Draft Climate Change Plan

Weinberg Next Nuclear

1. Summary

- Progress, targets and timescales are all good. A net zero target is recommended.
- Power sector is already driving decarbonisation; however policy to decarbonize power relies too heavily on CCS and neglects nuclear, undermining the Scottish Government’s commitment to decarbonisation.
- Without a significant policy shift in the power sector Scotland risks no longer meeting its targets.
- Considerable benefits for Scotland, within e.g. air quality and landscape, can be derived from a new nuclear build programme and should therefore be pursued.

2. Introduction

Weinberg Next Nuclear is a UK charity promoting safe, secure and sustainable nuclear power as a solution to the energy challenges of today. Weinberg focuses on all aspects of the nuclear power industry as well as the wider energy sector and decarbonisation.

Weinberg Next Nuclear welcomes the opportunity to respond to the Scottish Governments call for Evidence on the Draft Climate Plan. As a charity that works across the energy space, we will be directing our response to the Economy, Jobs and Fair Work Committee as the energy sector falls within their remit.

3. Progress, targets and timescales good

As the Committee on Climate Change reported, Scotland is leading the UK in greenhouse gas emissions reductions. Previous targets have been successfully met with a cut of adjusted emissions by 45.8% between 1990 and 2014, exceeding the 2020 target of a 42% cut six years early. These impressive emissions reductions were achieved whilst the Scottish economy grew. This success has made Scotland a leader in the decarbonisation space, second only to Sweden among Western European countries in cutting emissions over this period.

Future targets as set by The Climate Change Act 2009 show good ambition, with an 80% cut by 2050, though a net zero target should soon be discussed. The power sector has previously been the most successful at decarbonising, and future emissions savings may rely on progress in power whilst other sectors are more challenging. The policy for zero, or even negative emissions from power by 2030 is an ambitious target on an ambitious timeline. This level of ambition is needed but it needs policies to match that are currently lacking. Without more comprehensive, diverse power policy, this target is at risk of being missed.
4. Meeting the Targets: a role for nuclear

The Economy, Jobs and Fair Work Committee focuses on the following areas, Electricity generation, Reducing energy demand, Renewable energy (renewable electricity and renewable heat), Interconnection, Grid issues and Fuel poverty. These are all key areas of the power sector, and focusing on demand side issues such as interconnection and efficiency as well as the underemphasised renewable heat are vital to overall decarbonisation. But focusing on renewable energy, rather than low carbon energy, is limited. To give the best chance of decarbonisation, Scotland should encourage an all of the above approach including CCS and nuclear.

There is no current CCS in Scotland or anywhere else in the UK. With the cancellation of the CCS competition by Former Chancellor George Osborne the likelihood of imminent CCS commercialisation in the UK is low. Nuclear power on the other hand as point 7.1.5 states supplied,

“just over a third of Scotland’s electricity in 2015. This represents an increase from 2007, when nuclear energy represented 25.7% of Scotland’s electricity supply.”

Additionally 2.2.4 states:

“Electricity will be increasingly important as a power source for heat and transport. As a result, the total volume of electricity supplied within Scotland will increase to 2032. System security will be ensured through diverse generation technologies, increased storage, smart grid technologies and improved interconnection.”

Nuclear power is already making up a significant proportion of the low carbon power required to meet the negative emissions electricity generation target by 2030. If unabated fossil fuels are to continue to be replaced whilst electricity demand grows, Scotland will need a reliable form of power.

Pursuing CCS is wise, especially with the potential to combine with bioenergy for negative emissions; on which we welcome the proposal of a whole system bioenergy action plan and suggest it has a large emphasis on sustainability criteria. However with CCS still a significant way from commercialisation, Scotland should not rule out options that are already delivering carbon savings, such as nuclear power.

