What we eat and how we use the land

Summary of recommendations

1. Assembly members put forward **eight considerations for government and Parliament to bear in mind when making decisions about food, farming, land use and the path to net zero.** These focussed on:

   1. Providing support to farmers;

   2. Information and education;

   3. Using land efficiently;

   4. Rules for large retailers and supermarkets;

   5. More local and seasonal food;

   6. Making low carbon food more affordable;

   7. Some, just less, meat;

   8. Considering net zero as part of planning policy and new developments, including support for allotments.

2. Assembly members' **preferred future for food, farming and land use in the UK** centred around:

   - **Local produce and local food production** – for a wide range of reasons including community benefits, fairer prices for farmers, a 'feel good factor' and reduced environmental impacts;

   - **A change in diet to reduce meat and dairy consumption by between 20% and 40%** – the assembly stressed the significance of education, saying these changes should be voluntary rather than compulsory;

   - **A "managed diversity" of land use**, including steps such as restoring woodlands, peatlands and gorselands.

3. Assembly members highlighted the need for the above to be combined with **support for farmers to make the transition**, and policies to ensure changes do **not disproportionality affect the less well off.** Assembly members said changes should **not compromise animal welfare,** and expressed **strong concerns about GM and lab grown food.** They asked for policy-makers to take into account the implications for smaller farms, the suitability of different land for different uses, and differences in impact between UK regions.

4. Assembly members showed **strong support for policies to change both farming, food production and land use,** and **retail and individuals' behaviour.** At least two-thirds 'agreed' or 'strongly agreed' that nine policies should be part of how the UK gets to net zero. These included:

   - **Emissions labelling** for food and drink products;

   - **Information and skills training** for those who manage the land;

   - **Low carbon farming regulations;**

   - **Paying farmers and other landowners to use their land to absorb and store carbon;**

   - **Amending the procedure for awarding government contracts** to give preference to low carbon food producers and carbon storing products;

   - **Changing planning rules** so that food can be produced sustainably in a wider range of areas.

What we eat and how we use the land

Assembly members looked at food, farming and land use together because of the impact they have on one another. In total, about a tenth of the UK's greenhouse gas emissions come from farming and others ways we use the land.

Land in the UK is mainly used for farming.[1] This means it is used for purposes such as growing crops and grazing animals. Only a small amount of land is left natural or used to plant trees. To get to net zero emissions this needs to change. The UK will need to reduce the amount of land used for food production, while still producing enough food. It will need to use more land to help remove carbon dioxide from the air (see chapter nine) or grow crops to burn for energy (this is called bioenergy – please see chapter eight). This will affect what we can eat.

What we eat also affects greenhouse gas emissions in other ways. How much we eat and waste, how food is produced, and how far it is transported, can all have an impact on emissions.

What did the assembly consider?

Thirty-five assembly members considered the topic of what we eat and how we use the land. We selected these assembly members from the assembly as a whole using random stratified sampling. This ensured that they remained reflective of the wider UK population in terms of both demographics[2] and their level of concern about climate change.

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1   74% of land in the UK is used for agriculture (26% for cropland, 31% for grassland, 17% for rough grazing) – Committee on Climate Change (2018), Land use: Reducing emissions and preparing for climate change.
2   Age, gender, ethnicity, educational qualification, where in the UK they live and whether they live in an urban or rural area.

These assembly members heard a wide range of views on the future of food, farming and land use for the UK, and how we might move towards that future. They had the opportunity to question each speaker[3] in detail. These evidence sessions took place at weekend two of the assembly.

Assembly members spent weekend three of the assembly discussing the evidence they had heard and their own views in-depth, before reaching conclusions on three separate areas:

A. **Considerations:** the overarching considerations that government and Parliament should bear in mind when making decisions about food, farming and land use and the path to net zero;

B. **Futures**: what the future of food, farming and land use should look like;

C. **Policy options:** how the UK should move toward this future.

Assembly members also had the opportunity to discuss and add **anything else they wanted to say** to government and Parliament about food, farming, land use and the path to net zero. Assembly members' views on the implications of Covid-19 for this topic are touched on in Chapter 10.

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3   The assembly heard from six speakers on what we eat and how we use the land: Indra Thillainathan, Committee on Climate Change (informant), Ceris Jones, National Farmers' Union (advocate), Sue Pritchard, RSA (advocate), Dr Jo House, University of Bristol (informant), Dr Rosie Green, London School of Hygiene and Tropical Medicine (informant), Professor Tim Lang, City University (informant). All speakers' presentations are available as slides, videos and transcripts at climateassembly.uk/resources/. An 'informant' is a speaker who we asked to cover the range of views and available evidence on a topic. An 'advocate' is a speaker who we asked to give their own view, or the view of their organisation. Assembly members knew whether speakers were informants or advocates.

A. Considerations

Assembly members reached their first decisions on food, farming and land use by discussing their answers to the following question:

What considerations should government and Parliament bear in mind when making decisions about food, farming and land use and the path to net zero?

Assembly members thought about their answers to this question individually. They then discussed their views in small groups at their tables, with each table agreeing their five top considerations. These top considerations had to, between them, represent the range of views at the table.

Facilitators took the top considerations from each table and grouped similar options together to create a list on which assembly members could vote. They checked this list back with assembly members to make sure they had accurately reflected their views. This included making any necessary adjustments. Each assembly member could vote for the four options that they felt to be most important.

The results were as follows. The wording of the considerations in the table is either word for word what assembly members wrote on their option cards or, where facilitators combined similar options from several tables, how they described the options to assembly members prior to the vote.

Rank	Consideration	% assembly members who chose it as a priority
1	**Provide support to farmers** – including financial and professional/skills focussed support. Some assembly members noted that any schemes needed to "consider the respective impacts of arable and livestock farming."	89
2	**Information and education** – from an early age about "greener and healthier eating habits". This category also included suggestions for "carbon footprint labelling".	86
3	**Use land efficiently** – including: ▪ "Use the land differently to absorb more carbon" (e.g. "planting forests not trees", restoring peatlands); ▪ "Increased support for and collaboration between farming, forestry, land management and land owners to balance the need for sustainable food production with biodiversity and reduction of harmful emissions", and other considerations such as flood prevention.	66
4	**Rules for large retailers / supermarkets** – including: ▪ Addressing pricing structures and the low prices imposed on farmers; ▪ Reducing food waste and packaging.	46

5	**More local and seasonal food** – including**:**	40

- Active promotion, encouragement and support of local, seasonal and home-grown food options, including allotments;
- Support for people on low incomes to be able to access and cook/use healthy local foods;
- The UK becoming more self-sufficient;
- Cheaper, local food.

6	**Make low carbon food affordable** – including:	34

- "Mak[ing] low carbon, healthy and home cooked food affordable (and vice versa)". Some assembly members suggested "meat and dairy subsidies [should be put] towards making vegetarian and vegan alternatives more affordable"

7	**Some, just less, meat**	29
8	**Part of planning policy and new developments, including allotments**	14

B. Futures

After deciding their most important considerations, assembly members moved on to look at the future of food, farming and land use for the UK.

To aid them in this process, the Expert Leads presented assembly members with three scenarios for possible futures:

- Smarter farming;
- Eating differently;
- Local food and rewilding.

Together these scenarios cover a broad range of views about what could happen to food, farming and land use to help the UK meet its 2050 net zero target.

Assembly members discussed each of the scenarios or 'possible futures' in turn, before voting on them by secret ballot.

We start by presenting the rationale for their views, taking each possible future in turn.

B.1 Smarter farming

This scenario would involve making farming more efficient and using more land to store carbon. It would feature changes for businesses but not individuals.

What business would do:

- **Farms would emit less greenhouse gases** – e.g. by using more renewables and different animal feeds;

- **Farming would be more efficient** – e.g. by using precision farming, 'gene editing' or breeding to select stronger livestock/crops;

- **Farmers would use more land to store carbon** – e.g. planting trees and/or planting energy crops with carbon capture and storage to soak up and store carbon;

- **Farmers could also use 'speculative' measures to store carbon** – e.g. using minerals on land to absorb carbon.

What individuals would do:

- **No change.**

Assembly members discussed this possible future at their tables. They identified the following pros and cons.

⊕ Pros

- **Least amount of change, so easier for people to adapt, implement and accept** – some assembly members described it as the "soft option", saying there is "no need for people to change so should be popular." Others commented that it "will go down best with farmers and the public, because there won't be any impact on individuals", that "doesn't change as much so it is easier for people to accept" or that it would be "easy for people to adapt and easy to implement."

- **Moves towards renewables** – some assembly members felt it would "encourage farmers to use more renewables" or that it is "positive to move towards renewables."

- **Reduces flood risk and provides other benefits** – some assembly members noted that it "can reduce flood risk" or that "woodland, hedgerows and peatlands provide other benefits e.g. flood risks."

- **More efficient and less waste** – some assembly members said that "smarter, more efficient farming practices are beneficial" or that "increased efficiency is really important as it saves money in the long-term, making it more likely to be accepted." Some liked that it "leads to less waste e.g. less young male cows being slaughtered."

- **Protecting farmers, in particular livestock farming** – some assembly members suggested that there would be "no job losses (livestock farming)" or that it "ensures [the] farming industry is protected." Others commented "livestock farming is not at risk" or "livestock farming – no risk to farmers to change the way they work."

+ **Restoring biodiversity and land** – some assembly members said that "returning to traditional methods of farming restores (in time) biodiversity and healthy land" or said they liked the idea of "restoring hedgerows – many have been ploughed up so the land can be used (large arable farms)."

+ **'Natural' carbon capture and tree planting** – some assembly members felt that "using land to store carbon naturally is a great idea as it restores biodiversity naturally whilst also creating other benefits e.g. food production." Others liked that "land that is not in use can be used for trees to help capture carbon" or that we could "plan[t] more trees for timber farming."

+ **"Additives to food to reduce methane"**

+ **"20% less land for livestock, more home-grown fruit and veg – small change to diet"**

+ **"GM is a great idea, if it's done properly e.g. government controlled not a big corporation"**

⊖ Cons

– **Doesn't have enough impact on target** – some assembly members said they "don't think it'll have enough impact on the target" or that it "falls short, doesn't do enough." Others said more specifically that "it doesn't tackle red meat and dairy consumption therefore will carbon emissions be reduced enough?" or "I feel it's unrealistic to reach net zero if there is no consumer change...." Others agreed suggesting that it "doesn't change people's attitudes – some might even decide to increase their intake because they can justify it with smarter farming" or that "it won't help much if people don't change their behaviour."

– **Unfair on farmers** – some assembly members felt that "it seems unfair" or that "all the pressure to change is on the farmers."

– **No health improvements** – some assembly members commented that there would be "no health improvements" or "no health improvements from dietary change."

– **Negative effects on biodiversity and animal welfare –** some assembly members suggested that "some forms of farming intensification could risk biodiversity and animal welfare" or that "increasing efficiency is [a] good idea however we need to be aware of [the] negative effects of some processes, e.g. breeding decreases biodiversity." Others worried about impacts on "animal welfare" or "reducing welfare standards – selective breeding could have unforeseen [affects], e.g. mad cow disease." Some said "farming intensification won't be considered because of biodiversity, animal welfare and carbon capture and storage."

