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The Wilberforce Report

The Future of Animal Wellbeing in 2050

Firetail



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1. Executive Summary

Key Findings

The Wilberforce Report is an attempt to understand the challenges and opportunities facing animal wellbeing through to 2050.

As the RSPCA celebrates its 200th anniversary, the world today – for animals and humans – looks very different to the world in 1824. The UK is a nation of animal lovers in ways that would have seemed implausible at the organisation's founding.

Looking forward, it is possible to imagine society's relationship to animals shifting again. Yet, it is very hard to predict with confidence what this change could be.

Critical issues – from climate change to technological change, from future pandemics to the state of our food systems – will shape the world for humanity, for animals, and the planet over the next 25, 50, and 100 years.

The issues can feel overwhelming in their scale and seriousness. Huge, overlapping crises and opportunities can make us feel powerless and uncertain.

In the face of this uncertainty, this project is an attempt to think constructively about the future. By anticipating trends and challenges, society can better respond to them.

The report aims to stretch thinking, challenge long-held assumptions, and identify the work that needs to be done. It is deliberately provocative.

This collaborative process has helped the project to identify the critical issues today, the most important issues shaping the future, and critically, what the world might look like for animals in different futures.

The scenarios presented are the output of the project's participative and generative process, developed in collaboration with different voices from across our community.

1.1. Contemporary issues in animal wellbeing

To begin, the project built an evidence base about the big and emerging issues shaping animal wellbeing.

These included:

- The future for farmed animals
- The future for companion animals
- The future for wild and kept animals
- The links between animal and human wellbeing
- Social movements and animals

It looked at some of the big global trends and how they might change in the future, as well as 'weak signals' that could signpost more unusual trends.

This research included issues as varied as farming practices, food systems, genetic modification, zoonotic diseases, pet tech, antimicrobial resistance, and biodiversity loss.

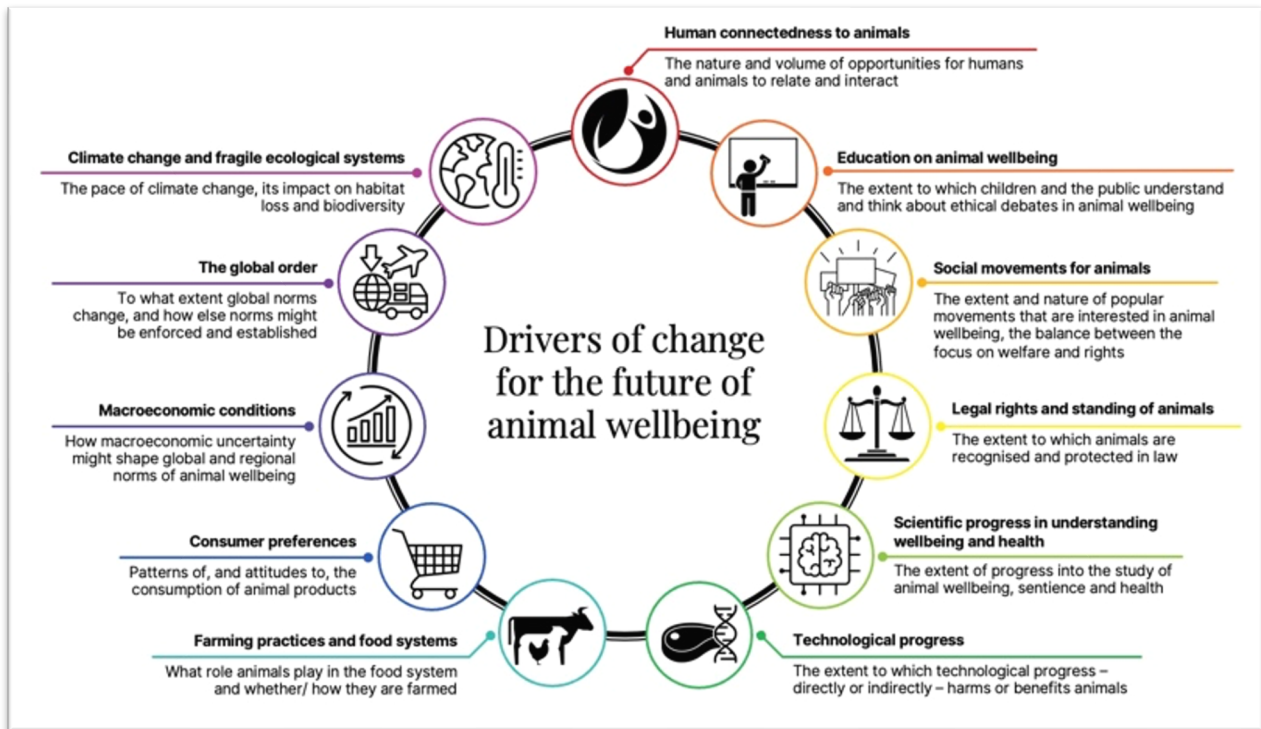
Highlights from this part of the research are outlined in section 5.

1.2. Understanding the drivers of change

The project identified 11 “drivers” are likely to be the most important issues influencing the future of animal wellbeing.

The drivers identify a world of crises and opportunities, global challenges and shifting realities.

These drivers are discussed in detail in section 4. In combination, they form the basis of our future scenarios.



1.3. Five scenarios for the future

The project developed five scenarios for the future of animal wellbeing.

The scenarios are based on interviews and workshops with a cross-section of animal wellbeing stakeholders, ranging from politicians to journalists, animal rights campaigners to academics, food tech companies to animal welfare lawyers.

The five scenarios are presented in detail in **section 3**. They primarily describe how animal wellbeing might develop in the UK, while taking into account global and regional trends.

In general, participants throughout the process saw the scale and urgency of climate change, the state of the food system, human health, and the pace of technological change as the main drivers of animal wellbeing in the future.

They believe that the fate of animal wellbeing in the long term will be shaped by the way society deals with these big questions.

These scenarios are not predictions.

They describe how the world might diverge based on the most important issues identified through the process.

They do not mean a positive future for animals is implausible or impossible.

They do not describe things that the RSPCA thinks will happen or wants to happen.

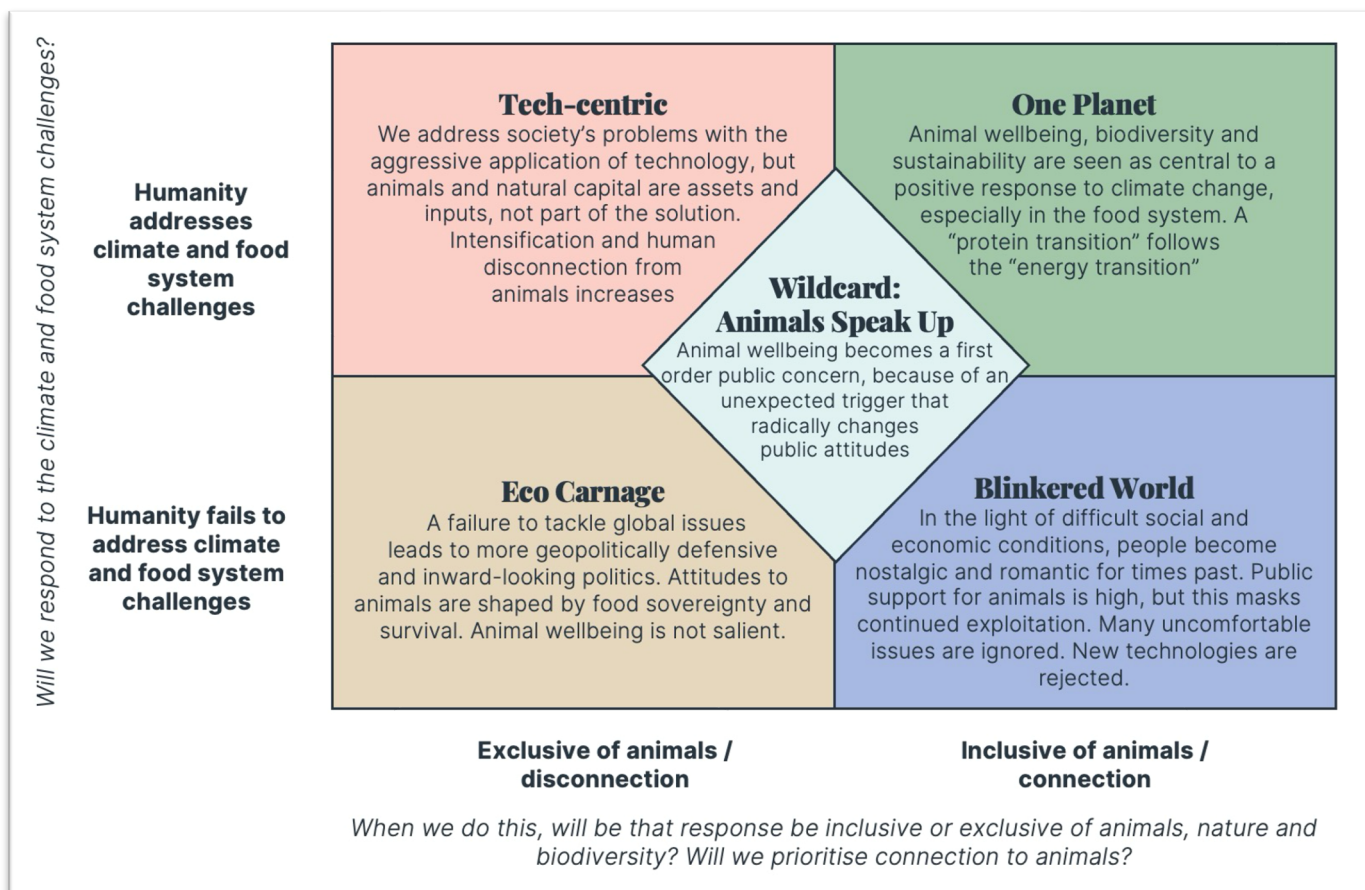
The scenarios illustrate the challenges facing society if it wants to ensure a better world for animals, and for humans. Inaction is not an option.

The four core scenarios are based on different combinations of two 'axes of uncertainty':

- The primary axis considers how effectively society will face up to the challenges of climate change, the food system, human health, and technological change.
- The secondary axis considers whether society's response to these challenges will be inclusive of animal wellbeing issues, or not. When will society respond to these big challenges? Will the response put animals, nature, and biodiversity at the centre? Will they be secondary considerations, or not considered at all?

Together, these axes create different stories about the future.

The fifth 'wildcard' scenario considers an alternative set of drivers. This scenario considers animals first, and whether the way that humans relate to animals might shift in a massive and surprising way. This was considered unlikely by participants relative to the other scenarios, but a number of wildcard triggers, issues, or breakthroughs that fundamentally change human relationships with animals were considered possible when considering the uncertainty of the next 50 years.



