ECONOMY, ENERGY AND FAIR WORK COMMITTEE
AGENDA

4th Meeting, 2021 (Session 5)

Tuesday 2 February 2021

The Committee will meet at 9.30 am in a virtual meeting and be broadcast on www.scottishparliament.tv.

1. **Decision on taking business in private**: The Committee will decide whether to take item 3 in private.

2. **Climate Change Plan**: The Committee will take evidence from—

   Dr Diana Casey, Director, Energy and Climate Change, Mineral Products Association;

   Professor Stuart Haszeldine, Director, Scottish Carbon Capture & Storage;

   Rich Woolley, Head of Energy and Climate Change, Chemical Industries Association;

   and then from—

   Cat Hay, Head of Policy, Food and Drink Federation Scotland;

   Richard Simon, Senior Consultant, Element Energy;

   Clare Reid, Director of Policy and Public Affairs, Scottish Council for Development and Industry.

3. **Climate Change Plan**: The Committee will consider the evidence heard at today’s meeting.

4. **Work programme (in private)**: The Committee will consider its work programme.
The papers for this meeting are as follows—

**Agenda Item 2**

PRIVATE PAPER  
**EEFW/S5/21/4/1**  
(P)  
Written_Submissions  
**EEFW/S5/21/4/2**

**Agenda Item 4**

PRIVATE PAPER  
**EEFW/S5/21/4/3**  
(P)
ECONOMY, ENERGY AND FAIR WORK COMMITTEE

CLIMATE CHANGE PLAN UPDATE

Mineral Products Association

1 What is your assessment of the progress to date in cutting emissions within the sector/sectors of interest and the implementation of the proposals and policies set out in previous Climate Change Plans (RPP1-3)?

Electricity
Scotland has been hugely successful in decarbonising power generation. However, the cost of policies introduced to enable decarbonisation and increasing costs associated with managing and balancing the electricity network with increasingly intermittent and distributed generation, has been borne by consumers, and particularly Energy intensive Industries (EII). Whilst domestic consumers have largely been protected from rising costs, EII have not. As a result, UK industrial electricity prices are some of the highest in the world (see BEIS data on international industrial electricity prices), and this has had a significant impact on the competitiveness of Scottish industry trying to compete in international markets.

Industry
On the surface, a 45% reduction in industrial emissions shows that good progress is being made. However, the plan makes it clear that this has been driven by the closure of a number of energy intensive sites as well as investment in innovative energy efficiency and decarbonisation technologies. The UK cement sector has also witnessed a displacement of domestic cement production as imports have steadily increased over the last two decades. In 2019, cement imports made up 22% of the market. Although data for cement sales in Scotland alone is not available (for competition reasons) there are publicly available examples of large infrastructure projects (like the Queensferry Crossing) that have procured imported cement over domestically produced cement. It is vital that this trend is halted, and ideally reversed, by ensuring Scottish industry can compete in international markets. MPA is encouraged by the recognition in the plan that further reductions must be achieved whilst ensuring a globally sustainable and competitive industry. In order to do this, industry needs internationally competitive energy prices, support to deploy innovative decarbonisation technologies and visibility on Government decisions on when infrastructure such as CO2 transport and storage and hydrogen production will be deployed.

2 Do you think the scale of reductions proposed within the sector(s) are appropriate and are the proposals and policies within the CCPu effective for meeting the annual emissions targets and contributing towards the 75% reduction in GHG emissions by 2030 and net-zero by 2045 targets?

Coordinated Approach
The coordinated approach is a particularly welcome element of the updated plan. MPA has been raising concerns for several years now regarding the incentivization of biomass. For the cement sector, the use of biomass fuels is one of three key technologies identified as important for decarbonisation of the sector, and millions of pounds of investment have been put into storage, handling and feeding systems for
each new fuel used on site. The use of waste biomass in cement production has a
number of benefits because not only does the energy replace other high carbon fuels
such as coal, but the mineral content of the fuels is recycled in the cement product
and zero process waste is left over from the cement manufacturing process, unlike
other uses of biomass such as energy from waste which leaves a combustion ash
that must be disposed (for further benefits of the use of biomass in cement
manufacture please see the response to question 4 below).

The CCC also identified the benefits of diverting biomass to the cement sector for
use with carbon capture (BECCUS). However, despite the significant evidence that
biomass fuels are a key tool in the decarbonisation of cement manufacture, UK
Government incentives to date have actively diverted biomass away from the sector
through schemes such as the Renewables Obligation for power and the Renewable
Heat Incentive that pushes biomass towards numerous smaller consumers that
utilise heat indirectly and therefore less efficiently. The use of biomass in directly
fired processes is ineligible for RHI support. The result has been particularly stark
when considering the use of meat and bone meal (MBM) as a fuel. In 2011, before
incentives were introduced, 68kt of MBM was consumed in cement manufacture,
making up 4% of the total thermal input for the sector. In 2018 MBM contributed only
0.6% of the thermal input for the sector. MPA ask that the Scottish Government
Bioenergy Update ensures secure bioenergy supplies for cement and asphalt
manufacture and recognises the use of waste biomass fuels in cement manufacture
as an important method of achieving negative emissions when combined with carbon
capture (which will be required to fully decarbonise cement production because of
the high proportion of unavoidable process emissions from the chemical reaction that
makes the cement which are not covered by fuel switching). Policies that can reverse
the recent trends of waste biomass being diverted away from the cement sector will
be required.

Electricity
Decarbonisation of power generation has received significant support and has
achieved significant emission reductions. As renewable energy has become much
more cost competitive there should be scope to refocus Government support for
essential energy intensive industries, where deep decarbonisation, and the parallel
investment in enabling infrastructure, currently presents unmanageable competitive
or financial risk. There must also be more emphasis on ensuring the UK electricity
system is regulated to provide decarbonized electricity at internationally competitive
prices to industrial customers throughout the transition to net zero.

