



# SAFE ENERGY E-JOURNAL No.89

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The Safe Energy Journal doesn't usually deal with the UK Government's proposed new reactor programme, although this issue includes an update. If the new reactor programme is your main interest you should watch out for our other newsletter here:

<http://www.no2nuclearpower.org.uk/nuclear-news/>

## 1 The UK Energy White Paper & Ten Point Plan

On 14<sup>th</sup> December the Westminster Government published its long-awaited Energy White Paper. (1) After a string of earlier announcements including Boris Johnson's Ten Point Plan, (2) the National Infrastructure Strategy (3) and a new greenhouse gas target for 2030, there were relatively few surprises.

The Government's response to the Consultation on the Regulated Asset Base (RAB) method for funding new nuclear reactors was published alongside the White Paper. (4) This concludes that the RAB model has the potential to reduce the cost of raising private finance for new nuclear projects, thereby reducing consumer bills, while still preserving incentives for the private sector to complete nuclear projects to time and budget. Unfortunately, no justifications are provided for these optimistic statements, given that major investors are busy withdrawing from nuclear rather than seeking to enter them.

The government says it will aim to bring at least one large-scale nuclear project to a Final Investment Decision (FID) in this parliament and will continue to explore a range of financing options with developers including the potential role of government finance during construction. Any evidence submitted by people and organisations thought to be opposed to new reactors was dismissed and those seeking more information were given short shrift.

The Ten Point Plan highlighted the fact that a large-scale nuclear power plant could support a peak of around 10,000 jobs during construction, and the White Paper says the Government remains *"open to further projects later if the nuclear industry demonstrates that it is able to reduce costs and deliver to time and budget."* (p.48)

The Government will provide up to £385 million to develop a Small Modular Reactor (SMR) design and to build an Advanced Modular Reactor (AMR) demonstrator. (p.50) £215m of this will be spent on developing a domestic SMR design that could potentially be built in factories and then assembled

on site. The remaining £170m will be spent on an R&D programme on Advanced Modular Reactors (AMRs) – reactors which use novel cooling systems or novel fuels. The Government has also committed £400m to fund nuclear fusion with the aim of developing a commercially viable reactor by 2040. (Cumbria Local Enterprise Partnership is looking for the ideal site in Cumbria to house the first prototype nuclear fusion facility. (5))

The White Paper puts forward the view that nuclear sector makes a significant contribution to the UK economy and currently employs around 60,000 people. (p.56) The Government says it is working with the nuclear sector to develop a national and regional supply chain productivity improvement programme to achieve these objectives and target at least £2 billion of domestic and export contracts for UK companies by 2030. (p.58)

Action on energy, it says, will be compatible with wider environmental objectives. Yet Sizewell C would be next door to Minsmere Bird Sanctuary and catastrophic for wildlife (6)

The White Paper is in many ways an unfinished work in progress, as many future reports are promised including the following:

- With Ofgem, the Government will publish a new Smart Systems Plan in spring 2021;
- The Government will publish an Industrial Decarbonisation Strategy in spring 2021;
- The Government will publish a dedicated Hydrogen Strategy in early 2021;
- The Government is consulting on phasing out coal in electricity generation a year early;
- The Government will further clarify measures to transform energy, and support a green recovery;
- A transport decarbonisation plan will be published in the spring of 2021;
- The Government will publish a dedicated Heat and Buildings Strategy in early 2021;
- The Government will complete a review of the existing energy National Policy Statements (NPS), with the aim of designating an updated NPS by the end of 2021;
- The Government will call for evidence on affordability and fairness before April 2021.

In other words, the White Paper is perhaps best seen as a loose framework of thoughts, some good and some bad, with most of the real choices and details yet to be published in supporting documents.

Other key Government aims mentioned in the White Paper include:

- 40GW of offshore wind, including 1 GW floating;
- Supporting CCUS in 4 industrial clusters;
- Increasing heat pump installations from 30,000 a year to 600,000 by 2026;
- Developing 5GW of low carbon hydrogen production capacity by 2030;
- Requiring that all rented non-domestic buildings will be Energy Performance Certificate (EPC) Band B by 2030, barring lawful exceptions.

Amazingly, the White Paper says “*Local Authorities are key to delivering [smart local] systems by combining energy into their wider statutory work on housing, transport, waste and planning, making delivery more cost-effective and preparing for a net zero future. Government provides funding for Local Authorities to deliver programmes that support decarbonisation and will continue to work with communities to enable projects to be tailored and delivered to meet local needs.*” (p.25)

Boris’s 10-point plan, issued in November, included some welcome areas, such as the major increase of offshore wind, supporting the development of electric vehicles in conjunction with support for public transport, cycling and walking strategies, laudable aims on energy efficiency (despite completely inadequate resource for it), protecting and restoring the natural environment and looking at ways to increase green finance across the country.

Nevertheless, the Nuclear Free Local Authorities (NFLA) described it as a “*missed opportunity*”. The amount of new money committed was totally inadequate to claim this to be part of a new green industrial revolution with much of the money going towards small modular reactors, and a nuclear fusion experimental reactor along with support for new large nuclear reactors.

With local authorities facing yet further deep cuts, there is little detail provided on how this plan will help support them in delivering decentralised energy or the sort of resource that can have the transformative approach that we all surely want such a plan to deliver. For example, the Conservative election manifesto in 2019 gave a pledge to “*help lower energy bills by investing £9.2 billion in the energy efficiency of homes, schools and hospitals*”. Earlier this year, though an energy efficiency programme was announced of around £2.5 billion over a six-month period. (7)

The 10-point plan will only reduce emissions by 59% by 2030, (8) whereas Boris Johnson announced a new ambitious target to reduce emissions by at least 68% by then. (9)

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## 2 New Nuclear Update

Kwasi Kwarteng, just before being promoted to become Business and Energy Secretary said “It is very difficult to see anything better than nuclear power in terms of low-carbon and dispatchable firm power ... in the 2030s and beyond, we'll have the opportunity for small modular reactors and maybe in the 2040s for advanced modular reactors, but at the moment there is still a commitment to [large reactors]. (1)

In contrast, Douglas Chapman, MP for Dunfermline and West Fife says the Energy White Paper highlighted the divide between Scotland and Westminster. Johnson’s emphasis on the centrality of nuclear power as a source of greener power is a marked difference. The Scottish Government and the Scottish electorate are on a very different page. Even with eye-watering sums pledged by Johnson to support Sizewell, it is by far the slowest route to tackle the climate emergency. And there’s the thorny issue of toxic waste and decommissioning. Interestingly, says Chapman, it’s not just the Scots who are concerned with nuclear -power. At the UK wide Citizens’ Assembly on Climate Change, members were far less supportive of nuclear options as part of a green energy mix. But he worries that the Tories will drive a coach and horses through our democratic devolved powers with the emasculation of our devolved parliament. (2)

### Sizewell C

Ministers are beginning formal negotiations with EDF to explore the possibility of taxpayer funding for Sizewell C - taking a direct financial stake in the project before the end of the current parliamentary term in 2024 or approving a “regulated asset base” funding model under which households and businesses would start paying for the project via their energy bills while it is still under construction. Both models raise concerns that consumers and/or taxpayers could be on the hook for cost overruns. At Hinkley, consumers are insulated from cost overruns but will pay a high fixed price for the electricity it generates. (3) Under the Government’s RAB proposals it is claimed that clear criteria are going to be set for what cost overruns will be payable by the consumer and what by the developer, with the outcomes carefully monitored by a ‘Regulator’. But once the construction juggernaut for Sizewell C starts rolling it’s hard to see EDF being stopped from passing on virtually whatever costs it wants to the consumer. (4)

The UK Government is set to fail the first major domestic test of its commitment to saving nature if it approves Sizewell C says the RSPB. The Government has committed to protect 30% of the UK’s land by 2030 to boost biodiversity, so allowing the destruction of one of the most nature rich places we already have in the UK would be a crazy decision. The RSPB has waited for over a decade for EDF

Energy to show them evidence that the globally important nature reserve at Minsmere won't be irrevocably damaged, but the evidence has never materialised. (5)

