Policy insight
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green alliance...

Crossing the divide

The potential for consensus between four worldviews of agriculture's future

Contents

Land use has to change to reach net zero

> **“Policy makers, confused over the best course of action for agriculture, intervene haphazardly, or not at all. As a result, progress is slow or non-existent, and the climate and biodiversity impacts of the current food system remain unaddressed.”**

Changing how we use land is essential to limit climate change and biodiversity decline. Globally, food production is responsible for approximately 26 per cent of greenhouse gas emissions and agriculture takes up an estimated 50 per cent of habitable land, making it the leading cause of biodiversity loss.[1]

In the UK, as in many other countries around the world, climate targets mean the land use sector will have to become net negative by 2050 to allow the economy to reach net zero. Achieving this, and the ‘30 by 30’ nature restoration targets set out during the UN Convention on Biological Diversity COP15, requires vast areas of habitat to be protected and restored. This is in addition to an existing set of demands on land, including food production, infrastructure, housing, renewable energy generation and resource extraction.

There is broad agreement that we need to move towards a food system that provides healthy food; supports good rural livelihoods; restores nature; makes meeting the net zero goal possible; and is resilient, eg to volatile markets and extreme weather.

But there is radical disagreement about how to meet these headline goals. There are very different worldviews – contrasting visions for the future of food production and consumption – within the food, agricultural and land use sector. Each has a different definition of the goals, at odds with other worldviews. For example, agroecologists tend to see food security as arising from local food systems in which people eat what the land can provide, while sustainable intensifiers tend to see food security as raising yields to meet the demands of a western-style diet. But both proudly champion the importance of food security. The effect is similar to debates over energy, in which partisans of nuclear power and renewables both assert their technologies can provide all the zero carbon power needed, rendering the alternative technology irrelevant.

The result of this superficial agreement, which masks underlying disagreement, is stasis. Policy makers, confused over the best course of action for agriculture, intervene haphazardly, or not at all. As a result, progress is slow or non-existent, and the climate and biodiversity impacts of the current food system remain unaddressed. But, as the Netherlands demonstrates, simply ignoring the issue does not make it go away: the government’s

failure to tackle nitrogen pollution led to a court case in 2019 which has forced the country to take drastic action, halting major developments and drastically cutting livestock numbers.[2]

There is also evidence that politicians are exploiting this disagreement as part of a broader culture war against green policies. For example, in Italy the government is attempting to ban the production and importation of cultivated meat, with the aim of protecting food heritage and consumer health.[3] The UK Prime Minister Rishi Sunak recently railed against an imagined 'meat tax', a threat invented to kill the possibility of future policies supporting dietary change.[4] By stoking the underlying conflict, politicians risk making it even harder to find solutions to these problems, and turning worldviews into tribes in intractable conflict. Building alliances across worldviews will instead speed up progress.

Here, we look closer at the different perspectives and explore the potential of stronger alliances between them, based on shared values and goals.

“By stoking the underlying conflict, politicians risk making it even harder to find solutions to these problems.”

Clashing perspectives on agriculture's future

We have identified four distinct worldviews influencing the debate over agriculture and land, based on semi-structured interviews and our own expert judgement. These predominantly reflect debates occurring in richer countries, although they are influenced by developments in the global south, especially in the case of agroecology.

Our work builds on Tara Garnett's three approaches to the 'food security – environmental challenge' based on what different actors believe to be the root cause of these issues. These are:

- **The efficiency-oriented approach:** those who see the challenge as one of production and, therefore, propose technological fixes to improve the efficiency of the food system.
- **Demand restraint:** those who see the challenge as one of consumption and, therefore, advocate for a change in the dietary drivers determining food production (including eating less meat and dairy).
- **Food system transformation:** those who see the challenge as socioeconomic and argue that change is needed in how the food system is governed.[5]

The viewpoints we present are best thought of as ideal types: these are based on observable reality but are deliberately simplified to highlight areas of contention and agreement. Real people of course rarely fall exclusively into one of these categories and their views tend to be more nuanced. For instance, advocates of 'regenerative' or 'restorative' farming may exist in all categories.

A full annex of quotes representing some of the positions commonly adopted by these four worldviews is available at bit.ly/4aM4z9u.

