

## The Sixth Carbon Budget and Welsh emissions targets – Call for Evidence

### Background to the UK's sixth carbon budget

The UK Government and Parliament have adopted the Committee on Climate Change's (CCC) [recommendation](#) to target net-zero emissions of greenhouse gases (GHGs) in the UK by 2050 (i.e. at least a 100% reduction in emissions from 1990).

[The Climate Change Act](#) (2008, 'the Act') requires the Committee to provide advice to the Government about the appropriate level for each carbon budget (sequential five-year caps on GHGs) on the path to the long-term target. To date, in line with advice from the Committee, five carbon budgets have been legislated covering the period out to 2032.

The Committee must provide advice on the level of the sixth carbon budget (covering the period from 2033-37) before the end of 2020. The Committee intends to publish its advice early, in September 2020. This advice will set the path to net-zero GHG emissions for the UK, as the first time a carbon budget is set in law following that commitment.

Both the 2050 target and the carbon budgets guide the setting of policies to cut emissions across the economy (for example, as set out most recently in the 2017 [Clean Growth Strategy](#)).

The Act also specifies other factors the Committee must consider in our advice on carbon budgets – the advice should be based on the path to the UK's long-term target objective, consistent with international commitments and take into account considerations such as social circumstances (including fuel poverty), competitiveness, energy security and the Government's fiscal position.

The CCC will advise based on these considerations and a thorough assessment of the relevant evidence. This Call for Evidence will contribute to that advice.

### Background to the Welsh third carbon budget and interim targets

Under the Environment (Wales) Act 2016, there is a duty on Welsh Ministers to set a maximum total amount for net Welsh greenhouse gas emissions (Welsh carbon budgets). The first budgetary period is 2016-20, and the remaining budgetary periods are each succeeding period of five years, ending with 2046-50.

The Committee is due to provide advice to the Welsh Government on the level of the third Welsh carbon budget (covering 2026-30) in 2020, and to provide updated advice on the levels of the second carbon budget (2021-25) and the interim targets for 2030 and 2040. Section D of this Call for Evidence (covering questions on Scotland, Wales and Northern Ireland) includes a set of questions to inform the Committee's advice to the Welsh Government.

## Question and answer form

When responding, please provide answers that are as specific and evidence-based as possible, providing data and references to the extent possible.

**Please limit your answers to 400 words per question and provide supporting evidence (e.g. academic literature, market assessments, policy reports, etc.) along with your responses.**

Confor is the not-for-profit organisation for sustainable forestry and wood-using businesses in the UK. We have more than 1,500 member companies representing the whole forestry and wood supply chain. Confor focuses on the strategic issues that are vital to the success and sustainable future of the sector. These include helping to build the market for wood and forest products, creating a supportive policy environment and helping members to become more competitive and successful.

### A. Climate science and international circumstances

**Question 1:** The climate science considered in the CCC's 2019 Net Zero report, based on the IPCC Special Report on Global Warming of 1.5°C, will form the basis of this advice. What additional evidence on climate science, aside from the most recent IPCC Special Reports on Land and the Oceans and Cryosphere, should the CCC consider in setting the level of the sixth carbon budget?

ANSWER: n/a

**Question 2:** How relevant are estimates of the remaining global cumulative CO<sub>2</sub> budgets (consistent with the Paris Agreement long-term temperature goal) for constraining UK cumulative emissions on the pathway to reaching net-zero GHGs by 2050?

ANSWER: n/a

**Question 3:** How should emerging updated international commitments to reduce emissions by 2030 impact on the level of the sixth carbon budget for the UK? Are there other actions the UK should be taking alongside setting the sixth carbon budget, and taking the actions necessary to meet it, to support the global effort to implement the Paris Agreement?

ANSWER: n/a

**Question 4:** What is the international signalling value of a revised and strengthened UK NDC (for the period around 2030) as part of a package of action which includes setting the level of the sixth carbon budget?

ANSWER: n/a

### B. The path to the 2050 target

**Question 5:** How big a role can consumer, individual or household behaviour play in delivering emissions reductions? How can this be credibly assessed and incentivised?

ANSWER: n/a

**Question 6:** What are the most important uncertainties that policy needs to take into account in thinking about achieving Net Zero? How can government develop a strategy that helps to retain robustness to those uncertainties, for example low-regrets options and approaches that maintain optionality?