EDF launched a consultation in November on a series of proposed changes to its plans for Sizewell C, even though it had already submitted its application for a Development Consent Order to the Planning Inspectorate. Amongst other things, the company wants to increase substantially the amount of materials being delivered by rail and sea, cutting by 20% the amount travelling by road if the twin reactor nuclear power station is given the go-ahead. But Paul Collins, chair of Stop Sizewell C, said: "It's laughable that it has taken almost 1,300 responses to EDF's DCO application, and the opposition of the county council and scores of parishes and four previous consultation stages for EDF to begin to listen about HGV traffic and site access." (6) The revised plans have now been formally submitted to the Planning Inspectorate. (7) The Environment Agency and Natural England have both raised concerns that design changes will be rushed through without adequate time to be evaluated. (8)

Now EDF is looking for partners to help it test the viability of producing hydrogen and technology to remove carbon dioxide from the air at Sizewell. (9) The company is planning to develop a small demonstrator project using an electrolyser with the potential to produce up to 800kg of hydrogen per day, which would be used to fuel some of the vehicles and equipment used in the construction of the power station and reduce diesel consumption. (10)

According to the Daily Mail Chinese investors are pondering pulling out of the project. China General Nuclear Power (CGN) holds a 20% stake in the Suffolk plant. Its departure at the construction stage could leave a huge hole in the project's funding. (11)

## Wylfa

The planning application for the Wylfa nuclear project has been withdrawn by the developer. (12) Unlike Sizewell, Wylfa had already undergone its planning inquiry but the decision on its Development Consent Order was postponed several times. (13) On 4<sup>th</sup> February, after the application had been withdrawn, the UK Planning Inspectorate released its 906-page report on Wylfa which recommended that the project should be rejected. (See <https://www.neimagazine.com/news/newsuk-planning-inspectorate-releases-report-on-wylfa-newydd-8502287> )

Japan's Hitachi told staff it will shut its Horizon subsidiary by March 31. Horizon chief executive Duncan Hawthorne said that while discussions "with multiple parties" including a US consortium of Bechtel, Southern Company and Westinghouse had been "positive and encouraging" they had not led to "any definitive proposal". (14) Hitachi rejected pleas from unions to keep the project alive, blaming the government for not providing enough financial support. (15)

People Against Wylfa B called the attempt to build Wylfa B shambolic from the start – a foolish dream that has paralyzed Anglesey's development since 2006. (16)

Now a company called Shearwater Energy says it could build hybrid small nuclear and wind plant at Wylfa for "less than £8bn" by late 2027. Shearwater says it has signed an understanding with US MMR company NuScale. The hybrid project could provide both baseload and load-following power, with the excess electricity produced used to create green hydrogen, (17)

## Hinkley

Hinkley Point C will open 6 months later than expected and will cost £500m more than previously thought. EDF blamed the impact of coronavirus and lockdown restrictions. The plant is now expected to open in June 2026 rather than 2025 and cost between £22bn and £23bn. (18)

Environmentalists are stepping up the battle against the potential killing of many millions of fish in the seawater cooling system being constructed in the Bristol Channel. EDF is required in its Development Consent Order to install an Acoustic Fish Deterrent (AFD). But in February 2018 the Company applied to the Environment Agency for permission to remove the condition. (19) After a public consultation the EA advised EDF that it was unable to conclude removal of the AFD would have no adverse effect. On 4 August 2020 EDF served the EA with a deemed refusal notice, (20) and then appealed to the Secretary of State against the deemed refusal. The appeal will be heard by the Planning Inspectorate (PINS) at a public inquiry in the spring of 2021. Construction of two tunnels in the seabed has already begun, each large enough to drive a double-decker bus through. The tunnels will suck in the equivalent weight in seawater of a dozen buses every second, and all sea life within it. EDF says the AFD has proved too costly and has reduced its original estimates of fish losses to suggest the AFD wouldn't make much difference after all. (21)

Marine and conservation groups, including the Angling Trust, Blue Marine Foundation, Bristol Channel Federation of Sea Anglers, Severn Rivers Trust, Somerset Wildlife Trust and Wildfowl & Wetlands Trust (WWT), argue that up to half a million fish would be sucked into Hinkley Point C every day if the new "giant plughole" was installed without an AFD with at least half of those killed outright. (22) The WWT accuse EDF of "altering the data in such a way as to make [removing the AFD] appear an inconsequential change." (23)

Campaigners against proposals for mud dredged from near Hinkley to be dumped off the coast of Cardiff, say they will continue their opposition despite reports that another location is also now being considered for disposing of the waste. EDF Energy are due to restart dredging as part of works to install cooling water intakes in the Bristol Channel and has confirmed it has applied to the Marine Management Organisation for disposal at the Portishead licensed disposal site in Somerset. The company also says that either the site off Cardiff or the Portishead site will be used for the entirety of the disposal. (24)

## Bradwell

Meanwhile, the Bradwell B project - a joint operation between CGN and EDF Energy – is moving forward. The developers have appealed against Maldon District Council's planning committee decision to refuse them permission to carry out land investigations. The appeal will be determined by written representation from both parties involved. (25)

Ofgem, has granted an electricity generating licence to Bradwell Power Generation. (26)

Maldon District Council has now voted to support of the development of small modular reactors at the Bradwell site. Blackwater Against New Nuclear Group (BANNG) says the Council can't have it both ways. A strong majority of councillors recently agreed the site is unsuitable, unacceptable and unsustainable site for nuclear development. "Small modular reactors would create the same environmental, heritage and ecological problems as those opposed by Maldon District Council in relation to Bradwell B." (27)

The Environment Agency has flagged six safety concerns with Bradwell. It is consulting, as part of the Generic Design Assessment of the Hualong Pressurised Water Reactor (UK HPR1000) As well as the six 'potential issues' it has identified 40 assessment findings. The consultation will run until 4th April. "If the issues are not resolved or new issues are identified but not resolved, then we would consider only issuing an interim statement of design acceptability. Our aim is to complete our detailed assessment of the design in early 2022." (28)

### SMRs

A consortium led by Rolls Royce and including Assystem, Atkins, BAM Nuttall, Jacobs, Laing O'Rourke, the National Nuclear Laboratory, the Nuclear Advanced Manufacturing Research Centre and TWI, has secured a further £215m to help with the development of a domestic SMR design. It hopes to create 6,000 UK jobs by building 16 mini nuclear power stations. The consortium says the jobs will help support the government's "levelling up" agenda, with up to 80% of the power station components set to be made in factories across the Midlands and the north of England. These components would then be sent on to existing nuclear sites around the country for rapid assembly. The reactors would not be actually all that small at 440MW each. (29)

The consortium estimates that the first project would cost between £2.2bn and £2.5bn, and then £1.8bn for further projects, enabling it to deliver electricity at between £40 and £60 per megawatt-hour. That is still more expensive than recent offshore wind projects. Andrew Stirling, Professor of Science and Technology Policy at the University of Sussex, said that the kind of SMRs envisaged by Rolls-Royce were commercially untested and that the nuclear industry had "a grave history of hype and disappointment". (30) The economics of modular reactors only work if there are lots coming off the production line. But who pays for the factory and all the start-up losses? Short answer: the taxpayer. What the Rolls consortium really means by a "clear commitment" from the government is around £2 billion to fund the factory and first reactor. (31)

### Fusion

The Energy White Paper also committed £400m of funding for nuclear fusion with the aim of developing a commercially viable reactor by 2040. The UK government has invited communities across the country to host a prototype reactor called Step — short for Spherical Tokamak for Energy Production. Cumbria Local Enterprise Partnership is looking for the ideal site in Cumbria to house a prototype. The Government's deadline for submission of siting proposals is March 31, 2021. (32) A council member in Chesterfield is hoping to persuade the Borough Council to apply. (33)



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### 3 Hunterston

As indicated at the last meeting Reactor 3 at Hunterston B was given permission by the Office for Nuclear Regulation (ONR) on 27th August to restart for about 6 months – generating up to a total of 16.425 Terawatts (taking us to about 27<sup>th</sup> February 2021) Then on 24 September ONR gave Reactor 4 permission to return to service for a similar limited period. (taking us to about 24<sup>th</sup> March 2021).

ONR has confirmed that it has received a safety case (covering Reactors 3 & 4) from EDF requesting permission for a further 6 months operation. But Hunterston B will enter into the defueling phase by 7 January 2022 at the latest. EDF expects de-fuelling to take between 3 and 3.5 years. The frequency of flask movements from Fairlie to Sellafield will likely quadruple once defueling starts.

