesses. This flexibility should help to mitigate some of the financial pressures.

7. Regulatory scorecard for preferred option

Part A: Overall and stakeholder impacts

(1) Overall impacts on total welfare	**Description**	**Directional rating** **Note: Below are examples only**
Description of overall expected impact	This regulation is expected to result in a significant social welfare gain, outweighing the business and environmental costs of moving production away from cages. Consumers already pay higher prices for free range shell eggs, which make up most shell eggs sales and a recent study shows households are willing to pay for improvements in animal welfare[41]. Recent research (commissioned by DEFRA) has monetised the household’s WTP for improvements to the welfare for laying hens[42]. The findings of this research are used to calculate the benefits to households of the policy, which outweigh the costs. The total costs of this policy are the capital costs of converting remaining cage facilities to non-cage,	**Positive** **Based on all impacts (incl. non-monetised)**

[41] Provision of a method for the economic valuation of animal welfare benefits suitable for use in policy appraisal - Main Report January 2025.pdf
[42] Provision of a method for the economic valuation of animal welfare benefits suitable for use in policy appraisal - Main Report January 2025.pdf

	increased production costs of non-cage systems, and the increased environmental cost of non-cage systems.	

Monetised impacts	Total NPSV – £250m
	Option 1 – ***Ban on new cages in 1 year, with a complete ban on cages 5 years after***. Due to the varying timescales between options, appraisals are over 20 years. Costs are presented in real terms and are discounted.
	• Benefits – *£375m*
	  ○ Consumer WTP Benefit*: £375m*
	• Costs – *£125m*
	  ○ Environment – GHG costs*: £35m*
	  ○ Business – Production costs*: £45m*
	  ○ Business – Capital Costs*: £45m*
	• BCR – *3.0*
		Positive
		Based on likely £NPSV

Non-monetised impacts	<u>Planning permission cost:</u> Some farms might need planning permission to change their production systems through significant refurbishment to current structures or building new barns to continue to produce the same output. Generally fewer hens are kept in cage free systems so farmers may require more space to have the same number of hens. Planning permission for this additional capacity will be an additional cost to farmers. We have not been able to monetise planning permission costs due to a lack of data and will clarify as part of the consultation how many farmers would need to seek planning permission, and how much this would be likely to cost them. Initial engagement with stakeholder suggests that planning permission can be between 5%-10% of overall development costs which gives us confidence that this policy will remain below the de minimis assessment threshold. We have tested additional conversion costs in the sensitivity in Annex 1. <u>Familiarisation cost:</u> Producers moving from cage to non-cage systems will likely require training to implement management practices needed for non-caged flocks. In most cases, this would be a one-off time cost although familiarisation may take place over a prolonged period. The Farm business survey reports an average of	**Negative**

	4 full time worker equivalents in layer poultry farms. Given less than 20% of the market is caged eggs, we assume less than 20% of companies will need to familiarise themselves with this policy. If familiarisation costs were monetised, they are not expected to increase the EANDCB calculation above the de minimis threshold. This cost has not been monetised due to uncertainty around the amount of training producers would require. This information will be sought in the consultation. <u>Monitoring and Evaluation</u> Information from on-farm APHA inspections and data from the Egg Marketing Inspectorate (EMI) will enable us to assess how many producers have moved to non-cage systems in each year. If a producer changes production system, then this needs to be assessed by the EMI to determine if it complied with the regulations and to determine numbers of birds that could be kept. This would take approximately 6-7.5 hours on average for the assessment and completion of paperwork, depending on the complexity of the repurposed building. Annual routine inspection frequency will not change although it would take the EMI longer to inspect a non-cage system. FSA will report any animal welfare issues with laying hens sent to slaughter.	
Any significant or adverse distributional impacts?	Yes, addressed below.	**Negative**

(2) Expected impacts on businesses	**Description**	**Directional rating**

Description of overall business impact	There will be costs from this regulation that directly impact businesses. Primarily these affect farmers that operate cage systems. Costs may be passed down by producers through the supply chain to packers, retailers, food service, and consumers. Producers could increase profits if the price premium of free range exceeds the slightly higher cost of production compared to cage eggs. Data for farm gate prices[43] shows that free-range eggs get 2.8p per egg more than enriched eggs, whilst there is an increase in production costs[44] of 2.1p per egg. A free-range producer can charge 11.3p per egg, with production costs of 8.0p, leaving 3.4p profit per egg and a margin of 42%. If producers opt to transition to barn production, barn eggs can get 1.4p per egg more than enriched eggs, with a production cost increase of 1.1p. A barn producer can charge 9.9p per egg, with production costs of 7.0p per egg, leaving 2.9p profit per egg and a margin of 42%. It seems likely that producers will be able to maintain profitability – but will still face high upfront capital investment costs.[45] When egg producers currently using cage systems transition to non-cage systems, they will either make capital investments to change their facilities (to barn, free range, or organic systems) or exit the market. The level of capital investment required depends on a variety of factors such as location of the farm and space to expand. Organic and free-range systems require more land per bird than barn systems, though most of the cost arise from buildings. Non-cage laying systems produce fewer eggs per hen and have higher operating costs per egg. This is because non-cage systems require for example, more space, more feed, and have higher mortality rates than cage systems.	**Negative**
Monetised impacts	Business NPV (if available) £-90m Approx net financial cost to business: EANDCB £6m Admin costs are £0 and are discussed in the non-monetised section. *Please indicate if pass through to households has been deducted from these figures* – No – discussed in expected non-monetised impacts to households below (part 3) *Please indicate any pass-through costs from households to business (if available)* – No	**Negative** **Based on likely business £-149m**
Non-monetised impacts	**Admin costs:**	**Negative**