– **GM and gene editing issues** – some assembly members expressed "gene editing concerns – is it safe?" or asked "do we know the effects of gene editing? If we do and it is fine, then how do we know this?" Others commented "GM – there are already problems with getting rid of 'weeds' etc" or "GM crops need to be bought for a fair price as they can't reproduce, so new seeds need to be bought each year. Also, they reduce biodiversity so will need to be controlled."

- **Impact on (some) farmers** – some assembly members said "farmers' health and wellbeing is a priority." Others noted concerns about specific types of farmer:

  "It could have a big impact on the smallest livestock farmers."

  "Would land quality be good enough for many 'hill farmers' to plant trees and grow arable crops."

  "Restoring hedgerows and woodland – some arable farmers won't like it as they have removed them for more 'efficient' land use."

- **"Maintaining 'look' of countryside when not in original state"**
- **"Crops from South Africa being shipped in … = carbon footprint"**
- **"Pesticides/chemicals may be used more if there is increased demand"**
- **"Farmland will disappear in order to build homes for an increasing population"**

Some assembly noted conditions to their support for this scenario or points they would want taken into account around its implementation. These included suggestions around:

- Grants and incentives:
  — "Government will have to give grants (e.g. to farmers) to help the transition";
  — "There have to be incentives in place for farmers to convince them and retrain";
  — "Can the government support more innovation rather than introduce more regulation?"
- Standards, regulations and labelling:
  — "Would have to have standards for farming practice to ensure all farming follows these measures";
  — The "retail industry [would need] to be regulated to ensure fair prices for farmers";
  — "Any genetically modified crop/livestock need to be labelled to give consumers the opportunity to make an informed choice";
  — "Should individual farmers be given a quota of livestock to produce but not based entirely on the size of the farm";
  — As noted above, some assembly members said that GM should be "government controlled."

Some assembly members also suggested that the "**transition can only happen on land that is suitable** (e.g. Yorkshire sheep farming won't be able to convert)" or wondered whether "we [can] **look outside of the UK for solutions** to land restriction challenges."

When we asked assembly members to rank the possible futures in their order of preference, this scenario received limited support from assembly members. Please see below for the results of the vote.

B.2 Eating differently

This possible future would involve farmers, retailers and individuals taking steps to reduce food waste and choose lower-carbon foods. It would feature changes for businesses and individuals.

What business would do:

- **Farming would be more efficient** – e.g. by using precision farming; 'gene editing' or breeding to select stronger livestock/crops;

- **Farmers would use 20% less land for livestock** (beef, lamb and dairy) and more for less carbon-intensive crops that grow well in the UK (e.g. some vegetables, fruit);

- **Farmers/landowners would use more land to store carbon** – e.g. planting trees, planting energy crops, restoring peatlands;

- **Retailers and restaurants would reduce food waste** – e.g. reducing portion sizes;

- **There could also be more 'speculative' measures to produce food** – e.g. making synthetic (lab-grown) meat or using genetically modified (GM) foods to improve crop yields.

What individuals would do:

- **Eat lower-carbon foods**, including 20% less red meat and dairy

- **Waste less food** – e.g. choosing smaller portions

Assembly members discussed this possible future at their tables. They identified the following pros and cons.

⊕ Pros

+ **Changes to land use** – some assembly members supported the idea of "reduc[ing] land used for livestock", saying it could be "reused for other things" or would be "free to grow more fruit and veg domestically instead of importing." Some noted that changing land use would "reduc[e] carbon emissions (through 20% less land for livestock)." Others suggested that "restoring woodland etc will reduce flood risk and increase biodiversity – restoring peatlands and planting trees is beneficial for the environment." One assembly member commented that the "landscape is already changing" and that "people complain about [the] look of 'prairie' farmland, loss of habitat for wildlife."

+ **Positive changes to farming** – some assembly members noted their support for certain types of farming, suggesting that:

  + **"Seasonal farming (horticulture) would be in better balance with wildlife";**

  + **"High intensity farming such as multi-story agriculture (hydroponics)"** would be positive;

  + **"Breeding to select stronger livestock crops"** is **"natural, farmers already do this";**

  + **"Cattle can be run on forests not just fields. It's a win-win."**

+ **Health benefits** – some assembly members liked the "health benefits from eating less red meat and dairy" or that it "does require people to change their eating habits…[which] in turn improves their health." Some assembly members pointed out that health benefits are possible without stopping eating red meat completely:

> "Red meat is getting [a] bad press, but our 'experts' have stated that no more than 100grams a day is perfectly safe."

Others suggested that "farming output will change i.e. different products will replace existing produce leading to… healthier eating habits."

+ **Realistic, including dietary change already happening**– some assembly members felt this future was "more realistic than other options to be able to reach net zero." Relatedly, others noted that "dietary changes … in meat consumption are already happening e.g. 'meat free Mondays'" or said this this future would be "quick [to achieve] because people are already reducing the amount of meat and dairy they eat. Young people are more and more inclined to become vegetarian." One assembly member wondered whether "school children [should] have no meat products in their school meals."

+ **Less food waste, saves money** – some assembly members suggested that "wasting less food" would be positive. Others agreed saying "less food waste is important and an easy thing to do as people will be saving money – only problem will be …reduc[ing] supply." Some noted it "saves money from reducing food waste – farmers could save money long-term." One assembly member noted a scheme in a Chinese restaurant in Camberley, which seeks to charge people for waste when they take too much food from the buffet.

+ **"Moves in the right direction, doing more"**

+ **"Might not be to everyone's taste, but where's the harm in testing the demand for synthetic meat in the market?"**

+ **"Farmers must make money long-term in order to maintain [their] lifestyle… [and] provide us with food."**

⊖ Cons

− **Lab meat and GM foods** – some assembly members said they were "not sure of the health implications of lab meat and GM foods" or that there is "not enough information about the impact and risk of measures such as GM food to make informed decisions." Some said "GM foods and lab grown meat – prefer natural food, not necessarily organic but don't want modified food" or "synthetic lab meat is not something we can support. Either you eat proper meat, or you don't." Some assembly members suggested that "gene editing open[s] the door for science and big businesses to take over."

− **Not (sufficiently) effective** – some assembly members questioned "does it go far enough? 20% less red meat and dairy may not reduce enough carbon emissions" or that "using 20% less land (for livestock) won't affect demand for meat."

- **Impact on farmers and regional implications** – some assembly members disliked that there would be "more impact on farmers", **"**potential job losses for farmers", "risk to livestock farming (job loss)" or "farmers having to retrain." Some also expressed concerns that it "may have regional implications i.e. farmers in some areas more adversely affected than others."

- **Impact on nature** – some assembly members suggested that "farming intensification risks biodiversity and animal foods" or that "farmers already do this [breeding to select stronger livestock/crops]; they can't do this faster (naturally) than they are."

- **Societal habits and attitudes not changing fast enough** – some assembly members felt that "social changes targeting habits will take a long time to implement, possibly generations through fundamental education" or noted that the "social barrier could be a big issue – attitudes are already changing, but will it be fast enough?"

- **Controlling** – relatedly, some assembly members worried that "people might feel forced if they're not educated about the goals of meat reduction." Others said it "might be rather restrictive and controlling."

- **Restaurant implications** – some assembly members disliked the "restaurant restrictions" saying it's "hard enough to make a living and restaurants already try to reduce food waste."

- **Concerns about cost** – some assembly members suggested that "the less meat there is available the more expensive it'll be...[which] will specifically affect poorer people and families." Others questioned "who will be footing the bill?", asking "will the government subsidise, or will it be down to us?"

- "Not realistic"

- "Risk to animal welfare is not okay!"

- "Will reduce the amount of our fresh milk supply, which is our most bought dairy milk item"

Some assembly members noted conditions to their support for this possible future, or points they would want taken into account if it is implemented:

- "Government will need to provide farmers with subsidies" or that they supported this possible future "as long as farmers are supported in the transition to move away from livestock."

- More public information and education is needed "on less meat and non-meat diets" and "about GM foods for [the] public to make informed decisions";

- "The change in consumer mindsets will only occur if incentivised and not forced";

- Retailers and fast food restaurants need to change too – "don't just push waste onto the consumer, no wasteful production."

One assembly member commented that they would want to see more technological change added to this possible future to reduce carbon emissions further.

When we asked assembly members to rank the possible futures in their order of preference, this scenario received considerable support from assembly members.

B.3 Local food and rewilding

This possible future would involve fundamental change in food systems and landscapes, towards local production and more space for biodiversity. It would feature changes for businesses and individuals.

What business would do:

- **Food would be produced locally in towns, as well as the countryside,** including growing food indoors, in gardens, in allotments, as well as on farms;

- **More wholefoods and less processed foods would be available and more food would be bought directly from producers** – e.g. farmers markets, veg boxes, food co-operatives – than from supermarkets;

- **Farming would be more efficient** – e.g. by using precision farming; 'gene editing' or breeding to select stronger livestock/crops;

- **Farmers would use at least 40% less land for livestock** (beef, lamb and dairy) and more for less carbon-intensive crops that grow well in the UK (e.g. some vegetables, fruit);

- **Farmers/landowners would use more land to store carbon** – e.g. planting trees, planting 'energy crops', restoring peatlands;

- **Retailers and restaurants would reduce food waste** – e.g. reducing portion sizes;

- **There could also be more 'speculative' measures to produce food** – e.g. making synthetic (lab-grown) meat or using genetically modified (GM) foods (to improve crop yields).

What individuals would do:

- **Eat lower-carbon foods**, including 40%+ less red meat and dairy, and less processed foods;

- **Waste less food,** e.g. choosing smaller portions.

Assembly members discussed this possible future at their tables. Assembly members tended to be consistent in what they saw as the main pros of this option, with strong support for the idea of local produce and food production. Assembly members were more divided about the cons, with smaller numbers of assembly members picking up a number of different points.

⊕ Pros

+ **Support for local produce** – some assembly members said they "love the idea of local (food) and less use of supermarkets", "great idea for local produce" or that they liked that this future "encourages people to buy local and locally produced products." Others suggested that this future was "overall [a] good option, just [with] a few extreme aspects – having more food locally is good." Some were specific about why they like the idea of local produce, suggesting that "having more local foods will reduce costs and the food will be fresh" or that there is a "feel good factor with 'grow your own' or getting food locally produced e.g. eggs." Others said "wastage – need more local markets to sell local produce", "could be cheaper for people and less packaging" or suggested local food is a "money saving incentive for local and personal food waste reduction – make it visible."

+ **Benefits of local produce for farmers** – some assembly members suggested that "farmers [would] get a better price for food", with others commenting that people "don't mind paying a bit more, if you know where it's from and if it's going to a local vegetable grower."

+ **Community benefits from local food production** – some assembly members suggested that there would be "community benefits from local food production and co-operative food schemes" or "community and wellbeing benefits from community/individual growing." Some liked that "communities' access to local food is increased."

+ **Getting people more involved and aware** – some assembly members felt it "educates and involves people in the process of meat reduction and growing local production" or that "improved self-sustainability makes individuals aware of the plant to plate process, reduces waste and improves awareness." Some commented "communal gardening – inner cities? Grow veg, free to pick – makes people more aware and engaged with source of food nutrition and benefits." Others suggested that it "encourages everyone, not just farmers to grow using different methods."

+ **Restoring woodlands, hedgerows, peatlands and gorselands** – some assembly members said this would provide benefits including reducing flood risk, acting as a carbon store, supporting biodiversity and encouraging more wildlife.

+ **Health benefits** – some assembly members highlighted the "health benefits from eating less red meat, dairy and processed foods" or said it "encourages people to cook their own meals – better for health and diet."