Industry
A 43% reduction in industrial emissions by 2032 on 2018 will be extremely
challenging whilst maintaining the competitiveness of industry in Scotland. Many of
the reductions left to make are those that are more complex and costly. For example,
MPA is currently investigating the use of hydrogen in cement manufacture, which
has not been tried anywhere in the world, and it is unknown how the use of hydrogen
will impact on the manufacturing process. In terms of CCUS, no commercial scale
cement CCUS plants have been built, decisions on UK CCUS business models to
support the roll out of industrial CCUS have not been made, and there is no CO2
transport network available yet. These are considerable challenges to overcome to
enable deployment of these technologies to begin, let alone to have them implemented and reducing emissions by 2032. Not only will considerable policy and financial support be required, but Scotland must be able to attract millions of pounds worth of investment from industry parent companies, many of which may be headquartered overseas and Scottish operations will need to compete for internal funding with sites all over the world.

In October 2020, MPA published the UK Concrete and Cement Roadmap to Beyond Net Zero (available here: https://thisisukconcrete.co.uk/TIC/media/root/Perspectives/MPA-UKC-Roadmap-to-Beyond-Net-Zero_October-2020.pdf) which highlighted UK concrete and cement sector ambition to not only meet the national targets set but go beyond net zero by 2050. The roadmap sets a credible and technically achievable pathway to net zero (and beyond) that is contingent on both Government and industry action. Targeted financial support for industry to deploy innovative decarbonisation technologies is required alongside support for increasing energy costs, that can enable industry to remain competitive as it decarbonises. There will also need to be consideration of the location of mineral assets such as asphalt and cement plants when hydrogen production and distribution networks and CO2 transport and storage infrastructure are being developed.

Energy costs are already a key concern for industry as they are impacting on competitiveness. The MPA roadmap highlights that innovative technologies to decarbonise the cement sector, including fuel switching and deployment of CCUS, will require a tripling of current electricity consumption by 2050. In the CCPu, Scottish Government has set out a number of funding streams to aid with the deployment of innovation, but there is a lack of wider policy support to protect EIIs from rising energy costs. Such support is offered in other countries that Scottish industry competes with. Although this may be a reserved matter, support from Scottish Government for greater compensation for EIIs to cover high energy policy costs and high network costs is important.

On energy costs, the CCPu proposes to address the imbalance in pricing for electricity and gas to better incentivize the deployment of zero emissions heating technologies. Increasing gas prices are a huge concern for industry. Switching to gas can be a useful transition away from other higher carbon fossil fuels and may provide an interim step to a transition to hydrogen. Increasing gas prices will undermine the economic case for decarbonisation of industry, like asphalt production, and will impact on competitiveness in the same way as high electricity prices.

Electrification is another key route to decarbonisation and some technologies, for example CCUS, will significantly increase electricity demand. UK electricity prices are already some of the highest in the world, and these are likely to increase further as capacity is upgraded to meet with demand associated with decarbonisation. Scottish Government need to set out clear plans for how and when this upgraded capacity will be deployed and how EIIs will be protected from the huge cost.

As noted in answer to question 1, it is concerning that decarbonisation of industry to date has resulted from the closure of some manufacturing sites. MPA would
encourage the Scottish Government to go further with decarbonisation targets and set a net zero target on consumption emissions, that sits alongside net zero targets on territorial emissions. This will ensure that net zero is not in part met through further closing of Scottish manufacturing and importing goods instead.

Planning is mentioned in other sections within the CCPu but not specifically in the industry chapter. The lessons learned from the quick turnaround of planning applications for the deployment of renewable energy generation will also be required for applications relating to carbon capture infrastructure on industrial sites and the CO2 transport infrastructure. Experience shows that it can take 2 years to get planning permission to double the size of an existing kiln line. It can take about 7 years to get planning permission and to construct a cement plant after it has been designed. The large capture plant required on site for CCUS is anticipated to require a similar level of planning permission and work to construct. Planning permission would have to be granted before a plant could commit to a Front End Engineering Design (FEED) study. This process would need to be expedited to meet the timescales set out in the CCPu therefore plans and investment in CO2 transport and storage, to both clusters and dispersed sites, need to be developed concurrently.

Negative Emission Technologies
The CCPu has missed carbonation of concrete as an important negative emission technology. Carbonation is the ability of concrete to naturally absorb carbon dioxide from the atmosphere throughout its lifetime, at end of life and in any secondary use. Studies to date indicate that the CO2 absorbed is at least 23% of the process emissions associated with cement manufacture. The production of cement using biomass fuels and CCUS, plus carbonation of concrete over its lifetime will enable the cement and concrete industry to reach negative emissions by 2050 and help offset emissions in sectors that are more complex to decarbonise. This absorption is already happening and therefore the accuracy of Scotland’s emissions reporting could be improved by ensuring the CO2 permanently captured and stored by the carbonation of concrete is included.

3 Do you think the timescales over which the proposals and policies are expected to take effect are appropriate?

Work to identify feasible sites for specific Negative Emission Technology projects is only expected to conclude in 2023. This isn’t fast enough if NETs are to be deployed in the 2020’s.

4 To what extent do you think the proposals and policies reflect considerations about behaviour change and opportunities to secure wider benefits (e.g. environmental, financial and health) from specific interventions in particular sectors?

As well as providing the benefit of decarbonisation, there are other benefits to waste biomass resources being utilised in cement manufacture. Firstly, cement plants are regulated under the Industrial Emissions Directive and therefore have to adhere to strict air quality limits, unlike smaller consumers of biomass that are currently incentivised through RHI, who might, in the long term, cause local air quality concerns. Secondly, the use of waste fuels in cement manufacture is different to burning waste for energy because the mineral content of the waste is recycled into the cement product and there is no residual ash that requires disposal. Policy must
ensure cement manufacture is not treated in the same way as waste incineration when it comes to considering the burning of waste. Ideally policy should ensure cement manufacturers can access waste biomass in preference to other sectors and users which generate no additional benefit.