[43] Latest UK egg statistics - GOV.UK
[44] Competitiveness of the UK egg sector, base year 2018 (Tables 2.2, 2.3 and 2.4)
[45] Competitiveness of the UK egg sector, base year 2018 (Appendix 1 and 2)

	Planning permission – There are around 120 holdings on the Poultry Register that report having more than 350 hens in cage systems. Egg producers will take different approaches to how they comply with the new regulations; some will remove the cages from the barn, while others will construct additional barns and some will exit the industry. There is a lack of information available on the number of these facilities that would require planning permission to change production method. Familiarisation – Stakeholders are not required to understand large amounts of new information as the cage free system currently exists in the market but may require individual training for farmers who switch. It is not expected that familiarisation costs will have significant impact on businesses operational budgets and processes. Rebranding – Farmers will need to update the branding of their products to reflect which new cage free system they adopt. It's not been possible to find this information from desk research. Rebranding is expected to be a small cost compared to capital costs therefore further evidence gathering has not been considered proportionate at this stage. **Other costs:** Market exit costs – Capital investment is required before the ban is introduced, which may result in some cage egg producers deciding to exit the market. When exiting, cage egg producers may be unable to amortise their initial investments in cage systems and not be able to fully recoup costs if selling parts of the business, such as cages will have low or no sell-on value. Industry reported it can take 10-15 years for producers to amortise their investments. It is unknown how many will make this decision to exit rather than convert, or the expected losses that would be incurred and so it is not monetised. Egg supply – It is also not possible to estimate if egg production will decrease because of the policy. Having a transition phase means producers will be able to adapt in advance of the ban being implemented, avoiding domestic supply shortages. Domestic supply shortages would impact the retail and food service sectors who would instead need to import eggs and egg products.	

Any significant or adverse distributional impacts?	**Sectors:** Caged egg producers will face the most significant impacts, as they will have to make capital investments to comply with the policy or exit the market. Whilst many retailers have pledged and made progress to be cage free by 2025, the food service sector is more dependent on caged egg production and may face higher costs. Producers – Caged egg producers will be most affected by this policy. They will be required to make capital investments to be compliant before the introduction of the complete ban on cages. These investments could include, but are not limited to, land for free range production, additional lower stocking density units, and remodelling current units to become a barn system. It is possible that these investments are not viable for some businesses, and instead they may choose to cease production and exit the market. Adaptation costs will include the time to become familiar with non-cage production systems to be productive and competitive with current non-cage producers. It is expected that if farms could easily make the transition to cage free, this would have already happened because free range eggs are worth 58p more per dozen than cage eggs. Therefore, if farms haven't already converted this is because they face a barrier. By having a phased ban on cages, producers will be aware and able to adapt business plans taking account of the upcoming ban. In 2024, cage eggs made up 26% the whole market for eggs, with 24% of retail (shell), 23% of food service (shell), and 38% of processed supply being caged eggs[46]. This shows that although caged eggs are a small share of the whole market, some sectors will experience greater impacts than others. Cage free eggs tend to have a higher farm gate price which means retailers, food services and processors will pay more for cage free eggs if they continue to buy British. Retailers – Most of the 39 supermarkets and retailers that signed up to the retailer pledge[47] have anticipated the transition to cage free. It is unknown if small or micro retailers sell a higher proportion of caged eggs compared to larger retailers. This would indicate whether they would be disproportionately affected. Food Service –	**Negative**

[46] Industry figures for 2024
[47] EggTrack 2024 EU Spotlight: Progress and Challenges in Cage-Free Transition

	As food service relies most on cage eggs, in addition to increases in the cost of eggs, if a large share of cage producers exits the market when the ban comes in, there could be supply shortages. This could be problematic, however there will still be a significant supply of non-cage eggs available. It is possible that some in the food service sector would import a greater share of their eggs if they were cheaper, although this would have a time cost to negotiate contracts. **Regional Impacts:** Egg producers are spread across the UK. It is unknown which of these are cage egg producers, and so we cannot estimate the variation of impact regionally. This policy will apply evenly across the UK and so will apply to all regions in the same way.	