LOCAL politicians have pushed the Scottish Government on its plans to protect jobs at Hunterston and generate new investment in the site. (1)

Meanwhile, scientists from the University of Stirling on behalf of the Scottish Environment Protection Agency (SEPA) have distributed an environmental survey to 7,000 Largs, Fairlie and Millport residents, chosen at random, looking for details on people's lifestyle changes during the Covid-19 pandemic in relation to living near a nuclear power station. Rita Holmes, chair of Fairlie Community Council, and the Hunterston Site Stakeholders nuclear liaison group, said: *"It is good to see that the Scottish Environment Protection Agency are carrying out more monitoring. During lockdown people's habits have changed and a lot more of us have been using the beaches, with a lot of kayakers and swimmers in the sea."* (2)

The NDA say that the decommissioning strategy at Hunterston A and Chapelcross will be reviewed following the announcement that Trawsfynydd will undergo accelerated decommissioning.

In response to an NFLA letter to the Scottish Government suggesting accelerated decommissioning at Hunterston B, Roseanna Cunningham said officials have agreed to *"explore the creation of a task force to examine the potential socio-economic impacts in North Ayrshire in greater detail and we hope to be able to share more information on this soon."*

The Minister continues: *"The Chief Scientific Adviser for Scotland also represents the Scottish Government on the NDA's research board to help monitor advancements in robotics and identify opportunities for the wider decommissioning programme in Scotland. In addition, the Scottish Government will continue to engage with the UK Government, EDF Energy and NDA on the future of Hunterston B seeking assurances and requesting consideration be given to increase opportunities for socio economic funding for the area as appropriate."*

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## 4 Torness

As previously reported the Office for Nuclear Regulation (ONR) Project Assessment Report (PAR) (1) which allows Torness nuclear power station (and Heysham 2) to continue operating for the period 2020 – 2030, reported that cracks in the graphite core are now expected to start appearing six years sooner than previously thought. (2)

Although no cracks have yet been detected, ONR inspectors pointed out there was a significant difference in the design of Torness and Heysham 2 compared to that of Hunterston. The newer stations have seal rings between the graphite bricks that make up the reactor core. ONR quoted EDF

saying that there could be “a systematic failure” of the seal rings after cracking. “This could lead to debris with the potential to challenge the ability to move or adequately cool fuel,” said ONR. “If keyway root cracking predictions are realised, then the safety case is unlikely to remain robust for the next ten years periodic safety review period,” observed ONR inspectors.

This makes it sound like the seal rings make the cracking more challenging in the newer AGRs.

ONR has confirmed that EDF predict that keyway root cracking (KWRC), similar to that at Hunterston B could start to occur in 2022 (central estimate). It is also understood that KWRC may also lead to cracking referred to as seal ring groove wall (SRGW) cracking.

To date neither KWRC or SRGW cracking have been observed in any Torness or Heysham 2 inspections. However, EDF is currently developing safety cases with the intent of justifying operation with KWRC and SRGW cracking. When available, ONR will assess these safety cases and will only permit operation with KWRC or SRGW cracking if it is safe to do so. Pending receipt and assessment of these safety cases, it is not yet known whether SRGW cracking will be more challenging than graphite cracking at other AGRs, or how that might affect reactor lifetime. (3)

On 22<sup>nd</sup> January, Reactor One at Torness started a 10-week statutory outage. This involves around 500 additional contractors descending on East Lothian to carry out essential maintenance. This was planned for last summer but it was postponed with the agreement of the ONR to allow better arrangements and mitigations to be put in place to manage Covid-19. (4)

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1. Periodic Safety Review: Assessment of the Heysham 2 and Torness third periodic safety review (PSR3) <http://www.onr.org.uk/pars/2020/heysham-2-torness-19-012.pdf>
  2. The Ferret 6th May 2020 <https://thoferret.scot/torness-nuclear-reactors-cracking-2022>
  3. Pers Com with Ian Hanley
  4. East Lothian Courier 20th Jan 2021 <https://www.eastlothiancourier.com/news/19013892.statutory-outage-torness-power-station-strict-coronavirus-rules-place/>

## 5 Dounreay

Dounreay Site Restoration Limited (DSRL) has announced the appointment of Mark Rouse as its Managing Director. Mark took up the position of Managing Director in March 2020 but will now move from the current parent body organisation to Dounreay Site Restoration Limited to continue leading the business when it becomes an NDA subsidiary on 1 April 2021. (1)

### Shaft

The Dounreay Shaft was originally constructed in 1956 as a means of removing waste from the Dounreay site liquid effluent discharge tunnel excavation. The Shaft goes approximately 65m deep underground and was used to store radioactive waste until 1977. A connecting ‘stub’ tunnel linked

the base of the Shaft to the effluent discharge tunnel. This was sealed in 1956 by the construction of a concrete plug to produce a watertight seal before the Shaft was then allowed to flood with groundwater. Disposals to the Shaft ended following an explosion in May 1977 and the facility has been under care and surveillance ever since.

The plan now is to retrieve, process and package waste from the Shaft to render it suitable for long-term storage and future disposal. During the project, new headworks will be constructed over the Shaft that will contain remote handling equipment to retrieve the solid and sludge waste. (2)

### ILW Store

Work on Dounreay's newest radioactive waste store has completed a "mega" concrete pour. The construction project was one of the first at the site to restart in June following the easing of lockdown restrictions. The building walls have now risen to above the first-floor level. Work began in 2018 and is expected to take around three years to complete. It will hold drums of waste in safe long-term storage in accordance with Scottish Government policy. (3)

### Waste Repackaging Facility

The Decommissioning Services Framework (DDF) Alliance has been awarded a contract for the design of a new waste repackaging facility at Dounreay. DDF is led by Cavendish Nuclear and supported by KDC Contractors (Veolia) and BAM Nuttall (BAM). The Contact Handled Intermediate Level Waste Process Facility will be used to treat and package waste on the site and will leverage knowledge from previous projects of a similar nature delivered by Cavendish Nuclear and the other DDF Alliance partners. (4)

### NDA Business Plan Milestones include:

**By 2025** all fuel will be in long-term storage or shipped off site and the Dounreay Fast Reactor (DFR) will be dismantled. Work to remove the last remaining radioactive fuel elements from inside the Dounreay Fast Reactor, and transporting the material to Sellafield, will continue to be a priority. The majority of the fuel was removed from the reactor after its closure in 1977, but almost 1,000 fuel elements were jammed and had to be extracted using purpose-built remotely operated tools.

**By 2027**, the Prototype Fast Reactor (PFR) will be dismantled

**By 2028** the Shaft and silo encapsulation will be completed

**By 2031** Site clearance and environmental restoration phase 3 completed

**By 2032-33** Interim end state achieved. (5)

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1. NDA 14th Jan 2021 <https://www.gov.uk/government/news/mark-rouse-appointed-as-managing-director-of-dounreay>

2. PBC Today 3rd Dec 2020 <https://www.pbctoday.co.uk/news/planning-construction-news/nuclear-clean-up-takes-shape/86138/>
3. John O Groat Journal 30th Dec 2020 <https://www.johnogroat-journal.co.uk/news/mega-concrete-pour-as-dounreay-waste-store-project-reaches-new-level-222933/>
4. Nuclear Engineering International 18th Jan 2021 <https://www.neimagazine.com/news/newsdesign-contract-secured-for-dounreay-waste-repackaging-facility-8457736>
5. NDA Draft Business Plan 2021 – 2024  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/941367/NDA\\_Draft\\_Business\\_Plan\\_041220\\_single\\_pages.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/941367/NDA_Draft_Business_Plan_041220_single_pages.pdf)

## 6 Nuclear Waste – Geological ‘Disposal’ Facility (GDF)

Two Working Groups have now been formed in Cumbria - one in Copeland and one in Allerdale - to begin discussions about the potential for hosting a deep geological radioactive waste ‘disposal’ facility. (1)

There are three key differences compared to the last attempt to find a site. Firstly, the Lake District National Park will be excluded from the search area; secondly, Cumbria County Council has lost its veto and thirdly, a substantial offshore area has been included – previously an area up to 5km from the shore was included now the offshore area from 5km to 22km is included. (2)

As part of the process to identify a suitable site for a GDF within a willing community, RWM has undertaken initial discussions with four interested parties, in Copeland and one in Allerdale. RWM carried out initial evaluations for each area proposed to determine if they have any potential to host a GDF. (3)

The Scottish Government has noted that near surface disposal is becoming a more accepted policy around the world and that the NDA is developing a generic near surface disposal concept.