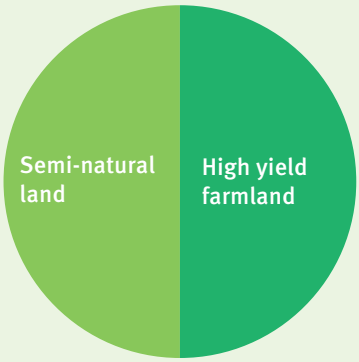
Land sparing vs land sharing

The 'land sharing' vs 'land sparing' debate is a prime example of the conflicts arising as a result of different views. Land sharers argue that the best way to balance food production, nature restoration and carbon sequestration is in the field, by farming in wildlife-friendly ways and incorporating natural features, such as ponds and hedgerows, on the farm. Land sparers, on the other hand, argue that good agricultural land should be intensively farmed to leave more areas of natural habitat untouched and free up land for nature restoration.

Despite criticism that this binary approach is too simplistic, and despite the emergence of other models for balancing food production, nature restoration and carbon sequestration (such as the three compartment model we promote), this debate over sparing or sharing continues to divide the farming and environmental sectors, preventing meaningful progress on climate mitigation and nature restoration.[6]

How the three compartment model would work, compared to land sparing and sharing[7]

Land sparing

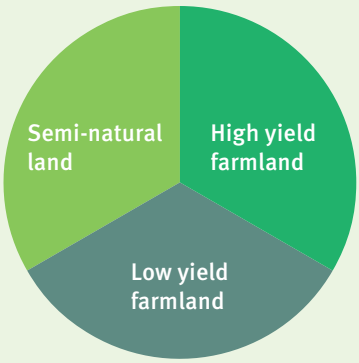


Fens: 59% of species do best
Salisbury: 37% of species do best

Land sharing

Fens: 32% of species do best
Salisbury: 20% of species do best

Three compartment model



Fens: 80% larger population across all food production levels
Salisbury: 60% larger population at high food production levels; similar populations at current production level

The four worldviews

Traditionalists

These represent the status quo in the UK and Northern Europe. As the name suggests, this view is characterised by resistance to the fast paced systems change promoted by others. It puts forward the view that farmers need to be recognised and valued, first and foremost, as food producers. They see their cultural role as guardians of the countryside, maintaining farmed landscapes and traditions.[8]

"...it is normal to cling on to the here-and-now, however unattractive or unsustainable, for fear of something worse... The very identity of being a "a farmer" seems threatened... only an incremental approach can overcome these natural instincts."

Dr Tony Hockley, director of public policy at the Policy Analysis Centre and visiting senior fellow at the London School of Economics

Approach to technology, land use and the natural world

Traditionalists take a pragmatic, if conservative, approach to farm technologies and practices. While climate change is seen as a problem, it is not seen as a big issue for farming specifically. In the UK, over half of farmers in 2014 thought greenhouse gas emissions were not important in relation to how they farm, and this only dropped to 38 per cent in 2022.[9] As a result, they can resent calls for the land use sector to seek net negative emissions, and think it unfair that farmers should also have to 'mop up' emissions from other industries.

Diet and food philosophy

Traditionalists are resistant to proposals to reduce meat and dairy consumption, casting current consumption as part of the '4Ns': natural, necessary, normal and nice.[10] They argue that today's level of meat is nutritionally important and central to a healthy, balanced diet. The tendency is to minimise the contribution of livestock to climate change and biodiversity loss, for example by over emphasising the role ruminants play in soil carbon sequestration.[11]

"...we have a climate whereby we have rainfall, we grow grass, we have predominantly extensive grazed beef, dairy herds and sheep flock, that [are] all outside, we should be enormously proud of that."

Minette Batters, president, National Farmers Union[12]

Trade and economics

Traditionalists often seem to believe in free trade for exports, but that imports should be restricted to protect local industries. Domestically, the main complaint is that food companies give farmers an unfair share of the profit generated from the food system.

Drawbacks of this approach

This viewpoint is defensive and resists change at the pace and scale needed to address climate change and biodiversity loss. Traditionalists regard proposals for change to the food system as yet another attack on farmers' livelihoods.

Agroecologists

Agroecologists believe that dramatic socioeconomic change is required to address the underlying issues with the food and land use system. They promote food sovereignty and social justice, adopting certain on and off farm agroecological practices to achieve this, such as farming with minimal external inputs, supporting rural communities through local markets and participating in local democratic institutions.[13]

"Agroecology combines regenerative farming practices with a system-wide transition where nutritious food is sustainably produced and affordable for all, nature is thriving ..., and resilient businesses and communities help to mitigate climate and geopolitical shocks."