(3) Expected impacts on households	Description	Directional Rating
Description of overall household impact	Some supermarkets and retailers have committed to phasing out caged shell eggs, and currently over 79% of shell eggs are from non-cage producers. The ban on chicken cages may increase costs for a small proportion of households who are still buying caged shell eggs. However, low-income households indicated in recent research that they would be willing to pay approximately £33 more per year for a move away from enriched 'colony' cages to at least a barn system[48]. Historic price trends indicate that the retail price for eggs varies considerably. At the point of the battery cage ban in January 2012 the average retail price for one dozen eggs was 269p, and by January 2015 this had fallen 8.5% to 246p[49]. A larger proportion of egg products (such as cakes, biscuits, quiches) currently contain caged eggs. Egg product producers may gradually switch to UK barn/free range eggs following this measure if there is demand for it or continue to use caged eggs after the ban imported from abroad. Currently 14% of	**Positive**

[48] Provision of a method for the economic valuation of animal welfare benefits suitable for use in policy appraisal - Main Report January 2025.pdf
[49] (RPI: Ave price - Eggs: size 4 (55-60g), per dozen - Office for National Statistics

	eggs bought by UK processors were imported[50]. Either way, the cost of production of egg products may increase but it is unclear by how much as this depends on the proportion of the total ingredients that eggs account for in any given product and the amount costs are passed through to final consumers. Similarly, the measure may impact catering costs although the impact on final prices is unclear.	
Monetised impacts	Household NPV (if available) **£375m** Approx net financial cost to household EANDCH (if available) £0 of which admin costs £0 – no direct costs to households' budgets. This policy does not dictate that costs must be passed on to households. *Please indicate if pass through to businesses has been deducted from these figures* - No Please indicate any pass-through costs from business to households (if available) £0 - none	**Positive** **Based on likely household £NPV**
Non-monetised impacts	Non-monetised costs: We haven't included an estimate of an increase in cost to consumers from this policy due to uncertainties of the impact of increase competition and imports on prices. A recent investigation by the Competition & Markets Authority found that grocery retailers had not passed through costs to consumers in 2022-23 with consumers typically switching grocers to get the best deals[51]. Some of the cost maybe passed on but it depends on price elasticity of consumers and relative bargaining power along the supply chain. However, if a ban on eggs from caged hens came into effect at current prices, in supermarkets still selling caged eggs some consumers will go from paying 29p per shell egg (caged hen) to 31p from a hen in a barn, the cheapest alternative, an increase in price of 7%[52]. Only a few products that contain egg highlight that free range eggs have been used, many egg product do not specify egg production system although information may be found at producers' websites. There are many products from cakes and biscuits to ready meals all with varying amounts of egg content. It's therefore difficult to estimate for all these products how much prices might increase by therefore the impact on consumers.	**Negative**

[50] Quarterly UK statistics about eggs – statistics notice (data to Q4 2024) - GOV.UK
[51] Competition and profitability in the groceries sector
[52] Prices are based on a box of 10 mixed weight eggs from Tesco and Asda, collected on 8 August 2025.

	With regards to food services, 51% of consumers surveyed in the latest Barclays Consumer Confidence Survey said that they are planning to cut down on discretionary spending, with the most cited ways of cutting back being a reduction in dining out at restaurants (54%) and ordering fast food and takeaways (53%).[53] With consumers being price sensitive and able to shop around, food services will need to be cautious on if or how much of the cost is passed through to consumers. Households will have less choice when purchasing shell eggs, as caged will no longer be an option. The price of cage free eggs is higher than enriched 'colony' cage eggs. If a household's WTP is below the market price for eggs they will stop buying eggs or buy fewer eggs. We intend to strengthen our evidence of the pass-through costs during the consultation.	
Any significant or adverse distributional impacts?	<u>Low income</u> Research shows that households on income below £20,000 a year would still be willing to pay approximately £3 a year to see an improvement in hens' welfare by one point[54]. The welfare for barn hens compares to the status quo is 11 points higher. The low-income households indicated that they would be willing to pay approximately £33 a year for a move away from enriched 'colony' to at least a barn system. Low-income households spend approximately £2 a month on eggs. After a ban, the cheapest eggs would be barn eggs which based on current prices and assuming they buy the same quantity, would result in an increase in spend of £15 a year, lower than their annual willingness to pay. Across all income groups, 0.2% of disposable income is spent on eggs[55]. For those in lower income groups, it can be assumed that price is the primary factor considered upon purchasing eggs, but free-range eggs may be purchased because they are more widely available. The banning of caged eggs may not strongly impact lower income households. Egg based products are also consumed in similar proportions across the income spectrum, making up 2.5%[53] of a household's disposable income. Food manufacturers that use domestically produced caged eggs would have to switch and potentially pass on their costs in the form of raising their prices.	**Uncertain**

[53] UK Consumer Spend Report | Barclays Corporate
[54] Provision of a method for the economic valuation of animal welfare benefits suitable for use in policy appraisal - Main Report January 2025.pdf
[55] Family spending workbook 1: detailed expenditure and trends, ONS, 2024, Family spending workbook 1: detailed expenditure and trends - Office for National Statistics

	However, any price movements stemming from this would be expected to be minimal as eggs represent a proportion of processed foods. Other impacted groups – There are no groups that fall into this category. Regional There is a small variation between regions in spend on eggs and egg products. For example, the South-East spend on average £16.30 per week whereas, Yorkshire and the Humber, on average spend £13.90. These regions represent the highest and lowest average spends on eggs and egg-based products[56]. Household's WTP by region is not available to analysis the likelihood that certain regions would not be willing to pay for improvements in laying hens' welfare. Without evidence its uncertain if there will be a disproportionate impact on regions.	