ANSWER: One big uncertainty is how quickly the private sector can deliver, and how fast customers will adopt, zero-carbon solutions: tree planting, net-zero homes, or other targets.

Experience shows that, where technological solutions are already developed (as is the case with forestry, zero carbon homes, renewable energy, electrified transport and low-carbon food) extremely rapid transitions and economic scale-ups are possible when the policy framework is right. Forestry has scaled up forestry rapidly in the past, and is doing so at present in Scotland; while the modern timber processing sector easily prepared for the volume of wood which has become available through that planting – a readiness which for a time was in doubt.

We are confident forestry and timber can deliver well above the level of ambition proposed, and in the process create jobs, wealth and environmental benefit, without reducing the UK's capacity to produce food or damaging nature conservation. It is likely that this is the case for several of the other sectors too.

Perhaps the biggest uncertainty, therefore, is the level of ambition we can hope to see from government. It must develop a strategy with strong and clear targets backed by appropriate policies to make the shift economic activity rapidly from carbon-emitting to net-zero.

**Question 7:** The fourth and fifth carbon budgets (covering the periods of 2023-27 and 2028-32 respectively) have been set on the basis of the previous long-term target (at least 80% reduction in GHGs by 2050, relative to 1990 levels). Should the CCC revisit the level of these budgets in light of the net-zero target?

ANSWER: n/a

**Question 8:** What evidence do you have of the co-benefits of acting on climate change compatible with achieving Net Zero by 2050? What do these co-benefits mean for which emissions abatement should be prioritised and why?

ANSWER: Acting on climate change through forestry and timber processing will deliver a wide range of co-benefits. These include:

- Economic development and the creation of jobs, particularly in rural areas

- Creation of biodiversity habitat through expansion of mixed forests on sites in historically degraded ecological condition
- Creating places for people: as they mature, forests become valuable for recreation and physical and mental health
- Home-grown homes: over 80% of the wood products we use are imported, and almost 80% of houses in England are built of masonry. Forestry supplies the material to shorten supply chains and develop offsite timber construction to deliver more high-quality housing more efficiently.

## C. Delivering carbon budgets

**Question 9:** Carbon targets are only credible if they are accompanied by policy action. We set out a range of delivery challenges/priorities for the 2050 net-zero target in our Net Zero advice. What else is important for the period out to 2030/2035?

**ANSWER:** The priority given to tree planting with a target of 30,000 hectares per year, and the need to manage woods for wood production, are essential to meet carbon targets. The policies required to deliver these listed in the Committee on Climate Change *Land Use: Policies for Net Zero* report are broadly welcome, but the order of priority and level of detail given to each is not designed to deliver rapid delivery of the targets.

**Uncertainty of applications to plant trees:** The most important barrier to new planting is the complexity and uncertainty of applications to plant trees. Investors are hesitant to purchase land and engage professional foresters to draw up proposals when there is a high chance that their application will be rejected at the end of a process which can last several years. This process has been de-risked in Scotland through clear guidelines as to what will be a successful application and a clear undertaking from the public sector to process applications in a timely manner. Replicating this in England and Wales would bring forward the considerable investment interest which is already there. The Woodland Creation Planning Grant, which was created in England to partially de-risk this process, should be retained; but it would be more efficient use of public funds and forestry resources to make the process clearer and quicker.

**Public funding for public goods** are key to ensuring new forests are equipped to deliver multiple benefits and are monitored by the public sector. They are also fundamental to broadleaf woodland management, which, contrary to the analysis in *Land Use Policies for Net Zero*, is rarely cost-effective on wood sales alone due to the small scale and complex environmental management requirements of most broadleaf woods.

**Invest in capacity of forestry supply chain:** this is vital in itself and will give an important signal to the sector and the wider economy that forestry is a core industry in the zero-carbon economy.

**Forestry investment zones:** The Forestry Commission's first attempt at developing a Forestry Investment Zone in Cumbria has yet to deliver any planting or substantive transferable lessons. Confor has promoted a different approach of 'forestry partnerships' and put forward Northumberland as a more suitable location for a pilot. This has secured support from the forestry Minister Zac Goldsmith and Northumberland County Council. We would focus future energy in this direction.

**Review of taxation:** current arrangements are generally considered positive and any proposed changes would have to be discussed at an early stage with Confor to ensure there are no unintended consequences.