Dr Jim Scown, previously programme co-lead: farming transition at food, the Farming and Countryside Commission [14]

Technology, land use and the natural world

Agroecologists value traditional farming techniques, and eschew the synthetic fertiliser, energy and technology inputs of the green revolution, which they hold responsible for harm to the planet. Their aim is to grow the food that a local environment is most capable of producing. To achieve this, they use practices such as polyculture, agroforestry systems, crop rotations and crop-livestock integration.

"There's a reason why it worked this way for so long because you have a closed nutrient cycle on your farm, you are not constantly exporting organic matter and nutrients from your soil, you are replenishing it with what you take off..."

Ben Andrews, Broadward Hall Farm

Agroecologists believe land sharing is the best way of preserving nature. In Europe especially, they see species favoured by rewilders, including wolves, lynx and bears, as alien impositions on their local natural environment.

Diet and food philosophy

Agroecological systems usually have lower yields than conventional systems, and so most agroecologists accept that a significant reduction in meat consumption is needed to allow populations to live off the land without chemicals.[15] Agroecologists believe this should be achieved through traditional diets that use plant-based wholefoods with meat as flavour rather than as the centrepiece of a meal. They see food as central to culture and identity and believe that growing, cooking and consuming food should take up a much larger share of people's time, interest and spending.[16]

Trade and economics

This group is sceptical of capitalism and rejects free trade in favour of producing local food for local people. They would remake economic life around local food and the good judgement of farmers, and see good food as undervalued by the abstract efficiency promoted in global food commodity markets.

"...if we truly want life to be convivial, or indeed possible, we need above all to structure the whole world, and our ways of life, around food and farming"

Colin Tudge, author and biologist[17]

Drawbacks

Agroecologists tend to be highly suspicious of 'Big Food' and 'Big Agriculture', making alliances with the other worldviews we outline challenging.

Agroecologists need drastic changes in the economy, democracy, behaviour and the welfare state for their worldview to become commonplace: theirs is a more comprehensive and demanding worldview than the others.

Technovegans

Technovegans believe that making food with much less farming will solve the climate and environmental crises. They view animal agriculture as inefficient and land intensive and believe that using new food technologies to replace animal products with alternative proteins will provide abundant flavourful food without environmental harm.

"The most important scientific question in the world right now is why does meat taste delicious. If we can answer that question successfully, we can eliminate and reverse the environmental threat."

Patrick Brown, Impossible Meats

Technology, land use and the natural world

Technovegans favour high tech, capital intensive solutions that remove food production entirely from land and ecosystems, eg vertical farming, plant-based meats or producing protein through precision fermentation and cell culture. They are strong proponents of land sparing and see unfarmed wilderness as true nature.

Trade and economics

This group is at ease with today's global trade and economic systems. If anything, they believe a global food system is a good way to promote the technologies that can rapidly displace intensive animal production across the world.

Diet and food philosophy

Technovegans assume that consumers' eating habits will not significantly change, so substituting meat, eggs and dairy with flavour-equivalent alternative proteins is the only way to change diets and, therefore, land use, at the pace and scale required. It is an unromantic, scientific view which sees so-called 'natural' food as marketing hype. For example, they argue that "the meat you eat is already fake" and that "the idea that the chicken consumers eat today is 'natural' is a fantasy", given the selective breeding and the conditions that livestock is reared in.[18]

Drawbacks

The idea of 'Frankenfoods' risks being rejected by people, and today's plant-based meats are sometimes seen by consumers in the same light as unhealthy, ultra processed junk food. Technovegans' wish for big food companies to scale up their products could be seen as enabling further corporate control of the food system.[19]

Sustainable intensifiers

Sustainable intensifiers share technovegans' technophilia and land sparing approach, but see farming innovation, rather than food innovation, as essential. They assume ever increasing demand for western style animal-based foods, which must be met by farming land as intensively and efficiently as possible, using external inputs as precisely as possible.

"Farming is not a cottage-industry, or something quaint and nostalgic; efficient, high-technology agriculture holds many of the keys to our future."

Dyson Farms

They favour agritech solutions that maximise yields and (secondarily) minimise the relative carbon and land intensity of food production. They use practices such as genetic modification, marker-assisted breeding, remote sensing to predict yields and precisely dose pesticides, irrigation and fertilisers. They tend to see the yield reduction associated with land sharing as inefficient, preferring a harder distinction between farmland and land for nature.

"Appropriate and efficient use of inputs, smarter approaches to business planning, and the adoption of innovations and new technologies, increase productivity whilst protecting valuable resources."