+ **Impact on carbon reduction** – some assembly members liked that this future included a "more dramatic reduction in high carbon food", with others suggesting it would have the "largest impact on reducing carbon emissions." Relatedly, some noted that it "make[s] more land available for less carbon intensive crops (more is better)", or that "less import is great as the production within our country will be more green and transport costs will be lower as well."

+ **"Promotes change for everyone in the food chain – good because everyone needs to change."**

+ **"Hydroponics method releases some land for other use and can only be grown in small amounts – less transport needed."**

⊖ Cons

– **Jobs and regional impact** – some assembly members expressed concern about "job losses – farming." Others commented:

  "impact on the regions where beef and lamb are bred, could have long-term consequences ... [for the] local economy. Small farmers will be forced out of farming. Rich will get richer; the big will get bigger."

– **Impact on low income households** – some assembly members suggested that "large numbers of families rely on cheaper food prices in supermarkets etc, due to their low income/financial situations." Others commented "cost – less meat and dairy will mean poorer people/families will be hardest hit" or said it was a "risk to equality and less fair for those on low incomes."

– **GM food/farming** – some assembly members said "again, includes modified 'farming'" or "GM – again do not like modified food." Others said we "need to know more about gene editing then [be] given a choice."

– **Nutritional and safety issues** – some assembly members said they were "not sure about the nutritional level on vertical wall farming foods" or highlighted "possible food safety risk[s] with more informal schemes."

– **Scale of behaviour change and controlling people** – some assembly members felt that a 40% reduction in meat and dairy is "too much." Others suggested that "convincing individuals to make the change may be a problem" or that "for that kind of fundamental change, 30 years is not long enough – behaviours cannot change so radically/quickly." One assembly member noted that they didn't "like the idea of controlling people to change food choices." Some said "role of supermarkets: so big, it will be hard to go back to local shops. Big part of people's life. Will be hard to persuade people to change."

- **Need for education** – some assembly members suggested that "many young people don't know how to cook healthy nutritional foods from scratch, would have to work with education" or said "food choices – if we need to change, more options [need] to be available. *Education*"

- **Animal welfare** – some assembly members said that the "risk to animal welfare is not okay!"

- **"Potential risk to rare breeds"**

- **"This idea is to move food production back to towns and cities, but we already produce too much food, and will this actually reduce food production"**

- **"Difficult for people in dense, urban areas to get access to 'grow your own' options (highest population)"**

Some assembly members noted conditions to their support for this possible future, or points they would want taken into account if it is implemented:

- It "could be a positive change, as long as training subsidies are provided to ex-meat/dairy farmers";

- "Imported food [needs to be]… regulated somehow. We don't just want to increase our importing of Brazilian beef with a higher carbon footprint";

- "Mindsets need to change";

- Attention needs to be paid to ensuring we "don't price people out completely";

- "Retailers/restaurants need to buy fresh not frozen food, this would reduce food waste. Use by dates differ. Local purchase if possible."

- "Local food: local councils need to look at that. Communities and local producers in green belts need to produce local food."

- A number of assembly members emphasised the importance of allotments, with some recommending that allotments should added "into housing developments". One assembly member said:

> I live next to the second biggest [allotment] in the country. The local authority can't use it as a shop to sell surplus [food grown]. It has to be used by local authorities – needs to be looked at; it is a massive missed opportunity."

When we asked assembly members to rank the possible futures in their order of preference, this scenario received considerable support from assembly members.

Cross-cutting comments

A small number of assembly members made cross-cutting comments about the possible futures. Some highlighted the "differences in farming in rural areas vs urban areas – very different problems and solutions required." Others noted again the need to consider the impact and suitability of different land uses, such as forestry, for different parts of the country and types of land.

Some assembly members suggested that all three possible futures "need to be combined when developing policy" or that the "scenarios include lots of proposals but only some of them are agreed with." These two points are picked up in more detail in the next two sections.

Some assembly member re-emphasised their concern about GM and lab grown food, noting the "risks" of these types of food and the fact they had "triggered lots of concerns" at the assembly. Some also highlighted that these foods "could be received with lots of opposition" by the wider public. Conversely a smaller number of assembly members felt that the assembly did not hear enough information about genetically modified food and expressed concerns that "our response was therefore based on preconceptions not evidence."

Vote results

Assembly members voted on the possible futures by secret ballot. The ballot paper asked them to rank the possible futures in their order of preference.

The votes were counted in two ways:

- **Counting assembly members' first preference votes only.** This tells us what assembly members would and wouldn't choose if they could have their most preferred future.

- **Using Borda count.** This involves allocating points for preferences – a first preference vote scored two points, a second preference vote one point and a third preference no points. Counting the votes like this tells us which futures are most acceptable to the greatest number of assembly members.

Figure 1: Possible futures

Please rank the possible futures in order of preference (% 1st preference votes)

Smarter farming	Eating differently	Local food and rewilding
26%	35%	38%
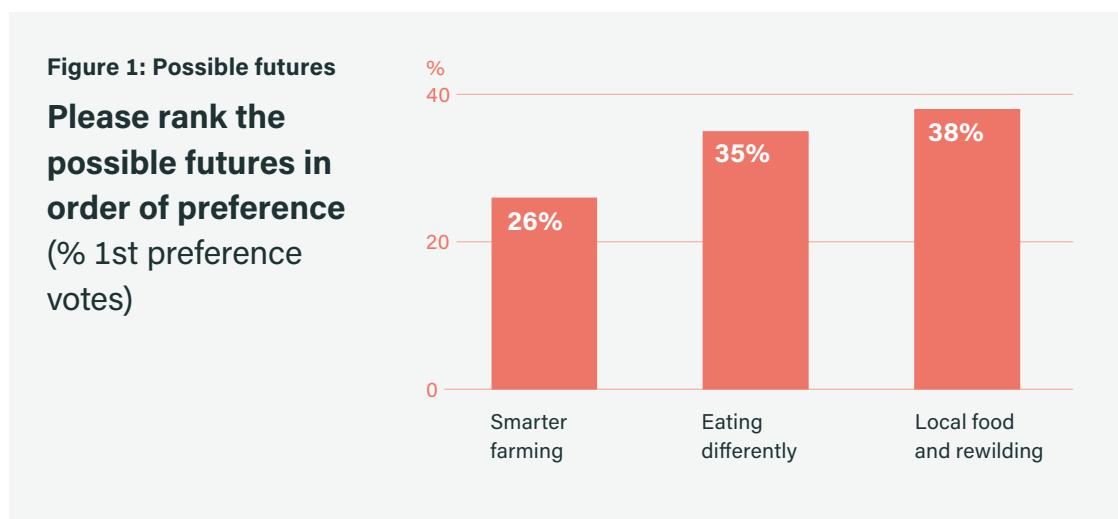
Figure 2: Possible futures

Please rank the possible futures in order of preference (Borda count)

The results of the votes consistently show greatest support amongst assembly members for 'eating differently' and 'local food and rewilding'. 'Local food and rewilding' received slightly more first preference votes. 'Eating differently' scored slightly better in the Borda count. In both votes the difference is minimal.

Assembly members who chose **'local food and rewilding'** as their first preference wrote positive reasons for their choices on their ballot papers, focussing on why they liked this future. Their explanations always mentioned a range of reasons, not just one. Points that came up frequently included those around:

- **Health benefits;**

- **Community and wellbeing benefits** from local food and local food production;

- **Advantages for farmers** including fairer prices and reducing supermarkets' "stranglehold". One assembly member suggested that "more localised food production would enable farmers to plan and adapt better to local market conditions/requirements." Another suggested it would benefit local businesses as well as farmers;

- **Support for a "managed diversity" of land use**, including steps such as restoring woodlands, peatlands and gorselands.

- **Other potential environmental or emissions benefits**, such as reductions in packaging and the transporting of foods, or a decrease in food waste;

- **A general feeling that the future "promote**[s] **a positive change"** for everyone in the food chain, building on some social trends already underway.

Smaller numbers of assembly members suggested that this future would result in **better pricing and food quality for consumers**, or that it would reduce the likelihood of intensified farming for livestock, thus **promoting animal welfare**.
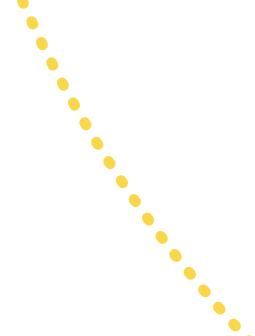
Some assembly members who supported this future noted **caveats to their support**. These touched on concerns around GM and lab grown foods, animal welfare and the need for changes in land use to take account of regional differences:

> " The decrease and reuse of land for livestock is a good thing as long as that is practical for that region (some areas are no good for anything but sheep)."

One assembly member said that they would want the change in meat and diary to be 20% not 40%.

Assembly members who chose **'eating differently'** as their first preference gave a range of reasons for their choice on their ballot papers. Two themes that recurred several times amongst their answers were the ideas of:

- **Shared responsibility between different actors** – for example, some stated "we [would] all take responsibility: individuals, farmers, retailers" or that "we can't expect one group to take on all the responsibility for everybody";

- **Lesser change and smaller negative impacts** – for example, some commented that there would be "small changes for farmers, other producers, and for the general public" or "less impact on farmers with regard to possible job losses."

Several of the rationales talked about this future in relation to the other two. For example:

> " I think all of the options are good but smarter farming wouldn't be enough on its own and I can see issues with the 3rd option that would need to be addressed first, e.g. teaching people how to change their diets and cook healthy, nutritional meals from scratch. Also 40% less livestock land may be too big a jump. [….] So option 2 was my favourite on balance but I do still support the other options and believe we will need to use a combination of all of them over a number of years to eventually work towards the best option (somewhere between 2 and 3)."

> " I don't like any of the scenarios, this is the best of a bad lot. I don't encourage GM crops in any way, or lab grown meat. However, I do acknowledge the need to change. I worry though that a drop in meat production and dairy will always affect the poorer and families more than the rich…."

These last two quotes raise themes noted by a number of assembly members. They are addressed more fully directly below.

Futures – conclusions

Assembly members' discussions on the possible futures presented a nuanced but clear picture of their views on food, farming and land use.

A number of assembly members made comments in group discussions and on their ballot papers about either: (1) liking all of the futures and feeling that they needed to be combined; or (2) not liking any of the futures because they disagreed with some elements of each of them. Some assembly members said they "wanted the good bits" of all of them.

These comments fit with some clear themes emerging from assembly members' discussions. In general, assembly members tended to express support for:

- **Local produce and local food production** – for a wide range of reasons including community benefits, fairer prices for farmers, a 'feel good factor' and reduced environmental impacts (packaging, transport etc);

- **A change in diet to reduce meat and dairy consumption by between 20% and 40%** – overall the assembly tended to stress that significant education was needed to promote voluntary, rather than compulsory, changes in diet. 'Choice' was important. They did however tend to support the need for these changes in diet to happen, including noting the health benefits these would bring;

- **A "managed diversity" of land use**, including steps such as restoring woodlands, peatlands and gorselands.

Assembly members noted strongly on several occasions the need for the above to be combined with **support for farmers to make the transition**. This was also their top consideration (please see Section A above).

Areas where some assembly members expressed strong concerns were:

- **GM and lab grown food** – some assembly members voiced strong opposition to including this in any potential future;

- **Animal welfare** – some assembly members expressed strongly that this needed to be protected;

- **Impact on lower income families/households** – some assembly members advocated strongly for measures to ensure that changes to food, farming and land use (including local food production and the price of meat/dairy) did not disproportionately affect the less well off.