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1. RWM 14<sup>th</sup> Jan 2021 <https://www.gov.uk/government/news/rwm-welcomes-launch-of-second-gdf-working-group>
  2. Cumbria Trust 10th Nov 2020 <https://cumbriatrust.wordpress.com/2020/11/10/copeland-takes-the-first-step-towards-burying-nuclear-waste/>
  3. See <https://copeland.workinginpartnership.org.uk/working-group-area/> and <https://allerdale.workinginpartnership.org.uk/working-group-area/>



## 7 Nuclear Waste Policy - Scotland

The Scottish Government has a commitment to review its Higher Activity Waste Policy which is now 10 years old. No major changes are expected.

The UK Business Energy and Industrial Strategy Department is leading on a review of the July 1995 Radioactive Waste Management Policy Document, known as Command 2919.

([https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/829274/review-radioactive-waste-management-policy-cm2919.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/829274/review-radioactive-waste-management-policy-cm2919.pdf) )

BEIS is hoping to run a public consultation on this early this year. Much of current policy, including deep geological disposal, stems from this document. As it was published before devolution, SEPA is providing a significant input.

The Scottish Government is working on a direction to SEPA regarding Article 37 of the Euratom Treaty which stipulates that each Member State shall submit information concerning any plan for the disposal of radioactive waste to the European Commission to enable it to give its Opinion on whether or not the plan is liable to involve radiological consequences in another Member State.

From 1 January 2021 this no longer applies in the UK. A domestic replacement for Article 37 will be introduced. In England the Environment Agency will consider whether the planned disposal of radioactive waste is liable to result in transboundary radioactive contamination and invite views through public consultation. BEIS will notify international partners of a permit application.

BEIS says operators in Scotland, Wales and Northern Ireland need to contact the devolved administrations for more details. (1)

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1. BEIS 30<sup>th</sup> Dec 2020 <https://www.gov.uk/guidance/transboundary-impacts-of-radioactive-waste-disposal-reporting-and-notification-obligations-euratom-article-37>

## 8 Scottish Climate Policy

The Scottish Government has finally published its updated Climate Change Plan (2018 – 2032). (1) It includes more than 100 new policies and proposals to support Scotland's green recovery and help deliver a just transition to net zero have been launched. The Scottish Parliament will now scrutinise the plan.

The Scottish Government was due to publish the updated climate change action plan in April but this was delayed by the coronavirus pandemic. (2) The Climate Change Act, passed by the Parliament in 2019, set the goal of reducing greenhouse gases by 75% by 2030 and reaching net-zero emissions by 2045. The updated plan was needed to set out what measures would be needed for Scotland to achieve these goals. The previous legally binding goal was to reduce greenhouse gas emissions by 80% by 2050 compared with 1990.

The Plan, which also increases the ambition of more than 40 other policies to cut greenhouse gas emissions across all sectors, includes:

- the launch of a £180 million Emerging Energy Technologies Fund (EETF), that, over the next 5 years, will support the development of Scottish hydrogen and Carbon Capture and Storage (CCS) industries, and support the development of Negative Emissions Technologies (NETs)
- additional funding of £120 million for zero emission buses to accelerate the decarbonisation of Scotland's bus fleet and support the Scottish supply chain.
- £50 million to support the creation of Active Freeways to provide sustainable transport links between our towns and cities;
- £50 million to transform vacant and derelict land, ensuring that this land is utilised for maximum environmental and community benefit.
- reducing the number of kilometres travelled by car by 20% by 2030 In line with the vision and priorities of our new National Transport Strategy,
- phasing out the sale of new petrol and diesel cars and vans by 2030, in line with UK Committee on Climate Change advice (bringing forward the ban from 2032).
- plan to help create 1 million zero-emission homes by 2030 (3)

Stop Climate Chaos Scotland (SCCS), welcomed the update but said *“there is detail missing in how some of these reductions will be delivered. For example, while it is welcome to see a new target to reduce car travel in Scotland it is now vital that the Scottish Government moves very quickly to deliver a clear plan to prevent car use from bouncing back to unsustainable levels in the wake of the pandemic.”* (4)

One of the biggest areas of debate between the Scottish Government and environment groups is the use of carbon capture and storage, and blue hydrogen. FoE Scotland called these illusory *“get out of jail free card”* technologies. (5)

A study by climate scientists at the Tyndall Centre says carbon capture and storage (CCS) cannot meet the urgent need to reduce greenhouse gas emissions – it is not a viable option for the rapid emissions cuts required in the next decade. Continued future use of oil and gas depend on CCS, as does the proposed conversion of methane to hydrogen. The UK government's 10-point climate plan pledged £200m investment in CCS, while the Scottish Government announced £80m of funding to support CCS and other negative emission technologies. But, according to the research by the Tyndall Centre reliance on CCS would endanger climate safety goals. Globally, it said, there are just 26 CCS plants in operation. There are no schemes in the UK and none are expected until at least the next decade.

Friends of the Earth Scotland and Global Witness, which commissioned the study, described CCS as a *“dangerous distraction”* from the climate solutions that work, such as renewables and energy efficiency. As well as being too slow CCS is only projected to capture 95% of the carbon dioxide released. In fact, capture rates at that level are unproven in practice. This raises questions about whether fossil fuel or blue hydrogen can be considered to be a sufficiently low-carbon alternative.

Despite these drawbacks, the UK Committee on Climate Change has projected a CCS capacity of up to 176MtCO<sub>2</sub> by 2050. This would mean that the UK would need to quadruple the entire current global CCS capacity. (6)

### Rural Economy Committee

Chris Stark, Chief Executive of the Climate Change Committee (CCC) told the Scottish Parliament's Rural Economy and Connectivity Committee that Scotland's targets for cutting emissions are "fantastic" but the Government's current policies mean they are unlikely to be achieved. Stark argued the Scottish Government needs more "tough" policies rather than relying on positive incentives to encourage people and businesses to change their behaviour. Citing the Government's policies for improving infrastructure, such as electric car charging points and the stated ambition of reducing the distances travelled in cars by 20% by 2030, Stark said: *"These are the right kinds of targets to drive progress ...the key thing for me is that will not happen unless there's a combination of carrots and sticks and the kind of policies that are being proposed in this pot in this document are mainly carrots."* (7)

While maintaining that Scotland could still hit its overall 2045 target, he said that policy makers must introduce "tough" new legislation in order to see more rapid change, rather than depending on positive incentives designed to encourage people and businesses to change their behaviour and reduce emissions. Mr Stark said the current net zero strategy "rests quite largely on electrifying the economy and cleaning up the supply of that electricity over time". But he said that *"by mid-century across the UK, we're expecting the demand for electricity will at least double"* with growing demand for electricity to heat buildings while electric vehicle infrastructure is also being rolled out, further increasing demand. (8)

### Environment, Climate Change and Land Reform Committee

On 26<sup>th</sup> January, Dr Rachel Howell, lecturer in sociology and sustainable development at Edinburgh University, told Holyrood's Environment, Climate Change and Land Reform Committee that she was *"very, very concerned about the reliance on negative emissions technologies"*. She added: *"The justification that's given for this is that we know this is important because of detailed modelling – that isn't evidence that it is going to be possible to meet the targets for negative emissions technologies by the dates set. That looks to me as if scenarios have been examined and there has been concern about the fact that the plans and policies for actually reducing emissions through other kinds of technologies and behaviour change don't meet the necessary targets – so people have said 'right's we're going to need NET'."*

Climate change scientist Dave Reay, the executive director at the Edinburgh Centre for Carbon Innovation, said that the technology will be required, but warned that the strategy is *"really optimistic to see that kind of scale of NETs operating in our economy, particularly in a way which doesn't have really large negative consequences"*. Tom Shields from the Just Transition Commission, told MSPs that *"the hard fact we have to face is there isn't a plan B"*. Mr Shields, who is a director of Neccus, which is producing a Scottish carbon capture project, added: *"If we don't get some of these technologies in place and working to the level we hope they will work then we probably won't meet the demanding targets that we've got."* (9)



## Scottish National Investment Bank

The Scottish National Investment Bank has been launched with net zero as a key area of investment. The bank – which is the UK’s first mission-led development bank – is to provide £2 billion patient capital for businesses and projects in Scotland in a bid to catalyse further private sector investment. Its missions will focus on supporting net zero, harnessing innovation and extending equality of opportunity through improving places. (10)