5 To what extent do you think the CCPu delivers a green recovery?

The generation of new jobs through manufacture and deployment of decarbonisation technologies, and new low carbon products will help the recovery. However, MPA is deeply concerned about how the costs of decarbonisation could impact carbon leakage vulnerable EILs. Greater deployment of renewables plus increasing the capacity of the grid will incur a huge cost that will be passed onto consumers and will be a particular burden on EILs unless support is offered. The CCPu outlines considerable funding streams for innovation but more needs to be done to protect competitiveness.
ECONOMY, ENERGY AND FAIR WORK COMMITTEE

CLIMATE CHANGE PLAN UPDATE

Scottish Carbon Capture & Storage

Introduction

We welcome the opportunity to provide evidence on the Scottish Government’s Climate Change Plan update (CCPu), which represents a ramping-up of efforts to tackle climate change in line with the 2045 net-zero target. The move from a target of 80% emissions reduction in 2050 to net-zero emissions in 2045 means that decarbonisation activities that were previously considered optional now become a necessity. We are pleased, therefore, to see that the Scottish Government has made a commitment to deploying carbon capture and storage (CCS); that it has recognised the importance of low-carbon hydrogen; and that it has understood the need for greenhouse gas removals, or “negative emissions” to balance residual emissions and enable Scotland to reach net zero.

We consider CCS to be crucial to the achievement of net zero, not least because it underpins the bulk production of low-carbon hydrogen from methane, and the ability to use either direct air capture or biomass to permanently remove carbon dioxide (CO\textsubscript{2}) from the atmosphere. We would stress that this does not mean other climate mitigation activities are unnecessary: CCS is a set of technologies that prevents CO\textsubscript{2} reaching the atmosphere, but it must be developed alongside measures to reduce consumption and improve efficiency in line with the waste, energy and travel hierarchies. We support an approach to emissions reduction that uses “all the tools in the box” and keeps options open for early stage technologies to be developed and deployed.

We have seen with the Covid-19 pandemic that governments can take swift and decisive action in an unprecedented situation, and can deploy public resources for activities that might previously have been considered politically difficult, if not impossible. We have also seen – for example with hydrogen – that technology can emerge and develop quickly, and move from the fringes to the centre of policy given the right support.

We welcome the Scottish Government’s intention to take a cross-government approach to reaching net zero, and in a way that enables a just transition and a green recovery from the Cover-19 pandemic. Such a joined-up approach is crucial to decarbonise efficiently and to maximise the co-benefits of climate action.
Industrial decarbonisation

We strongly welcome the intention to take a sequenced and strategic approach to industrial decarbonisation. This is vital to achieving a just transition for workers in high-emitting industries.¹

SCCS is a partner in the NECCUS-led Scotland”s Net Zero Roadmap project, and we are keen that the findings of this project make a real impact on Scotland”s industrial emissions. We welcome support for the Acorn project as the crucial first step for industrial decarbonisation in Scotland, but consider the build-out to all industries to be just as vital.

A strategic approach to industrial decarbonisation will require the provision of new infrastructure, both to provide the CO₂-takeaway service and to allow the use of hydrogen. This is not currently addressed in the Scottish Government”s draft Infrastructure Investment Plan (see section 6.1), so a revision will be needed.

Carbon capture and storage

We strongly welcome the CCPu”s recognition that deploying CCS will bring employment opportunities, both in building and operating the infrastructure and in the new and existing low-carbon industries that it will support. We would also like to emphasise that CO₂ storage in the offshore geological subsurface has the opportunity to bring revenue to the Scottish Government, through Crown Estate Scotland”s rights to leasing the porespace.

Scotland has the capacity to store at least 5.7 gigatonnes CO₂ and potentially 70 Gt CO₂.² The ALIGN-CCUS² project has developed a Storage Readiness Level approach, which can be used to characterise this resource in more detail³⁴.

For context, Scotland”s annual greenhouse gas emissions in 2016 were 41.6 million tonnes (Mt) CO₂e⁵, so 5.7Gt CO₂ is over 130 years⁶ of Scotland”s emissions at current rates. This means that, while Scotland reduces its emissions through means such as increased efficiency and reduced resource use, this storage capacity can be used to provide CO₂ storage for other countries that have industrial emissions but lack the geological resources. This approach is already being taken forward by Norway as part of its Longship project⁶. Research carried out by SINTEF to support the Norwegian CCS projects suggests that the market for CO₂ storage in Europe would be between 50-390 MtCO₂/yr in 2030 and between 170-1087 MtCO₂/yr in 2050, which they translate to revenue of


² [www.alignccus.eu](http://www.alignccus.eu)


65-400 billion Norwegian Krone (NOK) (£5-34 bn) in 2030, and 190-900bn NOK (£16-77 bn) in 2050\textsuperscript{6}. The Centre for Energy Policy assumes that Scotland could take 40% of the European CO\textsubscript{2} storage market (in line with the UK having about 40% of Europe’s geological storage resource), and estimate that this would support between 22,000 and 105,000 UK jobs by 2050\textsuperscript{7}. Based on SINTEF’s assumptions, this suggests revenue of between £2 billion and £13 bn in 2030, and £6 bn to £30 bn in 2050. Even at the lowest estimate, the revenue would be considerable.

**New funding**

We welcome the funding streams for industrial decarbonisation proposed in the CCPu. We recommend that the Carbon Capture and Utilisation (CCU) Challenge Fund is designed in a way that maximises CO\textsubscript{2} emissions reduction and incentivises carbon capture. While some potential uses of CO\textsubscript{2}—such as making building materials—can keep the CO\textsubscript{2} out of the atmosphere in the long term, others (for example, its use in the food and drink industry) only delay its release to the atmosphere by days or weeks. The CCU Challenge fund must, therefore, ensure that it does not support uses that are in conflict with climate change goals, and must ensure that the CO\textsubscript{2} used is captured from a waste gas stream in Scotland and not produced intentionally for the project.

It is not clear what the proposed Emerging Energy Technologies Fund is expected to cover so we look forward to receiving more detail.

**Supply chain**

We welcome the intention to learn from the past and capture supply chain and jobs opportunities as well as private investment. We consider that the proposed requirement for wind energy developers to include supply chain commitments should also apply to the development of CCS and hydrogen projects.

A study\textsuperscript{8} by the Energy Industries Council and the CCSA found that there is an urgent need to understand and, where needed, upscale and enhance fabrication yard capabilities so that equipment can be produced domestically. Domestic production would also benefit from an element of standardisation of the basic design of equipment in order to reduce costs, and programme- rather than project-length contracts to give yard operators the confidence to invest in upgrades.