**Carbon market funding:** The cost to the public purse of grants to lock up carbon by tree planting is relatively very low compared to alternative forms of carbon capture and storage. The grant system is also well established and understood and shown to be successful in Scotland – the key is to get the applications and approvals process functioning as it should in England and Wales. Carbon trading has made some progress in forestry as a top-up payment, but there can be reluctance from owners of woodland to have the carbon in their trees ‘owned’ by a third party who might, for example, restrict their sale of timber. The additional carbon application process further complicates an already difficult woodland creation process in England especially.

**Question 10:** How should the Committee take into account targets/ambitions of UK local areas, cities, etc. in its advice on the sixth carbon budget?

**ANSWER:** Many local authorities, particularly in England, have announced tree planting targets, and these are very welcome. These should be acknowledged and supported in the carbon budget. They should be encouraged to consider planting wood-producing forests and link to regional timber processing industries, shortening supply chains and developing local economies. This could be through more forestry partnerships as proposed above.

**Question 11:** Can impacts on competitiveness, the fiscal balance, fuel poverty and security of supply be managed regardless of the level of a budget, depending on how policy is designed and funded? What are the critical elements of policy design (including funding and delivery) which can help to manage these impacts?

**ANSWER:** Yes; if the policy framework is right, with carbon-emitting activities penalised and carbon-sequestering ones supported, businesses will respond quickly and innovatively to deliver zero-carbon goods and services cost-effectively. By setting a more ambitious budget, UK industry can become global leaders in technologies which will be required throughout the world. Lower levels of ambition mean the UK economy risks being left behind.

**Question 12:** How can a just transition to Net Zero be delivered that fairly shares the costs and benefits between different income groups, industries and parts of the UK, and protects vulnerable workers and consumers?

**ANSWER:** Forestry and timber are fundamental to a just transition to net zero, as it supplies a carbon-negative material required for basic commodities such as modern efficient homes, furniture and food packaging.

The UK only produces 19% of the wood products it requires<sup>1</sup> making it heavily reliant on imports. With global wood demand predicted to treble by 2060<sup>2</sup>, costs of these basic commodities could become unaffordable if the supply is not there, or they will be substituted for higher carbon materials such as masonry, steel and plastic.

At present, forestry and timber processing adds over £2bn to the UK economy, and supports over 80,000 green jobs, largely in rural areas. These jobs are diverse, from self-

<sup>1</sup> [Forestry Statistics](#) 2019, chapter 3 p.4.

<sup>2</sup> OECD [Global material resources outlook to 2060](#), 2019

employment to large companies, and at a wide range of levels from casual to professional, with a strong career structure and opportunities to train and advance on the job.

Forestry can enhance local communities, providing opportunities for recreation and access to nature such as dog-walking and mountain biking. Visiting a forest can improve mood and concentration and reduce stress.<sup>3</sup> It is important that the infrastructure is in place to ensure forest operations do not cause unreasonable disruption to local communities. This includes a clear mechanism for consultation and investment in road haulage infrastructure. The Scottish Woodland Creation Application Guidance<sup>4</sup> and Strategic Timber Transport Scheme<sup>5</sup> are examples of this.

Confor provided a fuller response to this question in response to the Scottish Just Transition Commission, [available here](#).

## D. Scotland, Wales and Northern Ireland

**Question 13:** What specific circumstances need to be considered when recommending an emissions pathway or emissions reduction targets for Scotland, Wales and/or Northern Ireland, and how could these be reflected in our advice on the UK-wide sixth carbon budget?

**ANSWER:** Between 2016 and 2020, Scotland has turned around decades of very low tree planting to reach over 10,000 hectares a year, including a substantial component of conifer for wood production. This demonstrates that rapid change is possible. The policies which have made this change include:

A strong lead from government level, with a cabinet secretary taking responsibility for delivering targets.

A smooth applications process, including clear guidelines for what types of land will be approved for planting, what must be included in a forest design, and clear timescales for responses from the regulator and stakeholders. This de-risks the application process encouraging investors to buy land and develop applications.

A grant scheme covering the cost of planting, enabling existing landowners such as farmers to plant trees without capital outlay.

Investment along the supply chain in timber transport, nurseries and timber technologies. Northern England and Wales have large areas of land which would be suitable for forestry, and landowners and investors who are eager to take advantage of the opportunities provided in Scotland. With measures like these there is no reason why they should not scale up planting rapidly in the same way.