A note on terminology: this report uses the term 'animal wellbeing' throughout, rather than 'animal welfare'. Many stakeholders understood 'wellbeing' to be a more inclusive term that connotes a wider range of thinking about how animals might flourish or not.

2. Introduction

2.1. 200 years of the RSPCA

Today, the UK is proud to be a nation of animal lovers.

Around two-thirds of the UK adult population, about 36 million people, describe themselves as animal lovers.¹ Over 80% of the public think that animal welfare should be protected by law, and 84% think it should be taught in schools.

While many see room for improvement, people are more thoughtful about the impact of their consumption habits on animals, seeking out cruelty-free products and ethically sourced foods. The rise in vegetarian and vegan diets are choices often driven by concerns about animals, the environment and human health.

Cultural events like *Blue Planet* and *My Octopus Teacher* have shaped the public conversation about humanity's relationship to other animals. Schools are increasingly including animal welfare in their curricula, fostering empathy and respect for animals from a young age.

Where the UK has led, the world has followed. Globally, there has been a surge in animal welfare legislation. Laws that protect animals from cruelty, regulate their use in research, and safeguard wildlife are becoming more common.

None of this was true, or even plausible, 200 years ago.

During the early 19th century, animals were seen as resources or property. From agriculture to entertainment, this perspective was deeply ingrained in daily life. The casual cruelty and everyday treatment of animals then would shock people today.

In agriculture, animals were essential for labour and food production. Farming practices prioritised efficiency and yield, with little regard for the comfort or wellbeing of the animals involved. Horses were a primary mode of transportation, and their treatment was more about utility than compassion. Bearbaiting, cockfighting, and other forms of animal fighting were common public spectacles attracting large crowds. Ivory, tortoiseshell, and sealskin were desirable goods.

In science, the ethical considerations regarding animals were at their earliest stages. Animal experimentation was conducted with few ethical guidelines or considerations of animal suffering. The concept of animals having intrinsic rights or deserving ethical treatment was a fringe idea, not a mainstream concern.

The founders of the RSPCA imagined a different future.

What might be true in our future?

The future is impossible to predict. The role animals play in society today – both good and bad – would have seemed implausible, if not impossible, to most people in 1824. Yet major changes in society, the economy, technology, and our understanding of animals have led to fundamental shifts in the way animals are treated, protected, and live today.

Looking forward, it is possible to imagine further significant shifts in society's relationship to animals.

Yet, it is very hard to predict with confidence what that change could be in our lifetimes.

Critical issues will shape the world for humanity, for animals and the planet over the next hundred years. They can feel overwhelming in their scale and seriousness. There are huge overlapping crises and opportunities that can make us feel powerless and uncertain.

In the face of this uncertainty, scenario planning is a way to think constructively about the future. Scenarios are stories about what the world might look like.

They describe how different outcomes might emerge from the critical issues whose outcome is uncertain today.

This kind of thinking about the future is useful because it gives us a richer understanding of the present. These scenarios strengthen our ability to cope with uncertainty. They reveal the work that needs to be done today.

Our future, as it was to the founders of the RSPCA, is an act of imagination. It is a choice and a promise. It is up to us to make it happen.

¹ RSPCA's *Kindness Index* (69%) of respondents.

2.2. About this report

This report presents the key findings of the research:

- **Section 3** presents **five scenarios** representing a plausible and distinct vision of what the future might be like, built on research conducted with a broad set of stakeholders.
- **Section 4** describes the **drivers of change**. These are the forces that are likely to shape future of animal wellbeing, as discovered through the research process. They are the building blocks of the scenarios.
- **Section 5** summarises the **issues and insights shaping contemporary animal wellbeing**. This includes 'weak signals' – occurrences or patterns that are not yet fully established in the present day but might hint at wider changes to come.

3. The Scenarios

3.1. Building the scenarios

The four core scenarios are based on the central insights generated by participants in the research process.

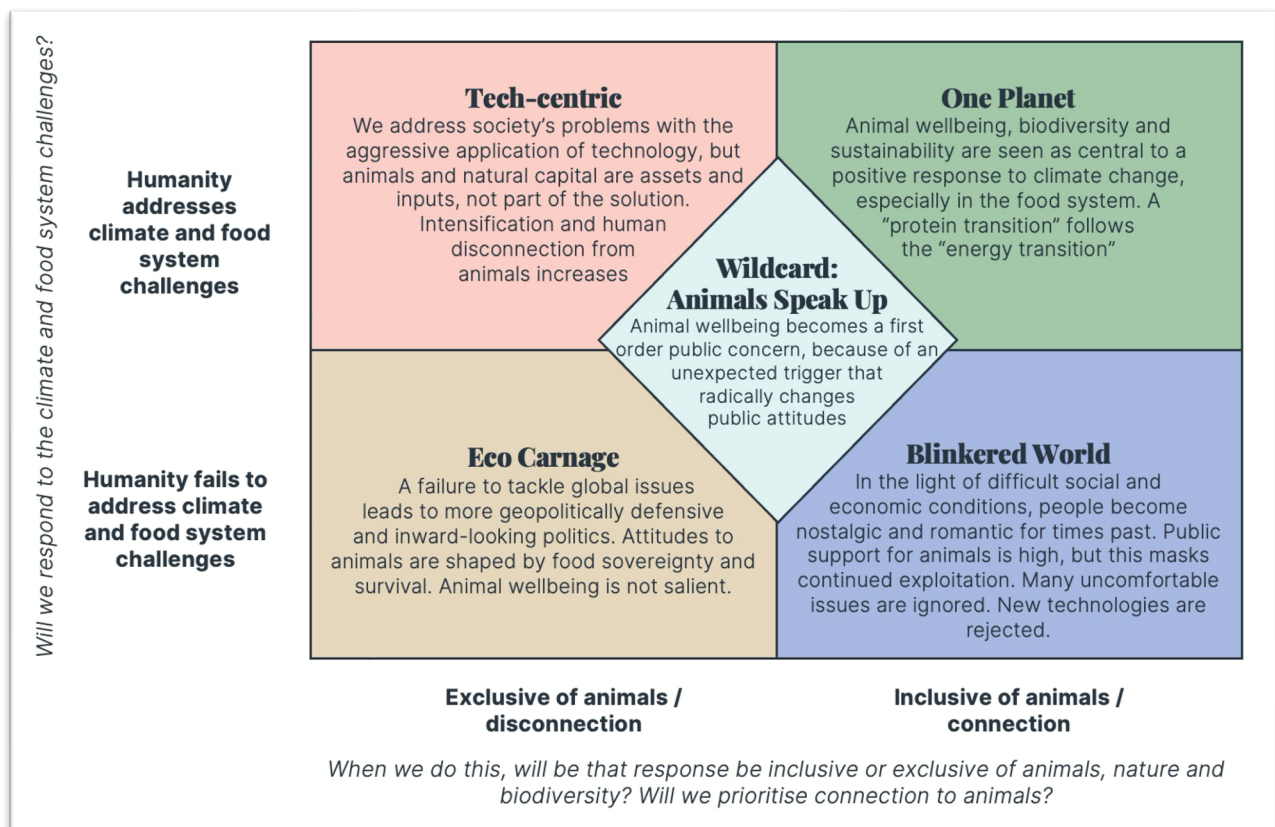
- The **primary axis** considers how effectively society will face up to the challenges of climate change, the food system, human health, and technological change.
- The **secondary axis** considers whether society's response to these challenges will be inclusive of animal wellbeing issues or not.

In combination, these axes create four different potential stories about the future.

In addition, our wildcard scenario asks: what if this approach is wrong? What if there is an unexpected change in our attitudes to animals? In general, stakeholders in this process – even long-term animal welfare experts and campaigners – thought this shift unlikely. However, if the way society thinks about animals became a primary human concern, rather than a secondary consequence of the way society thinks about climate, food, health, and security, then the impact for animals could be profound.

The wildcard explores what would happen if there was a moment when the way that humans related to animals suddenly and significantly changed.

3.2 The five scenarios



3.2. Tech-centric

In this scenario, society successfully grips the challenges of climate change and redesigning the food system, primarily through rapidly accelerating the use of technology to solve these problems. Much of humanity is disconnected from nature. Our relationships with animals are transactional and decontextualised.

Animal wellbeing in this scenario is a secondary or ignored issue, only considered when it is instrumentally important to creating enough food and within a sustainable footprint. Technology is used to intensify food production.

Humanity survives – but it is a less rich experience.

Contact with and connection to nature and animals is a luxury for the privileged. Most children have never seen a pig or a chicken. Animals are something to be studied in textbooks or to be seen on VR headsets during History of the Natural World classes.

Food systems are automated and increasingly intensified.

Farm animals, once freely grazing in the expanses of the British countryside, now live within mega-farms: enclosed, multi-tiered structures designed for the optimal use of space. Every inch is utilised to ensure maximum output with the least environmental footprint. Cows, pigs, and chickens are monitored continuously through sensors, ensuring they are free from diseases and growing at the desired rate. This technology-driven approach makes certain that diseases are quickly contained, and the health of the animals is maintained to ensure continuous food supply.

New problems emerge, as over-medicalised, over-engineered breeds expose the food system to unexpected new vulnerabilities. The lives of these animals are devoid of natural behaviours. To protect against disease outbreaks, rapid culls are delivered by automated systems. They are fed insect protein laced with antibiotics. Vertical farms mean that land use challenges are less intense.



AI-run pig farm

A mixed picture develops for wild and kept animals.

Some ecosystems are abandoned by humans. They recover and restore themselves. Some animal populations may adapt to the changing environment and develop new ecological niches. In regions where humans have retreated, wildlife might thrive, and natural balances could be restored. Animal habitats continue to change and shrink. Many forests and wild areas are privately owned, restricted 'Nature Luxe Zones', accessible only by those who can afford the high-priced tickets for a weekend getaway to experience 'nature', but few people see the point.

Most scientific research takes place inside computer models, so the demand for kept animals in medical research declines, but still happens to satisfy regulatory requirements. There is limited public pressure for reform.

Extinction is considered a 'solved problem.'

By 2050, an animal genome bank is mostly complete. This means any species can undergo de-extinction at any time. Public concern for extinctions decreases, and few worry about the habitat losses that cause extinctions, or the context in which these restored animals might exist. Whilst the technology to restore specific species exists, there is less understanding and agreement about the ecosystems to put them in.

The remaining pets have fantastic lives – in human terms.

The richest in society have access to cloning and genetically modified exotic animals as pets. The market for pet medicine is huge, dogs receive the latest cancer treatments. Some pets have better healthcare and insurance than many humans. Dogs will live to 50 as pharma companies use veterinary medicine as a testing ground for human medical treatments, particularly in the field of anti-aging and longevity. Living longer does not mean companion animals are happier as many cannot follow their natural behaviours or use their agency. Dogs do not care about private jets. People now commit to their pets for an extended period, often several decades, which influences lifestyle choices, housing, and long-term financial planning. Pets often outlive their owners.