Part B: Impacts on wider government priorities

Category	Description of impact	Directional rating
Business environment: Does the measure impact on the ease of doing business in the UK?	Attractiveness – profit incentives: The business environment may be less attractive for existing businesses that must transition to produce non-cage eggs as capital investments would be required. The required investment could act as a barrier to switching to non-cage production which may result in some businesses exiting from the market. However, egg production is a profitable business[57], and demand for cage free shell eggs will continue to grow in the retail sector as it transitions towards cage free, so entering the market could still be attractive. As discussed in the business impact section, free range farms can make a profit of 3.4p per egg excluding capital costs. Businesses will need to consider whether the capital investment required would be worth it to benefit from profits.	**May work against**

[56] Family spending workbook 3: expenditure by region, ONS, 2024, Family spending workbook 3: expenditure by region - Office for National Statistics

[57] Farm Business Income by type of farm in England 2023/24 - GOV.UK

	Barriers to entry: For new entrants to the egg production sector (including for pullet rearers and breeders), startup costs will be higher for non-cage systems than caged. Free range requires more land per hen, and new barns are estimated to cost around £42 per hen housed, compared to just converting facilities which costs £19 per hen housed in 2025 prices[58]. These upfront costs are a significant barrier for potential new entrants, and an advantage for those currently in the market. This policy removes the option of entering cage egg production which has lower upfront costs per bird. The time taken to get planning permission should also be considered. Stakeholders advised that in some cases it has taken up to 2 years to receive permission. Concentration and competition: Currently there are almost 74,000 laying hen holdings on the Poultry Register for England, Scotland, and Wales, which requires all commercial and non-commercial poultry holdings be registered regardless of size. On the register there are approx. 2,400 holdings with more than 350 hens, and only 5% (120) of these are cage systems. We expect that by the time the ban is introduced the number of cage producers will be lower. This policy could result in a small decrease in competition, and a small increase in concentration if smaller cage producers exit the market or are acquired by larger firms. This is because small cage producers may be less likely to have sufficient capital to make the transition to cage free production. We will explore any unintended consequences to competition during the consultation period. Foreign Investment: We do not consider the impact on foreign investment in the egg industry. International considerations are below. Innovation: This measure is not expected to hamper innovation for the industry. Industry stakeholders informed us	

[58] Update on the Impacts of Retailers' Non-Cage Commitments for Eggs – BFREPA August 2020

	that that the egg industry has had lots of research and innovation, helping it to improve the efficiency of producing eggs, although it is difficult to quantify the amount of research and innovation. It is not expected to reduce innovation in cage free production methods, instead any resources previously allocated to cage innovation may be redirected to improve cage free innovation.	
International Considerations: Does the measure support international trade and investment?	The policy does not impose barriers to imports, as it only applies to UK egg production. The UK egg sector is concerned about the trade implications of banning enriched 'colony' cages. A domestic ban could lead to an increase in imports of caged eggs if cheaper than domestic products. Most eggs imported are non-shell eggs, which could only be used by the egg processing sector or food manufacturing. Therefore, the UK production of non-shell eggs (that is not exported) might be vulnerable if egg processors decide to import cheaper caged non-shell eggs. Based on Defra statistics and HMRC trade data, non-shell UK egg production accounts for under 10% of the demand for eggs in the UK. Any proposals will need to be assessed for compliance with our international trade obligations. We are unaware of foreign investment in UK egg production sector and therefore, the impact this policy has on investment. This has not been raised as a point of concern in discussions with key stakeholders. We have reviewed the practice in the EU (see Section 2: Strategic case for proposed regulation) and the main destinations of UK exports, Turkey, Russia, Netherlands and United States[59] and will continue working on these aspects.	**Uncertain**
Natural capital and Decarbonisation: Does the measure support commitments to	A ban on caged systems will force egg producers to change their egg production system to either a barn, free range, or organic system. Due to the different resources required for these new systems, there will be environmental impacts although the magnitude is most likely small. In terms of Global Warming Potential (GWP), which is measured in CO2e (carbon dioxide equivalent gases), a conventional 'battery' cage system will produce 2.92 tonnes of CO2 per 1000kgs of eggs, with	**May work against**

[59] United Kingdom (GBR) Exports, Imports, and Trade Partners | The Observatory of Economic Complexity