**Question 14:** The Environment (Wales) Act 2016 includes a requirement that its targets and carbon budgets are set with regard to:

<sup>3</sup> [Forest Visits and Mental Health](#) (Ecologist, 17 May 2019).

<sup>4</sup> Scottish Forestry, [Woodland Creation: Application Guidance](#), 2017.

<sup>5</sup> Scottish Forestry, [Strategic Timber Transport Scheme](#)



- The most recent report under section 8 on the State of Natural Resources in relation to Wales;
  - The most recent Future Trends report under section 11 of the Well-Being of Future Generations (Wales) Act 2015;
  - The most recent report (if any) under section 23 of that Act (Future Generations report).
- a) What evidence should the Committee draw on in assessing impacts on sustainable management of natural resources, as assessed in the state of natural resources report?
  - b) What evidence do you have of the impact of acting on climate change on well-being? What are the opportunities to improve people's well-being, or potential risks, associated with activities to reduce emissions in Wales?
  - c) What evidence regarding future trends as identified and analysed in the future trends report should the Committee draw on in assessing the impacts of the targets?
  - d) Question 12 asks how a just transition to Net Zero can be achieved across the UK. Do you have any evidence on how delivery mechanisms to help meet the UK and Welsh targets may affect workers and consumers in Wales, and how to ensure the costs and benefits of this transition are fairly distributed?

ANSWER: n/a

**Question 15:** Do you have any further evidence on the appropriate level of Wales' third carbon budget (2026-30) and interim targets for 2030 and 2040, on the path to a reduction of at least 95% by 2050?

ANSWER: n/a

**Question 16:** Do you have any evidence on the appropriate level of Scotland's interim emissions reduction targets in 2030 and 2040?

ANSWER: n/a

**Question 17:** In what particular respects do devolved and UK decision making need to be coordinated? How can devolved and UK decision making be coordinated effectively to achieve the best outcomes for the UK as a whole?

ANSWER: Forestry is fully devolved, but certain functions including the UK Forestry Standard, plant health, and Forest Research remain co-ordinated at UK level. This arrangement was formalised between the UK governments following the passing of the Scottish Forestry Act in 2018. This is a good outcome, as it enables policy to be made suitable to each part of the UK, but standards and regulations remain consistent across the UK. This is important both for forestry companies working UK-wide, but also to ensure environmental protection is maintained at an equally high level everywhere.

## E. Sector-specific questions

**Question 18 (Surface transport):** As laid out in Chapter 5 of the Net Zero Technical Report (see page 149), the CCC's Further Ambition scenario for transport assumed 10% of car miles could be shifted to walking, cycling and public transport by 2050 (corresponding to over 30% of trips in total):

- a) What percentage of trips nationwide could be avoided (e.g. through car sharing, working from home etc.) or shifted to walking, cycling (including e-bikes) and public transport by 2030/35 and by 2050? What proportion of total UK car mileage does this correspond to?
- b) What policies, measures or investment could incentivise this transition?

ANSWER: n/a

**Question 19 (Surface transport):** What could the potential impact of autonomous vehicles be on transport demand?

ANSWER: n/a

**Question 20 (Surface transport):** The CCC recommended in our Net Zero advice that the phase out of conventional car sales should occur by 2035 at the latest. What are the barriers to phasing out sales of conventional vehicles by 2030? How could these be addressed? Are the supply chains well placed to scale up? What might be the adverse consequences of a phase-out of conventional vehicles by 2030 and how could these be mitigated?

ANSWER: n/a

**Question 21 (Surface transport):** In our Net Zero advice, the CCC identified three potential options to switch to zero emission HGVs – hydrogen, electrification with very fast chargers and electrification with overhead wires on motorways. What evidence and steps would be required to enable an operator to switch their fleets to one of these options? How could this transition be facilitated?

ANSWER: n/a



**Question 22 (Industry):** What policy mechanisms should be implemented to support decarbonisation of the sectors below? Please provide evidence to support this over alternative mechanisms.