Some assembly members also spoke at various points about the need to ensure that any changes and related measures took account of **smaller farms**, the **suitability of different land for different uses**, and **differences in impact between UK regions**.

C. Policy options

After considering the future of food, farming and land use in the UK, assembly members moved on to consider how we might get there. Specifically they looked at policy options in two areas:

- Changing farming, food production and land use;
- Changing retail and individuals' behaviour.

For each of these areas, the Expert Leads recapped and explained potential policy options. Assembly members discussed these ideas in their groups before voting by secret ballot. They were also able to note additional suggestions.

C.1 Changing farming, food production and land use

Assembly members looked at six options for changing farming, food production and land use:

- Low carbon farming regulations;
- Payments for carbon storage;
- Grants for research and development;
- Government contracts for bioenergy and forestry products;
- Changing planning rules;
- Information and skills training.

We start by presenting the rationale for their views, taking each policy option in turn.

Low carbon farming regulations

This would involve:

- Requirements for farmers to retain a proportion of their land for non-food uses, such as woodland or peatland; or

- Making farm payments conditional on low carbon practices (such as using different feeds or fertilisers) and other public benefits (such as protecting biodiversity).

This could involve extending existing rules that make it illegal for farmers to use artificial fertiliser where it is likely to run-off into water sources.

Assembly members identified a number of pros and cons about low carbon farming regulations.

⊕ Pros

- **Effective** – some assembly members felt it "will be more effective" than the other options, will be "effective in reducing emissions" or is "the only one guaranteed to do something." Others commented that "regulations = change" or that "farmers need constant reminding and auditing to ensure change happens."

- **Co-benefits, particularly from woodland and peatland** – some assembly members commented that "increasing woodland and peatland helps with flooding, wildlife and biodiversity" or that the "increase [in] woodland/peatland ...will greatly help flood protection."

- **Reduces use of fertilisers** – some assembly members liked the existing rule that "prohibits farmers from using artificial fertilisers [where it causes pollution]" or the potential "reduction of artificial fertilisers" through more low carbon farming practices.

- **"Rewards farmer for changing"**

- **"Extending existing rules"**

- **"Promotes [the] restoring of peatland and woodland"**

⊖ Cons

- **Dislike regulation** – some assembly members said "regulation is a big and unpopular step", that they "don't like regulation – nanny state", or that the policy amounted to "heavy hand[ed] regulation." Others commented:

  "No regulations! – low-carbon practices to be encouraged not enforced."

- **Cost to farmers and the need for support** – some assembly members suggested it would be "more expensive for farmers" or that there would be a "cost for farmers." Others asked "would there be sufficient support for farmers?" or stated that farmers would "need financial support." Some said they disliked that the "government would have to subsidise." Some queried "incurs cost to farmers – what about [the] long-term?"

- **Who pays?** – some assembly members asked "what is the impact of these financial incentives on everyone's tax?" or suggested that any "price rise could affect low income families." Some commented that "funding support [would be needed] to reduce [the] impact on public consumption of farmers' increased costs."

- **"Not fair to farmers, not sure there would be a result"**

- **"Obstacle to passing farms down to the next generation"**

- **"Not all farmland can be used for low-carbon practices e.g. sheep farmland"**

Some assembly members noted conditions to their support for this policy option, or points they would want taken into account if it was implemented. They suggested a need for:

- **Nuance, for example to take account of local conditions:** some assembly members said what was suitable "would depend on land and geography and [measures would] have to be localised." Others noted a need to "think of farmers who can't change land use."

- **Financial incentives and support, including careful thought about how they work:** some assembly members said they would support the policy if it went "along with financial incentives and support." Others focussed on how subsidies might work:

  "Subsidies need to be means tested. At the moment, large rich landowners get as much in subsidies as small farmers who don't earn or own a lot. It's not a fair system, single farm payment. Based on Common Agricultural Policy, not a fair system."

- **A combined approach:** some assembly members said that "all options [for policies to change farming, food production and land use] need to be combined" or specifically that options a, b, d and f[4] should be combined, "including steps around information and skills, regulations and payments for carbon storage and government contracts for bioenergy and forestry products."

Others said their support for the policy would depend on the detail of how it worked, for example: "What percentage of land would farmers be required to keep as that? Which farmers would receive payments?" Others commented that "regulations [would] have to be fair for farmers" or that "although it is more expensive at first, in the long run it is cheaper as it has higher efficiency for farmers."

Payments for carbon storage

This would involve farmers and other landowners earning money for using their land to absorb and store carbon, for example by restoring peatland or planting trees. Payments or incentives could also be provided for food producers who increase productivity or efficiency – in other words, who produce as much or more food using less land.

Assembly members identified a number of pros and cons about payments for carbon storage.

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4   Options a, b, d and f are: low carbon farming regulations, payments for carbon storage, government contracts for bioenergy and forestry products, and information and skills training.

⊕ Pros

+ **Good for the natural world** – some assembly members suggested it would provide "support for [the] natural world" or lead to the "improved health of rivers." Others said they liked the idea of "free distribution of tree saplings – connected to nature."[5]

+ **Incentivises low carbon practices and is flexible** – some assembly members said they "think this will incentivise good practice by farmers and will catch on as other farmers see [the] pay system working." Others liked that it provides an "incentive for farmers and encourages low-carbon practices in a flexible way."

+ **Effective at storing carbon** – some assembly members noted that "even at low uptake rates or slow change, [the] impact on reducing carbon is positive" or labelled it "quite a good approach, good for storing carbon." Others said we "need to do it."

⊖ Cons

– **Who pays what?** – some assembly members asked "what is the impact of these financial incentives on everyone's tax?" or "how much do we pay farmers and landowners?" Others queried "how long do payments go on for?" or "who would pay for this?"

– **Can all farmers do this?** – some assembly members noted "cost to farmers – which farmers can afford [it]?" or expressed concerns that it "may just make the richer owners richer and not [be] possible for small landowners." Others suggested that "some farmers can't change their practices because the land is only suitable for e.g. sheep."

– **Won't create (enough) change** – some assembly members felt it would lead to "slower change (farmers not required to change)" or suggested that "farmers must be forced to change attitude towards [the] carbon storage goal for it to become the norm." Others commented it "happens anyway, but is not a priority [for farmers]" or that "farmers need to change but need guaranteed financial support."

– **"Allow and encourage the farming community to provide the solutions and lead! Based on low-carbon specifications"**

Some assembly members noted conditions to their support for this policy option, or points they would want taken into account if it was implemented:

■ Some suggested it "**needs to be combined with other things** to be effective e.g. low carbon farming regulations and changing planning rules", or that "all options need to be combined." Others said "if [the payments are] not carried out in combination [with other options], they probably will have limited impact in terms of changing behaviour and making a difference in reduction of emissions."

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5   We think this is a reference to this scheme – http://www.onetreeperchild.com – which was brought up by an assembly member.

- Others focused on the **finances** suggesting that "if government doesn't pay it [would] pa[y] for itself" or recommending that policy-makers "shift money from bad practice subsidies rather than use extra money." Some commented "if farmers are receiving payments e.g. subsidies, why aren't they obliged to use land in diversified ways... e.g. maintaining peatland." Some suggested that "carbon storage [should]... be encouraged and monitored before payments [are made]" and that there should be "payment scales" linked to the volume of carbon stored. Others queried "what timescale? – for forever?"

- Some assembly members commented on **the need to consider all types of farmers**, saying "think of farmers who can't change land use" or querying "tenant farmers?" Others said "payments for carbon storage should be proportionate to [the] size of land owned e.g. to make it fair."

- Others expressed support for **carbon capture and storage**, saying it "seems like a great idea, quick fix but also effective"[6] or that "natural carbon storage has other benefits as well e.g. increased biodiversity." Some assembly members advocated **methane capture and storage** suggesting it "pays for itself in the long-term, burning it for energy" or commenting that it "should be implemented especially as methane has a larger effect than CO_2."

Some assembly members suggested **"use the land that can't be used for arable."**

Grants for research and development

This would involve grants for food producers to support research and technology development. The research and development could focus on making agricultural practices more sustainable, and/or on reducing the costs of meat and dairy made in labs.

There could also be a dedicated fund providing loans to help food and farming businesses shift to lower-carbon practices.

Assembly members identified a number of pros and cons about grants for research and development

⊕ Pros

+ **Encourages innovation** – some assembly members said it "encourages innovation" or "encourages farmers/producers to come up with new ideas for reducing emissions." Others said it would allow us to "innovate [our way] out of [the] problem (not enforce)."

+ **Benefits of R&D, including globally** – some assembly members suggested that "research and development have multiple benefits: increased efficiency which is better for the environment; selling this tech worldwide as leaders has further environmental and economic benefits." Other agreed saying they felt that by innovating the UK could create an opportunity for "global leadership."

6   The assembly went on to consider carbon capture and storage in detail. Please see chapter nine.

+ **It will/could help** – some assembly members said they were "confident that it will help" or that it would be beneficial because "there are still problems e.g. flooding, that we ... don't know how to solve yet." Others were more cautious suggesting it "could be good, but would need to be overs[een] and evaluated."

+ **"Good for farmers to be the leaders"**

+ **"Farmers must engage with changes required – education on benefits and profits over time"**

⊖ Cons

− **Not guaranteed to be effective** – some assembly members said it was "not guaranteed to be effective" or "might not be as effective as other options." Others commented that "we must have guarantees that change will happen with funding, otherwise it's money wasted."

− **Will this be funded by taxes?** – some assembly members asked "what is the impact of these financial incentives on everyone's tax?" or noted that there is "lots of talk around grants across topics, but – will this come from taxes? Who will fund it?" Others queried "how much do we pay farmers and landowners?"

− **Lab food** – some assembly members suggested that "lab grown meat diverts attention away from lower carbon options e.g. veganism" or commented "lab food – don't need it." Another assembly member commented that "I don't like the idea of meat and dairy being made in labs – don't know the impact. Taking jobs from farmers."

− **"Risk of bias from funders/sponsors"**

A small number of assembly members noted conditions to their support for this policy option, or points they would want taken into account if it was implemented. Some suggested that "**impact evaluation** [would be] needed to ensure that pilot schemes are actually making a real difference." Others said that "**all** [**policy**] **options need to be combined**" or suggested linking grants for research and development with low carbon farming regulations.

Government contracts for bioenergy and forestry products

This would involve amending the procedure for awarding government contracts to give preference to carbon-storing products. It would mean government contracts around energy or construction giving preference to bioenergy crops and forestry products (like wood for buildings or furniture). It could also include setting minimum purchase levels – guaranteeing that government will buy a certain amount of these products per year.

Providing a long-term customer base for bioenergy crops and timber would give farmers certainty that they can make money from them.

Assembly members identified a number of pros and cons about government contracts for bioenergy and forestry products.

