

**West of England Local Enterprise Partnership
Board meeting – 21.06.2022**

Regional opportunities around sustainable energy generation, including hydrogen

Purpose of the report

1. To update on the regions emerging opportunities for sustainable energy as part of the approach to net zero. This includes early conclusions from a recent review undertaken on energy innovation opportunities by the Combined Authority.
2. To provide some context to specific energy initiatives that Board members will update on, including hydrogen.
3. To introduce a live case study on the Institute for Advanced Automotive Propulsion Systems (IAAPS), which will be presented at the Board meeting following this paper. There was an investment of £10M for IAAPS through the Local Growth Fund, administered by the Combined Authority.

Recommendation

To note the current and emerging sustainable energy opportunities for the region.

To comment on any sustainable energy areas which Board Members consider to be of particular relevance or importance for the region, including how the Combined Authority can best support these.

Background

Why sustainable energy is important

4. Developing cleaner and more affordable energy sources is required in order to achieve net zero and deliver energy security. Sustainable energy is part of the regions approach to achieve net zero by 2030 and beyond and is being progressed alongside other work, such as the South-West Net Zero Hub and the £50M West of England Green Recovery Fund including its first investment to make more homes energy efficient.
5. The West of England Climate and Ecological Strategy and Action Plan identifies that to reach net zero we will need fully low carbon electricity. It includes a focus on increasing renewable energy generation across the region and supporting new energy systems such as hydrogen, tidal, and battery storage. Further, the British Energy Security Strategy highlights the importance of investment and innovation in wind, new nuclear, solar and hydrogen, which could see 95% of electricity by 2030 being low carbon.

How the West of England is innovating to deliver net zero

6. The West of England region is already innovating in the area of sustainable energy generation. In order to understand this more fully, and to identify areas where the Combined Authority can best support, the Strategy & Innovation Team has undertaken a desk top analysis looking at an initial nine energy areas:
 - Green Hydrogen
 - Hydroelectric & Tidal
 - Offshore Wind
 - Nuclear Fission
 - Nuclear Fusion
 - Biofuels
 - Batteries
 - Energy Storage
 - Space Energy Initiative
7. Each of these energy sources were reviewed against their importance (ie putting the region on the map; securing decent jobs and training; tackling the climate emergency; key risks) and the need for support (ie is there an identified role for the CA; evidence of industry interest; costs of no CA involvement). Reviewing what is currently happening in the region was part of the assessment.
8. The emerging conclusion is that there are a number of sustainable energy sources where the region could play a leading role, including:
 - a. **Green Hydrogen** - Hydrogen is particularly suited to sectors where electrification is not feasible or is too costly, such as buses, HGVs, rail, maritime and aviation. There is growing support and investment around hydrogen in the wider South West, including through the industry-led South West Hydrogen Ecosystem Partnership which aims to develop the production, transport, storage and use of hydrogen. Industry is prioritising hydrogen, for example Airbus has recently announced it will launch a new research hub at its base near Bristol to develop hydrogen technologies as part of efforts to decarbonise aviation. The Digital Engineering, Technology & Innovation (DETI) programme has identified hydrogen as a key priority.
 - b. **Offshore wind** – The Celtic Sea Cluster has been established with the vision to make the Celtic Sea the best place in the world to develop floating offshore wind. The Cluster has already reached out to Bristol Port and are seeking the support of the Combined Authority. The Combined Authority is actively working with the Welsh Government to understand collaboration opportunities.
 - c. **Space Energy Initiative** – Space Based Solar Power is the concept of harvesting solar energy in space. Initial research has been undertaken and involved several West of England primes, including Frazer-Nash, CGI, Airbus and Thales Alenia Space, and aligns with the West of England Space Hub work.
 - d. **Nuclear Fusion** – The Seven Edge bid to host one of the first Nuclear Fusion Prototype Powerplants (STEP) in South Gloucestershire has reached the final five with an announcement on the preferred bid expected soon. If this bid is successful, Fusion could become much more of a dedicated focus for the region. A key

advantage of Fusion is that it does not produce nuclear waste (unlike Nuclear Fission used in current Nuclear Power).

The Institute for Advanced Automotive Propulsion Systems

9. Board Members will shortly receive a presentation on the Institute for Advanced Automotive Propulsion Systems (IAAPS), which has been partly funded by £10M through the Local Growth Fund, administered by the Combined Authority. IAAPS is based at the Bristol and Bath Science Park and will undertake research and innovation that will accelerate the transition from low carbon to zero carbon vehicles.
10. Further, IAAPS has recently been awarded £2.5M from the UK Research Partnership Investment Fund (RPIF) to produce green hydrogen for its research and testing work. This new hydrogen production and storage facility is scheduled to become operational in Spring 2023.

Author: Adam Hickman, Strategy & Innovation Team