- a) Manufacturing sectors at risk of carbon leakage
- b) Manufacturing sectors not at risk of carbon leakage
- c) Fossil fuel production sectors
- d) Off-road mobile machinery

**ANSWER:**

- a) High energy-using industries such as cement and steel manufacture are at risk of carbon leakage if they are exported. These are chiefly producing materials for the construction sector. The biggest way to decarbonise this sector and reduce the carbon leakage risk is to drive up construction from home-grown timber. Timber frame construction accounts for only 23% of new housing in England.<sup>6</sup> At current rates of productivity, trees planted today could be providing thinning materials to make board for racking panels and kitchen units by 2035, and sawn construction timber by 2055; but early results of improved stock planted on better ground suggest that productivity could be increased by over 100% on current averages, and material could therefore be available for harvest by 2040.<sup>7</sup>

Mass-timber buildings such as Dalston Works in London not only remove the need for steel in construction, thanks to their comparatively light weight they also greatly reduce the need for concrete in their foundations. This means these buildings can be carbon negative.<sup>8</sup> However, at present the area of forestry in the UK is too small to deliver the quantities of timber required for mass timber manufacture.

The UK has arguably already offshored a high energy manufacturing process in terms of paper production which is now largely produced overseas. Remaining UK paper mills such as Iggesund in Cumbria have implemented innovative whole supply-chain processes to reduce the carbon emissions of this manufacture. This includes a biomass boiler using wood too low-grade for their high quality board manufacture which also acts as a top-up to the electricity grid at times of high demand. The mill also works with local landowners to grow willow coppice as an additional source of bioenergy.<sup>9</sup> Growing our forestry sector provides opportunities to reverse historic carbon leakage by keeping supply chains from land to consumer local and integrated in this way.

<sup>6</sup> Structural Timber Association, Timber frame construction market report (UK) 2018.

<sup>7</sup> Confor, [Super Sitka growing super-fast](#), 2018.

<sup>8</sup> Waugh Thistleton, [Dalston Works](#).

<sup>9</sup> Iggesund, [The Workington Mill](#).

**Question 23 (Industry):** What would you highlight as international examples of good policy/practice on decarbonisation of manufacturing and fossil fuel supply emissions? Is there evidence to suggest that these policies or practices created economic opportunities (e.g. increased market shares, job creation) for the manufacturing and fossil fuel supply sectors?

**ANSWER:** The Wood First policy in Canada has helped to drive a shift to low-carbon construction. The Brock Commons student accommodation in Vancouver was built in just nine weeks, and the amount of wood used in the building would take the forests of British Columbia just 9 weeks to grow.

The wood-first policy approach was linked to climate change objectives and supported by national policy in Canada and federal policy in British Columbia. It was backed up by a strong focus on timber construction in education and skills, creating a favourable environment in which building projects using wood can flourish. Education is a key piece of the equation, delivered through Wood Works through information, communication and awards.<sup>10</sup>

**Question 24 (Industry):** How can the UK achieve a just transition in the fossil fuel supply sectors?

**ANSWER:** n/a

**Question 25 (Industry):** In our Net Zero advice, the CCC identified a range of resource efficiency measures that can reduce emissions (see Chapter 4 of the Net Zero Technical Report, page 115), but found little evidence relating to the costs/savings of these measures. What evidence is there on the costs/savings of these and other resource efficiency measures (ideally on a £/tCO<sub>2e</sub> basis)?

**ANSWER:** The report identifies the use of wood in construction as a measure to reduce resource use in consumption.

As long as wood supply is available to make it a cost-effective material, the financial savings of increasing wood in construction can be considerable. Timber is suitable for offsite construction which is far more efficient. The Brock Commons building cited above was built in 9 weeks. The number of concrete deliveries to site required to build Dalston Works was reduced by 80% thanks to its timber construction, massively reducing disruption at the urban site. Makar Homes, who build rural homes from Scottish timber using an offsite construction process, expect the shell of their buildings to be complete within a working week.<sup>11</sup>

<sup>10</sup> Confor, [World's tallest wooden structure built in 9 weeks in Vancouver](#), 2018.

<sup>11</sup> [Makar Homes](#)

**Question 26 (Buildings):** For the majority of the housing stock in the CCC's Net Zero Further Ambition scenario, 2050 is assumed to be a realistic timeframe for full roll-out of energy efficiency and low-carbon heating.

- a) What evidence can you point to about the potential for decarbonising heat in buildings more quickly?
- b) What evidence do you have about the role behaviour change could play in driving forward more extensive decarbonisation of the building stock more quickly? What are the costs/levels of abatement that might be associated with a behaviour-led transition?