**Negative emissions technologies**

We strongly welcome the inclusion of negative emissions technologies (NETs) as a separate chapter in the CCPu. This reflects the role that NETs will need to play in

\textsuperscript{6}Størset et al (2018), *Industrial opportunities and employment prospects in large-scale CO\textsubscript{2} management in Norway*. Available at: https://www.nho.no/contentassets/e41282b08b8cb4918b63d9f4cc9c5270/industrial-opportunities/ccs_english.pdf

\textsuperscript{7}Turner et al (2019) *The economic opportunity for a large scale CO\textsubscript{2} management industry in Scotland*. Available at: http://www.evaluationsonline.org.uk/evaluations/Search.do?ui=basic&laction=show&id=689

\textsuperscript{8}Energy Industries Council (2020) *CCUS – UK Supply Chain Capabilities*. Powerpoint slide pack available on request
balancing residual emissions from parts of the economy where complete
decarbonisation is not possible.

There are opportunities for “quick wins” in negative emissions (once CO₂ transport
and storage infrastructure is in place), which are not explored in the CCPu but that
should be considered as a priority: SCCS research⁹ has found that there is the
potential to **capture 2.1 MtCO₂ per year from existing biogenic sources** at 29
sites across Scotland.

This research estimated current (2017) biogenic emissions from anaerobic
digestion (including biogas, landfill, sewage gas and biomethane upgrading),
biomass combustion and fermentation industries (beer and whisky). Total biogenic
emissions from these sources in Scotland were estimated to be 3.35 MtCO₂/yr.
These include six major sites where biomass is burned for power generation, heat or
both, accounting for around 1.4 MtCO₂/yr. Scotland also has seven industrial-scale
grain whisky distilleries, which account for around 0.25 MtCO₂/yr. The fermentation
process gives off a concentrated stream of CO₂ as yeast turns sugar to alcohol, and
CO₂ capture (for use in the food and drink industry) has previously been deployed at
the North British Distillery, in Edinburgh.

We welcome the proposal to carry out a detailed feasibility study of opportunities for
developing NETs in Scotland and recommend that existing emitters of biogenic CO₂
should be included in the scope of the study.

**Hydrogen**

We welcome the recognition of the important role that hydrogen can play in
decarbonisation, particularly in terms of dispersed emissions, such as from domestic
heating. Hydrogen can be produced in bulk through steam methane reforming, with
the CO₂ off-gas captured and stored in the subsurface.

It is important to consider how and where hydrogen will be stored, particularly as
interseasonal differences in demand are likely to be substantial: it is well established
that methane use in winter (mostly for heating) is about six times that of summer,
and that the demand for gas on a winter’s day can more than double within three
hours¹⁰.

The EPSRC-funded HyStorPor¹¹ project at the University of Edinburgh is the UK"s
first practical project aiming to establish the feasibility of storing hydrogen in
underground porous reservoirs. HyStorPor is developing fundamental understanding
of hydrogen flow and reactivity in the subsurface, upscaled to the storage reservoir,
coupled with public engagement to set the scientific foundations for hydrogen
storage in porous rocks.

Retaining hydrogen within a porous sandstone requires a no-flow caprock layer
above the gas. Calculations indicate that caprocks sealing methane into known
gasfields will provide increased caprock sealing capacity to hydrogen.

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¹¹ HyStorPor (2021) project website, University of Edinburgh [https://blogs.ed.ac.uk/hystorpor/](https://blogs.ed.ac.uk/hystorpor/)
North Sea depleted gas fields have greater salinities and hotter temperatures that inhibit bacterial growth – which can prevent the storage of hydrogen – thereby reducing the risk of hydrogen loss and contamination. These criteria identify suitable candidates for hydrogen stores as 7 from 42 fields examined by the project. Not all sites are suitable for hydrogen storage, so government planning is needed to protect those most suitable sites and allocate them to hydrogen storage.

HyStorPor is identifying potential sites for hydrogen storage onshore in the UK, which could integrate with demonstration projects, such as SGN’s H100 Levenmouth project for replacing natural gas in the gas grid with 100% hydrogen, where potential storage sites lie within 10km of the project.

Studies using criteria for hydrogen storage, and data from CO₂ storage databases have shown that the UK has some of the world’s largest storage capacity - between 2,660- 6,900Twh, which is at least 17 times the UK’s expected storage requirement of 150KWh. The next step is to undertake field tests to verify these calculations and bring the technology closer to commercialisation. This can be achieved through the implementation of a pilot site for the storage of hydrogen in an underground porous reservoir, ensuring Scotland and the UK take a world leading position.

Hydrogen policy statement

We welcome the publication of the Scottish Government’s Hydrogen Policy Statement at around the same time as the CCPu. However, we question why there is no similar document for CCS.

Both CCS and hydrogen deployment entail the establishment of a new sector and share many of the same issues, such as: the need to develop the supply chain; the potential to re-use existing infrastructure (and the risks associated with not planning for that); and the need for funding and legislative decisions from the UK Government. Hydrogen deployment in Scotland depends on the availability of CCS and we consider that a policy statement and action plan for CCS would be beneficial to the development of both sectors.

Other policy areas

Infrastructure

The CCPu refers to the Scottish Government’s draft Infrastructure Investment Plan. We have significant concerns that this plan as it stands is not fit for purpose and will fail to deliver the infrastructure needed for net zero emissions in Scotland.

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Our main concern is that industrial decarbonisation is not considered in the Infrastructure Investment Plan, despite the Scottish Government’s ambitions in the CCPu to have CCS operational in the mid-2020s. Consequently, the plan does not adequately consider infrastructure needs relating to CCS and hydrogen, and risks hampering their deployment.