Scotland is facing a bill of "tens of billions" of pounds to retro-fit homes across the country and bring them in line with net-zero carbon ambitions, but the Government has yet to grasp the "scale" of the change required. The head of the new Scottish National Investment Bank (SNIB) told the Environment, Climate Change and Land Reform Committee of the Scottish Parliament, there was a "huge amount" of investment available for the institution to help drive the country's push towards a low carbon economy. Andy Kerr, UK and Ireland director with green investment and change firm Climate-KIC, said the plan and establishment of the SNIB was welcome. But he said: *"If you look at the scale of the funding required to genuinely transform our cities, our regions, our towns and our industrial sectors, there is still quite a mismatch."* (11)

## Nationally Determined Contribution

Scotland is to set out an individual nationally-determined contribution to the Paris Agreement ahead of COP26 in Glasgow next year. The Scottish Government has said it will deliver its own "indicative" climate plan in support of the Paris Agreement next year, in a sign of growing determination to draw a distinction between Scotland's plans and the UK's. (12)

## Just Transition

Think tank IPPR has published a new report detailing how oil and gas operations in the North Sea will need to change if the UK is to meet its 2050 net-zero target. The report states that some 260,000 jobs are linked to the oil and gas industries across the UK, with a high concentration in Scotland and the North of England in the offshore sector. Aberdeen is the area most directly dependent on the sector – more than 10% of jobs in the city and 5% in surrounding Aberdeenshire are related. The IPPR outlines how the sector has been one of the worst-affected by Covid-19, with demand for oil slumping. IPPR recommends that the UK and Scottish governments collaborate to develop a 'net-zero deal'. The deal should include time-bound, numerical targets for capping the production of fuels for use domestically and abroad. Changes to the "maximum economic recovery" law for oil and gas firms, to implement legally-binding caps, would add teeth to this target. (13)

The Danish Parliament has announced that it will cancel all future licensing rounds for new oil and gas exploration and production permits in the Danish part of the North Sea and end existing production by 2050. As a major oil producing country in the EU, Denmark's announcement is a landmark decision towards the necessary phase-out of fossil fuels. Additionally, the political agreement allocates money to secure a just transition of impacted workers. (14)



## Action Plan to Tackle the Covid Unemployment Crisis in Scotland

Alex Neil MSP and Alex Salmond have published an Action Plan to tackle the Covid unemployment crisis. It says Scotland is in a unique position to manage a successful industrial transition from carbon to post carbon technologies, and claims the deployment of carbon capture technology will extend substantially the life of North Sea oil and gas fields.

The plan's headline proposal on the energy front is the establishment of a Scottish National Renewable Corporation (SNRC), which would have by legislative and license entitlement, a 5 per cent project shareholding in all future licensed energy projects of 20 MW and above. The influence and revenues accruing from this position will be used for three purposes:

The securing of an industrial benefit from the renewable investment with the direction of orders for a Scottish supply chain to service these major investments.

50 per cent of the dividends from capital acquired and invested by SNRC will fund investment in universities and colleges energy research, support for emerging companies and technologies in wave and tidal power and the projection of Scottish companies into the international marketplace. Scotland has a national interest in leading the development of smart, digital and flexible electricity networks, which will open the marketplace for Scottish generated power.

The establishment of a "Scotland Pension Fund", which will use the capital base gains of the SNRC and the remaining 50 per cent of dividends to make strategic international investments. From small beginnings, this will accumulate into a generational fund for the Scottish people benefiting for the first time directly from the enormity of our natural resources onshore and offshore.

## Scottish Government Budget Proposal for 2021/22

The Scottish Government should have been bolder with its climate ambitions in the budget says Labour's spokesperson Claudia Beamish MSP. It should go further tackling fuel poverty, energy efficiency and creating skilled green jobs. The current budget is far less than experts suggest is required to tackle fuel poverty in Scotland – it needs to be doubled to at least £244 million for the coming year to see a step change in energy efficiency activity.

The budget included a commitment to create a Green Jobs Workforce Academy, which will focus on "a national mission for new, good, and green jobs". Claudia Beamish said this was a re-announcement. (15)

Patrick Harvie MSP of the Greens said "Even before Covid, Scotland was on track to miss targets on child poverty and climate emissions. This budget simply doesn't address that, and refuses to consider progressive taxation." He said the budget was not as green or progressive as had been hoped.

The Tories and Labour MSPs questioned whether sufficient cash is being allocated to local authorities. (16)

1. Update to the Climate Change Plan (2018-2032): Securing a Green Recovery on a Path to Net Zero, Scottish Government, 16<sup>th</sup> December 2021 <https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/>
2. The National 29<sup>th</sup> April 2020 <https://www.thenational.scot/news/18414491.climate-change-action-plan-delayed-due-cornavirus-pandemic/>
3. Scottish Government 16th Dec 2020 <https://www.gov.scot/news/steering-scotlands-pathway-to-net-zero/?s=09>
4. Stop Climate Chaos 16th Dec 2020 <https://www.stopclimatechaos.scot/more-detail-needed-to-show-how-climate-change-plan-update-will-meet-scotlands-targets/>
5. Herald 16th Dec 2020 <https://www.heraldscotland.com/news/18948902.snp-fire-illusory-promises-climate-change-plan/>
6. Drill or Drop 11th Jan 2021 <https://drillordrop.com/2021/01/11/ccs-cant-solve-the-climate-crisis-new-report/>
7. The National 21<sup>st</sup> Jan 2021 <https://www.thenational.scot/news/19026348.committee-warns-scotland-set-miss-climate-change-goals/>
8. Independent 22nd Jan 2021 <https://www.independent.co.uk/independentpremium/scotland-climate-change-emissions-net-zero-b1790830.html?r=26087>
9. Herald 26th Jan 2021 <https://www.heraldscotland.com/news/19040426.scottish-government-no-plan-b-hit-climate-targets/>
10. Current News 23rd Nov 2020 <https://www.current-news.co.uk/news/net-zero-at-heart-of-2bn-scottish-national-investment-bank>
11. Scotsman 26th Jan 2021 <https://www.scotsman.com/news/politics/tens-billions-pounds-make-scottish-homes-net-zero-3113040>
12. Business Green 1<sup>st</sup> Dec 2020 <https://www.businessgreen.com/news/4024153/scottish-government-promises-indicative-paris-agreement-climate-plan>
13. Guardian 3rd Dec 2020 <https://www.theguardian.com/business/2020/dec/03/uk-north-sea-industry-urged-to-phase-out-oil-and-gas-extraction>
14. Energy Voice 4th Dec 2020 <https://www.energyvoice.com/oilandgas/north-sea/283825/denmark-ends-north-sea-oil-exploration-drops-production-in-2050/>
15. Herald 1<sup>st</sup> Feb 2021 <https://www.heraldscotland.com/news/19053041.budget-should-bolder-climate-change/>
16. The National 31<sup>st</sup> Jan 2021 <https://www.thenational.scot/news/19052260.greens-refuse-back-disappointing-scottish-budget-look-compromise/>

## 9 100% Renewables

In November the NFLA published a detailed briefing considering the ways all parts of the UK and Ireland could get to a 100% renewable electricity system. The report argues it is becoming increasingly more feasible and can be much more cost effective than for those advocating new nuclear facilities.

The report also highlights how the usual criticism of renewable energy that it is intermittent can be overcome to create a 100% energy system:

First and foremost, by reducing overall demand with a comprehensive energy efficiency program that can be led by local authorities.

Demand management – using various techniques to reduce demand at peak times. This would include, for instance, introducing time-of-use tariffs and smart control systems which would charge electric vehicles and operate heat pumps at times when renewable energy is plentiful.

Batteries allow surplus renewable electricity to be stored either as electricity or heat. These supplies can then be called upon when wind and solar production is low.

Surplus renewable electricity could also be used to create hydrogen through electrolysis. Hydrogen could then be used to generate electricity at times of peak demand or for other uses, for instance in Orkney it will be used to power ferries.

Electricity can also be stored by using Pumped Hydro Storage Systems. Surplus electricity is used to pump water back up to a reservoir when there is a surplus. This water can then be used to generate electricity at peak times.

Combined heat and power stations working in conjunction with heat storage can be called on to generate electricity at peak times.

