



Cornish Lithium

# BACK TO THE FUTURE

The identity of Cornwall is being transformed by investment in emerging global industries. How does the region blend the old and new? **Nicola Smith** explores

Traditionally synonymous with tourism and agriculture, Cornwall has evolved over the last decade and recent investment in emerging global industries is playing to its strengths and reshaping its profile. From floating offshore wind to solar farms, electric vehicles and space – and with Cornwall a key part of a wider Great South West ‘powerhouse’ vision – how will new industries shape the county’s future identity, and how are traditional sectors keeping pace?

“We are seeing signs of a more balanced economy and the associated benefits,” says Mark Duddridge, chair, Cornwall and Isles of Scilly LEP. “We are hoping we can make our more traditional businesses more sustainable and robust, start to see higher-tech businesses coming through, and unlock new industries around energy, data, digital and, in particular, mining critical minerals.”

## Mining meets technology

Cornwall is mineral-rich with an abundance of tin, copper and lithium, powering the rechargeable batteries integral to devices and vehicles. Forecasts suggest the UK will



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require around 80,000 tons of lithium a year by 2030, and almost 40 per cent of that could come from Cornwall.

One of the pioneers is Cornish Lithium, based at Tremough Innovation Centre in Penryn. The company has secured extensive mineral rights agreements across Cornwall, enabling it to use modern

exploration techniques in both geothermal waters and hard rock. Its 70-strong team is expected to grow to more than 300 over the next three to four years.

Neil Elliot, manager, corporate development of Cornish Lithium, says a 2022 study shows that Cornish Lithium is expected to produce a gross value added

(GVA) of £800m. "With geothermal lithium extraction in the mix, that forecast is likely to increase," he says. "Due to the generation of carbon-free heat from its lithium extraction boreholes, Cornish Lithium believes that secondary industries such as vertical greenhouses and year-round growing of crops could result in further employment opportunities."

But more still needs to be done, according to Elliot. "To develop a sustainable UK supply chain, a more significant innovation cluster must be created, including a reputable gigafactory with operable transport links from supply to production," he adds.

### Harnessing nature

Lithium is also integral to large-scale renewable power storage batteries and is an intrinsic part of the drive for clean energy, an area in which Cornwall boasts a natural advantage.

The waters around Cornwall provide some of the best resources for wind energy in Europe, and it is one of the UK's sunniest counties for generating solar energy. Nearly 40 per cent of Cornwall's electricity now comes from renewable sources (up from 6 per cent in 2009).

Cornwall was home to the UK's first commercial wind farm in 1991, while last year, five areas in the sea off Cornwall and Wales were earmarked for possible floating commercial-scale wind farms as part of the Celtic Sea project. Collectively they have the potential to deliver four gigawatts of power



Dr Chris Mann

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**Dr Chris Mann  
Bennamann**

by 2035 – enough to run nearly four million homes.

In 2011, Cornwall's first solar energy farm was built on the reclaimed Wheal Jane tin mining site near Truro, and solar energy has continued apace. In January 2022 Cornwall Council gave approval for Tregonning Solar Farm, near Quintrell Downs, that will power up to 17,000 UK homes. Renewable Connections expects to start construction in 2024.

John Leith, development director, Renewable Connections, says: "The land will remain in agricultural use with a grazing licence existing on the site for sheep. There will also be cereal cropping on approximately 25 hectares of the site, enabling the continued production of food, and support for ground-nesting birds such as the skylark."

Solar farms broadly have the support of the National Farmers' Union (NFU), proving a valuable source of income for many beleaguered farmers. Renewable energy production is a core part of the NFU's net-zero plan, and solar projects enable diversification.

David George, regional communications adviser, NFU, says: "Clearly there is a balance to be struck between farming, food security, energy generation and our climate ambitions. Utilising roofs and farm buildings for solar should also be incentivised as it delivers a sustainable method of energy production while avoiding any land-use conflict."



The Spaceport Cornwall team

### Cultivating space innovation

Cornwall is also well-positioned to drive the burgeoning space sector. As Melissa Quinn, head of Spaceport, says: "Cornwall's geography provides advantages for spaceports and launch pads, while the region's natural resources, such as tin and lithium, are essential for manufacturing spacecraft and batteries."