Alternative companions emerge.

Pressures on resources mean that few have the luxury to keep a dog or a cat. Instead, robotic pets with AI personalities are the trend. They offer companionship without the complication or the space requirement.

3.3. Eco Carnage

In this scenario, society fails to make substantial progress on addressing climate change. Animal welfare is all but forgotten. By 2050, cascading ecological disasters are putting most societies in a defensive crouch. In this scenario, the technological innovation required is either not developed, or not deployed at a scale to allow for successful adaptation to a changing climate.

Animal welfare falls down the agenda.

With society more focussed on adaptation and preservation, there is little concern for animal welfare. Around the world, wild, farmed, and companion animals die in vast numbers. Waves of human migration to cooler parts of the planet mean companion animals are left to die or roam free. Food sovereignty is every government's highest priority.

Ecosystems collapse

Rising sea levels, uncontrolled wildfires, and relentless droughts decimate habitats, leading to massive animal die-offs. For the animals that manage to survive these catastrophes, and as certain areas of the world become uninhabitable by humans, animals are able to adapt and create new ecosystems, to varying degrees of ecological richness and diversity. In some areas, vast natural habitats are restored with bears and wolves roam undisturbed across newly empty parts of Europe.

Food systems struggle.

In some countries, farms, once full of livestock, lie abandoned. The animals that once lived there have either been consumed in a desperate bid for food or have perished due to lack of care. Insect protein begins to make up an increasing proportion of people's diets. Many are vegetarian by necessity.



Abandoned farms

Intensification and extinctions.

The public become used to extinctions of species and express low levels of concern for farmed animals, who

are now kept under ever more intensive and exploitative conditions. Cows face awful conditions in high-rise skyscrapers. Despite extinctions, big game hunting re-emerges as a luxury pursuit justified by its contribution to conservation.

Animal violence cascades into human violence.

Without the empathy generated by animal contact, people are more routinely violent to others. Law enforcement agencies observe a direct correlation between areas with high rates of animal cruelty and increased criminal activity. Children and adolescents exposed to frequent and casual instances of animal cruelty, whether in their neighbourhoods or in the media, tend to develop more aggressive and violent behaviours. Schools report higher instances of bullying, physical altercations, and a lack of empathy among students.



The last elephant

People hold their pets tightly.

People's responses may be to hold their surviving pets even closer. Policy attempts to limit pet ownership for health, energy, or resource concerns meet with huge public outcry and resistance, as the pets represent a remaining source of hope and happiness in a difficult world.

The policy environment is unstable.

The policy environment is highly volatile, as politicians respond quickly and inconsistently to rapidly changing circumstances and unstable political coalitions. Meat taxes, import bans, pet culls, and animal protein laws are ruled out almost as quickly as they are proposed. No one can plan or anticipate the long term.

The UK might be the least worst.

In general, the UK is considered more tolerable than many parts of the world, both for humans and animals, but it is a bleak picture.

3.4. Blinkered World

In this scenario, the efforts to redesign the food system and address climate change are not ambitious or cohesive enough to address the problem, but at least these efforts include a concern for animal wellbeing. The mood of society is defensive and isolationist. Society still cares about animal welfare, but in a selective way. People are proud that British animal welfare standards are considered the best in the world, but in practice most animal products are imported.

National exceptionalism and nostalgia thrive.

Nostalgia in the face of adversity drives people towards a vision of life – and the animals within it – that calls back to previous ages of farming, wildlife, and pets. As the world's inability to collectively address global challenges increases, a sense of defensive exceptionalism grows in Britain. This belief extends to the treatment of animals.

Government prioritises food sovereignty.

To feed the population in a challenging geopolitical environment, the government is forced to do deals that allow low welfare food imports whilst the UK nominally retains some of the highest standards at home.

Pressure on land use for food security means there is little space for uses that promote biodiversity. The measures to secure food sovereignty do not produce enough to feed everyone. Despite trade deals, black markets in cheap, low welfare animal products from abroad thrive out of necessity. Antimicrobial resistance and zoonotic diseases arise at a global level. Consumers have strong preferences for domestic produce.



A black market for animal products

Alternative proteins never happen.

Health scares, public campaigning, and heavy-handed regulation mean that alternative proteins never catch on. They are characterised as 'franken-foods' and

depicted as a fraud perpetrated by elites to force ordinary people to eat fake food.

Urban farms demonstrate community resilience.

In the face of global adversity, local communities develop strong bonds and mutual support networks. There are campaigns for urban farms. Sheep roam in community parks, chickens peck away in alleyways repurposed as communal coops, and city rooftops are transformed into beehives and butterfly gardens. These initiatives serve as a source of community pride, a testament to Britain's love of animals, but in practice they only represent a small proportion of food supply.

Environmental and nationalist politics align.

Climate change has significantly altered the UK's natural landscapes. Warmer temperatures and changed rainfall patterns have made the environment more suitable for certain species that were previously uncommon. Invasive jellyfish become a problem for farmed fish and are claimed to threaten the native salmon. Environmental politics becomes more aligned to nationalist politics, with invasive species like the jellyfish presented as a metaphor for external threats.



Nostalgia-driven pastoral suburbia

Pet ownership increases.

Pet ownership increases as people focus on what they can control in their surroundings, in the same way as the pandemic led to increased dog ownership. The public turn towards domestic animal issues, they are indifferent to farmed and wild animals. Companion animals are prized, especially British breeds.

Charities fragment and compete.

More money than ever is given to animal charities, but these groups are fragmented and compete among themselves. Organisations divide into those more concerned with climate, or animal welfare, or biodiversity. Militant rewilding campaigners kidnap domestic pets and kill grazing animals to highlight their impact on biodiversity, in the same way that some climate campaigners have targeted SUV drivers to highlight the impact of their emissions.

3.5. One Planet

In this scenario, society grips the challenges of climate change and the food system through innovation and technology, but in a way that is inclusive of animal wellbeing issues, as well as broader environmental concerns about biodiversity, land use, and natural capital.

Interdependence is recognised.

There is a deep recognition that the fates of animals and humans are strongly connected. There is a widespread awareness among both policymakers and the general populace that our detachment from the natural environment – based on the prevailing notion that nature exists merely for human exploitation, with no repercussions for humanity – is fundamentally responsible for our ecological dilemmas as well as various social issues. This realisation leads to a call for a profoundly different approach to how humanity interacts with the natural world. This new outlook is shared by many countries and regions.

Technological change enhances animal wellbeing.

Technology, alongside regenerative practices, are harnessed to increase animal wellbeing and biodiversity. There are trade-offs. Society must make difficult choices between food supply and biodiversity. As the monitoring of urban biodiversity increases with mobile technology, there are campaigns by urban rewilding groups to limit domestic cats' freedom to roam.

Farming becomes an aspirational, respected technology-led career.

Universities and colleges offer advanced degrees in agricultural technology. Farmers have lucrative careers, and hold a status similar to doctors or engineers, recognised for their contribution to society and the economy.



Technology-led farming

Land use remains a source of tension.

There is resistance and protest from some food producers. Traditional sheep farmers become figures of popular resistance as their land is claimed for rewilding and carbon sequestration projects.

Consumer adoption of alternative proteins is identified as a government priority, and supported and promoted. The UK government takes the lead in supporting innovation with regulatory “sandboxes” where innovative companies can try new ideas, and partnerships with universities.

There is a “protein transition”.

The ‘protein transition’ is analogous to the shift in energy production from fossil fuels to renewable resources. Initially, alternative proteins are adopted by manufacturers of processed food to produce new, cost-equivalent alternatives. Consumers of processed food are largely indifferent to the switch, and the overall nutritional impact is low. A variety of alternative proteins come to market leading to a decline in overall meat consumption without significant consumer activity. Higher welfare animal products remain.

Climate regulation leads to transparency, but also higher unit costs for all proteins, making more space for alternative proteins. Investment in cultured animal products reaches a tipping point where they are competitive in taste and cost. Concerns about the impact on human health and disease drive consumption as much as concern for animal wellbeing, though these issues become intertwined in the minds of consumers. A mixed economy of alternative protein and higher welfare meat provide the bulk of people’s diets. People are broadly supportive of this shift for health and climate reasons.

Ethical and practical dilemmas remain.

Society stands at a crossroads, grappling with the ethical and logistical dilemma of what to do with the animals that were once reared for food. Debates ensue, with some advocating for sanctuaries where these animals can live out their days in peace, while others propose alternative roles for them in agriculture or even as companions.

As farming takes up a smaller footprint there are opportunities to rewild swathes of farmland. Forests rejuvenate, rivers run clear, and wildlife once on the brink of extinction flourish once again.

Animal sentience is recognised in law and culture.

There are debates about the ethics of companion animals. The rights of animals are safeguarded, ensuring they are treated with the respect and dignity they deserve. This societal shift trickles down to everyday life, sparking discussions about the ethics of keeping pets. Is it right to confine a being, now legally recognised as sentient, for our own companionship?

3.6. Animals Speak Up

Our wildcard scenario asks, what if we're wrong? What if there is an unexpected change in our attitudes to animals? In general, stakeholders in this process - even long-term animal welfare experts and campaigners – thought this shift unlikely.

However, if the way society thinks about animals became an area of primary concern, rather than a secondary consequence of the way we think about climate, food, health, and security, then the impact for animals could be profound.

- What if there was a moment when the way humans related to animals significantly and suddenly changed?
- What if animal wellbeing became a primary human concern, rather than a secondary consequence of the way society thinks about climate, food, health, and security?

In the research process, no-one thought this was likely.

Suggestions about what might trigger such a moment from participants included the emergence of youth movements for animals as has been seen in climate, or breakthroughs in AI that allow for direct communication with animals, or even the discovery of alien life.

Whatever the trigger, an 'animal-first' scenario might play out very differently to the other scenarios.

Imagine a new technology that allowed us to communicate directly with animals. Society could undergo a profound cultural shift.

If society had an impetus to put a new emphasis on empathy and ethical consideration of animals, this could lead to changes in traditions, norms, laws, and values related to animal welfare.

The world could experience a significant realignment of values and priorities, challenging traditional practices and systems that have disregarded or exploited animals.

The collective voices of animals might demand better treatment, respect, and understanding. Animals would no longer be objects of human discretion, but individuals with their own voices and concerns.

People might not like everything they hear. They might learn that our domestic cats experience disgust, fear, and contempt in their daily lives. Many stop seeking cats as companion animals as a result. Some are in denial, questioning the accuracy of the technology.