We recommend Scotland replaces Hunterston nuclear power station with a new nuclear station. Hunterston is due to close in 2023 and though the owner EDF may extend its life, it has been generating since 1976 so will not be able to continue for much of the foreseeable future. When it does close the gap will need to be filled and if renewables are not expanding quickly enough there is a risk of a relapse on emission savings. Torness nuclear power stations' life has already been extended, but only until 2030. Thus even if the Scottish government met it's 2030 target, emissions would likely rise again when Torness closes.
With a third of Scotland’s low carbon power due to close down, there is a need for replacement to compliment the expansion of renewables. This will be necessary whether CCS is delivered or not. Advanced nuclear power, with simpler, more secure and more sustainable reactors, can fill this gap, contribute to emissions savings and also generate new opportunities for Scotland (see below section 5).

Though Weinberg Next Nuclear accept the limits to Scotland’s options due to the policy demands of Westminster, the Scottish government now has an opportunity to channel the pro-nuclear sentiment set out by Westminster in the Industrial Strategy into a decarbonisation narrative.

Though Weinberg Next Nuclear recommends a diverse energy supply based on an “all of the above” strategy, there are obvious environmental concerns to take into account. All technologies have their limitations, including nuclear, but these are often overstated. One technology that can cause more damage than others is pumped storage hydropower, which is supported in the draft climate plan. Though hydro provides reliable power, the construction of dams is often fraught with environmental compromises, and the location should be considered, especially in areas of natural beauty such as the Scottish highlands. Nuclear could provide the same power, with additional skills benefits, without the environmental compromises.

5. **Opportunities to secure wider benefits**

In line with the UK’s industrial strategy, a renewed nuclear focus could give the opportunity for building a strong nuclear skills and innovation base in Scotland, drawing upon the wealth of experience and expertise that exists. Continuous failure to preserve this expertise is regrettable and could lead to a further ‘brain drain’. Similarly, focusing on building a skills and innovation based economy in Scotland, led by a dual commitment to nuclear and renewables, could see Scotland becoming a leading nation in the world on successful and sustainable decarbonisation.

There are social opportunities to consider to expanding nuclear power. Nuclear power stations are expensive to build but, given their very long lifespans, most of the power produced will be cheap. Fuel prices will not play any significant role as the price of uranium remains low, as well as the fact that uranium is almost 71 000 times more energy dense than natural gas. This has a dual benefit. Firstly, modern nuclear power stations can play a significant role in addressing fuel poverty by reducing the costs of electricity. Secondly, by opting for nuclear power, issues around landscape (e.g. windfarms, commercial solar farms) are less of an issue. This is highlighted in **table 1**, showing the vast amounts of space required to replace merely one nuclear reactor.
Table 1: Landscape impact

<table>
<thead>
<tr>
<th>Technology</th>
<th>Capacity factor (%)</th>
<th>Sq. miles needed to produce 1000 MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear</td>
<td>90</td>
<td>1</td>
</tr>
<tr>
<td>Wind</td>
<td>32-47</td>
<td>260-360</td>
</tr>
<tr>
<td>Solar</td>
<td>17-28</td>
<td>45-75</td>
</tr>
</tbody>
</table>

Further social opportunities stemming from a nuclear-led decarbonisation are found within air quality. By opting for a rapid decarbonisation by using long-proved technologies, nuclear power can replace fossil fuel-based electricity generation within timescales that renewables cannot match. If this is coupled with a serious commitment to decarbonise the transport (non-aviation) fleet, the air quality in Scotland could derive considerable benefits. This, in turn, would allow many serious health issues connected with poor air quality in many of Scotland’s cities to be addressed in an adequate manner.

6. Recommendations

- Set a net zero decarbonisation target.
- Acknowledge the urgency of decarbonisation of the energy sector, by changing focus to low carbon energy focus to encompass nuclear and CCS
- Establishing a nuclear skills and innovation programme in Scotland.
- Remove the Memorandum on New Nuclear in Scotland, thus allowing for modern nuclear power stations to be built in Scotland.
- Establish a programme of nuclear new build in Scotland, coupled with a commitment to decarbonise the non-aviation transport sector.