improve the environment and decarbonise?	enriched 'colony' cages producing 2.83 tonnes[60]. For comparison, the enriched 'colony' egg industry produces 4,232 tonnes of CO2e each year, whereas the UK produced 371 MtCO2e (million metric tonnes) in 2024 alone[61]. The preferred option would result in a GWP increase of 0.2% from the baseline. The main difference in the GWP between systems mainly stems from housing, electricity and feed (Leinonen et al, 2012)[62]. Acidification refers to decreased pH levels within the ocean, primarily due to the release and absorption of carbon dioxide from human activities which can have significant impacts on marine life. Acidification Potential (AP) is measured in tonnes of SO2e per 1000kgs of eggs. Changing from a conventional 'battery' cage system to a barn or free-range system will increase the SO2e per 1000kg eggs from 55.50 tonnes to 59.43 or 64.13 tonnes respectively (an 7-15% increase). Accounting for the market shares of each system, the preferred option results in an SO2e increase of 0.1% from the baseline. This increase is mostly concentrated in the housing/land and the manure/bedding components (Leinonen et al, 2012). Eutrophication is caused by nitrate and phosphate runoff from farmlands. Rapid plant and algal growth in lakes, ponds, and water deposits cut off sunlight and oxygen from plant and animal life below the surface. Producers that switch to free range systems are more likely to have higher levels of eutrophication, but it is largely dependent on where the farm is located and its proximity to lakes, rivers, and ponds. Eutrophication Potential (EP) is measured by tonnes of PO4e per 1000kgs of eggs. Changing from a conventional 'battery' cage system to a barn or free-range system will increase the PO4e from 19.0 tonnes to 20.32 or 22.03 tonnes respectively (between a 7-16% increase). The preferred option results in an PO4e increase of 0.1% from the baseline. This is mostly concentrated in the feed and the manure/bedding components (Leinonen et al, 2012). There are no UK wide statistics on PO4e emissions to understand the proportion this increase in emissions will have on a national level. Ammonia emissions can decrease biodiversity in terrestrial and aquatic ecosystems, damage sensitive habitats and influence climate change by interacting with the carbon and nitrogen cycles. Emissions from	

[60] The effects of welfare-enhancing system changes on the environmental impacts of broiler and egg production - ScienceDirect
[61] 2024 Provisional greenhouse gas emissions statistics: statistical release
[62] Predicting the environmental impacts of chicken systems in the United Kingdom through a life cycle assessment: Egg production systems

poultry housing are predominantly linked to the type of housing system as this will determine the quantity of manure present within the house at any one time. Cage-free systems tend to have higher ammonia emissions than colony cage systems due to the inclusion of a large, littered floor area with the potential for manure accumulation over time. The increased ammonia emissions from changing from cage systems to non-cage systems is therefore likely to be minimal given the proportion of egg production that uses cages although there is a risk of localised impacts if a few farms in the same area are changing systems.

Negative externalities to local natural capital stocks can be mitigated against and eutrophication levels can be managed when changing egg production systems. The positioning of layer houses relative to water sources, along with more precise and deliberate manure management means that these predicted impacts might not be guaranteed. Correct management of free-range systems may improve soil structure over time[6364](Berton and Mudd, 2009) (IEEP, 2020).

The impact of this policy on achieving the Government's environmental targets are listed below.

Environmental target	Impact
Halt the decline in species populations by 2030 and then increase populations by at least 10% to exceed current levels by 2042.	Potentially negative – More land is required for cage free production methods which may impact local wildlife, but planning consultations and environmental permitting should mitigate potential environmental damage caused by farms transitioning out of caged systems.
Restore precious water bodies to their natural state by cracking down on harmful pollution from sewers and abandoned mines and improving	Potentially negative – despite not being one of the sources named in the target, there is a possibility of eutrophication if systems are not managed

[63] Assessment of environmental and socio-economic impacts of increased animal welfare standards: TRANSITIONING TOWARDS CAGE-FREE FARMING IN THE EU, IEEP, 2020. Available at: transitioning-towards-cage-free-farming-in-the-eu_final-report_october.pdf

[64] Profitable Poultry: Raising Birds on Pasture, Berton and Mudd, 2009, Profitable-Poultry.pdf

	water usage in households.	properly.
	Deliver our net zero ambitions and boost nature recovery by increasing tree and woodland cover to 16.5% of total land area in England by 2050	Uncertain - this policy may encourage farmers to purchase more land to maintain egg production which may work against boosting nature recovery. That being said, free range producer usually require their farms to have tree cover in the birds' ranging area, so an increase in free range units may lead to increased tree planting.
	Halve the waste per person that is sent to residual treatment by 2042.	Neutral – this policy has no impact on this target.
	Cut exposure to the most harmful air pollutant to human health – PM2.5	Potentially Negative– changes to PM2.5 levels in egg production was not mentioned in the studies used to assess environmental impacts of the policy so impact is uncertain. However, ammonia is involved in the formation of secondary PM2.5, so increased ammonia emissions may lead to increased production of PM2.5.
	Restore 70% of designated features in our Marine Protected Areas to a favourable condition by 2042, with the rest in a recovering condition.	Potentially negative– A potential 0.1% increase in acidification due to change in production methods if not mitigated.
	In conclusion, in terms of both natural capital and greenhouse gas emissions, this policy is expected to have a negative impact; it represents the trade-off with an increase in animal welfare standards, at the cost of the environment.	