It might lead to a coordinated effort to establish a more compassionate coexistence between humans and animals.

Curriculums incorporate the importance of animal welfare. Students not only learn about animals but are also in direct communication with them.

Large parts of society become vegan almost overnight. Industries that rely on animal exploitation undergo drastic reforms. Sustainable and cruelty-free alternatives to meat, leather, and other animal products become the norm. Animals in agriculture are seen as partners, not commodities.

Job markets would see a surge in animal welfare positions – from animal communication specialists using communication interfaces, to habitat restoration experts. Traditional roles, like farming, would pivot to more sustainable and animal-friendly methods.

With AI translations serving as testimony, legal reforms recognise animals as sentient beings with rights. Animal abuse is prosecuted as severely as crimes against humans. There are vigorous debates about the extent to which rights and privileges enjoyed in law by humans should be extended to animals.

Existing language around animal issues, including the phrases “animal welfare” and “animal wellbeing”, would be seen as redundant and paternalistic by young campaigners. Theories of interspecies justice become popular. The campaign ‘From Paws to Laws’ captures the public imagination.



A campaign poster of the future



3.7. Comparison table

Scenario	Tech-centric	Eco Carnage	Blinkered World	One Planet	Animals Speak Up
Mindset	Technology is the answer, animals are just an input	Survival, there is not enough to go around	Isolationist, defensive; high standards but limited power	Human and animal wellbeing is deeply interconnected, we can't go back to 'before'	A new era, filled with new possibilities
Society	Urbanised, unequal, digital	Low trust, in decline and decaying	Inwardly focussed, nostalgic, nationalist	Cohesive, unified, pragmatic	Inclusive, empathetic
Human health	More uniform engineered diets, lower risk of zoonotic disease from remote monitoring; unequal mental health benefits from access to nature	Catastrophic, unchecked use of antibiotics leads to resistance, many new zoonotic diseases	Setbacks; disease risk from black market products, isolationism can only resist zoonotic disease so far	Flourishes, lower risk of zoonotic disease, better diets, better mental health	Lower disease risk with rising veganism, better mental health from raising empathy
Humans and animals	Disconnected, a preserve of the rich; interested in animals as commodities	Focused on extracting whatever is left, humans must come first	In denial; pride in standards in animal welfare is not matched by the reality	Strong connection and respect for animals and nature	Conceptual boundary between humans and animals fundamentally changes
Politics	Prioritises industrial strategy and intensifying the food system	Chaotic, volatile, inconsistent	Prioritises food sovereignty	Prioritises biodiversity, alternative proteins	Adjusts to new order, creates new institutions
Animal welfare movement	Ignored, irrelevant, on the side lines	Struggling, attempting to mitigate against panicked reforms	Attracts funding but highly fragmented	Working on solutions, new questions, and partnerships	Dissolves into partnership

4. Drivers of Change

4.1. Introduction to the drivers

This section introduces the 'drivers of change' – the forces that will shape the future.

Drivers of change are the building blocks of scenarios. They are the forces that are most likely to affect the future of animal wellbeing. They include technology,

climate change, food systems, health, social innovation, and economic shifts. These drivers are drawn from expert interviews and desk research.

In workshop and discussions, participants explored what the future might be like under different combinations of these drivers.



Despite their commitment to the cause and their passion for animal wellbeing and welfare, participants saw climate change, the food system, and technological change as the main drivers of animal wellbeing in the future.

Participants thought that outcomes for animals in the long term will be secondary considerations arising from the way society deals with those big questions facing society, specifically around climate change and the food system, but including issues like human health and food security.

Participants are less likely to believe that consumer attitudes would shift independently, that there would be sharp, discontinuous changes in individual behaviours or beliefs, or that breakthroughs in our understanding of animal sentience would lead to fundamentally different conditions for animals, especially in the food system. They anticipate progress in our understanding of animal sentience, but this progress was less likely to shape human behaviours as much as our response to climate and technological change.

The animals facing the greatest uncertainty are farmed animals, followed by wild animals. The lives of companion animals are expected to change, but perhaps within a narrower band of possibilities. Our discussions with the animal welfare community raised challenging ‘what if’ questions about the future. These included:

- What will the role of **animals and nature be in human** culture? How might increased urbanisation and more digital lives affect how prominent animals are in our culture?
- What if animals were granted some form of **legal personhood**?
- Are we at the beginning of a sustainable **protein transition** in the same way as we are at the beginning of a sustainable energy transition? What about growing concerns around **ultra-processed foods**?
- How will we think about the **cumulative impact of the farm system** on animals? What matters most: biomass, sentience, climate impact, biodiversity, or something else?
- If **economic conditions** continue to stagnate, will price ultimately drive protein consumption habits? Could alternative proteins or meatless diets become ‘culture war’ issues?
- How will **animal wellbeing movements** relate to environmental, health and food movements? Will there be shared goals and broad coalitions, or incompatible demands?
- How might artificial intelligence lead to an increased understanding of **animal-to-animal communication**? How would that impact how humans treat animals?
- What if animal wellbeing was on the **curriculum** for every child?
- In the future, which country will be the best place to be a cat, dog, sheep, chicken, pig, or cow? What chance is there that a **global** agency develops and enforces international standards?
- If wealth continues to concentrate and **inequality** grows, which groups in society will care most about animal wellbeing? What happens to charitable support and civil society?
- How can animals most at-risk from **climate change** be protected? Which stand to gain from rising temperatures? Will there be selective extinctions? What will happen to the livestock and companion animals when there is **mass climate migration**?

4.2. Human connectedness to animals

Human connectedness to animals can be viewed from several perspectives, including through psychology, cultural beliefs, and social norms. What are the patterns of behaviour and cultural norms about human interaction with animals in the future, and how might these change? Historically, humans and animals have coexisted in different roles such as companions, workers, spiritual entities, and food sources. As society has developed and our understanding of animals has improved, there could be a shift in many cultures towards viewing animals as sentient beings with individual rights.

Quotes from expert interviews:

“In terms of wildlife, we're already losing huge numbers of species, so that continuing and having a snowball effect because if you don't grow up alongside nature and you're not exposed to nature, you don't see the benefits of nature in terms of mental health or wellbeing for non-human animals. That could then lead to a spiralling of dwindling interest in animals. It may be that in the future we see a lack of empathy towards animals and nature in younger generations who are more used to interacting with iPads and phones.”

“The world is now urbanised. The majority of people live in cities and towns. There is a disconnect between how food is produced and the people who eat it.”

“[We need a] kind of generational change, enshrining concepts of animal sentience into education syllabuses in a really meaningful way in order to create adults and decision makers and consumers who have more favourable and enlightened attitudes in society.”

Questions for the future

What will the role of animals and nature be in human culture?
 How might increased urbanisation and more digital lives affect how prominent animals are in our culture?
 What if day to day interaction with animals declined?
 What if access to nature was the preserve of the privileged? A status symbol? A luxury good?
 What if access to animals and nature was highly prized? What role could culture and media play?

Wildcard development (i.e. low probability but large effect developments)

What if cats were banned from roaming free outside to save wildlife? How could the welfare implications for cats be managed?

4.3. Legal standing and rights of animals

The landscape of animal rights and wellbeing in 2050 could reflect a world where animals are more widely recognised as deserving of dignity, respect, and protection under the law. As society continues to grapple with the complex ethical questions surrounding our relationship with animals, this raises questions about animals' legal standing.

Quotes from expert interviews:

"The Sentience Act is a step in the right direction. But the next step on from that would be to say, animals have legal rights, to not have harm inflicted upon them."

"In Spain they have recently recognised animals as a distinct category of property that is sentient. So the courts can take into account the interest of the animal itself when they are deciding matters under the criminal and civil code."

"There's the whole welfare versus rights debate. A lot of people in the welfare camp, which is kind of like bigger cages, slightly better conditions for animals, but still reinforcing that oppressing and abusing animals is okay. And then there's rights, which if it is to mean anything for animals, it's about like bodily protection. I can see that potentially there is some progress that can be made in the welfare paradigm. But there is a need to create some kind of pathway towards getting people to think about animal rights and what animal rights would mean, because that's a very different paradigm to welfare."

"There's that interrelationship between the protection of species and the welfare of wildlife. The way in which the law has developed is that the protections that we have for species around habitats and around say taking eggs from nests or conservation focused, the primary objective of that international legislation is for the protection of the species so that we can benefit from that species in the future. It's about sustainability and sustainable resources. The

protection isn't there for the sake of the animal in itself. So, for me, in terms of the law, that's an important correction that needs to happen. It's really an ethical issue because we don't see the moral value in the animal, him, or herself."

Questions for the future

What progress – if any – will be made to the legal protections and rights of animals?

Will it be based on protection of species or individual rights?

Could this progress be incremental? Or more radical?

What if animals were granted some form of legal personhood? What if laws and regulations were shaped by an assessment of the potential harms and benefits to animals involved in human activities?

Could there be backlash? What if legislators are overwhelmed by other pressures?

Wildcard development

What if animals were no longer defined as property?

What welfare might they enjoy? Is there social security for dogs? What would this mean for the responsibilities of owners?

4.4. Technological progress

The technological advances of the coming decades will almost certainly have the potential to radically improve or worsen animal wellbeing. From lab-grown meat competing with conventional meat, to displacing the animals used in laboratories, the necessity to use animals for human endeavours will be reduced in a way society has not seen before. But it is perhaps just as likely that technological progress will exacerbate the suffering of animals, where new technology is utilised to further exploit animals to increase efficiency and reduce costs for humans.

Quotes from expert interviews:

"Cultivated meat is actually appealing more so to meat eaters, including heavy meat eaters. So, I think in terms of focusing on displacing the maximum amount of meat, cultivated meat is going to have more to it than plant-based meat has had."

"Technology used in the wrong way could further commodify animals into units of production. Tech fixes could allow us to maintain the status quo but drive the entire planet off the cliff in terms of climate change and environmental destruction. There are already cases of multi-storey pig farms in China, so there

could be even more animals crammed into even less space with a variety of tech fixes."

"I think continued intensive farming to meet population growth and demand for meat, increasingly using enhanced scientific technology to further compromise animal welfare."

"We've definitely been more conservative on sort of food technology than the US historically, and I think that continues to be the case. There are trickier legislative hoops to jump through here than there are in America for cultured meat."

"Will the pandemic risks in the future lead us to want to wipe out large chunks of the animal population because we don't want to live alongside animals anymore? Will we become very averse to risk, and so distance ourselves even more from nature? And, how does that work with continued biodiversity and sustainability? Can the planet support itself? Maybe it can because our technological advances will mean that we're the only species left. That would be my dystopia."

"At the end of the day, everyone who fights something technology-wise always loses. Look at banks – closed, post offices – closed. But with farmers everyone's like "oh what about their livelihoods?" But when email was invented, I never read anything about postmen's livelihood, and the government saying "No, we have to ban emails and save the postmen's livelihoods".