ANSWER: b) Confor and Swedish Wood's joint venture company Wood for Good Ltd brings together timber industry contributions and funding from Scottish Forestry to deliver a long-standing (20 year) marketing campaign aimed at architects, engineers and specifiers to promote and encourage the use of timber in construction. Through awards, publications, PR activity, case studies, newsletters and partnership working with timber trade associations and technical organisations there has been substantial progress in encouraging timber-rich construction and informing the professions and decision makers on the benefits and practicalities of timber. Wood for Good is currently reviving an earlier sub-campaign to highlight the carbon benefits of using timber in construction, based on a collective mark 'Wood Co2ts Less' for the timber trade. The carbon benefits come from the displacement of more energy intensive materials and in the sequestration of carbon in the housing stock. Wood for Good also promotes the benefits of off-site timber construction methods. There is substantial scope to up-scale Wood for Good's campaign if additional resources could be made available.

**Question 27 (Buildings):** Do we currently have the right skills in place to enable widespread retrofit and build of low-carbon buildings? If not, where are skills lacking and what are the gaps in the current training framework? To what extent are existing skill sets readily transferable to low-carbon skills requirements?

ANSWER: n/a

**Question 28 (Buildings):** How can local/regional and national decision making be coordinated effectively to achieve the best outcomes for the UK as a whole? Can you point to any case studies which illustrate successful local or regional governance models for decision making in heat decarbonisation?

ANSWER: The Powys Homegrown Homes project is a wood encouragement project bringing together Powys County Council's Housing and Regeneration Services, the Welsh Local Government Association, Community Housing Cymru and Natural Resources Wales, along with local social housing providers to encourage forestry, retain and create new jobs and build better and more energy-efficient homes.<sup>12</sup>

The Anderston Regeneration project in Glasgow replaced damp, highly inefficient concrete low-rise blocks with 540 new affordable homes using an enhanced closed panel timber frame system including whole house ventilation and designed solar gain. This enabled the homes to be constructed quickly and to a high environmental standard, combating fuel poverty.<sup>13</sup>

<sup>12</sup> Arwain, [Home Grown Homes](#).

<sup>13</sup> Wood for Good, [Anderston](#).

**Question 29 (Power):** Think of a possible future power system without Government backed Contracts-for-Difference. What business models and/or policy instruments could be used to continue to decarbonise UK power emissions to close to zero by 2050, whilst minimising costs?

ANSWER: n/a

**Question 30 (Power):** In Chapter 2 of the Net Zero Technical Report we presented an illustrative power scenario for 2050 (see pages 40-41 in particular):

- a) Which low-carbon technologies could play a greater/lesser role in the 2050 generation mix? What about in a generation mix in 2030/35?
- b) Power from weather-dependent renewables is highly variable on both daily and seasonal scales. Modelling by Imperial College which informed the illustrative 2050 scenario suggested an important role for interconnection, battery storage and flexible demand in a future low-carbon power system:
  - i. What other technologies could play a role here?
  - ii. What evidence do you have for how much demand side flexibility might be realised?

ANSWER: b) i. The Iggesund mill at Workington, mentioned above, uses biomass power from the co-product of its paper manufacture to provide heat for its drying process and power to run its machines. When variable supply from renewables means demand from the grid is high, power can be sold instead to the grid. The mill becomes a 'battery' providing flexible supply as required in a low-carbon power system.

**Question 31 (Hydrogen):** The Committee has recommended the Government support the delivery of at least one large-scale low-carbon hydrogen production facility in the 2020s. Beyond this initial facility, what mechanisms can be used to efficiently incentivise the production and use of low-carbon hydrogen? What are the most likely early applications for hydrogen?

ANSWER: n/a

**Question 32 (Aviation and Shipping):** In September 2019 the Committee published advice to Government on international aviation and shipping and Net Zero. The Committee recognises that the primary policy approach for reducing emissions in these sectors should be set at the international level (e.g. through the International Civil Aviation Organisation and International Maritime Organisation). However, there is still a role for supplementary domestic policies to complement the international approach, provided these do not lead to concerns about competitiveness or carbon leakage. What are the domestic measures the UK could take to reduce aviation and shipping emissions over the period to 2030/35 and longer-term to 2050, which would not create significant competitiveness or carbon leakage risks? How much could these reduce emissions?