Sustainable Intensification Platform

Trade and economics

This group thinks wealthy countries with access to expensive precision agricultural technologies have a duty to feed the world, and that the trade system should facilitate the export of cheaply produced grains, dairy and meat to global consumers. It is comfortable with farming subsidy so long as it supports higher yields.

Diet and food philosophy

Sustainable intensifiers may promote limited dietary change, for example from livestock that require more land to rear (such as beef) to more efficient livestock (like chicken and pork). Like technovegans, they are unromantic about food production and believe abundance at low cost is preferable to maintaining agricultural or food system traditions.

Drawbacks

This worldview is split into two subgroups: those with strong sustainability credentials and 'true intensifiers', who are primarily concerned with intensifying food production with sustainability as a secondary goal. There is the danger that political concern over food security following the invasion of Ukraine will lead to greater support for intensification, even where it doesn't support sustainability.

Power dynamics between the four worldviews

Sustainable intensifiers, particularly the 'true intensifier' subset of this worldview, hold the most economic power. However, traditionalists and agroecologists have the advantage of holding cultural power: the public supports the traditional, higher welfare farming systems that these worldviews are believed to represent. Technovegans lack this cultural and economic capital, but they have the benefit of innovation power. They may be seen by some to hold the keys to the future.

Summary of the four worldviews on the future of agriculture

	Traditionalists	Agroecologists	Technovegans	Sustainable intensifiers
Approach to technology	Pragmatic	Cautious	Optimistic about new food technology	Optimistic about new farming technology
Trade and economics	Free trade for exports, resist imports	Economies should revolve around local food	Use global food systems to deploy meat and dairy alternatives rapidly	Use trade to let efficient farmers feed the world
Food philosophy	Food security and flavour matter most	Food is culture and identity	Natural is a lie: food can be engineered to be better	Abundance at low cost
Nature and climate	Farmers should do something, but action is mostly for others	Lower yields mean more farmland nature. Avoiding inputs avoids fossil fuels	Making livestock obsolete frees land for more wild nature and carbon removal	Farming intensively frees up land for nature and carbon removal
Diet	No change. Meat is crucial to a healthy diet	Reduce meat consumption by returning to traditional diets	Like for like substitution of animal proteins with alternative proteins	Limited change, eg from beef to chicken

Areas of agreement and disagreement

	Traditionalists	Agroecologists	Technovegans	Sustainable intensifiers
Wary of tech-driven solutions				
Favour land sharing				
Cater to consumer preferences for a meat centric diet				
Reduce meat consumption				
See food production change as essential to addressing climate/ nature crises				

Legend

Strongly agree Strongly disagree

An alliance between two worldviews can lead to progress

“Alignment between agroecologists and technovegans is the best option as it delivers stronger environmental results and social benefits.”

At present, the future of agriculture and land is being determined by an accidental alliance between traditionalists and the ‘true intensifier’ subset of the sustainable intensifier worldview we outline. This is capitalising on concerns over food security to gain political support.[20] The result is continuing environmental degradation: more land will be brought into agricultural production and this will be farmed more intensively, with limited regard to the ‘sustainable’ element of sustainable intensification. Alone, agroecologists, technovegans and sustainable intensifiers cannot make change happen. But, in alliance with one another, they may be able to set the sector down a better path.

While it is the differences between the four worldviews that are most striking, as we demonstrate, there are also significant points of agreement.

Below, we outline some alignments that could be forged between them based on common values and goals, expanding most on the one we believe would lead to the best outcome. We argue that alignment between agroecologists and technovegans is the best option in a European context as it delivers stronger environmental results and social benefits, is relatively stable and likely to be popular with the public.

Technovegans and agroecologists

An alliance between technovegans and agroecologists would make a virtue of each group’s strengths, which mirrors the other’s weaknesses: agroecology needs radical diet change to be scaled up, which technovegans can provide, while technovegans need to avoid being seen as anti-farmer to be accepted, which allying with agroecologists would help. This alliance would have to be a ‘marriage of convenience’ as these groups also have major disagreements.

Areas of agreement

There are three potential areas of agreement that could underlie this alliance:

1. The need to reduce meat production and consumption

Agroecological farming typically has lower yields than conventional farming. To maintain sufficient nutrition, agroecologists assume diets will match the capacity of the land, mainly by reducing consumption of grain-fed meat and dairy. For example, IDDRI's *10 years for agroecology* halves meat consumption, with pork and egg consumption falling by two thirds, based on voluntary behaviour change.[21] However, these assumptions stretch the boundaries of plausibility.

> "Conventional agriculture has contributed to the loss of 20 per cent of common bird species in Europe."