Questions for the future

Is society at the beginning of a protein transition? How much of the protein market can alternative proteins capture?

Will alt proteins prove to be a flash in the pan? How will they fare against concerns around ultra-processed foods?

Is it unrealistic to say no animals will be used in laboratories by 2050? To what extent can the number be reduced?

How could gene-editing improve the welfare of animals? How could it be used to animals' detriment? If animals could be bioengineered to no longer feel pain, what would that lead to?

How would the 'de-extinction' of historic animals influence our attitudes and behaviours to endangered species.

Wildcard development

What would the future look like if cultivated meat matches or improves upon conventionally farmed meat in terms of price, taste, convenience, and health? What would it mean for farms? Are there any other barriers to overcome?

4.5. Farming practices and food systems

Animal agriculture is at the nexus of climate change, biodiversity loss, human health, as well as animal welfare. The welfare of billions of animals depends on the choices society makes about farming practices and food systems. Economic challenges, changing market dynamics, evolving consumer expectations, and the impact of climate change are all presenting significant challenges for small-scale farmers and rural communities.

Quotes from expert interviews

"The single biggest driver of climate change, biodiversity loss and animal suffering is intensive animal agriculture. So farmed animals sit at the nexus of all the great planetary challenges that we have. So that above all else is the single biggest existential threat I think the human race faces."

"One potential Hail Mary is alternative proteins and cellular agriculture. I've spent 30 years trying to professionally campaign to raise awareness amongst the public and policy makers around the sentience of animals, the health problems associated with eating animals and the obvious animal welfare challenges. And I've singularly failed. People are eating more meat than they have ever been, there's been greater intensification of animal farming than there's ever been."

"I think that by 2050 antibiotic resistance is predicted to kill 10 million people a year. And recent data shows we're well on the way to that. And the reason why animals are so important is that around 70% of the world's antibiotics are prescribed to farmed animals."

"There needs to be a very radical rethink of farming, both in the crop and livestock side towards what is broadly being called regenerative agriculture."

"Farmers are one of the set of people that are very forward thinking. They've traditionally been the ones that have really adopted technology. They could adopt

[cellular agriculture] on their farms. It wouldn't surprise me if some of the first adopters are farmers who say, I don't believe in farming animals anymore. The vegan farmer movement probably."

"Insect farming is the other really big one because there's a lot of talk now of replacing some of the sort of large vertebrate farming with insect proteins. And if insects are sentient animals, they currently don't have the kinds of regulations that's needed to protect them."

"At the end of the day, everyone who fights something technology-wise always loses. Look at banks - closed, post offices - closed. But with farmers everyone's like "oh what about their livelihoods?" But when email was invented, I never read anything about postmen's livelihood."

Questions for the future

How should we best think about the cumulative impact of farmed animals: cumulative biomass (e.g. chickens), cumulative sentience (e.g. pigs), cumulative environment impact (e.g. cows) cumulative biodiversity impact (e.g. sheep)?

What happens when new zoonotic diseases emerge? Antimicrobial resistance?

Could commodification of animals increase? What if technology (remote monitoring, AI) enables more intensive farming? Could new forms of intensive farming emerge (e.g. insects)? How will food producers' livelihoods change?

What if alternative, regenerative models of farming take off? What would it take to win farmers round? What if this happens alongside more intensive farming?

Wildcard development

What would happen to farming if animals that could not feel pain were developed through bioengineering?

4.6. Consumer preferences

Consumers will have a large say on the future of animal wellbeing, whether through consumption patterns impacting demand, or through campaigning for new legislation. This influence extends far beyond the consumption of animal products as food. Breeds of dogs with severe health implications, use of animals in sport and entertainment, and animal testing could all lose their social license over the next few decades. Alternatively, legacy, and social media could entrench current consumer preferences, turning the public against progressive positions.

Quotes from expert interviews:

"People do increasingly think about food provenance, and they want to know that the meat or the dairy products they're consuming have been produced in the most humane way possible."

"I think we're seeing a big movement towards a stronger adherence to compassion in agriculture. People do increasingly think about food provenance, and they want to know that the meat or the dairy products they're consuming have been produced in the most humane way possible. So, it starts with that societal attitude."

"I think to some degree climate has motivated people. But if you look at the evidence on what drives consumer choice, it is taste, price, and convenience. And it's because chicken has become so cheap, and beef has become a little bit more expensive that they are moving away from that in their diets. So that is ultimately a product of the economics."

"I was surprised how many people were really on board with the idea of octopuses and lobsters as being feeling animals that did need protection, because I thought perhaps a lot of people would just be really put off by that. But they actually seemed quite on board with it and starting to think through what the implications are for octopus farming, for boiling of lobsters, those kinds of things. And so, I guess the hope is that this kind of societal attitude change can continue, and that people seem to like this idea of sentience in animals."

"The media could either pitch this as the best thing that's ever happened for the planet and for animals and say it's healthier, it's more environmentally friendly, it comes without harm. It's exactly the same. You're an idiot if you don't eat this. Or it could say, Frankenstein meat grown in lab. Lab meat tastes disgusting. We tasted the first lab meat, and we were not impressed. It had a ropey texture. I'm uncomfortable with it. I don't want my food grown in a lab."

"I think public facing science, popular culture, is really important. For example, the Netflix documentary 'My Octopus Teacher' was really, really popular and it got a lot of backing behind the octopus movement. People

like the stories about what a particular animal is capable of, more than just impartial specifics about animal capacities.

Questions for the future

Are alternative proteins at risk of becoming a culture war issue in the UK? Could industry lobbies and media conspire to undermine public trust in cultivated meat? If regional differences in food culture widen, will animal welfare be seen as out of touch and disrespectful? A nice-to-have for out-of-touch 'liberal elites'?

As understanding of animals grows, will boundaries between companion, farmed, and wild animals break down globally?

What are the pets of the future? Will they be made-to-order?

What if meat consumption in emerging economies plateaus below the standard western diet?

Will sports using animals lose their social license? What year will the last ever Grand National be?

Wildcard development

What if meat rationing was reintroduced as part of a package of lifestyle controls to meet climate change targets? Could this lead to illegal food production?

4.7. Social movements for animals

There are two distinct paradigms across the social movements dedicated to animal wellbeing: welfarism and rights. The first seeks incremental improvements to the lives of animals (e.g. increasing cage dimensions, bans on debeaking), whilst the latter focuses on the right of animals to be recognised as more than property and afforded additional protections. There is also a question around how the dynamics of social movements more broadly are changing, and how and if the animal wellbeing movement should collaborate with other causes.

Quotes from expert interviews:

"In the animal protection movement, there was a boom in the 80s and 90s and then a bust in the two first decades of the 2000s. And we're now seeing the movement being replenished with talented, passionate, and excited energy. And so, the fact that there was a day where 120 people got arrested at the Grand National Occupation. What other movement has seen that level of non-violent civil disobedience except for the climate change movement? It is profoundly exciting seeing what has happened with the movement and thinking where it's going to go."

"Another very key issue from my perspective is the commercialisation of the movement as well. So essentially, it kind of went from animal rights to veganism and then vegan lifestyle. And so, it's kind of become more like a lifestyle, diet trend and we're not talking about how the issue is systemic."

"As we've seen with Extinction Rebellion and Just Stop Oil, people can turn against the whole ethos because they're so annoyed that they haven't been able to get to work or whatever. But equally there's lots of examples of using that good cop, bad cop approach where different actors within the sector are fulfilling different roles for a common cause."

"I think success comes from pushing all of the levers at once. So, citizen power and bringing that voice of citizens to elected representatives is important, but so is making sure that when those elected representatives ask business what they want, business is also aligned and ready to support us. And then business goes to try and get onto the market with regulators. Regulators see that there's a potential way forward. You need all of those levers to reinforce each other, and I think successful movements make all of those pieces work."

"I think there is a need to create some kind of pathway towards getting people to think about animal rights and what animal rights would mean, because I think that's a very different paradigm to welfare."

Questions for the future

How will animal wellbeing movements relate to environmental, health, and food movements? Will there be shared goals and broad coalitions, or incompatible demands?

Will the future of the animal wellbeing movement be rights-based, or welfarism-focused?

Could animal wellbeing organisations form a coalition with environmental organisations, coalescing around shared causes?

Are other social movements compatible with the animal wellbeing movement?

Does the animal wellbeing cause get lost as veganism becomes viewed as a lifestyle and environmental trend?

Wildcard development

Could a 'non-human Greta Thunberg' really transform and spearhead the movement? What's the potential for

a pig using communication breakthroughs to campaign for rights?

4.8. Scientific progress in understanding wellbeing

Animal welfare science is a relatively new field. Our knowledge on animals' physical and mental wellbeing has greatly expanded. Aided by technological advances, the coming decades are likely to see significant breakthroughs. This includes deciphering animal communications, further research into what animals value, and advances in veterinary medicines and treatments. A clear, robust understanding of how animals think and feel could have huge implications for how humans interact with animals in the future.

Quotes from expert interviews:

"Not being able to understand animals gives us licence to assume that they're not as sentient as they are. So, if AI gives us the ability to understand what different frequencies or different types of pig grunt mean, that one is definitely 'I'm really scared' or 'I'm finding this extremely painful'. Then that might just be the sort of development that pushes the welfare agenda further ahead."

"What we need to do is understand what animals need and want rather than trying to get inside their heads. And there's ways of doing that. For example, it was established that chickens would work to get access to a dust bath, or a nest site or a perch, and therefore it was decided that these animals wanted these substrates."

"I think some of the treatments that a lot of specialist vets are engaging in nowadays are unethical, unacceptable, and do not improve animal welfare. Animals don't sign consent forms. They don't sit there saying, 'Actually, I've got a really awful tumour and I'm going to die in six months' time. Well, it's all right, cut my legs off and keep me going because I really want to see my grandchildren grow up.' They don't think like we do. They want to run around and play."

"The fundamental thing in farm animal welfare is moving beyond the basic concept of the five freedoms and developing those into something more sophisticated. And that is that the concept of a life well lived. And I think that probably militates against more intensive systems, probably means phasing out cage systems on poultry altogether."

Questions for the future

How might AI lead to an increased understanding of animal-to-animal communications? How would that impact how humans treat animals?

Will a conclusive and robust test for sentience be developed?

Is society likely to reach a clear consensus on the tools and approaches to know the state of an animal's welfare? Would this subsequently be used to perform cost-benefit analysis of all 'uses' of animals?

How long could pets live after new veterinary advances? What are the implications for their quality of life?

Wildcard development

How would the world react to a scientific breakthrough that enabled communication between humans and animals?