⊕ Pros

+ "Allows farmers to use land they weren't otherwise using to plant bioenergy crops"

+ "Government sets precedent, gives carbon-friendly industry a foot up"

+ "Supports campaigns who have interest[s] besides profit"

+ "Really easy option, makes sense"

+ "Government contracts good for competition, competition is healthy and produces better goods"

⊖ Cons

− **Unsure about bioenergy crops** – some assembly members said they "don't want to include bioenergy" or that "bioenergy is not the way to go as it requires a lot of land and releases CO_2." Others queried "are bioenergy crops any more carbon efficient if we are still burning them?"[7]

− **Puts burden on farmers** – some assembly members disliked that that "farmers must change to achieve lower emissions." Others suggested that this policy "puts indirect pressure on farmers" or asked "will some farmers need retraining?" Some assembly members countered this final point saying *"we always need to learn new things – so it [farmers needing to be retrained] is not a problem."*

− **"How long will it take?"**

7   The assembly went on to look at bioenergy in detail (please see chapter eight).

Some assembly members noted conditions to their support for this policy option, or points they would want taken into account if it was implemented. Some suggested the policy should be expanded in scope:

> " These shouldn't be limited to the farming industry – how about building industry using low carbon materials."

> " A lot of contracts with farmers are from the private sector (e.g. supermarkets, restaurants). Need to think more widely with procurement contracts, not just government."

Others queried "will new governments honour previous contracts for bioenergy etc?"

As with previous policy options, some assembly members noted their preference for "all options need to be combined" or for those responsible to "think of farmers who can't change land use."

Changing planning rules

This would involve changing planning rules so that healthy food can be produced sustainably in a wider range of areas, including in urban areas and buildings. This could include requiring new developments to set aside space for residents or communities to grow their own food. The changes could also make it easier to locate renewables, such as wind turbines or solar panels, on farmland or elsewhere.

Assembly members identified a number of pros and cons about changing planning rules.

⊕ Pros

+ **Space, scope, feasibility** – some assembly members commented "rooftop developments and vertical green walls – lots of scope for this" or noted that there are "lots of empty buildings already." Others suggested "turning existing green spaces/squares into allotments e.g. plot in the middle of high rise [buildings]" or said "smaller allotments are needed e.g. long waiting lists in some cities, urban areas particularly."

+ **Less packaging and transportation** – some assembly members liked that it involved a "reduction of food miles" or that it involved "less packaging and [less] nee[d] [for] low carbon transport from rural to urban."

+ **Fewer imports and local** – some assembly members commented "less import[s] and more self-sustainable." Others liked that it's a "local way of doing [things] – not shipping food" or said that "growing locally means you know what has gone into it."

+ **General support** – some assembly members said that they "can't see a negative with this option" or "like this option very much."

+ **"Planning guidelines must be monitored to ensure compliance. Leads to better choice of product"**

+ **"Buying direct from farmers so profit made, and consumers pay fair price"**

+ **"Not too restrictive"**

⊖ Cons

- − **Need to ensure standards are met** – some assembly members expressed concern about "safety issues and loose standards" or "food standards not being maintained – open to abuse and people not checking." Some commented that "food standards must be adhered to – ensure health and safety is paramount...."
- − **"Will planners recognise what needs are?"**
- − **"No guarantee that people will use them"**
- − **"Changes are too big"**

Some assembly members noted conditions to their support for this policy option, or points they would want taken into account if it was implemented. They suggested:

- ■ We "need to make sure food is the same price or cheaper";
- ■ We should "make [the] most of existing brownfield [sites] in urban areas."
- ■ "Food standards are only a problem if you're going to sell the produce, but okay if you're going to consume it."
- ■ "All [policy] options need to be combined."

Information and skills training

This would involve providing information and skills training to those who manage the land in order to encourage low-carbon farming practices and other ways of reducing emissions (e.g. restoring peatlands, planting trees, growing different crops).

Assembly members identified a number of pros and cons about information and skills training.

⊕ Pros

- + **Understanding why change is needed** – some assembly members said "farmers need to understand why they're being asked/told to change." Other commented:

  "education is the basis for everything, especially if the government is going to make changes. With farming practices, [it] will need a lot of education and training."

- + **Common sense** – some assembly members said it was a "no brainer" that should be "available no matter what." Others said "most [people] want changes."
- + **"Train and benefit farmers including across generations"**
- + **"Primary schools planting food – good for education and attention from media, fast solution?"**
- + **"Low cost"**

Figure 3 : Changing farming, food production and land use

How much do you agree or disagree that each of the following policy options should be part of how the UK gets to net zero? (%)

Legend:
- Strongly disagree
- Disagree
- Don't mind/unsure
- Agree
- Strongly agree

Low carbon farming regulations: 43%, 46%, 3%, 9%

Payments for carbon storage: 34%, 54%, 9%, 3%

Grants for research and development: 14%, 46%, 29%, 9%, 3%

Government contracts for bioenergy and forestry products: 26%, 57%, 14%, 3%

Changing planning rules: 49%, 34%, 11%, 3%, 3%

Information and skills training: 54%, 37%, 3%, 6%
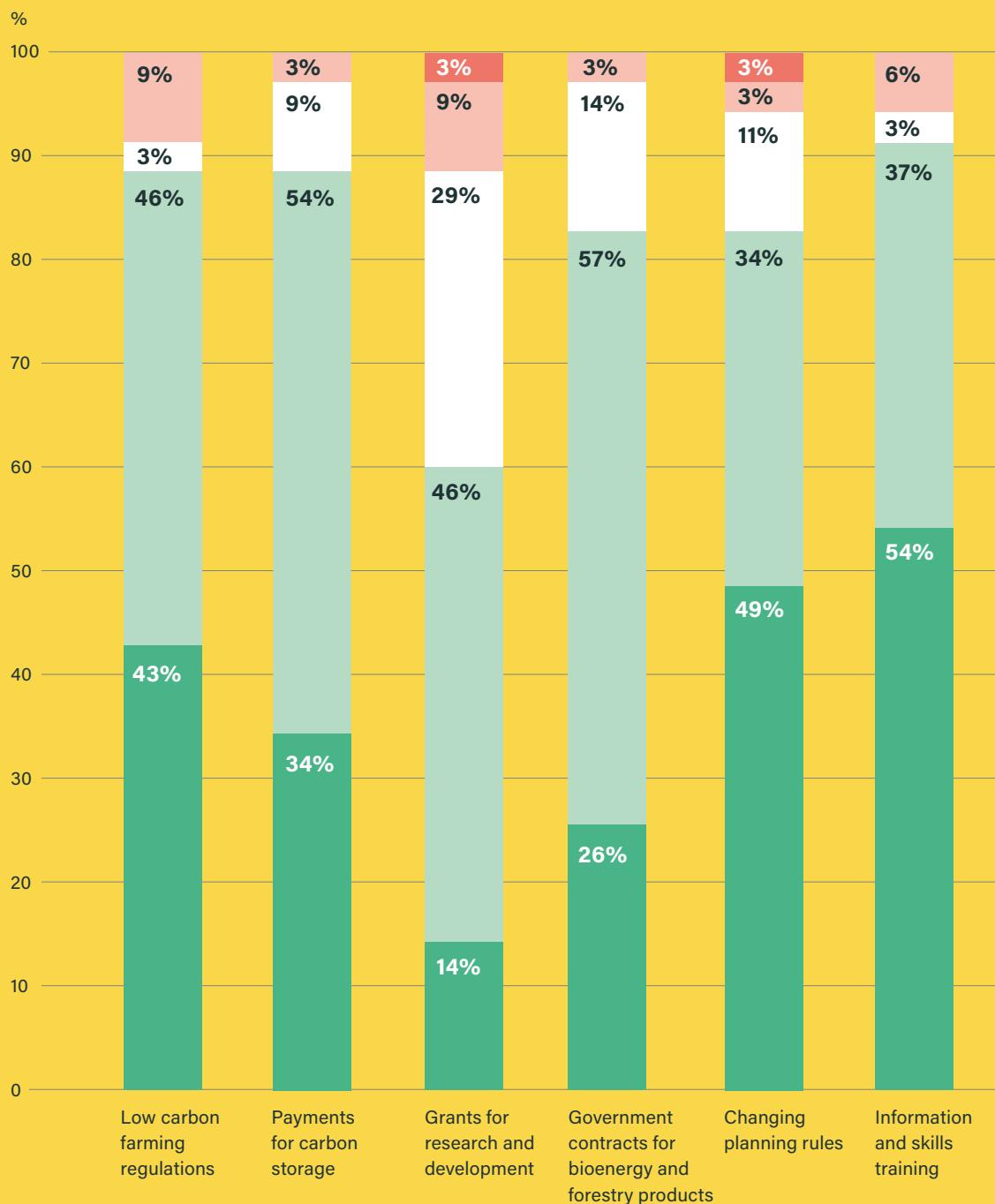
⊖ **Cons**

- **Wouldn't create fast enough change** – some assembly members queried "would world change be quick enough?", "not radical enough?" or noted that it doesn't "force action from people?"

- **"Risk of glut of seasonal veg grown – too much of one crop"**

Some assembly members said their support for this option would depend on how it is implemented, asking "who gets trained – farmer, labourer, staff?" Others noted the need to "think of farmers who can't change land use." Some said this policy "needs to be in tandem with retailer change " or again stressed that "all [policy] options need to be combined."

Vote results

Assembly members voted by secret ballot on policy options for changing farming, food production and land use. There were two ballot papers. The first ballot paper asked assembly members how much they agreed or disagreed that each policy option should be part of how the UK gets to net zero. The second ballot paper asked them to rank the options in their order of preference. The votes from this second ballot paper were counted both in terms of first preference votes and via Borda count.

Assembly members were in general very supportive of the policy options: **a clear majority of assembly members 'agreed' or 'strongly agreed' that all six policies should be part of how the UK gets to net zero**. For five of the six policy options, the percentage of assembly members backing their implementation was over 80%. A comparatively smaller 60% of assembly members supported the remaining option of 'grants for research and development.'

There was also a difference in how much 'strong' support policies received. Assembly members were most likely to 'strongly agree' with 'information and skills training', 'changing planning rules' and 'low carbon farming regulations', followed by 'payments for carbon storage'.

In the ranking vote **'grants for research and development'** remained assembly members' least preferred option by some distance. The main difference was that **information and skills training** received less support in terms of first preference votes in particular than might have been expected given the earlier result. This difference may be explained by the fact that, while assembly members generally felt it should happen, they were uncertain about how much change it would create by itself.