We prepared a detailed response on the inadequacies of the Infrastructure Commission for Scotland’s key findings report yet, despite this, these inadequacies were carried through to the Infrastructure Investment Plan. We urge the Scottish Parliament to ensure that infrastructure investment in Scotland aligns fully with Scotland’s climate change targets. This includes:

- Recognising that the size of Scotland’s industrial emissions is comparable to the size of its emissions from heat and transport
- Recognising that industrial emissions are not just about heat – there are also unavoidable process CO₂ emissions
- Ensuring that the Scottish Government’s definition of infrastructure explicitly includes infrastructure to enable industrial decarbonisation

CCS infrastructure – or more accurately, infrastructure to transport and store CO₂ – does not exist yet in Scotland. This is perhaps why it was not picked up by the Infrastructure Commission for Scotland or in the draft Infrastructure Investment Plan. At minimum Scotland will need on- and offshore CO₂ pipelines, between the central belt and the North East and out to the offshore storage sites, as well as potential upgrades to port and harbour facilities to enable the transport of CO₂ by ship for storage in Scottish sites.

Waste

We welcome the consideration of CCS technology for waste-to-energy plants. We recommend that the post-2025 route map for waste should consider the potential for negative emissions, where the waste includes biogenic material.

This is being explored as part of the cross-Europe NEWEST-CCUS project, which aims to de-risk and accelerate the development and deployment of CO₂ capture technologies tailored specifically for waste-to-energy plants.

Public procurement

We welcome the commitment to use public procurement to support net zero. We suggest that this should include requirements for low-carbon products to be used in major public contracts after 2026 to drive industry uptake of CCS infrastructure.

Scottish Carbon Capture & Storage

Scottish Carbon Capture & Storage (SCCS) is a research partnership of the British Geological Survey (BGS), Heriot-Watt University, the University of Aberdeen, the University of Edinburgh, the University of Glasgow and the University of Strathclyde with associate member the University of St Andrews. SCCS researchers are engaged in innovative applied research and joint projects with industry and

17 https://www.newestccus.eu
government to support the development and commercialisation of carbon capture and storage as a climate change mitigation technology.
ECONOMY, ENERGY AND FAIR WORK COMMITTEE

CLIMATE CHANGE PLAN UPDATE

FDF Scotland

FDF Scotland represents the food and drink manufacturing industry - Scotland’s largest manufacturing sector and one of the “energy intensive industries” that will most definitely be impacted by the new policies and proposals contained within the updated Climate Change Plan.

Our members are keen to switch focus to the opportunities posed by the Scottish Government’s environmental ambitions. But at this present moment, neither FDF Scotland nor our members have the resources nor organisational bandwidth to engage with and respond to policy consultations or new initiatives during these turbulent months and we urge the Committee to consider the impact of the exit from the EU and the ongoing pandemic on food and drink producers when considering work plans.

Consequently, it has not been feasible for FDF to provide in-depth feedback on the policies and proposals contained within the 255 pages of the Climate Change Plan at this time.

Instead, we raise some key points relating to the CC Pu plan and highlight opportunities and challenges for food and drink producers. We would, of course, be keen to discuss the opportunities and concerns of the food and drink manufacturing sector in more detail with the committee in the future.

Industry Outcome 1: Scotland’s industrial sector will be on a managed pathway to decarbonisation whilst remaining highly competitive and on a sustainable growth trajectory

Policy: Emissions Trading Scheme (ETS): following EU Exit we will work with UK Government and other devolved administrations on maintaining carbon pricing that is at least as ambitious as the EU ETS. The Scottish Government’s preference is to establish a UK ETS will have an interim cap 5% tighter than the EU ETS, and will be reviewed for consistency with Net Zero in 2021.

- Linking the UK ETS with the EU ETS - The FDF welcomed the UK government’s decision to replace the UK’s participation in the EU ETS with a domestic UK ETS from 1st January 2021. This will help to mitigate the uncertainty going forward and give the UK market the long-term visibility it needs for carbon pricing. However, concerns remain that a standalone UK ETS will not be able to deliver a sufficient level of liquidity for the market to operate as efficiently as it did whilst operating under the EUETS. To enable the most efficient and effective compliance, we urge that discussions are expedited to link the UK and EU ETS schemes.
Proposal: Establish and deliver a Scottish Industrial Energy Transformation Fund (SIETF) – to support the decarbonisation of industrial manufacturing through a green economic recovery.

- FDF Scotland was part of the Energy-Intensive Industries Focus Group chaired by Paul Wheelhouse. We welcome the SIETF and Low Carbon Manufacturing Challenge funds but we are concerned that the levels of funding are not enough to support businesses across all the energy intensive sectors and we have particular concerns that smaller food producers may miss out.

Proposal: Low Carbon Manufacturing Challenge Fund: to support innovation in low carbon technology, processes and infrastructure. Will be based on successful delivery of ERDF funded Advancing Manufacturing Challenge Fund.

- Dedicated Decarbonisation Fund for Food and Drink Sector
  Investment policy will be key over the next decade, especially to ensure that policies and investment cycles are matched. For the Food and Drink sector, it is essential to have funding for key demonstration projects on step-change technologies, such as with hydrogen, options to electrify heat or for processes which avoid heat generation, to address concerns around potential impacts on product quality and cost. FDF is calling for a fund be set up for the food and drink sector in a similar way to that for UK steel and for Green Distilleries or to ringfence part of this challenge fund for food and drink.

Deliver a Net Zero Transition Managers Programme to embed Managers in organisations tasked with identifying, quantifying and recommending decarbonisation opportunities for the business.

- In principle, this is a good idea, FDF Scotland suggests that the proposal is expanded to be a broader net-zero training programme for staff with existing responsibility for net zero and decarbonisation to be able to upskill in this area.
- There is a need to better understand the current level of understanding of these complex areas through organisations like Skills Development Scotland.

Waste and Circular Economy Outcome 3: A reduction in Food Waste
Policy: We will lead collaborative efforts to deliver Scotland’s landmark Food Waste Reduction Action Plan. To reduce food waste by 33% from the 2013 baseline by 2025. Actions include:

- **Improving monitoring and infrastructure by considering a mandatory national food waste reduction target and mandatory reporting of Scotland’s food surplus and waste by food businesses.**
- FDF members have already achieved significant reductions in food waste from within their own operations. As part of our [Ambition 2025](#) commitments our members are engaging with entire supply chains, including end consumers to drive down waste with a focus on reducing avoidable food waste rather than production residues and inedible parts.
- If this becomes mandatory, future requirements should be seamless with existing voluntary requirements, most notably the UK Food Waste Reduction Roadmap and Courtauld 2025 reporting and that different requirements by Scotland should be avoided.
- These existing reporting mechanisms are already widely adopted by the food and drink supply chain can be used to gather Scottish specific data.
- Public reporting could generate a very public negative perception for certain sectors who generate unavoidable by-products. For example, a meat processor will generate a large tonnage of “food waste” from bones and hides, yet this will be neither be avoidable nor suitable for human consumption and is often used by other sectors to make non-food products.