4.9. Education on animal wellbeing

The future of animal wellbeing is intrinsically tied to the public's understanding and awareness of animal ethics and the systems that impact animal wellbeing. There are different possibilities for how education about animal welfare might be incorporated into school curricula, illuminating how differing approaches to education could significantly shape societal attitudes, policy decisions, and industry practices impacting animal welfare in the future.

Quotes from expert interviews:

"I do have a massive optimism around the younger generation. ... [A]ll the public opinion polls show far greater concern for the environment, far greater concern for animal welfare. And they are just far more hyper sensitised to these issues than people of my generation."

"Enshrining concepts of animal sentience into education syllabuses in a really meaningful way in order to create adults, decision makers and consumers who have more favourable and enlightened attitudes in society."

"I saw a photo a few years ago from a Berlin supermarket, where they had two prices for their meat. One price was the price you'd actually pay. But the other price, a much higher price, was saying to consumers, 'this is what you would pay if this was properly costed'. It's a way of beginning to educate people."

"What's critical in my opinion are education and public education. Education starting as young as early years so that children start thinking about animals and making ethical decisions about their interaction with animals rather than just pushing one particular ideology or one particular idea or normalising certain behaviour."

"And in terms of education at secondary school, when children are having these debates about ethics, that should include animal ethics, and arguably should include animal welfare. We should be teaching children at all ages about the welfare of all animals and getting them to think critically about animals and accept suffering less."

Questions for the future

What if animal wellbeing was on the curriculum for every child?
What's the best way to channel young people's interest in animal ethics?
What if young people had a greater understanding of where food comes from?
What if there was a backlash against animal welfare education? Where might it come from?
What role could popular culture have? What if a film or artists breaks into the public imagination? A *My Octopus Teacher* for cows?

Wildcard development

What if every young person had to visit a slaughterhouse as part of the school curriculum?

4.10. The global order

The global order will have deep influences on the future of animal wellbeing. A stable multilateral global order might mean international standards for animal welfare can be more easily established and enforced, leading to a general improvement in the treatment and respect for animal rights and greater global cooperation on issues such as the prevention of wildlife trafficking, regulation of animal farming practices, or joint efforts to conserve biodiversity. A fragmented global order is likely to see much more variation in progress and many different models for thinking about animal welfare.

Quotes from expert interviews:

"What we choose to import into this country or not, and what we choose to export, such as live animal exports for slaughter or fattening, I would argue we

should get more robust on that, so we're not just exporting cruelty to other parts of the world. "Society's values change over time, but also there's subject to an enormous amount of cultural variation and geographical variation, which means that developing global standards is extraordinarily difficult."

"There is a real issue around the trade deals which the government is doing with Australia, New Zealand, India, Canada, and the other countries that are coming forward. Their animal welfare standards are not as good as ours, and their animals are fed on compounds which have additives which increase body mass and production, which we don't allow here. And so there are very, very serious concerns about that, and the undermining of English farmers who are sticking to the rules."

"They learned the basic lesson that actually in agri-food you need to use tariff policy to deliver some of these wider ethical objectives, such as animal welfare. That's why tariffs are higher in agriculture, not actually principally due to protectionism in the old-fashioned sense, but because there are other ethical values that we're seeking to protect."

"I think [the UK] is in a very strong position to leverage better methods of keeping animals into those trade deals. Whether it will use that or not, I'm not sure. It just depends on how desperate the government is on doing these trade deals. And I fear that in some cases it is pretty desperate to show that Brexit has produced a mechanism for opening up trade with other countries."

Questions for the future

Will thinking on animal welfare diverge in different parts of the world? In the future, which country will be the best place to be a cat, dog, sheep, chicken, pig, or cow?
What chance is there that a global agency develops and enforces international standards?
The EU? The FDA?
What would happen to norms around animal welfare if geopolitical blocs emerged?
What if relations between countries are about individual trade deals rather than global standards? Is it inevitable that this leads to a 'race to the bottom' on animal welfare standards?
What happens if global initiatives are seen as being about national interests rather than global public goods?

What would happen if illegal trade – in animals, trophies, genomes – increased?

Wildcard development

What if a new market for xenotransplantation (i.e. transplantation of organs or tissues from one species to another species) tourism emerged in another region? Could this be regulated? How would legislators react?

4.11. Macroeconomic conditions

Macroeconomic uncertainty is high at present, with wide-ranging consequences for animals.

Macroeconomic stability can positively affect animal welfare by enabling greater financial resources for pet care, funding for conservation efforts, and innovation in animal welfare research and technologies. Conversely, it might negatively impact animal welfare if economic growth is prioritised over environmental sustainability, leading to habitat destruction, overexploitation of wildlife, and inadequate consideration for the welfare of animals in industrial farming and other sectors.

Quotes from expert interviews:

"I wonder whether things like the pandemic, the cost-of-living crisis – people's mortgages going up, the gas bills going up, whatever it is, whether animal welfare becomes less of an issue. It goes down the list of priorities when day-to-day living goes up."

"I think the real threat is that globalisation, if animal welfare is not properly factored into that process, if we see continued globalisation and liberalisation of trade in the livestock sectors, there's a severe risk that that takes animal welfare globally backwards and that would be a tragedy given that developed countries have made some progress on animal welfare over the last 20 or 30 years."

"I think a bad outcome would be if we don't get inflation under control, if people's cost of living still keeps spiralling, and more and more people don't have the luxury of being able to choose high welfare food."

Questions for the future

What would happen if we entered a period of prolonged economic hardship in the UK? How would this change our consumption? Would this affect how society prioritises animal wellbeing? What would the

cost to animals be? What are the long-term implications? Does pet ownership become a luxury? If wealth continues to concentrate and inequality grows, which groups in society will care most about animal welfare? What happens to charitable support and civil society? How will human migration patterns affect animals?

What if new ways of thinking about the purpose of the economy emerged? What would it mean for animals if models like 'doughnut economics' went mainstream?

Wildcard development

What if animal welfare becomes a luxury belief for the 1%? What if only luxury brands offered high welfare animal products? What if there was a tax on companion animals?

4.12. Climate change and fragile ecological systems

Climate change will, of course, be one of the most significant drivers of change for every field over the coming decades, and its effect on animal wellbeing cannot be understated – from increasing temperatures causing health implications for many animals, to the destruction of habitats from extreme weather events. Whilst climate change's impact on animals has already begun, how the UK and the world responds will ultimately shape the impact on animal wellbeing. This includes the scale of the transition to Net Zero, as well as the response to indirect impacts such as famines and increased climate migration.

Quotes from expert interviews:

"We're going to have to have conversations about the state of wild animal populations and how they're being impacted by climate change. And in the way that people take responsibility for a stricken bird they come across in the street, we may have that conversation more broadly about what our responsibility is to all those animals that live in the UK."

"Even slight temperature changes by one and a half, two degrees make a massive difference to the physiology of fish. It's believed that when salmon migrate out of the rivers, they head to Greenland to feed. But when they've been getting there, their food, krill, and suchlike, isn't where it usually is and it's a smaller patch. So, climate change is a big issue for all fish species."

"With climate change it is important to stress that we don't know what all the effects of climate change will

be on wild animals. There will be losers, but there will also be winners. As we lose tundra, we will have more boreal forest that will hurt lemmings but will benefit warblers."

"To some degree, in some areas the climate might become more favourable to farm animals. So, in parts of the Global North, the heating of the climate might create more favourable conditions for them to be outdoors more. But in the Global South, the heat is already causing more heat stress in animals."

"These changes are needed not just for animal welfare, but for climate change. I'm aware of at least two studies in the last three years that have said, 'look, even if we stop using fossil fuels tomorrow, our diets would make it almost impossible to meet the Paris targets'."

Questions for the future

How can animals most at-risk from climate change be protected? Alternatively, which stand to gain from rising temperatures?

Will an environmental drive to eat local give more animal wellbeing oversight to UK farmers? Or will it create pressure to increase supply? Would this threaten welfare standards?

Is there a tension between animal welfare and reintroduction movements?

What will happen to livestock and companion animals when there is mass climate migration by humans? Will they be abandoned, or will they be taken with migrating humans?

As famines intensify around the world, could tens of millions of animals be pre-emptively killed?

Wildcard development

One whale can sequester 33 tonnes of carbon at the bottom of the sea upon death. What if whales were artificially bred to be carbon sinks in the fight against climate change?

5. Issues and Weak Signals

5.1 Introduction to the issues and 'weak signals'

The research built an evidence base about the big and emerging issues shaping animal wellbeing, including:

- *The future for farmed animals*: given that approximately 60% of global mammal biomass is livestock and 71% of the global bird biomass is poultry, and with so many humans reliant on them, it is perhaps unsurprising that there is a strong body of literature on trends and drivers for farmed animals.
- *The future for companion animals*: over half of UK adults have a pet, spending over £9bn on them. Their wellbeing is top of mind for many people.
- *The future for wild and kept animals*: the wellbeing of wild animals can often be overlooked in comparison to other animal groups, but their issues are also of human interest.
- *Animal and human wellbeing*: there is a growing body of literature on the intersection of animal and human wellbeing.
- *Social movements and animals*: how people assemble, campaign, and mobilise around causes is changing. New movements could have an important say in the future of animal wellbeing.

It looked at some of the big global trends and how they might change in the future, as well as weak signals (i.e. early indications of a trend or disruption) that could signpost more unusual trends.

This section pulls together the trends, drivers, and weak signals of a range of animal wellbeing issues across all types of animals. It is not an exhaustive list but a starting point for discussion. Some of the major trends covered in each category are introduced below.

This research included issues as divergent as farming practices, food systems, genetic modification, zoonotic diseases, pet tech, antimicrobial resistance, and biodiversity loss.

This was used as stimulus material for participants in the research, whether in interviews or workshops. Ideas were shared in preparation, to provoke thoughts

and ideas around a survey of prominent issues in animal wellbeing.

Whilst it takes a global perspective on trends, it keeps in mind the importance of the UK to the RSPCA.

5.2 Issues and trends: Farmed animals

Global meat and dairy consumption

In 2020, the world produced 337 million tonnes of meat, up nearly 50% since the turn of the century and up 300% since 1970.

- All major meat types have seen large increases in absolute terms, with poultry meat accounting for the biggest relative increase from 12% of meat consumption in 1961 to 39% in 2020.
- Similar increases in dairy consumption have accompanied this trend, with a consumption of 800 million tonnes of milk in 2020 – more than double the 1970 total.

A primary driver of this increase is rapid human population growth. The world has gone from three billion people in 1960 to more than eight billion people today. Secondly, as the world's population has got richer, it has consumed more meat. The global average per capita per year meat consumption has increased by 20kg since 1960, including a 15-fold rise in China. One report from 2021 predicts that total consumption of meat will peak by in Europe and North America 2025; after this point, consumption of animal proteins is said to begin to decline.