By using the right mix of renewables intermittency can be reduced for instance by adding biomass, or geothermal generation into the mix;

By increasing grid connections to other countries so that electricity can be imported at peak times when indigenous renewable production is low, and so that surpluses can be exported. (1)

A group of leading experts have called on the UK Government to opt for 100 per cent renewables and reject nuclear power. They believe that a future based on 100 per cent renewable energy underpinned by traditional and advanced energy efficiency and storage techniques is not only practicable, affordable, but immensely preferable to one that involves nuclear power. Renewable energy offers us a rapid path to net zero carbon transition that, unlike nuclear power, does not involve the need for decommissioning of radioactive plant, nuclear waste or concerns about safety or security threats. (2)

A study by Finnish energy company - Wärtsilä Energy – says if the UK government were to back renewable generation and flexible energy technologies like battery storage instead of a new nuclear plant, some £660m could be saved by 2030. The analysis show that the UK could invest in adding 7GW of flexible energy capacity through utility-scale battery storage, advanced flexible gas plants and technologies like vehicle-to-grid (V2G) by 2030, if it scrapped plans for Sizewell C nuclear power station. (3)



## Balancing Renewables

A recent Imperial College study says power grid balancing costs for variable renewables are low at low penetration, and can even be negative. And although they can be higher at over 50% shares, depending on how balancing is done, total system integration costs need not be excessive- at most €30/MWh, even at 85% penetration. Grid balancing systems are developing fast, so costs should fall. For example, green hydrogen production and storage using zero cost surplus renewable output offers a way to balancing long lulls and although some balancing system may add to the cost as the Imperial College paper notes, some may actually reduce power costs. (4)

## V2G

Innovative Vehicle-to-Grid (V2G) projects, whereby electric vehicles (EVs) act as a form of distributed energy storage, could deliver cost savings of up to £880m annually while reducing emissions from power networks, according to research published through a collaboration involving carmaker Nissan, energy giant E.ON and Imperial College. (5)

## Grid Connections

Scottish Power, SSE and National Grid have agreed to build an underwater grid connection to bring Scotland's vast reserves of renewable energy to millions of homes in England. The so-called Eastern Link will run from two separate points in Scotland – Peterhead and Torness – for more than 270 miles along the east coast of Scotland to Selby and Hawthorn Point in the north of England. The 2GW power project will use some of the longest subsea high-voltage power cables in the world to transmit enough clean electricity from Scotland's wind farms to keep the lights on in around 4.5m homes in England. It will also have the potential to double in size to 4GW as Britain's North Sea energy boom gains pace in the years ahead. The east coast of Scotland is already home to almost 1GW of offshore wind farms and hosts a pipeline of projects totalling 4.4GW. After the next leasing round for offshore wind licence areas there could be up to 10GW in Scottish waters in the coming years. (6)

## Geothermal

The UK's new underground observatory, dedicated to researching subsurface knowledge, has opened in Glasgow, with the facility team saying that it will contribute to the UK's ambition to decarbonise its energy supply and achieve net-zero by 2050. Data from the Glasgow Geoenery Observatory will help scientists understand the subsurface better and further research on how to use warm water from abandoned mines as a renewable energy source for homes and industry. While the Glasgow Geoenery Observatory officially opened on Monday during a virtual event, it has been supplying scientists with open access data since drilling began in 2018. (7)

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1. NFLA 12<sup>th</sup> Nov 2020 <https://www.nuclearpolicy.info/news/nfla-report-cost-effective-renewable-electricity-system/>

2. 100% Renewables 13<sup>th</sup> Nov 2020 <https://100percentrenewableuk.org/leading-experts-opt-for-100-per-cent-renewables-and-reject-nuclear-power>
3. Wartsila 23<sup>rd</sup> Nov 2020 <https://www.wartsila.com/aus/media/news/23-11-2020-the-uk-could-increase-its-ambitions-for-renewable-energy-at-a-lower-cost-to-consumers-new-wartsila-analysis-finds-2821932> and Edie 23<sup>rd</sup> Nov 2020 <https://www.edie.net/news/10/Report--Renewables-and-flexible-energy-could-cut--660m-off-UK-s-net-zero-transition/>
4. Renew Extra 26<sup>th</sup> Dec 2020 <https://renewextraweekly.blogspot.com/2020/12/as-variable-renewable-expands-there-are.html>
5. Edie 7<sup>th</sup> Jan 2021 <https://www.edie.net/news/8/Vehicle-to-Grid-rollout-could-deliver--880m-in-annual-savings/>
6. Guardian 16<sup>th</sup> Nov 2020 <https://www.theguardian.com/business/2020/nov/16/firms-agree-scotland-to-england-renewable-energy-superhighway>
7. Power Technology 7<sup>th</sup> Dec 2020 <https://www.power-technology.com/news/uk-government-funded-observatory-opens-to-research-water-from-abandoned-mines/>

## 10 Offshore Wind

The Scottish Government wants to see around 11GW of offshore wind capacity installed around Scotland's coast by 2030 around 1,000 new turbines. The Sectoral Marine Plan for Offshore Wind Energy and Offshore Wind Policy Statement – published last October by Marine Scotland – sets out the most suitable locations for the future development of commercial offshore wind energy. Large projects in the pipeline include Seagreen 1 with 114 turbines expected off the Angus coast, the Moray East development with 100, Inch Cape, also off Angus, with 72 and Nearth na Gaoithe in the outer Firth of Forth with more than 50. Scotland's energy minister Paul Wheelhouse emphasised the need to “harness Scotland's enviable wind resource for our energy system and unlock significant investment in the supply chain to create more green jobs across the sector”. Crown Estate Scotland head of energy and infrastructure John Robertson said that the next phase of seabed leasing can now begin. (1)

The capacity of Scotland's offshore wind production is currently one gigawatt (GW) but developments underway will bring this up to 5.6GW, so another 5.4GW will be needed by the end of this decade. (2)

### Offshore Wind & Jobs

A major overhaul of the way wind farms are given the go-ahead in the UK is needed to ensure that local firms are guaranteed work to build them, MSPs have said.

Holyrood's economy, energy and fair work committee has been looking into the demise of BiFab (Burntisland Fabrications Limited) It described the failure of the company as a “huge blow” to workers and local communities in a report published on 22<sup>nd</sup> January. The Committee criticised the Scottish Government and the Canadian owners of the firm over a lack of transparency about investment decisions.

BiFab went into administration in December after failing to win contracts to build wind turbine jackets for developments off the coast of Angus and Fife. The Scottish Government announced it could not provide further financial support to the company, citing EU state aid rules.

MSPs were told the current contract for difference (CFD), which governs UK onshore and offshore windfarm schemes, encourages power firms like SSE renewables and EDF to strike the cheapest possible deals on producing electricity. It means Scots firms like BiFab seeking to build the turbines lose out to low wage economies in the far east – or European competitors which have state-aid support. (3)

Decades of underinvestment have left Scotland's ports and manufacturing yards unable to compete internationally for windfarm projects, according to Scottish and Southern Energy (SSE) and EDF. Prohibitive prevent them from using Scottish yards like BiFab in their developments. SSE said "as long as we have to compete on price, we have no option but to seek out the lowest cost supplied, otherwise we do not have a project." (4)

The Committee's report says that "all reasonable steps" should now be taken to support robust and competitive local supply chains for offshore wind. The UK Government should consider all options available to it to balance investment in offshore wind, energy prices and local supply chain benefits. This could include contractual requirements to demonstrate that consideration has been given to local supply chains, requirements on fair work policies and pay, and wider environmental factors.

The committee also expressed concern about by the lack of transparency on the part of both DF Barnes and the Scottish Government over their decision making and use of public funds. (5)

Alex Neil MSP and Alex Salmond have suggested establishing a Scottish National Renewable Corporation (SNRC), which would have by legislative and license entitlement, a 5% project shareholding in all future licensed energy projects of 20 MW and above. This would help to secure an industrial benefit from the renewable investment with the direction of orders for a Scottish supply chain to service these major investments.