Waste and Circular Economy Outcome 4: Reduce waste and establish a more circular economy, where goods and materials are kept in use for longer.

Proposal: Reforming extended producer responsibility (EPR) schemes: We will continue to work with the UK Government and other devolved administrations on reforms to the packaging extended producer responsibility regime

- FDF supports the development of a coherent, transparent and integrated GBwide system that is both fair to business and which promotes long term investment and planning.
- It is important that a new EPR works holistically and that organisations do not end up paying multiple times for the same packaging item e.g. a bottle placed on the Scottish market should not be subject to EPR as it will be captured via the Scottish deposit return scheme.
Opportunities and Challenges for the food and drink production within the updated Climate Change Plan (CCPu)

The following sets out some broad considerations for the Committee specifically relating to Scottish food and drink manufacturing:

- **Size** - The Scottish Government has identified the food and drink sector as an energy intensive industry (EII). 95% of food and drink manufacturers in Scotland are either small or medium-sized businesses. To transition to netzero in food and drink production, many small-scale interventions will be needed. We understand this is not the case for most of the other sectors identified as EII where there are a few very large companies e.g. oil and gas, paper and pulp.

- **Scale and complexity of changes required** - Food and drink producers have been working to decarbonise their operations for many years and have had great successes, reducing emissions in the UK by 53%\(^{18}\). But early interventions were often simple e.g. changing lighting from conventional to LED lightbulbs. Many of the interventions within the climate change plan will require structural changes or large-scale capital investment from food and drink companies.

- **Support and funding** - We welcome the commitment to review Scottish Government funding schemes to ensure that they support the deployment of low and zero emissions heat and agree there is a need for tailored start to end support. There is a need to review this more widely not just with a focus on heat and buildings but also processes within manufacturing. Currently, Scottish food and drink businesses are able to access many support agencies and funds to decarbonise. But, as illustrated by the [attached PDF](https://www.fdf.org.uk/corporate_pubs/sustainability-progress-report-2018.pdf), the support and funding available for decarbonisation in cluttered and complex. FDF members would really welcome a simplification of the funding and support landscape to maximise the uptake of funding and support by the food and drink producers in Scotland.

- **Decarbonising electricity** Decarbonising the electricity used by the sector is largely dependent on how the national electricity grid decarbonises together with increasing use of on-site renewables to generate electricity, whereas decarbonising emissions from heat use will be much more dependent on the actions taken by the sector and the decarbonised energy sources available.

• **Decarbonising heat** - Our report\(^{19}\) on decarbonisation of heat in food and drink production concluded that it is technically possible to decarbonise the emissions from heat from food and drink manufacturing but to achieve this, the electricity grid needs to fully decarbonise and there must be sufficient access to decarbonised gas, mainly via hydrogen.

• The greatest contribution to the decarbonisation of heat is likely to come from changes to boilers; either switching to low carbon fuels or electrifying the processes that the boilers provide heat to. Decarbonisation savings should increase markedly after 2035 once decarbonised gas and/or hydrogen should become available and the electricity grid has fully decarbonised.

Annex

About FDF Scotland and The Food and Drink Manufacturing Industry

Food and Drink Federation (FDF) Scotland represents the food and drink manufacturing industry in Scotland.

- We are Scotland's largest manufacturing sector, accounting for 31% of total manufacturing turnover\(^\text{20}\).
- Our gross value added to the economy is £3.9 billion, representing 32% of Scottish manufacturing value added\(^\text{21}\).
- We have 1,385 food and drink manufacturing businesses, employing 47,000 people, 26% of the Scottish manufacturing workforce\(^\text{22}\).
- In 2018, manufactured food and drink exports from Scotland increased by 8% to £7.0 billion\(^\text{23}\).

The following Associations actively work with the Food and Drink Federation:

<table>
<thead>
<tr>
<th>Association</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABIM</td>
<td>Association of Bakery Ingredient Manufacturers</td>
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<tr>
<td>BCA</td>
<td>British Coffee Association</td>
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<tr>
<td>BCUK</td>
<td>Breakfast Cereals UK</td>
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<tr>
<td>BOBMA</td>
<td>British Oats and Barley Millers Association</td>
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<td>BSIA</td>
<td>British Starch Industry Association</td>
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<tr>
<td>BSNA</td>
<td>British Specialist Nutrition Association</td>
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<tr>
<td>CIMA</td>
<td>Cereal Ingredient Manufacturers’ Association</td>
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<tr>
<td>EMMA</td>
<td>European Malt Product Manufacturers’ Association</td>
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<tr>
<td>FCPPA</td>
<td>Frozen and Chilled Potato Processors Association</td>
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<tr>
<td>FOB</td>
<td>Federation of Bakers</td>
</tr>
<tr>
<td>GFIA</td>
<td>Gluten Free Industry Association</td>
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<tr>
<td>PPA</td>
<td>Potato Processors Association</td>
</tr>
<tr>
<td>SA</td>
<td>Salt Association</td>
</tr>
<tr>
<td>SNACMA</td>
<td>Snack, Nut and Crisp Manufacturers’ Association</td>
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<tr>
<td>SSA</td>
<td>Seasoning and Spice Association</td>
</tr>
<tr>
<td>UKAPY</td>
<td>UK Association of Producers of Yeast</td>
</tr>
<tr>
<td>UKTIA</td>
<td>United Kingdom Tea &amp; Infusions Association Ltd</td>
</tr>
</tbody>
</table>

FDF also delivers specialist sector groups for members:

- Biscuit, Cake, Chocolate and Confectionery Group (BCCC)
- Frozen Food Group
- Ice Cream Committee
- Meat Group
- Organic Group
- Seafood Industry Alliance