((••)) *Weak signal – 'postcard from the future'*

Adverts for meat products derived from industrial farming to be banned in Dutch city – is it possible for meat products increasingly to be viewed as public 'bads' like smoking and fast food?

Industrialised farming practices

One billion animals are raised for food every year in the UK and across the world. Factory farming is commonplace across Latin America and Asia, as well as starting to occur in Africa.

This increase in intensive farming will cause billions more animals to suffer, with an estimated 94% of all animals raised for food already reared on factory farms. The widespread use of preventative antibiotics in intensive farming also threatens antimicrobial resistance (as discussed in more detail in section 5.5).

The increase in global meat consumption is due to population growth and the increasing relative wealth of the global population, as noted above.

((•)) *Weak signals – ‘postcards from the future’*

Formation of Legal Impact for Chickens (an organisation that brings strategic lawsuits on behalf of farmed animals) – will legal challenges against intensive farming lead to new rights for farmed animals?

The rise of offshore fish farms – a step forwards or a backwards leap for animal-based food production standards?

Alternative proteins (plant-based, microorganism-based and animal-cell-based)

The first burger derived from cultured meat was served in 2013 at a cost of \$330,000. Today, investment in alternative proteins is worth over \$5 billion annually, with over 70 companies developing cultured meat products. Approximately 13 million metric tons of alternative proteins were consumed globally in 2020, equating to 2% of the animal protein market. One report predicts that alternative proteins will make up as much as 11% of the global protein market by 2035, which could rise as high as 22% if aided by regulatory and step changes in technology.

In November 2022, the US Food and Drug Administration (FDA) declared that lab-grown meat produced by Upside Foods is safe to eat. There are still a few regulatory steps remaining, but they are expecting their products to enter restaurants this year and supermarkets by 2028.

Whilst data are scarce, there has been a notable increase in non- or only occasional meat-eaters in the

UK and other countries in recent years. This increase is no longer driven primarily by animal wellbeing, but for environmental and health reasons. This behavioural shift has boosted demand for alternative proteins and is creating an investment boom in the field.

Technological advances have facilitated this trend, which together with scale of production have resulted in better products and the cost of cultured meat falling to \$9 per burger since 2013.

((•)) *Weak signal – ‘postcards from the future’*

Precision fermentation platform for producing alternative proteins at scale raised \$20m in seed financing – is an alternative-protein production revolution well and truly underway? Or is there a hype cycle?

Tyson Foods, the world's second-largest processor and marketer of chicken, beef, and pork, describes itself as a “protein-focused food company” and has invested in alternative protein companies through its venture arm.

Tuggs was first launched in 2022 with the goal of offering consumers fresh, insect-based food tailored to their pets' specific needs, while helping to lower the carbon footprint associated with owning a dog.

Gene-edited livestock

The first genetically modified animal to gain approval from the FDA to enter the US food supply was the AquAdvantage salmon in 2015. These fish carry growth-enhancing genes from two other fish, allowing them to grow to full size in 18 months instead of the usual 30. The creators argue this makes producing salmon more environmentally friendly and cheaper. Sales of AquAdvantage salmon began in May 2021.

More recently, gene editing techniques have been applied to farm animals (in a laboratory setting) to make them resistant to certain diseases, to increase productivity, or for ‘welfare’ reasons (e.g. to create hornless cattle who will not have to undergo painful disbudding procedures). There are ethical and animal welfare issues associated with all of these purposes, particularly with increasing yields of meat, eggs, milk and wool, when many farm animals are already at (or beyond) their physiological limits.

In May 2022, the US FDA announced that beef from gene-edited cattle was safe to eat, with the meat expected to be on the market in the next few years. The cattle were genetically engineered to grow shorter hair so they could better tolerate heat. Similarly, in December Israeli researchers developed gene-edited hens that lay eggs from which only female chicks hatch. This modification could prevent billions of male chickens from being culled every year.

The Genetic Technology (Precision Breeding) Act, passed in England in 2023, will eventually enable gene edited farm animals to be created, and products made from them to be marketed, in England, Scotland and Wales. The secondary legislation, which should include animal welfare safeguards, is yet to be drafted.

At present, it is not clear how viable the production of gene edited farm animals will be on a large scale, nor which countries will be able to take advantage of this technology.

- How might dietary preferences change in the future? How might different parts of the population segment? Do these changes correlate with wider societal changes in how animals should be treated?
- What will influence these changes most? Policy makers? Societal attitudes? The market?
- Where are the limits (moral, economic, technological) of how far we might intervene in the genomes of farmed animals?
- Will land use pressures emerge or intensify? How will farming space compete with demands for e.g. housing, rewilding, energy production?

Suggested further reading

- Social and economic opportunities and challenges of plant-based and cultured meat: [link](#)
- United Nations Environment Programme (UNEP) report on the importance of animal welfare for sustainability: [link](#)
- Australia's shifting mindset on farm animal welfare: [link](#)
- The EAT-Lancet Commission on Food, Planet, Health: [link](#)
- Section 12 of this Future Trends report covers gene-editing and alternative proteins: [link](#)
- Social and ethical issues related to genome editing and farmed animal breeding: [link](#)

- The Nuffield Council on Bioethics' research on genome editing and farmed animals: [link](#)

5.3 Issues and trends: Companion animals

Advances in pet health care

Some studies report that over 50% of pet owners have purchased tech just for their pet. This wearable tech collects a huge range of data which can then be used to improve health outcomes and potentially train further artificial intelligence tools.

Innovations in animal healthcare can have implications for human medicine. For example, mRNA vaccines – originally used in veterinary medicine – were introduced to humans in response to the COVID-19 pandemic.

Climate change and companion animals

Several animal wellbeing organisations have already reported increasing incidences of dogs dying in hot cars. Global temperature increases are also correlated with dog bites and rabies infections in dogs. The geographic range of vector species (i.e. organism that can transmit diseases or pathogens) has also expanded and led to a higher prevalence of diseases in humans and animals, such as ticks and tick-borne illnesses including Lyme disease. An increase in hot weather will also influence human behaviour and is likely to lead to reduced exercise for dogs, which could mean increased pet obesity. Dog walking is a bonding experience and prevents behavioural problems which could lead to increased pet abandonment at rescue shelters.

Longer summers may lead to a longer kitten season (i.e. the period during which cats tend to breed, usually during warmer months) and will increase kitten survival rates. This may exacerbate cat overpopulation issues and lead to a surge in free-roaming cat populations.

Pets also have their own impact on the climate. The carbon footprint of an average-sized dog is 770kg of CO₂e per year, the majority of which comes from their diet. This is the equivalent of driving approximately 2,500 miles in an average petrol car. Cats indirectly generate 310kg of CO₂e per year on average.

By 2050, some predictions estimate as many as 1.2 billion people could become climate refugees, with huge implications for companion animals. Many will accompany their owners on long-distance, stressful

journeys, which is a direct stressor for companion animals. Zoonotic diseases that are not endemic in the destination population will also likely spread. The increased movement of rescue dogs from southern to northern Europe has already introduced new parasites. Rabies may also spread around destinations where it was previously controlled. Conversely, pet abandonment will inevitably increase as some people elect to leave their companion animals behind.

The ethics of companion animals

Some organisations are advocating for the prohibition of keeping animals as pets. Whilst currently an unpopular and uncommon view, any conversation regarding the granting of rights to animals has clear ramifications for pet ownership. The breeding process, neutering, caging, and euthanising of animals are all incompatible with granting legal personhood for companion animals.

Ethical concerns regarding companion animals could involve the implementation of a range of laws and policies to strictly regulate pet breeding and ownership. This could include bans on breeding certain types of dogs for health reasons or introducing nationwide caps on the number of litters.

There is a high level of awareness among the UK public that animals are sentient beings. This was highlighted by the RSPCA Kindness Index, with 92% of respondents believing that dogs are sentient. Globally, more than 30 countries have formally recognised other animals as sentient beings over the last three years.

Exotic animals as companion animals

Over the last 20 years, there has been a boom in exotic animals as companion animals. The wild animal protection charity Born Free estimates that there are nearly 4,000 dangerous wild animals that are being privately kept under licence in Great Britain. The number kept without a licence is not known.

Weak signals – ‘postcards from the future’

Study finds ‘personhood’ viewed as a spectrum with animals receiving high scores – is there a future where animals are regarded as possessing too much ‘personhood’ to breed, own, and control?

In Germany, the Dogs Act comes into law in 2023 which will introduce a batch of new regulations including the legal requirement to walk dogs for an hour every day – could similar regulations be introduced in the UK?

- How will people think about companion animals and the role they play in their lives in the future?
- What priority will companion animals have when humans have to make difficult choices about the challenges (e.g. economic, climate change) they face?
- How will veterinary medicine and human medicine relate? How will we allocate resources between human and animal healthcare?

Suggested further reading

- Three trends in the animal health industry: [link](#)
- Opportunities for adaptation and mitigation strategies regarding climate change and companion animals: [link](#)
- Born Free’s latest survey of wild animals being kept in the UK: [link](#)
- The exotic pet-demic: [link](#)

5.4 Issues and trends: Wild and kept animals

Biodiversity loss

The UN’s Intergovernmental Science-Policy platform on Biodiversity and Ecosystem Services forecasts that over one million animal and plant species are at risk of destruction. This includes 40% of all amphibian species, a third of all corals, and around one in ten insects. They project that one in six of all species will be at risk of extinction. This will lead to further co-extinctions, where species dependent on other species both go extinct. Research has projected that including co-extinctions increases biodiversity loss by 34% overall, compared to primary extinctions alone.

Migration and reproduction patterns of many wild animals will be affected by climate change. One example is that sea turtle populations are in decline due to the increase in sand temperatures at turtle nesting sites, affecting the sex of hatchlings.

Increasing temperatures and habitat loss are the two main drivers behind the biodiversity crisis.

Weak signal – ‘postcard from the future’

Wild animal suffering – Do humans have a moral duty to intervene in the suffering of wild animals we indirectly cause?

De-extinction

In January 2000, the Pyrenean ibex, a species of wild goat, went extinct after a falling tree landed on the final remaining animal. Before she died, scientists took skin biopsies which were subsequently used to create some cloned embryos which were implanted into female goats. One of these goats went on to give birth and the Pyrenean ibex was brought back to life for ten minutes before she died of a lung defect.

This idea has become increasingly popular in recent years. Texas-based Colossal Biosciences is a gene editing company currently embarking on projects to revive the woolly mammoth, thylacine (Tasmanian tiger), and the dodo. Whilst none of these projects will produce facsimile species, their bone fragments will be sequenced, before cells of a living relative are then edited to create a genome resembling the extinct species. Colossal Biosciences has already raised over \$200 million in venture capital financing.