George Kerevan said the Scottish Government's powers may be limited but they go far enough not only to save BiFab but also to create a public stake in the offshore wind industry. (6)

- ESB – the Irish state-owned electricity company has teamed up in a 50-50 joint venture with China's State-controlled Red Rock Power to develop the Inch Cape wind farm. It will generate up to one gigawatt of electricity and include 72 turbines. It will be located about 15km from Angus on the east coast of Scotland. ESB also has a 50% stake in the 450MW Neart na Gaoithe offshore wind-farm project being developed by EDF. (7)
- North Yell Development Council (NYDC) has appointed a new development manager to help bring benefits to the local community from profits generated by the Garth wind farm in North Yell. Sarah Kersey, who has a background in community development in the charity and not for profit sector for the last past 20 years, started work during November. Her post is being funded via income generated by the community-owned 4.5MW Garth wind farm, which was commissioned in 2017. Formed 40 years ago NYDC was established to strengthen the community, enhance the local tradition of pulling together to get things done with a

focus on making north Yell a better place to live, work and visit. From the outset the group identified the importance of enterprise, initiative and self-help as the crucial features behind community development. (8)

- ORBITAL Marine Power – a leading floating tidal turbine technology developer, has raised £1 million in a week. To fund its first commercial 2MW unit, the Orbital O2, which will be installed in the waters off the Orkney Islands. (9)

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## 11 Climate Emergency

By autumn 2020, 75% of local authorities in England and 62% in Scotland had declared a climate emergency, demonstrating their determination to act on the climate crisis. But they are held back from doing so by a lack of long-term funding, resources and support from central government. But local authorities are best placed to support local people, communities and businesses to make the local changes necessary to reduce emissions and tackle climate change. They also have responsibilities for transport and housing, two of the highest emitting sectors. With high levels of public trust, The Green Alliance (GA) argues that a new approach is needed in which local authorities are seen by government as crucial partners in the drive to achieve the national net zero goal. The Alliance has drawn up a series of recommendations which were developed working with six local authorities who are leaders in climate action. (1)

A cash shortfall caused by the Covid-19 pandemic, little support from central government and years of austerity have left councils unable to make the changes they want to. It's clear that the chance to address climate change effectively and rebuild local economies fit for future is in danger of being missed. The GA report recommends a new policy framework setting out expectations for all levels of government and including ways to overcome current barriers to decarbonisation. This should form an essential baseline for local action. As a start, this enabling framework should also include:

- Agreed methodology to monitor and report emissions under local authorities' direct control.
- A single point of contact within central government focused on local authority decarbonisation.
- A strategic approach to addressing in-house skills gaps within local authorities and a new national green skills strategy.
- Sufficient and stable funding to allow councils to plan ahead and prevent environmental imperatives being deprioritised.
- Reforms to the planning system that put sustainable housing and transport at their heart. (2)

Local leaders require more support in order to understand how to make decisions that are in line with the UK's net zero goal, says Prof Forster - director of the Priestley International Centre for Climate at the University of Leeds and a member of the UK's Climate Change Committee (CCC): *"There are situations where it would have been good for the government to step in, as with the building of the Cumbrian coal mine," he says. "But that can't be the answer for everything. By far the better solution is to really make sure that local authorities understand what the government's priorities are. We have to give our local authorities appropriate long-term financing to be able to take part in the net zero delivery, and we have to give them the flexibility to be able to make the changes appropriate for their communities."*

One idea is that local areas should develop a Locally Determined Contribution which sets out carbon reduction targets and timescales. Overlooking people's concerns and interests and trying to impose low carbon solutions is not going to work. But if we begin to see democracy as part of the solution to climate change, we could begin to see politicians, citizens and experts debating and collaborating on locally devised climate strategies. There is plenty of evidence about what works from a technical perspective. But much less thought has gone into how to win democratic support, acknowledging people's values and engaging them, not attempting to bypass them. (4)

Another problem for local authorities is a lack of data. More than a third of councils in the UK are not confident that they'll be able to meet public commitments to reaching net-zero emissions, with a "black hole" of data hindering efforts on energy efficiency plans. A poll of 1,061 UK councillors, carried out in November 2020, by the independent non-profit Icebreaker One found that 36% are not confident that their council will meet public commitments to net-zero emissions. In total, 89% of respondents had a net-zero target ambition in place, but more than one-third felt they did not have sufficient data and information to set out detailed and informed roadmaps to net-zero. Respondents cited a lack of data on retrofitting homes to make them more energy efficient as a key barrier to net-zero, despite the Government launching a £65bn investment framework into the sector. (5)

- More than 100 local leaders from Edinburgh to Cornwall are pledging to eliminate greenhouse gas emissions by 2045 – five years earlier than the target set by the UK government. The cross-party group of city mayors and council leaders represent more than 20 million people from areas such as Birmingham, Bristol, Glasgow and Greater Manchester. They will sign the ‘UK100 Net Zero pledge’ which explicitly commits them to making their council’s carbon neutral by 2030. Mayor of Greater Manchester, Andy Burnham, said: “We are proud to be supporting the UK100 Net Zero Pledge and making the case for urgent collective action to tackle the climate emergency.” (6)
- City of Edinburgh Council says it has cut the authority’s carbon emissions by 60% in the last 14 years – helped by halting tonnes of rubbish being dumped as landfill. The Council along with arms-length organisation, Edinburgh Leisure, has already surpassed its aim of a 42% carbon reduction by 2021. Attention will now turn to a citywide commitment to become carbon neutral by 2030. In the last year, combined emissions for the council and Edinburgh Leisure fell by 36%. The emissions reduction, released on the public bodies climate change duties report, is largely down to the Millerhill waste reprocessing plant being opened last year – which has diverted more than 107,000 tonnes of rubbish away from landfill sites and being harnessed to produce energy. The facility is also able to separate metals from waste, boosting recycling levels. A report to councillors says that there has been a “97 per cent reduction in council waste going to landfill”. The council has also managed to contribute to reducing its carbon footprint by upgrading street lighting and changing to a green energy supplier. (7)
- A solar “carport” that will generate enough energy to power 500 homes has been installed by the Aviva, the financial services group at its Perth office. The project is believed to be the country’s biggest solar energy carport and battery facility. There are 3,283 photovoltaic panels that have been installed on steel frames over an area covering 342 parking spaces. The energy produced from that system will allow the office to function off-grid for at least five hours a day. Aviva estimates the array will generate 812,000 kilowatt hours each year. There are also charging points for 50 electric vehicles and Tesla battery technology that can feed any excess electricity back into the grid. The project cost about £3.2 million with the Scottish government providing about £1.5 million of the funding as part of its Carbon Infrastructure Transition Programme. (8)
- Six leading Edinburgh businesses and employers have signed a pledge aimed at sparking radical action on climate change across the city. Launched by the Edinburgh Climate Commission, the Edinburgh Climate Compact outlines a list of commitments which organisations taking part will need to adopt to contribute to a green recovery and help Edinburgh reach its target of net zero emissions by 2030. The six founding signatories comprise representatives from the private and public sector with Edinburgh Festival Fringe Society, NHS Lothian, Robertson Group, NatWest Group, The City of Edinburgh Council and The University of Edinburgh all confirming their commitment to be leaders in the race to net zero. (9)

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## 12 Hydrogen

The Scottish Government has published its Hydrogen Policy Statement. The hydrogen sector will receive £100 million over the next five years. Scotland hopes to become a leading hydrogen nation, with an ambition to generate 5GW of renewable and low-carbon hydrogen (blue hydrogen produced from methane with carbon capture and storage) by 2030 – enough to power the equivalent of 1.8 million homes. The ambition is to generate 25GW of hydrogen by electrolysis by 2045 which will produce 126TWh per year of green hydrogen across Scotland, with 32TWh to deliver Scotland’s net zero target and 94TWh of green hydrogen for export. Economic impact research suggests the industry has the potential to be worth up to £25 billion a year to the Scottish economy by 2045. (1)

Tom Baxter of Aberdeen University says clearly the Scottish Government is not yet convinced that hydrogen is a natural gas network replacement for heating. The Climate Change Committee expects heat demand to be met by 52% heat pumps, 42% district heat, and 5% hydrogen boilers. (2)

### Levenmouth

300 homes in the Levenmouth area of Fife will soon become the first in the world to use 100% green hydrogen to heat their properties and cook their meals as part of a new trial that could help households across the country replace fossil fuel gas. Houses will be fitted with free hydrogen boilers, heaters and cooking appliances to be used for more than four years in the largest test of whether zero carbon hydrogen, made using renewable energy and water, could help meet Britain’s climate goals. They will begin to receive green gas from the end of 2022, at no extra charge, and up to 1,000 homes could be included if the first phase of the trial is completed successfully. (3) Houses in the trial will be connected to a new pipeline network supplying them with 100 per cent “green”

hydrogen. The gas will be produced through electrolysis, which will use electricity from a wind turbine to split water into hydrogen and oxygen. (4)