\(^\text{20}\) Source: Scottish Annual Business Statistics.
\(^\text{21}\) Source: Scottish Annual Business Statistics.
\(^\text{22}\) Source: Scottish Annual Business Statistics.
\(^\text{23}\) Source: Exports Statistics Scotland. Figures include tobacco manufacturing.
## Programme of advice or support

<table>
<thead>
<tr>
<th>Programme of advice or support</th>
<th>Lead organisation</th>
<th>Type(s) of project</th>
<th>Aim, purpose, priority</th>
<th>Eligibility</th>
<th>Funding</th>
<th>Timing</th>
<th>Contact/ links</th>
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<tbody>
<tr>
<td><strong>Low Carbon Infrastructure Transition Programme (LCITP)</strong></td>
<td>Scottish Government. Supported by RES, enterprise agencies, Scottish Futures Trust</td>
<td>a) Catalyst or development categories (open application window) b) Demonstration/ commercialisation of energy systems</td>
<td>Energy systems supported, often with multiple stakeholders e.g. heat networks. Lead applicant normally main ‘risk-holder’.</td>
<td>Identify site, energy user &amp; technology. Mandatory criteria list includes lowering GHG, requirement for valueadded from programme support. Desirable includes Xsector collaboration.</td>
<td>£60m. 40% European Regional Development Fund (ERDF), 60% SG. Projects apply for 50% match funding &amp; max. £10m.</td>
<td>Launch: March 2015. Latest call: Jan 2018. EDI: April 18 for Capex. ERDF match-fund till late 2018. Fully commissioned by Autumn 2021.</td>
<td><a href="mailto:LCITP@gov.scot">LCITP@gov.scot</a></td>
<td>Experience indicates applicants can overstate readiness for capital fund, with more projects needing development support.</td>
</tr>
<tr>
<td><strong>Low Carbon Infrastructure Programme (LCIP)</strong></td>
<td>Scottish Enterprise Business Infrastructure Team.</td>
<td>Feasibility, options appraisal. Building business cases (not Capex). Individual businesses or areabased.</td>
<td>Make low carbon energy projects commercial investoready. Feed into programmes such as LCITP.</td>
<td>Focus on Account Managed Companies.</td>
<td>SE core funding.</td>
<td>To April 2021</td>
<td><a href="mailto:Colin.Bell@scotent.co.uk">Colin.Bell@scotent.co.uk</a></td>
<td></td>
</tr>
<tr>
<td><strong>Enterprise agency - Sustainability specialist support</strong></td>
<td>Scottish Enterprise</td>
<td>One-to-one bespoke support with businesses.</td>
<td>To build international competitiveness and deliver long term inclusive, sustainable economic growth.</td>
<td>All business. Flexibility is key and SE is always open for discussion from business on ideas.</td>
<td>SE core funding.</td>
<td>Ongoing</td>
<td><a href="mailto:jian.carstairs@scotent.co.uk">jian.carstairs@scotent.co.uk</a></td>
<td>Over 200 asset audits carried out.</td>
</tr>
<tr>
<td><strong>Scottish Manufacturing Advisory Service (SMAS)</strong></td>
<td>Scottish Enterprise and Highlands and Islands Enterprise (National coverage)</td>
<td>Process improvement, lean manufacturing, innovation</td>
<td>Link to other SE/HIE work if energy or decarbonisation considered.</td>
<td>All business. Flexibility, responding to individual needs.</td>
<td>Practitioner team expertise from SE/HIE.</td>
<td>Ongoing</td>
<td><a href="https://www.scottishenterprise.com/knowledge/hub/articles/guide/meet-the-smas-team">https://www.scottishenterprise.com/knowledge/hub/articles/guide/meet-the-smas-team</a></td>
<td>Measures of impact: - Turnover or jobs growth. - Increased investment -CO2 reduction.</td>
</tr>
<tr>
<td><strong>Enterprise agency - Business Improvement Expert, or Project</strong></td>
<td>Scottish Enterprise</td>
<td>Includes energy systems, environmental technology, circular economy.</td>
<td>Business efficiency or deployment of projects</td>
<td>All businesses eligible: SME/ non-SME. Detailed feasibility studies, design studies.</td>
<td>SE core funding.</td>
<td>Core function</td>
<td></td>
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<tr>
<td><strong>Enterprise agency - Highlands and Islands regional focus</strong></td>
<td>Highlands &amp; Islands Enterprise (HIE)</td>
<td>Businesses and social economic growth sectors, particularly distinctive regional opportunities.</td>
<td>Generate sustainable economic growth. Creating conditions for a competitive and lowcarbon region.</td>
<td>All business. Flexibility is key. Encourage early engagement.</td>
<td>HIE core funding. Support through account management.</td>
<td>Ongoing</td>
<td><a href="mailto:diane.duncan@hient.co.uk">diane.duncan@hient.co.uk</a></td>
<td>HIE priorities’ ‘like SE include innovation &amp; energy efficiency.</td>
</tr>
<tr>
<td><strong>Resource Efficient Scotland</strong></td>
<td>A programme of Zero Waste Scotland. Funded by Scottish Government &amp; ERDF</td>
<td>On-site support. Advice on access to suppliers and access to relevant finance. Consultancy to develop full business cases for a limited number of promising heat recovery projects.</td>
<td>ZWS goal: help realise economic, environment and social benefits of making best use of the world’s limited natural resources. RES: overcome barriers to resource efficiency.</td>
<td>Free, specialist advice to SME. Projects identified by Energy Measurement &amp; Quantification, for heat recovery. Or via ESOS compliance checks (SEPA)/ feedback surveys.</td>
<td>RES is sponsored and funded by SG.</td>
<td>Operational since April 2013. 2018-19 workplan currently being agreed.</td>
<td><a href="mailto:Allan.Crooks@zerowastescotland.org.uk">Allan.Crooks@zerowastescotland.org.uk</a> - <a href="mailto:Antony.Akilade@resourceefficientscotland.com">Antony.Akilade@resourceefficientscotland.com</a></td>
<td>RES chair Industrial decarbonisation workstream of SMAP/Industrial decarbonisation steering group.</td>
</tr>
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<td>Programme of advice or support</td>
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<td><strong>SME Loan Fund</strong></td>
<td>RES promote the SME Loan Fund which is managed by Energy Saving Trust on behalf of Scottish Government.</td>
<td>HVAC Renewables Lighting Building fabric Control equipment Waste/water …etc.</td>
<td>Commitment to support Scottish SME to reduce energy &amp; resource costs. Reducing operating costs not only improves margins but helps competitiveness.</td>
<td>Fewer than 250 employees. Turnover not exceeding £50m and/or balance sheet total not exceeding €43m. No controlling interest &gt; 25% by non-SME.</td>
<td>Launch 2008. Unsecured loans from £1k - £100k for installation of energy efficient measures (interest-free) and renewables (low interest). Provided &gt;24m loans, &gt;900 projects.</td>
<td>Programme open but reviewed each financial year.</td>
<td><a href="https://www.resourceefficientscotland.com/SMELoan">https://www.resourceefficientscotland.com/SMELoan</a></td>
<td>Current offer of 30% cashback on project completion (max £10k). Estimated total financial savings to businesses thus far &gt; £36m.</td>
</tr>
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</table>