Figure 4: Changing farming, food production and land use

Please rank the following policy options in order of preference

(% 1st preference votes)

Policy option	% 1st preference
Low carbon farming regulations	26%
Payments for carbon storage	12%
Grants for research and development	9%
Government contracts for bioenergy and forestry products	12%
Changing planning rules	24%
Information and skills training	15%
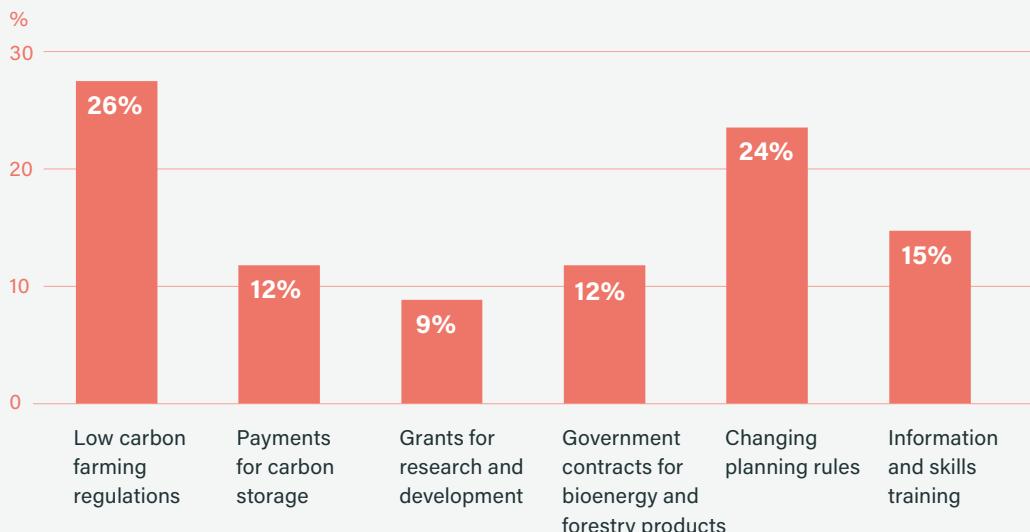
Figure 5: Changing farming, food production and land use

Please rank the following policy options in order of preference

(Borda count)

Policy option	Borda count
Low carbon farming regulations	104
Payments for carbon storage	96
Grants for research and development	49
Government contracts for bioenergy and forestry products	79
Changing planning rules	89
Information and skills training	92
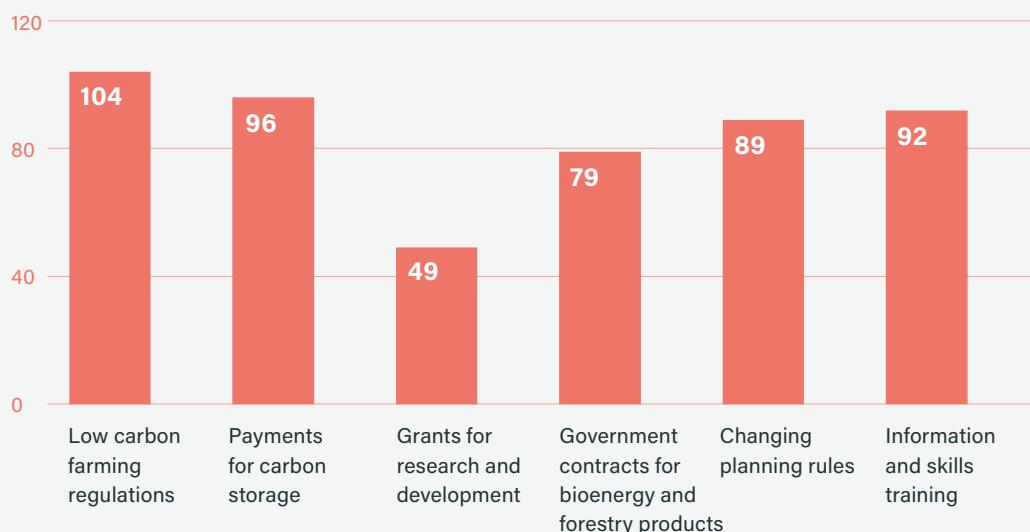
C.2 Changing retail and individuals' behaviour

Assembly members looked at five options for changing retail and individuals' behaviour:

- Bans and restrictions;

- Taxes and incentives for low carbon foods;

- Taxes and incentives for reducing food waste;

- Government contracts for low carbon food;

- Labelling and information.

We start by presenting the rationale for their views, taking each policy option in turn.

Bans and restrictions

This would involve applying bans or restrictions to the most carbon-emitting food-types (e.g. red meat, processed foods, foods transported by aeroplanes). The rules could start by reducing the use of these foods in the public sector, for example in schools and hospitals.

Adverts for high-carbon foods could also be regulated. This could mean forcing adverts to include information about the relevant food's emissions, or banning the adverts altogether.

Other regulations could focus on food retail (restaurants, cafes, takeaways, shops/supermarkets, caterers), perhaps limiting high-carbon foods on menus, or reducing portion sizes.

Assembly members identified a number of pros and cons about bans and restrictions.

⊕ **Pros**

+ **Changes in schools and hospitals** – one assembly member said "I like the idea of public sector establishments only offering healthy/low carbon food." Others agreed saying you "don't need [high carbon food] in schools or hospitals." Some commented that "restricting red meat in hospitals also benefits health – hypocritical to serve" or that "if you're going to eat meat eat better meat e.g. especially in schools such as primary schools."

+ **Lack of impact on individuals** – some assembly members said it "forces producers to change their ways – trickles down to us. We don't have to do anything" or it "doesn't hit individuals hard financially."

+ **"Restrictions would be okay"**

+ **"Health benefits for children and they are more receptive to changes than older people"**

+ **"Smaller portion sizes and reducing the amount of high carbon foods in our diets"**

+ **"Advertising high carbon foods to be banned, healthy advertising to be encouraged"**

- **Bans are too harsh** – some assembly members said that "restrictions [are] okay, but not a ban – likely to damage business (butchers, shops, not just farmers)." Others agreed saying "there should be restrictions not bans" or that they disliked "forcing change through ban." Some commented that "forcing the public to eat/not eat certain foods is bound to be unpopular (impacts on freedom)" or that they "prefer to give people choices rather than banning – some people rely on particular foods, or won't change and [it] could lead to hoarding and increased black market use."

- **"Hard to regulate adverts online"**

- **"School meal the only decent meal a child might get"**

- **"Use of carbon emitting foods is already being reduced in many hospitals and schools"**

- **"Livestock farming to be reduced with alternatives put in place"**

Some assembly members noted conditions to their support for this policy option, or points they would want taken into account if it was implemented. Many were about advertising, with most, but not all, favouring restrictions over bans:

❝ Allow advert[s] but [they] must have [a] message about carbon footprint"

❝ Ads with information about food emissions is a great way to educate people."

❝ Restricting high carbon advertising is great as it'll be very effective"

❝ [I would like to see] no adverts for high carbon foods."

Some assembly members suggested that "schools and hospitals [will] need to ensure [people are] … still getting enough nutrients." Others called for "greater scrutiny and regulation of unhealthy ingredients, mainly highly processed ingredients such as sweeteners." Some said in general that we should "not ban just restrict."

Taxes and incentives for low carbon foods

Additional taxes could be brought in for:

- The types of food with the largest emissions (e.g. red meat);

- Emissions coming from how food is produced, packaged, stored and transported;

- Advertising high-carbon food.

These charges could be targeted at producers, retailers, or consumers.

Incentives could help make low carbon food cheaper. They could include subsidies for local food suppliers (e.g. food cooperatives) if they are lower carbon. Additional discounts could be given to people on low incomes.

Assembly members identified a number of pros and cons about taxes and incentives for low carbon foods.

⊕ Pros

+ **Taxes and restrictions** – some assembly members felt that "taxes on meat could help shift behaviours." Others liked "taxes/charges for food producers to encourage emission reductions."

+ **Making low carbon food (comparatively) more affordable** – some assembly members liked that it would "make healthy low carbon food much cheaper than unhealthy high carbon food" or suggested it "makes low carbon food more affordable." Others said that "vegan/ vegetarian diets can be more expensive so decreasing the price and increasing [that of] high-carbon foods will be effective."

+ **Not everyone has to be able to afford everything** – some assembly members said "it's okay if not everyone can afford red meat" or it's the "same as [the] current system, where people can afford different foods."

+ **Less restrictive** – some assembly members said it "doesn't restrict personal choice as much so more likely to be accepted" or that it's "more free market: gives options; less controlling; carrot and stick."

+ **Important / meeting a need** – some assembly members felt this policy is "really important" or commented that "we do need more low-carbon food."

+ **"More beetroot bonds"**[8]

+ **"Charges for red meat locally is better than Brazil etc"**

8   One of the speakers, Sue Pritchard from the RSA, mentioned 'beetroot bonds.' They are the idea that: "Every person in the UK would receive a monthly dividend to spend on fresh, healthy produce purchased directly from local farmers and traders. For more information, please see https://www.thersa.org/globalassets/reports/rsa-ffcc-our-future-in-the-land.pdf

⊖ **Cons**

- **Impact on consumers, including those on low incomes** – some assembly members expressed concerns that "retailers will just pass the cost onto the consumer" or that "costs [will]… be passed on to consumers – only a problem if it extends so the poor can't afford any food." Others said it "may just mean poorer people can't eat it [red meat]."

- **Behaviour of the wealthy** – some assembly members disliked that the "wealthy could continue to buy a lot of high carbon foods." Others were more circumspect, saying "we can't tell for sure if wealthy people will continue buying high-carbon foods" or that the "wealthy will continue to buy meat, but that's okay."

- **"Concern supermarkets always win, whatever system is in place"**

Some assembly members noted conditions to their support for this policy option, or points they would want taken into account if it was implemented:

- **Education and information:** some assembly members said it has "no major downsides, if you communicate about the carbon footprint of products (e.g. share graph from presentation)." Others advocated a combination of "stop[ing] producing high carbon foods and education and awareness of healthier options."

- **Supporting people on low incomes** – some assembly members stressed the need to provide "support for those on low incomes or nearly low incomes – so it's fair and doesn't increase inequality" or to "ensure access for low income individuals."

- Some said they **"prefer incentives to taxes."**

One assembly commented that "I like the idea that adverts for high carbon foods could be targeted for regulation/banning altogether."

Taxes and incentives for reducing food waste

Taxes or incentives could:

- Encourage shops to reduce waste (e.g. make 'wonky veg' cheaper to buy);

- Penalise food waste by businesses and individuals (e.g. food waste charges/taxes);

- Encourage supermarkets, restaurants and shops to serve smaller portion sizes.

Assembly members identified a number of pros and cons about taxes and incentives for reducing food waste.

⊕ Pros

+ **Reducing food waste** – some assembly members said "we produce too much [food] at the moment" or that it would result in "less waste for farmers e.g. wonky veg." Others liked the idea of "educat[ing] people to only buy what they need – reduces waste."

+ **Changes for supermarkets and restaurants** – some assembly members particularly liked the idea of "supermarkets ... sell[ing] smaller packaging/portions" or said it "makes more sense for supermarkets and restaurants – hard to monitor at individual level (e.g. private households)."

+ **Already starting to happen and it works** – some assembly members said it's "already happening, does work" or that "Fareshare[9] cafés [are] growing in popularity (social enterprise)."

+ **"Recycle/compost food waste through doorstep collection"**

+ **"Not difficult"**

+ **"New homes built or developed should have built in waste reduction technology"**

+ **"Eco-tax – could use tax revenue for other projects to get to net zero"**

⊖ Cons

− **Food going to landfill** – some assembly members worried that "charges for food waste could mean people put it in black bins for landfill, causing more greenhouse gas emissions." Others agreed saying "if you tax food waste, they will chuck it away [in the general waste]" or "concerns about landfill – food needs to be composted nationally as well as wasting less."

− **Scepticism** – some assembly members queried "do we really need to encourage shops to sell wonky food cheaper?" or "isn't this a business idea that has been explored already?" Others said "smaller portions – will this have the effect of reducing consumption, or will people just buy more?" or "the wealthy would continue wasting food."

− **Penalising people** – some assembly members suggested it "penalises businesses and individuals – it's unfair and unrealistic" or said "don't penalise people e.g. no council facilities."

− **Practical issues** – some assembly members noted that it's "currently very restrictive to share 'waste' food so it doesn't go to waste" or said there would be "some difficult things to manage e.g. if you don't eat all your food in a restaurant who pays?"

− **"Let market work"**

− **"Like BOGOF[10] deals e.g. freeze/store food"**

9   For more information about FareShare please see https://fareshare.org.uk
10   Buy One Get One Free

Some assembly members noted conditions to their support for this policy option, or points they would want taken into account if it was implemented. These tended to fall into two themes.