Technological advances have given scientists the ability to turn science fiction into reality. The increasing threat of extinction for so many species has also given this field an impetus.

Weak signal – ‘postcard from the future’

Biotech company plans to de-extinct the Tasmanian tiger – will ethical concerns prevent de-extinction ever happening?

AI-facilitated non-human communication

Scientists are deploying artificial intelligence and machine learning to study and decipher animal communications. Large data sets of animal vocalisations are studied using algorithms to detect patterns. These algorithms are already able to distinguish between the voices of individual animals and able to detect whether a pig's grunt is the result of joy or of stress. The hope of this field is to create one day a 'Google Translate for Animals'. For example, the Earth Species Project is a non-profit dedicated to using

artificial intelligence to decode non-human communication, with the ambition of transforming humans' relationship with nature.

Weak signal – ‘postcard from the future’

Album of whale songs spearheaded global movement for commercial whaling ban – just how far-reaching would the consequences of humans being able to communicate with animals be?

Animal testing

It is increasingly possible to replace, and avoid, animal use in research and testing with new non-animal technologies (NATs) and new approach methodologies (NAMs). For example, advanced cell cultures maintained outside the body, such as organs-on-chips and organoids, are increasingly available in biomedical research. The global non-animal alternative testing market is growing annually and is expected to be worth an estimated \$2.6 billion by 2026.

A number of countries, organisations and companies have set out ambitions and strategies for transitioning away from animal use, and the UK Government is coming under increasing pressure to 'phase out' animal experiments and exploit the huge potential of NATs and NAMs. More approaches which avoid animal use are already being introduced to assess the safety of chemicals such as pesticides, although replacement is currently more challenging in other fields. There is strong public support for a 'phase out'; polling has shown that 77% of EU citizens want to see clear plans for a transition to doing science without the use of animals.

However, there are potential drivers that could lead to increased demands for animal research and testing. These include backlash from bodies representing researchers using animals in fields in which replacement opportunities are currently limited, such as neuroscience. These may deliberately misrepresent moves to phase out animal use as anti-patient, possibly stoking culture wars. Wild and farmed animals are already used in experiments to understand how they will cope with global heating, and future pandemics will also drive animal use to develop and test vaccines (as was the case during Covid). The global ageing population is currently driving increased use of animal 'models' of diseases associated with ageing, such as dementia and arthritis.

((•)) *Weak signal – ‘postcards from the future’*

Pharmaceutical companies have finally committed to stopping harvesting blood from horseshoe crabs used to test vaccines for contaminants – where will innovation negate the need for animal use in other sectors?

Many countries, including Australia, Canada, Ireland, New Zealand and the UK no longer use the (severe) Mouse Bioassay (MBA) test for routine toxicity testing of shellfish, as this can be replaced with sensitive analytical chemistry techniques. Should the ‘gold standard’ for replacement in toxicology be animal test data? Would different people have more trust in animal tests, or analytical chemistry?

- What rights and protections will be afforded to wild animals?
- As we face the mounting problems of climate change, what will the role of animals be in our adaptation? Will they be symbols of the environmental plight? Stakeholders in the process? Or forgotten?
- What will the extent of human intervention into the lives of wild animals be? How far will rewilding efforts go?
- Will ‘kept’ animals exist as a category in the future?

Suggested further reading

- Pages 6-8 of the United Nations Environment Programme report covers biodiversity loss: [link](#)
- Article examining de-extinction: [link](#)
- NPR news report on the FDA Modernization Act 2.0: [link](#)
- Overview of artificial intelligence use in non-human communication: [link](#)
- Earth Species Project is a non-profit dedicated to using AI to decode non-human communication: [link](#)
- The UK’s roadmap for non-animal testing in predictive biology: [link](#)

5.5 Issues and trends: Animal and human wellbeing

Zoonoses

A zoonotic disease is one that can be transmitted to humans from animals. It is estimated that as many as 80% of new infections are derived from an animal source. This includes major modern diseases such as Ebola, Zika, HIV, E. Coli, Salmonella, and many strains of avian and swine flu. Zoonotic transmission can occur from any contact between animals or animal derivatives and humans.

As humans have continued to have more contact with animals, the frequency of appearances of new zoonotic diseases has increased considerably. The United Nations Environment Programme states this is the result of climate change, microbial adaptation, unsustainable agriculture, exploitation of wildlife, and international travel.

Extinction of pollinators

The sixth mass extinction in Earth’s history is underway, including many pollinator species. Animal pollination plays a crucial role as a regulating ‘ecosystem service’ in nature. Over 75% of leading types of global food crops rely to at least some extent on animal pollination, including 35% of global crop production being pollinator dependent. The International Union for Conservation of Nature lists 16.5% of vertebrate pollinators as threatened with global extinction.

The main drivers behind this include land-use change, intensive agricultural management and pesticide use, environmental pollution, invasive alien species, pathogens, and climate change.

Antimicrobial resistance

The World Health Organisation recently described antimicrobial resistance as the fifth biggest threat to global health and food security. The antibiotics used to treat a number of infections including pneumonia, tuberculosis, gonorrhoea, and salmonellosis are becoming less effective. A post-antibiotic era is possible in the future, where common infections and minor injuries would once again have the potential to become fatal. The OECD already estimates that 35,000 people in the US die every year from antibiotic-resistant diseases.

In January 2022, the EU banned all routine farm antibiotic use and all preventative antibiotic treatments of groups of animals. In the UK, sales of antibiotics for use in livestock has reduced by 55% since 2014. Defra are yet to make any changes to existing regulations on antibiotic use in the UK.

The use of antimicrobials in farm animals, often administered preventatively, is believed to contribute to the rise of antimicrobial resistance for drugs that are important to human health. The Bureau of Investigative Journalism found that suppliers of beef to McDonald's and Walmart in the US are sourcing meat from US farms that use antibiotics linked to the spread of superbugs.

- How might people in the future see the relationship between human and animal wellbeing? Will they merge? Be seen as contingent upon each other? A zero-sum game? Or as a threat to human health (e.g. through pandemics)?
- What other issues might change how we see the relationship between human and animal wellbeing?

Suggested further reading

- UK Government health trends deck includes the spread of new, zoonotic diseases (page 15): [link](#)
- Overview of the use antibiotics in farmed animals and the threats of antimicrobial resistance: [link](#)

5.6 Issues and trends: Social movements and animals

Self-organising social movements

How people come together and mobilise around a cause is changing. Newer movements tend to be grassroots, decentralised, improvised, rapid, non-hierarchical, and are often ephemeral. They do not have an 'institution' at their centre. They are open and self-organising. Black Lives Matter and Extinction Rebellion are good examples.

The drivers behind these are complex. Technology has played an important role: the internet and social media have made it far easier for decentralised movements to organise, without a central institution to plan for them. The bar to participation is lower. There may also be generational changes in expectations of political participation, with younger people wanting to participate on their own terms, and being more sceptical of traditional, hierarchically organised institutions.

There is not yet a high-profile equivalent to Extinction Rebellion in the animal wellbeing sector, however the Open Wing Alliance (OWA) does share some of the qualities of similar social movements. It is a global, decentralised network of animal protection organisations, with the aim of ending the abuse of chickens worldwide. The coalition was developed by The Humane League in 2016 and has already amassed over 90 member organisations across 67 countries. Whilst maintaining their independence, members work together on strategy, corporate dialogue, and global campaigns.

Since its foundation the OWA has helped secure over 2,000 cage-free commitments and over 400 broiler welfare policies worldwide. This includes multinational corporations such as Burger King, Unilever, and KFC. In many cases these pledges have transferred into actions, with 85% of companies following through on their commitments.

The success of alliances such as the OWA is partly due to its international presence. This allows members located near global corporate headquarters to apply pressure, whilst members located elsewhere can focus on regional branches and outlets.

((•)) Weak signal – 'postcard from the future'

Wave of UK anti-racism protests sparked by police killing of George Floyd – how can other social movements in the UK use this new form of decentralised activism?

- What kinds of movement could emerge in relation to animal wellbeing? What issues might they mobilise around? Who will their targets be? Who will be involved in these movements?
- Could there be a backlash against such movements?
- How will social license change for sport involving animals? What is considered acceptable now that might not be acceptable in the future?

Suggested further reading

- News articles articulating how the future of animal wellbeing lies beyond the West: [link](#)
- Report examining the profile of Extinction Rebellion: [link](#)

6. Appendices

6.1 Acknowledgements

We would like to thank the participants in this process for their time and creativity. Organisations represented in this process include:

- A-LAW
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- Animal Welfare APPG
- Battersea Dogs & Cats Home
- British Horseracing Authority
- Bryant Research
- City University
- Conservative Party
- Compassion in World Farming
- Cruelty Free International
- Financial Times
- Good Food Institute
- Humane Society International
- Humane League UK
- Ivy Farms
- Leon
- Liberal Democrats
- ProVeg UK
- Salmon Scotland
- Synthesis Capital
- The Guardian
- Understanding Animal Research
- University of Cambridge
- University of Southampton
- University of Surrey
- Wild Animal Initiative

Disclaimer: the perspectives expressed in this document were generated through analysis by Firetail and the RSPCA. They do not represent the views of participants in the process, or their organisations. No endorsement is implied.

All images in section 3 of document were generated with the help of DALL-E 3.

6.2 Methodology

Our approach was designed in collaboration with the RSPCA, and using best practice for scenario planning (e.g. the Government Office for Science's Futures Toolkit). It comprised five phases:

1. **Inception:** meetings and workshops with the project Steering Group and RSPCA's senior leadership to ensure alignment and agreement on scope, objectives, the options available and subsequent approach.
2. **Gathering intelligence about the future:** desk research focused on the current context of animal welfare and related issues, as well as covering evidence regarding trends and forecasts for the role of animal welfare. Our reading list included academic papers, news articles, industry reports, and trend analyses. It was based on recommendations from RSPCA colleagues and our own online research. We produced an Issues Paper based on this, presented in section 5.
3. **Exploring the dynamics of change:** 1-1 qualitative interviews following a '7 questions' format with over 30 key informants. The sample was chosen in collaboration with, and the approval of, the project Steering Group. The aim of the interviews was to gather trends and drivers related to animal wellbeing, their connection to other issues, and to capture different perspectives on what success and failure in the future might mean for animals. We synthesised these into the drivers outlined in section 4.
4. **Scenario development:** 3 scenario development workshops (2 with external stakeholders, 1 with RSPCA subject matter experts) to test and validate drivers identified in phase 3, prioritise them by impact on animal wellbeing and certainty of outcome, and to hypothesise scenarios based on different combinations of drivers.
5. **Output development and testing:** synthesis of the workshop outputs into a final set of 5 scenarios outlined above. These were tested and refined through consultation with the Steering Group and other RSPCA stakeholders.

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