Technovegans have a solution to this difficulty: technology can replicate meat flavours without the use of animals at the same or lower prices, certainly for the use of meat in processed or pre-prepared food. But this worldview's lack of connection with farming is a cultural weakness. Meanwhile, the high welfare, nature friendly farming espoused by agroecologists is popular. An alliance in which technovegans' alternative proteins make more space for agroecology to produce less, but better animal proteins, could enhance the public's view of both approaches.

2. Restoring nature in a culturally sensitive way

Agroecologists see their land sharing practices as more climate and nature friendly than conventional farming. IDDRI's *10 years for agroecology* report describes how conventional agriculture has contributed to the loss of 20 per cent of common bird species in Europe and argues that expanding agroecology would increase biodiversity and reduce the sector's greenhouse gas emissions by 40 per cent.[22] But carbon emissions from land use need to be net negative, not just 40 per cent less.

Technovegans also want to restore nature. Pat Brown, founder of Impossible, characterises this view, stating that "by replacing animals in the food system with delicious, nutritious meats made from plants, vast swathes of the Earth's entire land surface could be spared for biodiversity and wildlife".[23] Land sparing can create net negative carbon emissions and restore more wildlife than land sharing, but on its own it is culturally unlikely in Europe, given the importance of farmed landscapes and rural communities to national myths. It is also politically implausible in countries where agriculture employs a large share of the workforce: in practice, this is most of the world.

For an alliance between these views to work, it would need to be based on the 'three compartment' model of land use we have proposed, that combines land sparing and land sharing, as described above.

Agroecologists would have to forgo the idea of farming all land agroecologically (though our modelling suggests it could still expand by ten to 15 times in the UK).[24] They would, however, gain

the advantage of more wildlife and carbon removal through the increased semi-natural habitat provided.

Technovegans would forgo the higher carbon sequestration and biodiversity gains of a pure sparing approach.[25] But, they would gain more support through the alliance with those who practice the type of farming that most Europeans identify with, and who are often used to represent rural culture.

3. A shared enemy: the industrial meat lobby

Both groups require industrial meat consumption to decline so they can grow. Industrial meat undercuts agroecologically produced meat on price, squeezing it out of the market. Alternative proteins are in direct competition with industrial meat as they can readily replicate processed meat in taste and texture, which is generally produced from industrially farmed livestock.

> “Agroecology faces an existential threat in the form of intense lobbying by industrial farmers.”

This competition is also political: agroecology faces an existential threat in the form of intense lobbying by industrial farmers, capitalising on concerns over food security, as demonstrated by the European People Party’s (EPP) recent pushback on proposed laws to reduce pesticide use.[26] Given these trends, it seems unlikely that the 25 per cent organic target in the EU’s ‘farm to fork’ strategy will be met. Technovegans are also threatened by a proposed ban on lab grown meat in Italy, and they risk being portrayed as a force destroying agroecology or, worse, as the new purveyors of ‘Frankenfoods’.[27]

Areas of disagreement which would need to be set aside by an alliance

Below, we highlight two potential barriers to alignment between technovegans and agroecologists, and propose how they might be overcome.

Power dynamics and political economy

Agroecologists believe that substituting alternative proteins for industrially farmed meat does nothing to change the broader economic, political and social dynamics within the food system. They argue that the purchase of alternative protein start-ups by ‘Big Meat’ companies and the fact these companies are beginning to roll out their own products suggests this process is already underway.[28,29] This tension runs deep: technovegans need the global food system to get their products to scale while agroecologists see the global food system as the heart of what is wrong with food.

Possible solutions

A possible route to accommodation is to encourage more diversity in the alternative proteins industry. They could be produced at smaller scale, fed by locally sourced ingredients, as companies like Symplicity Foods or Nukoko are doing.[30] Critics note that the policies needed for this to succeed –stronger anti-trust laws and restrictions on intellectual property rights – would be challenging

to implement due to food industry lobbying.[31] Just as microbreweries for beer have not put industrial beer production out of business, this accommodation would require agroecologists to accept something short of their revolutionary economic goals.

An alternative accommodation would be to ensure that the protein transition follows a food justice approach. For example, the raw materials for alternative protein products could be grown in an agroecological way; research into alternative proteins could be made open access, publicly funded and participatory; steps could taken to ensure a just transition for those in affected jobs; and continued research undertaken to improve the nutritional profile of alternative proteins.[32] This approach would require significant policy change which might frustrate technovegans because it slows down the roll out.