Some assembly members highlighted that **"provision would have to be there for food waste"** or commented "what other alternative is there for disposal of black bin bags of waste food." Others suggested there "needs to be national solutions, e.g. composting that already exists locally."

Approaching the issue from a different angle, some assembly members identified a "need to review best before policies, currently causing waste – use same policy as France, if waste food is left at the end of the day, give it to the homeless." Others suggested a need to get firms to "reduce 2 for 1 deals."

Slightly overlapping with the above, another set of comments looked at **who should and shouldn't take responsibility and pay for any changes**:

- " Consider impact of penalising small business e.g. café owners"

- " Supermarkets need to take responsibility"

- " Incentives only, not taxes as it comes back to the individual"

- " Mostly focus on firms as this will reduce their waste and reduce 2 for 1 deals which will lead to decreased consumer waste as well."

Government contracts for low carbon food

This would involve amending the procedure for awarding government contracts to give preference to food producers that are low carbon. Food producers are people or companies that make, process and supply food (e.g. farmers, food factories, caterers). It could also involve all public sector catering (e.g. hospital cafes, school canteens) offering plant-based alternatives at every meal.

Assembly members identified a number of pros and cons about government contracts for low carbon food.

⊕ Pros

+ **Government can lead the way** – some assembly members liked "government/public sector contracts for low carbon foods – lead the change", with others agreeing that they liked the idea of government "leading by example."

+ **Practical to implement** – some assembly members suggested it is a "quick fix, very easy for government to implement" or noted that they are "already regimenting what's happening e.g. plant-based option in school and in hospital." Others suggested that it could later be "extend[ed]."

+ **Maintains choice** – some assembly members liked that it "maintains choice" or the idea of "offering plant-based alternatives at meals in public establishments." Others commented that they supported a "Government preference to food produce in low carbon products, but don't take people's freedom of choice away on i.e. red meat eaters."

- + **Good for business** – some assembly members suggested it "would give [a] huge initial boost to [the] plant-based industry" or that it would "hel[p] companies work out how they might change – test beds."

- + **"Makes sure child in school gets good school meal"**

- + **"Health benefits (more plant-based)"**

- + **"Can't see major downside – needs to be enforced at local government and central government levels and related services (e.g. NHS)"**

⊖ Cons

- − **Leave it to the experts** – some assembly members said that "experts, not civil servants in isolation [should]... develop solutions and track progress/outcomes." Others said "leave experts to decide not politicians or civil servants."

- − **"Already happening, so superfluous"**

- − **"Doesn't incentivise producers ... regulation would be more effective"**

Some assembly members commented that "contracts should include reducing food waste as well."

Labelling and information

This would involve labelling on food and drink products showing the amount of emissions that come from different foods. This could help individuals choose what they wanted to buy.

Education could also raise awareness of issues around food and food waste. This could include teaching skills like cooking and meal planning in schools.

Assembly members identified a number of pros and cons about labelling and information.

⊕ Pros

- + **Educate people and let them choose** – some assembly members said it "doesn't restrict choices but educates people", that it's "not controlling, allowing choice" or that it "helps consumer choice." Others commented that "showing carbon footprint on food helps individuals to choose (reduces confusion on low carbon food)" or that "many people don't understand climate change – need informing to make the right choice."

- + **Impactful** – some assembly members said you "see [labelling] instantly" and "it would have a big effect." Others said that "labelling and marketing are very important to change people's behaviour and what they eat." Some commented "start young, drives behaviour change."

⊖ Cons

- "Might not work in isolation"
- "Name[s] and shame[s] decent producers where a high carbon product has no alternative"

A significant number of assembly members noted conditions to their support for this policy option, or points they would want taken into account if it was implemented.

Some talked about **how to make labelling effective**. Assembly members consistently emphasised that it "must be clear" and "has to be easy to understand." Some said a "traffic light system [is] needed and [should be] highly visible – simple fuel gauge traffic light labelling." Others recommended a similar idea, suggesting "labelling on food and drink to show emissions i.e. green sticker for green products. It's a way of educating people and being transparent."

Others noted that labelling "has to be available when doing online shopping as well." Others suggested a need for "independent oversight to make sure information is true and properly represents carbon footprint." Some commented "what about imports? – if you have a choice with one carbon scoring labelled, and the other without, you will probably get the product with the carbon scoring."

Another group of comments focussed on the **power of peer influence.** Some assembly members said "information and peer pressure on choice of food is as effective as wealth. Need more notice taken of peer pressure to change behaviour." Others said they "believe in the power of peer influence" or that we "need key influencers for all sorts of audiences, not just young people influencers."

Some assembly members said that "**teaching** could also cover [the] big picture – life skills, cooking."

Additional ideas

Some assembly members suggested additional policy ideas that could help to change retail and individuals' behaviour:

- " New policy idea: a carbon card to reward low-carbon lifestyles"
- " Include rules about where products can be placed in supermarkets to encourage low carbon choices"
- " Can someone invent/distribute recyclable carrier bags"
- " High carbon/low carbon menu"
- " High/low carbon information on menu"
- " Have a small, medium and large portion size serving at restaurants"

Vote results

Assembly members voted by secret ballot on policy options for changing retail and individuals' behaviours. There were two ballot papers. The first ballot paper asked assembly members how much they agreed or disagreed that each policy option should be part of how the UK gets to net zero. The second ballot paper asked them to rank the options in their order of preference. The votes from this second ballot paper were counted both in terms of first preference votes and via Borda count.

Figure 6: Changing retail and individuals' behaviour

How much do you agree or disagree that each of the following policy options should be part of how the UK gets to net zero? (%)
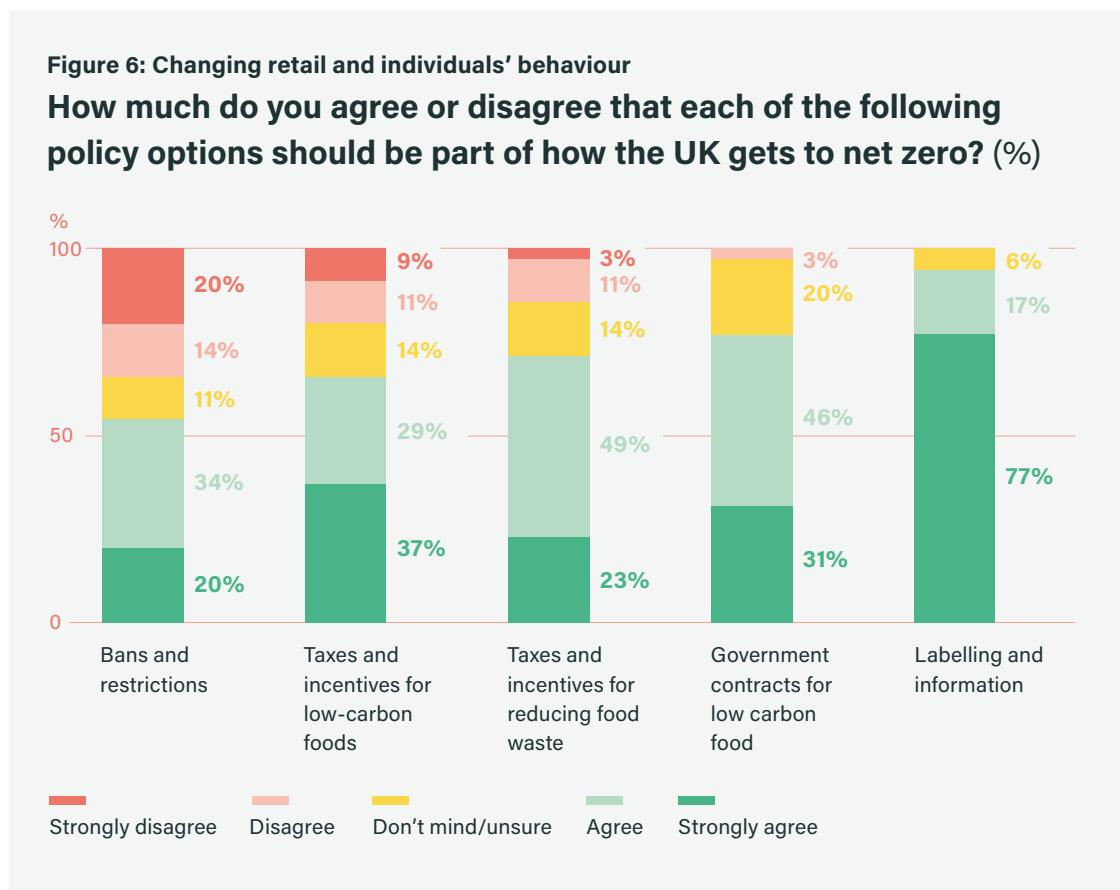
Assembly members were in general supportive of the policy options: **a majority of assembly members 'strongly agreed' or 'agreed' that all of the policies should be part of how the UK gets to net zero**. The size of the majorities was however lower in general than for policies to change farming, food production and land use.

The exception was 'labelling and information' which was more popular than all the policies for changing farming, food production and land use. 77% of assembly members 'strongly agreed' that it should be introduced, with a total of 94% 'strongly agreeing' or 'agreeing'.

The most controversial policy was 'bans and restrictions'. A small majority (54%) of assembly members supported this option, while 34% 'strongly disagreed' or 'disagreed' that it should be introduced.

For the other options, 77% of assembly members 'strongly agreed' or 'agreed' with 'government contracts for low carbon food', 72% with 'taxes and incentives for reducing food waste' and 66% with 'taxes and incentives for low carbon foods.'

Figure 7: Changing retail and individuals' behaviour

How much do you agree or disagree that each of the following policy options should be part of how the UK gets to net zero? (%)