## Orkney

Scottish company Eneus Energy has gained planning consent for a proposed green hydrogen/ammonia plant in Orkney - the first commercial facility of its kind in the UK. along with a proposed wind turbines extension at Hammars Hill. Eneus said the plant, near Evie, will harness the renewable electricity generated by the wind turbines to produce hydrogen from water, and then combine the gas with nitrogen from the air to form ammonia. Converting green hydrogen to ammonia turns it into an easily stored and economically transportable zero carbon fuel that can be used to decarbonise heat and transport on the islands. (5)

## Crown Estates Scotland

Crown Estate Scotland is tendering a £40,000 contract for a study into whether oil platforms can be reused to produce hydrogen. The study will assess capacity to deliver a “strong pipeline of hydrogen projects from late 2020s to 2050”, according to Public Contracts Scotland. Crown Estate Scotland tendered the oil-hydrogen study on behalf of the Scottish Offshore Wind Energy Council (SOWEC), a public-private partnership set up by the Scottish Government. It will look at the costs of using oil infrastructure and other “key supply chain capabilities” like maintenance services, supply of electrolysers and upgrading of ports and quays. (6)

## UK Hydrogen Plan

Chris Stark, chief executive of the Climate Change Committee, says converting all gas heating systems to hydrogen would be “*unwieldy and impractical*” because of the difficulty of producing enough of it. The country would need 30 times as much offshore wind farm capacity to produce enough “green” hydrogen to replace all natural-gas boilers. He says heat pumps will be “the bedrock of the transition”. (7)

In September, the then UK business secretary, Alok Sharma told the Environmental Audit Committee that the government expected to release a hydrogen “early on next year [2021]”. Prime minister Boris Johnson’s “10-point plan” for a “green industrial revolution” mentioned spending of “up to £500m (\$667m)” on hydrogen, including a target of 5GW low-carbon hydrogen production capacity over the next decade. This is the same as Scotland and significantly less than some other European nations. Germany alone has said it will spend €9bn on clean hydrogen production and exporting the technology overseas, but with the same target of 5GW domestic capacity by 2030.

But Boris’s Ten Point Plan also outlined plans for 600,000 heat pumps to be installed annually by 2028 – a huge increase on the current 22,000 a year. (8)

## Hydrogen Hype

As reported on October Dave Toke - reader in Energy Policy at Aberdeen University –warns that politicians are being hoodwinked by the gas industry to back blue hydrogen – made from natural gas using carbon capture and storage - for domestic heating. The Corporate Europe Observatory

complains that an intense and concerted lobbying campaign by the gas industry in the EU could bring grave dangers for the climate. (9)

In the most optimistic outlooks, hydrogen could soon power trucks, planes and ships, heat homes, balance electricity grids and help heavy industry to make everything from steel to cement. But doing all these things with hydrogen would require staggering quantities of the fuel, which is only as clean as the methods used to produce it. Moreover, for every potentially transformative application of hydrogen, there are unique challenges that must be overcome.

Of course, nothing is ever completely black and white. Dr Jan Rosenow of the Regulatory Assistance Project says asking “*Are you for or against hydrogen?*” is the wrong question. The right question is: “*where do you really need to use it?*” Hydrogen could help tackle “critical” hard-to-abate sectors, such as steel and long-distance transport. It could help to balance the use of variable renewables to generate electricity. Electrolysis could absorb excess supplies and, when there is little wind or sun, hydrogen could be burned in gas turbines to ensure electricity demand is met.

Even Dave Toke and the 100% Renewables campaign — says Yes to hydrogen for on-site energy storage for windfarms and other big renewables in remote locations and for fuelling ships. But No to hydrogen for domestic heating or extracted from natural gas with carbon capture or produced by electrolysis using nuclear electricity. (10)

Michael Liebreich of Bloomberg New Energy Finance says we can forget hydrogen for many things — because it will be too expensive and not very efficient as an energy vector. (11) *The Economist* agrees hydrogen is “*inescapably inefficient*”. Electric vehicles are several times more efficient than hydrogen fuel cell vehicles. It is a similar story when comparing electric heat pumps with hydrogen boilers, or when looking at the efficiency of storing excess electricity in the form of hydrogen for later use. The low efficiency makes hydrogen more expensive. (12)

Hydrogen’s role in the final energy mix of a future net-zero emissions world is likely to be to do things that cannot be done more simply, cheaply and efficiently by the direct use of clean electricity and batteries. “*There are always going to be some applications where electrification is not appropriate,*” says Meredith Annex, at BloombergNEF.

Even though hydrogen is expected to play a lesser role than electricity in reaching net-zero emissions, its production and use could still need to scale up dramatically from today. Just how dramatically hydrogen expands will depend on policy decisions, societal choices, relative costs and technical performance, across each potential application of the fuel. There is also uncertainty over how much low-carbon hydrogen will cost to make in the future and how easy it will be to successfully deploy the fuel at scale, across multiple sectors of the economy. As a result, there is a broad range of hydrogen use in pathways that model how the world — and individual countries or regions — can cut their emissions to avoid dangerous climate change.

Virtually all pure hydrogen today is used in applications such as oil refining and fertiliser production, not to heat buildings, drive trucks or generate electricity, but demand for hydrogen has been rising steadily for decades and stands at around 70Mt, according to the IEA. The vast majority of this is made from fossil fuels, with high CO<sub>2</sub> emissions, and no carbon capture. Satisfying all of this demand

using electricity would require 3,600 terawatt hours (TWh) of dedicated production – “*more than the total annual electricity generation of the EU*”. An additional 45Mt of hydrogen is used in industries, such as steel and methanol production, in a mixture with other gases.

The International Energy Agency sees hydrogen meeting 13% of final energy demand by 2070. It would meet large shares of energy use in shipping and aviation, but hardly any for buildings. There is widespread optimism about the cost of green hydrogen coming down to be able to compete with fossil fuel-based hydrogen (with and without CCS – blue and grey), due to the falling cost of renewables and electrolyzers.

The National Infrastructure Commission (NIC) says producing hydrogen from curtailed electricity “*could help to reduce system costs in highly renewable mixes*”. IRENA states that this “*can significantly help improve the economics of hydrogen production*” and also provide revenues for renewable asset owners. These periods are becoming more common with rising renewable penetration. But NIC says “*it will be challenging to absorb all curtailed renewable generation at low cost due to the volatility of its production*”. Electrolysers built solely to make use of this otherwise wasted power may only operate around 10% of the time. Such low utilisation rates mean the hydrogen they produce may not be competitive, owing to the costs associated with the electrolysers themselves, although these are declining.

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## 13 SEPA

Computers that were compromised in a cyberattack on Scotland's environmental watchdog are likely to be crippled for up to six months. 4,000 files were stolen and these have now been illegally published online. The Scottish Environment Protection Agency (Sepa) was hit by an attack "*involving complex and sophisticated criminality*" on Christmas Eve, according to Terry A'Hearn, its chief executive. The attack has left SEPA unable to access most of its systems, including its email system as well as its hourly rainfall and water level trackers. (1 & 2)

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## 14 Submarine Decommissioning

A plan, released under freedom of information law, shows that the company that runs the port at Hunterston - Peel Ports - wants to use it to decommission defunct nuclear submarines. But the idea has brought condemnation from politicians, environmental and community groups. They warn that the transport and dismantling of submarines would be "potentially hazardous" and could cause "significant environmental damage".

The NFLA has pointed out that prolonged public consultations resulted in agreement that decommissioning should only take place at Rosyth and Devonport. If Peel Ports is lobbying for a change in that policy a new consultation process would be required, and the last one took years to deliver. The NFLA said it is unlikely the Ministry of Defence would want to reopen the process.

The Scottish Government said "*We are not aware of any Nuclear Decommissioning Authority plans for nuclear decommissioning activities to commence at Hunterston Parc.*". The MoD didn't comment but a source suggested that officials were not currently looking at Hunterston as a site for nuclear decommissioning.

At Rosyth 2 submarines have finished Stage 1 decommissioning – removing the low-level waste. All the waste from the first – Swiftsure – has been transported away. An invitation to negotiate on the Resin Disposal Project has been put out to tender.

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