The simplest accommodation on both sides would be the understanding that, from an environmental and animal welfare perspective, 'Big Veganism' is preferable to the status quo of industrially farmed livestock.

> **"Agroecologists may be concerned that alternative proteins will displace agroecologically produced meat."**

Perceived competition between products

Agroecologists may be concerned that alternative proteins will displace agroecologically produced meat. This is partly true: while alternative proteins remain expensive, higher end products, they are partly competing for ethical consumers who are also who willing to pay a premium for high welfare meat.[33]

However, this displacement is unlikely in the medium term for the following reasons:

- alternative proteins cannot yet mimic whole cuts of meat (like a leg of lamb) and instead compete with processed, usually industrially farmed meat;
- alternative proteins are soon likely to become cheaper than conventionally produced, lower welfare meat.[34]

For this accommodation, agroecologists must believe they are targeting a different market to technovegans in the medium term and accept, for example, that there will continue to be a demand for cheap sausages that they cannot serve. In turn, technovegans would need to accept and even endorse the production of high welfare, if low volume, agroecological meat, which runs counter to vegan ethics.

Agroecologists and technovegans: areas of tension and possible compromises

	Animal welfare	How to reduce meat consumption	What is a healthy diet?
Agroecologist stance	Agroecological animal farming is much higher welfare than intensive farming.	This can be achieved by using meat more sparingly and relying more on home cooking. Meat alternatives are not 'true' diet change.	Healthy diets are unprocessed, with meat in moderation. Alternative proteins enable nutrient-poor, processed food diets.
Technovegan stance	Could believe that raising animals for consumption is morally unjustifiable in all circumstances.	Substitution with very similar alternatives is the best way to achieve diet change due to the centrality of meat in western diets.	Healthy diets can be achieved by engineering food to be nutritious.
Compromise	As everyone is unlikely to become vegan, high welfare animal rearing is always preferable.	Both approaches can operate in tandem.	The health properties of alternative proteins should be assessed via more public investment in nutrition research.

The potential of other alliances

> **“This alliance could deliver significant environmental benefits by freeing up space for ecosystem restoration and habitat creation.”**

Technovegans and sustainable intensifiers

An alliance between technovegans and sustainable intensifiers could work well in countries like the US where a lower proportion of land is dedicated to agriculture and where intensive farming is the norm. This alliance could deliver significant environmental benefits by keeping the amount of land dedicated to food production low, freeing up space for ecosystem restoration and habitat creation.

However, there are risks. These approaches compete directly with one another which would make an unstable alliance. Its strong focus on technology also ignores important cultural factors in food consumption and production, so may be publicly and politically unpopular.

It also threatens any potential agroecologists–technovegans alliance by making no space for the growth and development of agroecology. If this alliance became dominant, it would be difficult to change course.

The basis of the alliance

This could draw on the following areas of common ground:

- **Technophilia** – both believe that innovation is the solution to questions of future food production, climate and nature.
- **Land sparing** – both believe that as much land as possible should be taken out of food production to free up space for nature restoration and carbon sequestration, without threatening food security.

This combination of approaches has the benefit of avoiding some of the challenges of the agroecologists-technovegans alliance when it comes to power dynamics. Both worldviews could hold considerable power, as sustainable intensifiers could be ‘Big Agriculture’ while, in manufacturing, technovegans could become ‘Big Food’. They also both fit well with a capitalist global food system.

Challenges and solutions

This alliance of views would contend with the following challenges:

1. Differing views on meat consumption and dietary change

Sustainable intensifiers do not believe that widespread dietary change is required. They argue that increased demand for meat can be met through the intensification of livestock farming and by switching to forms of livestock production that need less land, such as chicken.

This is at odds with the technovegans' view: that animal agriculture is the most damaging human activity from an environmental perspective and that replacing animal products with alternative proteins is necessary to limit climate change. Technovegans might also disagree with intensive livestock farming from an ethical point of view.

2. Competing products

As we have outlined above, alternative proteins are most likely to displace processed meat and dairy products in the short to medium term, most of which come from industrially processed meat. As a result, technovegans are in direct competition with sustainable intensifiers.

Possible solutions

From an environmental perspective, the best case scenario would be for sustainable intensifiers to capture the market for meat products that alternative proteins cannot easily replicate, such as steak. In this instance, alternative proteins could dominate the processed meat market and displace demand growth from sustainable intensifiers, sparing more land.