8. Monitoring and evaluation of preferred option

50. A Theory of Change (ToC) has been developed which describes the key inputs and activities delivered by the intervention, as well as the objectives and outcomes (see section 4).
51. A robust evaluation plan will articulate the intended outcomes of the intervention, and propose how these can be evaluated, including key success measures and data requirements, timeline, available resources, the key challenges of evaluating the programme and how the findings will be used. The evaluation will follow the Green book (HM Treasury, 2022), Magenta book (HM treasury and Evaluation Task Force, 2020) and Theory of Change Toolkit (Defra, 2022), and will encompass a range of approaches including process evaluation (*what can be learned from how the intervention was delivered?*), impact evaluation (*what difference did the intervention make?*), and value-for-money (*was this good use of resources?*).
52. Monitoring and evaluation activities will take place at timely intervals before-, during- and post-implementation, to understand effectiveness and whether improvements can be made to the way the ban is being delivered (e.g. the stakeholder engagement approach). Evaluation activities will include a full post-implementation review for the legislation at 5 years, to allow sufficient time for the industry to adapt.
53. Readily available data sources exist relating to egg prices[65], production[66], imports/exports[67] [68] and biological surveillance[69]. These data sources will provide robust measures to track the system across time. For example, an external factor that could impact on the success of the intervention is a potential increase in the importation of eggs that do not meet the same animal welfare standards. This unintended impact could be monitored through egg import data. Monitoring of available data could also answer evaluation questions such as:
    - Has there been a reduction in egg production during the transition?
    - Has there been any noticeable change in the biosecurity risks (e.g. highly pathogenic avian influenza) associated with non-cage systems?
54. Social research, including surveys and interviews, could also be conducted to provide insight into experiences with the new system, challenges faced, and how the system has impacted on operations. Key stakeholders include laying hen producers, pullet rearers, retailers, local authorities and consumers. Social research could answer evaluation questions such as:
    - To what extent have different stakeholder groups been impacted in different ways, how and why?

[65] Office for National Statistics, inflation and price indices
[66] Defra, quarterly UK statistics about eggs
[67] Defra, monthly UK trade statistics on eggs and egg products
[68] Defra, latest UK egg statistics
[69] Defra and APHA, notifiable animal disease cases and control zones

- Were there any unintended consequences of the intervention?
- Do producers feel able to manage the non-cage system?
- How do consumers perceive the welfare of UK laying hens, pullets and breeder layers? Has this been affected by the intervention?
- Have stakeholders incurred any additional costs because of the non-cage system?
- How have the business models / logistics of stakeholders (such as producers, packers and retailers) adapted to the new regulations?

Learning from the monitoring and evaluation activities will feed into the development of the intervention by several routes, including presentations and development of future training material, discussions, debate and challenge at senior level.

9. Minimising administrative and compliance costs for preferred option

For caged system producers there is a transition period between when the regulations are announced and when they come into force, to allow organisations the time to prepare for any changes they might need to make and reduce compliance costs. The complete ban on conventional 'battery' cages will be from 1st January 2027 with no transition period.
No substantive administrative costs are identified for barn and free-range production as current networks and organisations exist to support the transition.

Some standards, however, do differ and a producer would need to be familiar with these. These include stocking densities, provision on perches, nest boxes and dustbathing areas, biosecurity considerations, and environmental management.

10. Declaration

Department: Defra

Contact details for enquiries:

Patricia.antunes1@defra.gov.uk

11. Annex 1: Summary – Analysis and evidence

Price base year: 2025

PV base year: 2025

All values are rounded to the nearest £5m.

This table may be reformatted provided the side-by-side comparison of options is retained	**Business as usual (do nothing)**	**Option 1 – ban new 2027, ban all cages 2032 (preferred)**	**Option 2 – ban new 2027, ban all cages 2037 (do minimum)**	**Option 3 – ban new 2030, ban all cages 2034**	**Option 4 – ban all cages 2030 (do maximum)**
Net present social value (with brief description, including ranges, of individual costs and benefits)	£0	NPSV: £250m Household WTP Benefit: £375m Environmental Cost: £35m Cost to Business: £90m	NPSV: £105m Household WTP Benefit: £170m Environmental Cost: £15m Cost to Business: £55m	NPSV: £155m Household WTP Benefit: £250m Environmental Cost: £25m Cost to Business: £70m	NPSV: £360m Household WTP Benefit: £510m Environmental Cost: £40m Cost to Business: £110m
Public sector financial costs (with brief description, including ranges)	£0	£0 There are no additional costs to government. Current enforcement continues.	£0 There are no additional costs to government. Current enforcement continues.	£0 There are no additional costs to government. Current enforcement continues.	£0 There are no additional costs to government. Current enforcement continues.
Key risks (and risk costs, and optimism bias, where relevant)		Risks <u>Business risk –</u> There could be a decrease in UK egg production due to the cost of the transition and risk UK eggs being substituted with imports which could lead smaller businesses to struggle most. The options considered try to mitigate this by giving a minimum of 3 years to remove all cages for transition. We will also be considering the responses of the consultation to further understand impact on farmers. <u>Reputational risk –</u>			

		If instead of retailers, food services and food manufacturing opt to import eggs from caged hens, this would be a reputational risk as despite improving the welfare of laying hens in the UK, we have transferred the welfare problem abroad. Increase in diseases – There might be an increased risk from Avian Influenza (AI) when there is range access but regardless of the system, producers should be taking the appropriate biosecurity measures to reduce the risk. The control regime for AI includes a housing order which will require hens to be housed if the risk is high. There are existing management practices, vaccinations and treatments which should mitigate the impact on hens.

Results of sensitivity analysis

Central Scenario:

This represents the scenario considered in the main analysis for each option. This uses our best assumptions at the likely factors influencing the cost benefit analysis. All sensitivity tests should be compared to these values for each option.