**Energy efficiency and decarbonisation - advice and support in Scotland - relevant to industrial users.**

| Sustainable Growth Agreements (SGA) | SEPA | Compliance with environmental regulation is required. Then, help as many regulated businesses as possible to move ‘beyond compliance’. | SEPA protect & improve environment by environmental regulation, mitigating & adapting to climate change, report on state of environment. | SGAs - voluntary formal agreements between organisations and SEPA that focus on practical action to deliver environmental outcomes. | Agreements or strategies - so advice not individually funded. | Dependent on engagement. | Carolyn.Vannan@sepa.org.uk For SGA: https://www.sepa.org.uk/media/286873/sga_guiding_principals.pdf | Guide engagement, ‘beyond compliance’, to raise performance. |
| **Sector Plans** | SEPA | Productive sectors: Whisky & Metals. Other: landfill sector. | To identify and harness key levers that influence sector. | Sector activity. | Plans due: June 2018 Suggested priority actions for 2018/19. | Current sector plans open to consultation until May 2018 | http://www.energysavingtrust.org.uk/scotland/grants.districtheatingloans@est.org.uk | Send completed form to districtheatingloans@est.org.uk. For this year’s funding round download the expression of interest form. |
| **Industrial Energy Efficiency Accelerator (IEEA)** | BEIS, Carbon Trust. | Primarily demo projects. Target partnerships between developers of energy efficient technologies & industrial companies willing to test on-site. | Lower the cost of nearmarket energy efficient technologies. | All UK manufacturing sectors. Technology neutral. Innovations that have cross-sectoral impact on energy and carbon reduction. | £9.2M co-funding available. Successful applicants: 40-60% of project cost Contributions £150k to £750k. Scope for exceptional > £750k. | Phased application windows throughout 2018. | William.Hudson@Carbontrust.com | Carbon Trust would like to offer further outreach in Scotland on IEEA. |
| **District Heating Loans Fund** | Managed by the Energy Saving Trust (EST) | Support district heating (DH) and decarbonisation of heat. | Help address financial and technical barriers to DH projects. Commercial borrowing can be expensive and difficult to obtain. | £<1M + low interest unsecured loans - over 10/15yrs. projects > £50K - case by case. >£1M if co-investment with funding partners. | To be considered for this year’s funding round download the expression of interest form | Send completed form to districtheatingloans@est.org.uk | districtheatingloans@est.org.uk | Since 2011 >£10M to 40 Scottish projects. |

**Proposed or potential programmes**

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<thead>
<tr>
<th>Programme</th>
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<tbody>
<tr>
<td>Scotland’s Energy Efficiency Programme (SEEP)</td>
<td>SG. Delivery to be determined.</td>
<td>Built environment.</td>
<td>SEEP routemap to join offer between energy in premises + processes. SEEP likely to balance requirement (e.g. a standard) with offer.</td>
<td>TBC. SEEP routemap by summer 2018</td>
<td>TBC</td>
<td>TBC</td>
<td></td>
<td>SEEP finance mechanisms under discussion.</td>
</tr>
<tr>
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<tr>
<td>European funding: Innovation Fund (NER400) / Horizon 2020 / Innovfin</td>
<td>SE SDI</td>
<td>Scale/type of project varies</td>
<td>Some R+D. Some collaborative. NER400 to be defined. Domestic programmes could be way into applying for funding.</td>
<td>NER400 is from EU ETS credits for new entrants or innovation. Response to NER400 consultation closes 10&lt;sup&gt;th&lt;/sup&gt; April 2018.</td>
<td>European funding:</td>
<td></td>
<td><a href="mailto:Charles.Abbott@scotent.co.uk">Charles.Abbott@scotent.co.uk</a></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>Innovfin</td>
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</tr>
<tr>
<td>Industrial Energy Efficiency Scheme</td>
<td>UKGov, BEIS</td>
<td>Help large companies install measures to cut energy use &amp; bills.</td>
<td>Work with financial sector - identify how to take forward.</td>
<td>From 2017</td>
<td></td>
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<tr>
<td>Industrial Heat Recovery Support Programme</td>
<td>UKGov, BEIS England &amp; Wales only</td>
<td>Heat recovery</td>
<td>Increase industry confidence to identify &amp; invest in HR opportunities. Increase deployment of technologies</td>
<td>Companies on a competitive basis. Total up to £12m, as match funding. Maxima % matched as grant-funded dependant on enterprise size.</td>
<td></td>
<td>Anticipated summer 2018 launch</td>
<td>IHRSP consultation (closed Jan 2018)</td>
<td></td>
</tr>
</tbody>
</table>

**Other**
- Fuel switching programme
- Industrial Strategy Challenge Fund (ISCF) Energy Programme
- Scottish Business Sustainability Partnership (SBSP) co-ordinates activity. Partnership between SE, HIE, RES, EST to facilitate better cross-working, communication and referrals. It aims to make sure businesses are directed to the right source of support regardless of which they approach first.

**Excludes** - exemptions, or energy cost compensation schemes, or UKG Renewable Heat Incentive (ends in 2020/1).