This market sharing could easily break down if it becomes possible to accurately replicate cuts of meat using alternative proteins at a comparable, or lower price. 'Carcass balance' – the fact that unwanted cuts are usually turned into mince to get value from otherwise unsaleable meat – could also be an issue. Agroecologists are able to address this issue by encouraging nose-to-tail eating, but sustainable intensifiers are more likely still to want to meet the demand for steak, even if demand for mince is displaced with alternative proteins. But doing so would increase the price of steak, risking economic conflicts.

Agroecologists and traditionalists

Alliances between traditionalists and agroecologists have begun to form in southern Europe, motivated by the identification of a common 'enemy': technovegans. Their shared interest is to reduce the threat posed by the industrialised alternative proteins industry by keeping demand for meat up, ensuring there is a market for animal products even after alternative proteins capture some of the market share. Both parties emphasise the role livestock farming plays in rural culture and diets, and both agree that land sharing is the only culturally appropriate way to save nature. Both are sceptical of 'fake' or non-traditional foods and appreciate traditional methods of farming, such as mixed farming.

> **"The main risk for this alliance is poor outcomes for climate and nature."**

The main risk for this alliance is poor outcomes for climate and nature. Without widespread voluntary dietary change, the area of land under agricultural production will stay the same or continue to increase if demand for meat and dairy grows across the world. This will replace semi-natural habitat, leading to less nature and fewer natural carbon sinks: a hectare of semi-natural habitat, like woodland, supports three to six times more wildlife than farmland and two to four times more wildlife than low yield farmland.[35]

Challenges

The primary challenge facing this alliance is agroecologists' wish for radical socioeconomic and food system change which sits uneasily with traditionalists' resistance to major change. But, in reality, agroecology currently occupies less than three per cent of land in the UK, for example, so traditionalists are unlikely to see them as much of a threat.

Assessment of likely outcomes from potential alliances[36]

	Environmental impact	Supports dietary change needed to reach net zero	Stability of the alliance	Public perception
Technovegans + agroecologists				
Technovegans + sustainable intensifiers				
Agroecologists + traditionalists				
Traditionalists + sustainable intensifiers (the status quo)				

Beyond a bad status quo

> **“Significant changes in how land is used are needed to avoid the worst impacts of climate change.”**

The current trajectory of the food, agriculture and land use sector is not sustainable. Continuing business as usual will result in the worst outcomes for all four groups outlined in this analysis, including traditionalists. It will also make it impossible to meet nature or climate goals.

Significant changes in how land is used and shifts in food production and consumption habits are needed to avoid the worst impacts of climate change while continuing to feed a growing population. Such change is not happening at the pace and scale required.

Polarised debates between different approaches to the future of food production and agriculture are leading to paralysis.

At present, the four worldviews we have characterised here are, mostly, uncompromising. Agroecologists are pushing for a transition that would see all land farmed in ‘nature friendly’ ways but they are losing out to sustainable intensifiers who capitalise on concerns over food security to gain support. Technovegans have a few prominent voices encouraging conflict with all animal agriculture. Traditionalists hold the dominant worldview. Policy makers intervene haphazardly and indecisively, slowing the net zero transition and making its achievement more fraught.

Finding common ground between these different perspectives could provide a route forwards.

An alliance between agroecologists and technovegans would lead to better outcomes for society – not least farmers – and the environment and is likely to be a durable partnership. It could also act as an inspiration for other countries who are grappling with how to reconcile new demands on land with family farming and traditional land uses.

A strong alignment of technovegans with sustainable intensifiers could also lead to strong environmental outcomes, but at the expense of many small farmers’ livelihoods.

An approach forged around the joint interests of traditionalists and agroecologists would be the least desirable option from a climate and nature perspective. However, it has the prospect of being popular as it appeals to popular notions of rural life and landscapes.

This study shows that the current impasse in food and land use policy is pernicious, arising from a superficial agreement about goals which disguises deep division amongst people who hold very different worldviews. This suggests that experts, advocates and philanthropists who want to make progress should explore and create opportunities for alliances between different worldviews based on a desire to make change in the short term – with alliances based on shared self-interest even where agreement is only partial – rather than each continuing to focus on promoting their ideal food and land system.

Summary

Agriculture is responsible for over a quarter of global carbon dioxide emissions and is the primary driver of land use change and biodiversity loss.[37] In the global north, there is consensus within the sector that food production and land management practices need to change to keep global warming below 1.5°C and meet the targets signed up to in the Montreal Biodiversity Agreement. But that is where the consensus ends.

While the course of action for other sectors, such as energy, is relatively clear, the path for agriculture and land use to reach net zero and restore nature is highly contested. There is division between competing 'worldviews', each with very different ideas of how to achieve a system that can produce healthy food at affordable prices, sustain rural livelihoods and resist shocks, all without destroying nature and overshooting climate goals.