The preferred option does not change under any of the scenarios tested because it maintains a balance between NPV, business costs, and environmental impact.

Central Scenario	Option 1 – ban new 2027, ban all cages 2032 (preferred)	Option 2 – ban new 2027, ban all cages 2037 (do minimum)	Option 3 – ban new 2030, ban all cages 2034	Option 4 – ban all cages 2030 (do maximum)
	NPV = £250m BCR = 3.0 EANDCB = 6.0	NPV = £105m BCR = 2.6 EANDCB = 3.6	NPV = £155m BCR = 2.6 EANDCB = 4.8	NPV = £360m BCR = 3.4 EANDCB = 7.5

Household WTP Switching Values:

This sensitivity tests how much lower the WTP values from the research commissioned by Defra[70] could be before there is no net benefit to society from the policy. i.e. the costs are equal to the benefits. In the central analysis, the WTP for 1 point of welfare improvement for

[70] Provision of a method for the economic valuation of animal welfare benefits suitable for use in policy appraisal - Main Report January 2025.pdf

laying hens is £4.44. Under the preferred option, the WTP value could be 68% lower at £1.44 for the BCR to be 1. Our assessment is that it is very unlikely for the WTP value is 68% lower than in the research.

Household WTP Switching Values	Option 1 – ban new 2027, ban all cages 2032 (preferred)	Option 2 – ban new 2027, ban all cages 2037 (do minimum)	Option 3 – ban new 2030, ban all cages 2034	Option 4 – ban all cages 2030 (do maximum)
For BCR = 1, and NPV = 0	WTP = £1.44 68% decrease	WTP = £1.66 63% decrease	WTP = £1.53 66% decrease	WTP = £1.30 71% decrease

Cage-free pledge not met:

In the central case, it is assumed that retailers and their suppliers meet the pledge to source all eggs from cage free systems. Egg track[71] tracks companies progress of meeting this target, of the 40 companies listed, 10 are classed as being at risk of not meeting the deadline, and 2 have stopped reporting or regressed on progress. Therefore, our assessment is that there is a low chance these companies will be entirely cage free by the end of 2025. The sensitivity tests what the impacts would be if this part of the industry does not make any further progress towards this pledge. The benefits increase because more of the WTP benefits from the transition to non-cage systems can be attributed to the policy. Essentially less of the industry will have already transitioned before the policy comes in. While this also means that costs increase for industry, this is outweighed by the consumers WTP benefit.

Cage free pledge	Option 1 – ban new 2027, ban all cages 2032 (preferred)	Option 2 – ban new 2027, ban all cages 2037 (do minimum)	Option 3 – ban new 2030, ban all cages 2034	Option 4 – ban all cages 2030 (do maximum)
Pledge not met	NPV = £455m BCR = 3.2 EANDCB = 9.4	NPV = £220m BCR = 3.0 EANDCB = 5.7	NPV = £320m BCR = 3.0 EANDCB = 7.8	NPV = £745m BCR = 3.8 EANDCB = 12.9
Central (pledge met)	NPV = £250m BCR = 3.0 EANDCB = 6.0	NPV = £105m BCR = 2.6 EANDCB = 3.6	NPV = £155m BCR = 2.6 EANDCB = 4.8	NPV = £360m BCR = 3.4 EANDCB = 7.5

Forecast egg production growth rate:

[71] EggTrack 2024 EU Spotlight: Progress and Challenges in Cage-Free Transition | Compassion

Year on year growth in egg production has averaged 1% over the last 5 years. Therefore, in the central case we assume a steady growth rate of 1% a year. We test the implications of doubling and halving the growth rate (2% and 0.5% respectively) as we currently have no evidence of alternative growth rates to rely on. Total egg production can vary considerably from year to year, with annual growth peaking at 8% in 2023, and reductions of - 8% in 2022. Therefore, it is likely that actual average changes in egg production fluctuate significantly from our central estimate, although sustained substantial changes are less likely.

Forecast egg production growth	Option 1 – ban new 2027, ban all cages 2032 (preferred)	Option 2 – ban new 2027, ban all cages 2037 (do minimum)	Option 3 – ban new 2030, ban all cages 2034	Option 4 – ban all cages 2030 (do maximum)
Low growth 0.45%	NPV = £270m BCR = 3.2 EANDCB = 6.1	NPV = £120m BCR = 2.8 EANDCB = 3.6	NPV = £170m BCR = 2.8 EANDCB = 4.8	NPV = £385m BCR = 3.5 EANDCB = 7.5
High growth 1.8%	NPV = £210m BCR = 2.7 EANDCB = 6.0	NPV = £80m BCR = 2.2 EANDCB = 3.6	NPV = £125m BCR = 2.3 EANDCB = 4.7	NPV = £305m BCR = 3.0 EANDCB = 7.3
Central	NPV = £250m BCR = 3.0	NPV = £105m BCR = 2.6	NPV = £155m BCR = 2.6	NPV = £360m BCR = 3.4

Stakeholder inputs:

Stakeholders provided information estimating the cost of rearing pullets. We test the impact of these inputs, increasing and decreasing pullet costs by 25%. The variables tested are the cost of building a production system per pullet housed; the proportion of pullets currently in cages; the additional cost of rearing a pullet in a non-cage system. In the low scenario, we simultaneously reduce the cost assumptions for these inputs by 25% and find that the BCR increases. This would represent a situation where the actual costs to business are lower than in our assumptions. Conversely, in the high scenario we simultaneously increase the pullet cost assumptions by 25% and find the BCR decreases. This would represent a situation where the actual costs to business are higher than in our assumptions. In the consultation we will be asking if respondents agree or can provide their costs to improve our estimates.