Figure 8: Changing retail and individuals' behaviour

Please rank the following policy options in order of preference (Borda count)
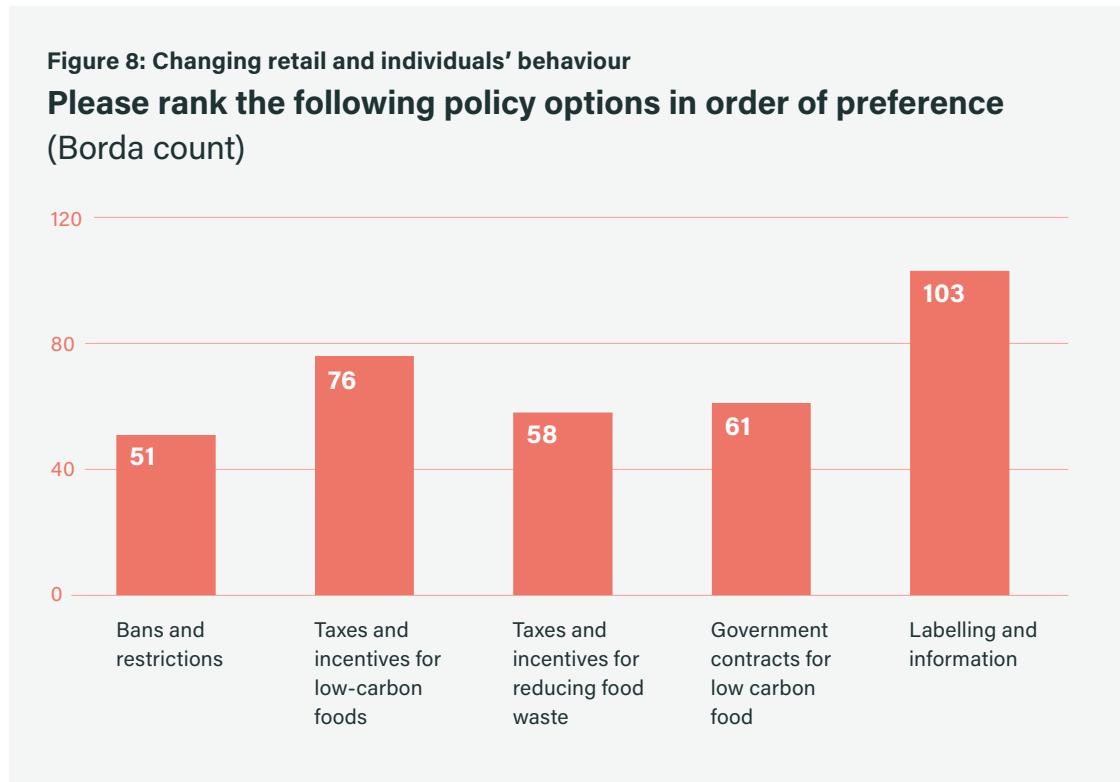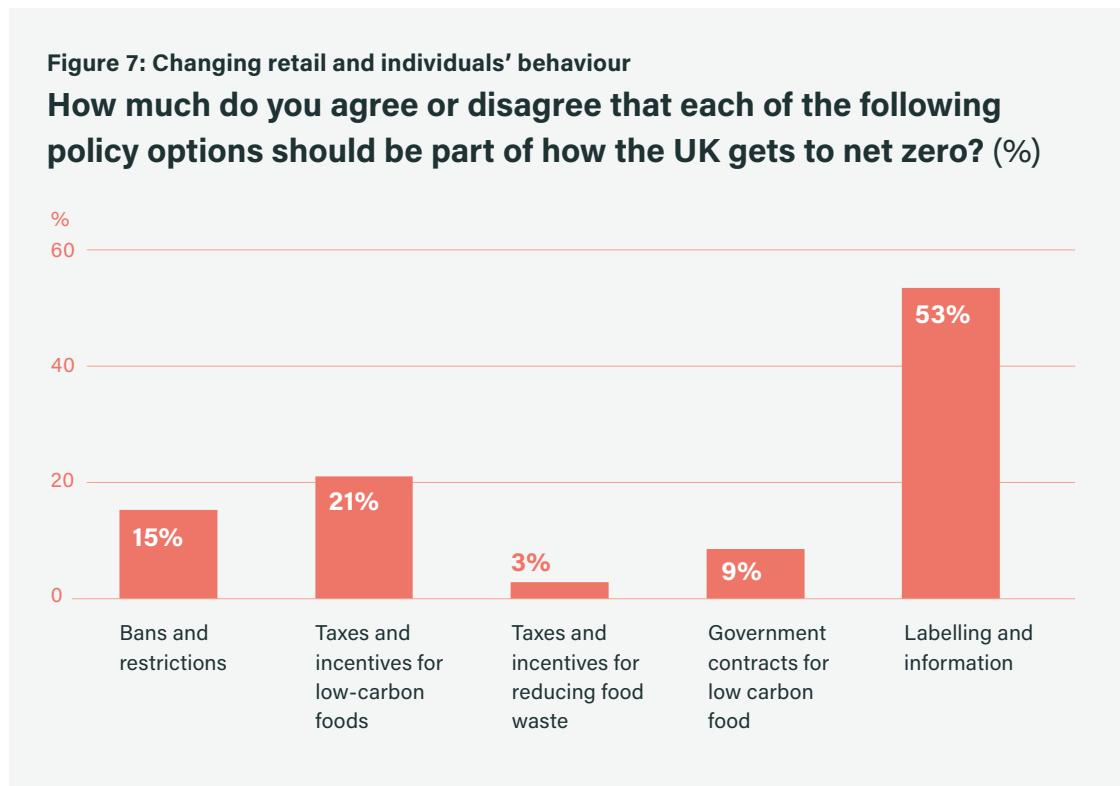
The results of the ranking vote re-emphasised assembly members' strong support for **'labelling and information.'** The second most popular policy in terms of both first preference votes and the Borda count was **'taxes and incentives for low carbon foods.'** Whilst it received slightly lower support than some of the other options in the first vote, these results suggest that those who did support it felt comparatively strongly about it.

Bans and restrictions secured a reasonable number of first preference votes, but was again the least popular option in the Borda count.

Policy options – conclusions

Assembly members showed **strong support for a wide range of policies.**

Their support was particularly pronounced for policies to change **farming, food production and land use**:

- A clear majority of assembly members 'agreed' or 'strongly agreed' that all six policies in this category should be part of how the UK gets to net zero;

- For five of the six policy options, the percentage of assembly members backing their implementation was over 80%. Assembly members' preferred options were 'information and skills training' (91% supported implementation), 'changing planning rules' (83%), 'low carbon farming regulations' (89%), and 'payments for carbon storage' (87%).

Assembly members noted positives about the policies including effectiveness, feasibility, and co-benefits such as helping nature. They suggested 'information and skills training' was a "no brainer" and should be "available no matter what." They showed comparatively less support for 'grants for research and development' (60%). There was also strong support, albeit slightly more measured, for policies to **change retail and individuals' behaviour:**

- A majority of assembly members 'strongly agreed' or 'agreed' that all of the policies should be part of how the UK gets to net zero;

- The size of the majorities whilst lower in general was still substantial tending to lie between 60% and 80%.

Assembly members' preferred policy option in this category was **'labelling and information'** (**94% supported implementation**). Assembly members suggested that steps in this area would allow individuals to make an informed choice, with some clearly feeling that this would have a "big effect." Assembly members put forward a range of ideas about how to implement this policy effectively.

Beyond 'labelling and information', assembly members also showed substantial levels of support for **'government contracts for low carbon food'** (77%), **'taxes and incentives for reducing food waste' (72%)** and **'taxes and incentives for low carbon foods'** (66%). They showed comparatively less support for **'bans and restrictions' (54%).** 34% of assembly members 'strongly disagreed' or 'disagreed' that these should be implemented.

Assembly members also put forward a number of additional ideas for policies that could help to change retail and individuals' behaviour.

D. Anything else to tell government and Parliament

At the end of weekend three, assembly members had the opportunity to add any final thoughts on food, farming, land use and the path to net zero. A large number of assembly members chose to add additional points. All of the comments came from small group discussions – and were well-supported by the assembly members in those discussions – unless otherwise stated.

About farming and farmers

- "Protecting farmers is essential (particularly small to medium scale)– not big ones." This group continued:

  "Protecting farmers/farming community is key. They need to get a fair deal for their crops. Need to involve major companies in the process (e.g. supermarkets)."

Another group also commented that they wanted an "emphasis on supporting farming."

- "Farmers in particular should be leading change in their industry and should be supported financially by the government in the process."

- "Solutions and actions must include and allow farmers diversifying into the leisure industry e.g. holiday homes, recreation, petting farms."

- "Should be regional and fixed solutions that work in different contexts – **not** 'one size fits all'". Two assembly members in another group made a similar point: "It isn't a case of one size fits all – must fit local environment."

- "Prioritise capturing or reducing methane in farming and in tackling food waste (not just focus on carbon)."

About the UK's relationship with the rest of the world

- "Look at what other countries are doing – they may already have solutions that we could use too."

- "Existing climate change laws in UK are restrictive as it's limited to the UK – more global approach is needed (and R&D), partnership and investment with other countries."

- "Use what we produce or could produce in the UK **before** we import from abroad."

About land use and biodiversity

- "Preserve environment and wildlife in whatever changes are made don't adversely impact it."

- "We shouldn't build on flood plains – recreate peatland or natural habitat." *(This point was made by three assembly members)*

- "Rewilding is a popular idea – could help with a lot of problems produced by climate change." *(This point was made by two assembly members)*

- "Livestock can co-exist with woodland they don't have to be purely on grassland win-win." *(This point was made by one assembly member)*

About education, communication and wider involvement

- "Education/information is key."

- "Suggest greater profile given to farmers and farming to educate public on 'where their food comes from' etc."

- "Evidence needs to be presented by credible people."

- "All need to be involved, we need media involved. Needs to go beyond the assembly." Assembly members in this group commented that "as citizens involved in the assembly, we have learned a lot." One said I "was not bothered so much before the assembly about the evidence", another that "I heard the evidence and it made me aware of the risks."

About a fair and managed transition

- "Make sure you focus on nearly low income i.e. working poor, just about managing (as well as lowest incomes)."

- "Ensure a transition period, no sharp transition."

About business and waste

- "Restaurants should have carbon footprint rating on display (like hygiene rating)."

- "League table for brands – competition (for CO_2 emissions)."

- "Composting food waste nationwide to stop landfill." *(This point was made by four assembly members)*

Conclusions

Assembly members put forward **eight considerations** for government and Parliament to bear in mind when making decisions about food, farming, land use and the path to net zero. These focussed on:

- Providing support to farmers;

- Information and education;

- Using land efficiently;

- Rules for large retailers and supermarkets;

- More local and seasonal food;

- Making low carbon food more affordable;

- Some, just less, meat;

- Considering net zero as part of planning policy and new developments, including support for allotments.

Assembly members' preferred future for food, farming and land use in the UK centred around:

- **Local produce and local food production** – for a wide range of reasons including community benefits, fairer prices for farmers, a 'feel good factor' and reduced environmental impacts (packaging, transport etc);

- **A change in diet to reduce meat and dairy consumption by between 20% and 40%** – the assembly stressed the significance of education, saying these changes should be voluntary rather than compulsory. They noted the health benefits such changes would bring;

- **A "managed diversity" of land use**, including steps such as restoring woodlands, peatlands and gorselands.

Assembly members noted strongly the need for the above to be combined with **support for farmers to make the transition**, also saying that changes should take account of smaller farms, the suitability of different land for different uses, and variations in impact between UK regions. They backed measures to make sure changes do **not disproportionality affect the less well off,** said that **animal welfare should not be compromised,** and expressed strong concerns about **GM and lab grown food**.

Assembly members showed **strong support for policies to change both farming, food production and land use,** and **retail and individuals' behaviour**. While the former received slightly more support on average, a majority of assembly members 'agreed' or 'strongly agreed' that all eleven policies they considered should be part of how the UK gets to net zero. In assembly members' order of preference, these policies were:

Policy option	Policy objective	% strongly agree or agree
Labelling and information about emissions from food and drink products	Changing retail and individuals' behaviour	94%
Information and skills training	Changing farming, food production and land use	91%
Low carbon farming regulations	Changing farming, food production and land use	89%
Payments for carbon storage	Changing farming, food production and land use	87%
Government contracts for bioenergy and forestry products	Changing farming, food production and land use	84%
Changing planning rules	Changing farming, food production and land use	83%
Government contracts for low carbon food	Changing retail and individuals' behaviour	77%
Taxes and incentives for reducing food waste	Changing retail and individuals' behaviour	72%
Taxes and incentives for low carbon foods	Changing retail and individuals' behaviour	66%
Grants for research and development	Changing farming, food production and land use	60%
Bans and restrictions	Changing retail and individuals' behaviour	54%

Assembly members put forward a number of ideas about how to best implement 'labelling and information' about emissions from food and drink products. They also suggested a number of additional ideas for policies that could help to change retail and individuals' behaviour.