We characterise below four central worldviews influencing this debate:

- **Traditionalists**
  This is the dominant worldview in Europe, resisting change at the pace and scale proposed by others. Its adherents take a traditional approach to food production, viewing a farmer's role as producing enough food to feed the nation, seeing the tools of the Green Revolution as normal and natural, with climate and nature goals as secondary.

- **Agroecologists**
  These call for a complete restructuring of the food system, to shift power away from big business towards family farmers, who they see as more in touch with nature. They promote low intensity, agrochemical free farming, localised food systems and 'slow food' culture, where growing, cooking and consuming food takes up a much larger share of people's time, interest and spending.

- **Technovegans**
  These see new food technologies as central to tackling the climate and nature crises, mainly by displacing meat and dairy with alternative proteins. They believe the ensuing huge reduction in land use would free up most farmland for large scale rewilding.

- **Sustainable intensifiers**
  These take a similar 'land sparing' approach to Technovegans. However, their approach is to focus on

updates to farm level Green Revolution technologies rather than changes to food manufacturing: for instance, they believe decarbonised fertiliser and precision breeding will mean that farms become more efficient while limiting inputs, land use and pollution.

These worldviews are ideal types. Though most will recognise the categories, few people will feel they fit neatly into one. However, the differences they expose are reflected in expert debates, which can tend toward polarisation. The effect is similar to debates over energy, in which partisans of nuclear power and renewables both assert their technologies can provide all the zero carbon power needed, rendering the alternative technology irrelevant. As with energy, so with food: the resulting clash of worldviews focuses minds on an idealised far future, with partisans seeking to prevent the deployment of approaches preferred by other worldviews. From an outsider's perspective, the disagreement is bewildering. In debates over near-term policy changes such as the EU's Farm to Fork strategy or England's ELM programme, protagonists often bury their differences and pretend to agree. Positions may be polarised, but the debate is often falsely consensual. The result is stasis, while global temperatures rise and nature continues to decline.

New alliances could drive positive change

An alternative approach is needed. New alliances between these worldviews could help to drive change at the pace needed to meet food, nature and climate goals.

We explore three alliances between these worldviews, two of which could drive forward environmental progress at a faster pace and one which may lead to negative environmental outcomes:

- **Technovegans and agroecologists.** This alliance could lead to significant environmental benefits, in ways that align with widely held cultural and landscape preferences. It would match family farming appeal with food technologies that make space for agroecology's high land demands, as well as more natural habitat for wildlife and nature-based carbon removal.
- **Sustainable intensifiers and technovegans** could find an alliance based on their shared affinity for technology, land sparing and their satisfaction with the way the economy works today. This alliance could see progress on environmental goals, freeing up large areas of land for nature restoration. But it risks being unpopular as it does little for small farmers, risks destroying traditional, pastoral landscapes and has animal welfare implications.
- **Agroecologists and traditionalists** are already building loose alliances motivated by having a shared enemy: technology, whether laboratory produced meat or robotic mega-dairies. They have aligned on keeping demand for meat and dairy up to boost sales of artisanal livestock products. Because this alliance also incidentally increases demand for large volume,

low cost foods, this alliance has a negative impact on the natural world.

— All these alliances will have to deal with fundamental disagreements. For example, technovegans and agroecologists clash on land sharing and the role of technology. To come together, they would have to see the benefits of greater influence and effectiveness in an alliance, or at least believe that a shared enemy – in this case large scale, industrial meat production – is sufficiently objectionable to unite them.

Why agroecologists and technovegans are a good alliance for the environment

Our assessment suggests that the agroecologist – technovegan alliance is most stable, with clear environmental benefits and is also likely to be the most popular with the public.

This is because they each help to solve issues faced by the other. For example, alternative proteins make the dietary change needed for an agroecological farming system more viable while freeing up some land for nature restoration. This would help agriculture to meet its net zero carbon target. In turn, agroecology is the type of farming system more of the public want to see, and linking its expansion to the promotion of alternative proteins could improve the popularity of technovegans, who risk looking anti-farmer on their own.

However, if either of the other two alliances we have outlined were to emerge strongly, it could weaken the opportunities for this alliance, as one of the partners would be locked into another alliance.

In this report, we have recommended some ways organisations could lay the groundwork to encourage an agroecologist – technovegan alliance.

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Crossing the divide:
the potential for consensus between four worldviews of agriculture's future

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