Stakeholder inputs	Option 1 – ban new 2027, ban all cages 2032 (preferred)	Option 2 – ban new 2027, ban all cages 2037 (do minimum)	Option 3 – ban new 2030, ban all cages 2034	Option 4 – ban all cages 2030 (do maximum)
Low scenario	NPV = £260m BCR = 3.3 EANDCB = 5.2	NPV = £115m BCR = 3.1 EANDCB = 2.9	NPV = £170m BCR = 3.1 EANDCB = 4.0	NPV = £370m BCR = 3.6 EANDCB = 6.6

High scenario	NPV = £235m BCR = 2.7 EANDCB = 7.2	NPV = £90m BCR = 2.1 EANDCB = 4.5	NPV = £140m BCR = 2.3 EANDCB = 5.7	NPV = £340m BCR = 3.0 EANDCB = 8.6
Central	NPV = £250m BCR = 3.0	NPV = £105m BCR = 2.6	NPV = £155m BCR = 2.6	NPV = £360m BCR = 3.4

Conversion Costs:

In the central scenario, the cost of converting and building non cage systems is taken from the BFREPA report 2020[72] and updated into 2025 prices. In the conversion cost sensitivity, we test the effect of higher reported conversion costs from industry stakeholders, which still gives a positive BCR for all options. In the sensitivity test the conversion costs are £32.50 per laying hen, and £65 per hen for new systems (2025 prices).

This conversion costs scenario also demonstrates the impact of planning permission costs. There are around 120 cage farms with more than 350 hens on the poultry register, and these farms would be most likely to incur significant planning costs and need to build new facilities. If we interpreted the higher cost estimates as additional planning cost, then a £10m increase in business costs would give an average planning cost per farm of approx. £84,000. The consultation will ask respondents if they would maintain the size of their flock and seek planning permission and what they estimate the cost to be to improve our assumptions.

Conversion costs	Option 1 – ban new 2027, ban all cages 2032 (preferred)	Option 2 – ban new 2027, ban all cages 2037 (do minimum)	Option 3 – ban new 2030, ban all cages 2034	Option 4 – ban all cages 2030 (do maximum)
Stakeholder informed	NPV = £235m BCR = 2.7 EANDCB = 7.0	NPV = £95m BCR = 2.3 EANDCB = 4.0	NPV = £150m BCR = 2.5 EANDCB = 5.3	NPV = £345m BCR = 3.1 EANDCB = 8.6
Central	NPV = £250m BCR = 3.0	NPV = £105m BCR = 2.6	NPV = £155m BCR = 2.6	NPV = £360m BCR = 3.4

Cages production transitions:

In the analysis we assume that decreases in cage system production will be made up by non-cage production methods. In the central case for the preferred option, we assume 20% of enriched ‘colony’ egg production will convert to barn, 20% will build a new barn, 20%

[72] Update on the Impacts of Retailers’ Non-Cage Commitments for Eggs – BFREPA August 2020

will convert to free-range, and 40% to will build a new free-range system. This totals 40% to barn and 60% to free range systems. This affects outputs via conversion costs, environmental costs, and the WTP benefits. If a greater share of production shifts to free range systems, then the WTP benefit for households is greater than if they switched to barns.

However, we know it's costly to build new barns and more space is needed for a free-range system. Therefore, we test the scenario where in total 70% of production changes become barn systems, and 30% is free range. Second, we test an even split with 50% becoming barn and 50% becoming free range. Both scenarios are possible and demonstrate that our analysis is sensitive to these assumptions.

Cage production transitions	Option 1 – ban new 2027, ban all cages 2032 (preferred)	Option 2 – ban new 2027, ban all cages 2037 (do minimum)	Option 3 – ban new 2030, ban all cages 2034	Option 4 – ban all cages 2030 (do maximum)
70% barn, 30% FR	NPV = £170m BCR = 2.4 EANDCB = 5.4	NPV = £60m BCR = 2.0 EANDCB = 3.2	NPV = £90m BCR = 2.1 EANDCB = 4.1	NPV = £210m BCR = 2.6 EANDCB = 6.3
50% barn, 50% FR	NPV = £220m BCR = 2.8 EANDCB= 5.8	NPV = £75m BCR = 2.2 EANDCB = 3.3	NPV = £115m BCR = 2.3 EANDCB = 4.4	NPV = £265m BCR = 2.9 EANDCB = 6.7
Central	NPV = £250m BCR = 3.0	NPV = £105m BCR = 2.6	NPV = £155m BCR = 2.6	NPV = £360m BCR = 3.4