ANSWER: n/a

**Question 33 (Agriculture and Land use):** In Chapter 7 of the Net Zero Technical Report we presented our Further Ambition scenario for agriculture and land use (see page 199). The scenario requires measures to release land currently used for food production for other uses, whilst maintaining current per-capita food production. This is achieved through:

- A 20% reduction in consumption of red meat and dairy
- A 20% reduction in food waste by 2025
- Moving 10% of horticulture indoors
- An increase in agriculture productivity:
  - Crop yields rising from the current average of 8 tonnes/hectare for wheat (and equivalent rates for other crops) to 10 tonnes/hectare
  - Livestock stocking density increasing from just over 1 livestock unit (LU)/hectare to 1.5 LU/hectare

Can this increase in productivity be delivered in a sustainable manner?

Do you agree that these are the right measures and with the broad level of ambition indicated? Are there additional measures you would suggest?

ANSWER: Confor agrees with these targets. Confor proposed that the forestry targets be delivered through scaled up targets year-on-year to reach a higher level of 40,000 hectares per year by 2030.<sup>14</sup> This will give time for the sector to scale up and overcome technical constraints in terms of seed availability, nursery capacity, and skilled people. Confor believe the yield forecasts for forestry used in the Committee on Climate Change calculations are far too low. These assume conifers growing at yield class 13, with thinning beginning at 25 years and harvest at 60 years.<sup>15</sup> This is based on an average from current forests. These include a mixture of forests in public and private ownership, and a large component of forests planted on poor sites.

New conifer planting will be delivered by the private sector, by investors who will expect a minimum of yield class 16 and will expect to thin by 20 years and harvest at 35. This is already considered average for commercial harvests. Compared with conifers being harvested now, conifers being planted have the benefit of 40 years of genetic improvement and silvicultural development, which have greatly increased yield. In addition, forestry is no longer planted on very high, steep or wet sites which often resulted in very poor yields: sites must not be environmentally sensitive or inaccessible, and forestry is typically planted on former rough or semi-improved grazing land, on which trees grow very well. This means investors can expect yields of 16-24 in Scotland and greater in England and Wales. Going forward, more investment in genetic improvement and policies which target better land for forestry will push yields up faster.

The CCC should be clear about the net and gross areas of forestry, as under the UK forestry standard a high-yielding forest requires to be supplemented with additional diversification of at least one-third of the conifer area, to provide environmental and resilience benefits. Rather than averaging gross areas of these diversified forests, the CCC's calculations should be clear about the size and productivity of the high-yield areas. The danger in the very conservative figures given in the Committee on Climate Change reports is that it could result in inappropriate policies.

First, the Land Use for Net Zero report assumes, based on these figures, that conifer forestry is not an economic investment, and spends a lot of time considering policies to

<sup>14</sup> Confor, [Woodland Carbon Targets for the UK](#), 2019.

<sup>15</sup> Committee on Climate Change, [Land Use Policies for a Net Zero UK](#), p.62.

overcome this hurdle. However, the lively interest of investors in practice demonstrates that this is not the case, and the hurdle is in fact the risk created by the uncertainty and difficulty of the application process.

Second, the potential volumes of timber and the timescales of its availability are greatly underestimated, meaning the policies cannot accurately discuss the role of UK forestry in supplying the low-carbon bioeconomy.

**Question 34 (Agriculture and Land use):** Land spared through the measures set out in question 33 is used in our Further Ambition scenario for: afforestation (30,000 hectares/year), bioenergy crops (23,000 hectares/year), agro-forestry and hedgerows (~10% of agricultural land) and peatland restoration (50% of upland peat, 25% lowland peat). We also assume the take-up of low-carbon farming practices for soils and livestock. Do you agree that these are the key measures and with the broad level of ambition of each? Are there additional measures you would suggest?

ANSWER: n/a

**Question 35 (Greenhouse gas removals):** What relevant evidence exists regarding constraints on the rate at which the deployment of engineered GHG removals in the UK (such as bioenergy with carbon capture and storage or direct air capture) could scale-up by 2035?

ANSWER: n/a

**Question 36 (Greenhouse gas removals):** Is there evidence regarding near-term expected learning curves for the cost of engineered GHG removal through technologies such as bioenergy with carbon capture and storage or direct air capture of CO<sub>2</sub>?

ANSWER: n/a

**Question 37 (Infrastructure):** What will be the key factors that will determine whether decarbonisation of heat in a particular area will require investment in the electricity distribution network, the gas distribution network or a heat network?

ANSWER: n/a

**Question 38 (Infrastructure):** What scale of carbon capture and storage development is needed and what does that mean for development of CO<sub>2</sub> transport and storage infrastructure over the period to 2030?

ANSWER: n/a