Spaceport Cornwall has attracted £20m in funding, including significant contributions from the UK Space Agency (£7.35m) and Cornwall Council (£5.6m). Virgin Orbit had a failed mission from its Newquay Airport headquarters in January this year, and filed for bankruptcy in April, but Spaceport Cornwall also has a partnership with US-based Sierra Space, which could lead to landings of its Dream Chaser spaceplane.

It is also continuing to grow its Space Cluster, which secured £292,000 of funding from the UK Space Agency in February. "The Cornwall Space Cluster has helped more

"The Cornwall Space Cluster has helped more than 500 companies to establish their UK and international operations in Cornwall."

**Melissa Quinn**  
Spaceport

than 500 companies to establish their UK and international operations in Cornwall," says Quinn. "Some of these companies include Intelligent AI, Exobotics, and KISPE, which have invested in Cornwall as part of their expansion plans."

She adds that the space and data sector in Cornwall continues to grow, with a GVA worth £88m and employment up 24 per cent since 2018.

### Applying space tech to farming

The cross-fertilisation of expertise from traditional to emerging industries continues with the unlikely application of space expertise to agriculture, driving clean energy.

Bennamann, a company founded by Dr Chris Mann (a physicist who has previously worked at the Space Science department at the Rutherford Appleton Lab in 2011), has developed a core technology suite that helps farmers to drive down emissions and become more sustainable by capturing agricultural waste and converting it into biomethane.

As Dr Mann says: "By using these technologies on a farm, the resulting outputs can significantly reduce the site's carbon footprint and, additionally, be distributed locally to help establish net-zero outcomes more broadly."

Bennamann's innovations also include a range of off-take by-products, including biofertiliser and bio-CO<sub>2</sub>. For example, the company uses cryogenic technologies to convert methane into liquid, allowing it to be used as fuel in tractors and HGVs. Working with New Holland and CNH Industrial, now a major shareholder in Bennamann, the company has jointly developed the world's first liquid methane tractor which it expects to be mass-produced globally in the future.

Dr Mann says: "Utilising waste and biomass to produce fuel not only for electrical power generation and heat provision, but also fuelling vehicles, is now the basis of a future in which farmers can maximise productivity while reducing their carbon footprint and establishing energy independence."

### Powerhouse pioneer

Cornwall's embracing of new industries could provide opportunities and create higher-paid jobs, while the organic collaboration between traditional and emerging sectors promises to help established industries become more robust and sustainable.

With the Great South West powerhouse initiative aiming to promote the combined strengths of Cornwall, Devon, Dorset and Somerset, and become net zero, Cornwall has a clear role to play.

"The Great South West is an opportunity to amplify our voice and allows us to talk with more authority to offers of investment, DTI and all the government institutions, and shout louder to the private sector nationally and internationally," says Duddridge. ■



Ian Burnage

## MAKING WAVES

Founded in 1956 and now located in Bodmin with 65 staff, Flann designs and manufactures microwave, millimetre-wave, and now sub-millimetre-wave instruments. As the world has become dependent on faster data transfer, Flann's products have evolved.

For example, mobile phone communication is only possible with the use of waveguide – metal tubes which carry electromagnetic waves or sound – while the aviation industry also uses waveguide, from air traffic control to whole-body security scanners.

In 2015, Flann was selected by NASA's Jet Propulsion Laboratory (JPL) to provide critical hardware for high-resolution radar components.

In December 2022, the Surface Water and Ocean Topography (SWOT) satellite launched in California, marking the first collaborative spaceflight project between Flann and NASA. SWOT is the first of its kind to survey the surface water on Earth, observe ocean surface topography and measure changes.

Flann's chief executive Ian Burnage is positive about securing the right talent and skills to capitalise on the industry's potential. "With increasing opportunities for highly skilled jobs and more specialised courses in higher education in Cornwall, we are seeing fewer people feeling the need to move out of county in pursuit of higher-paid roles or to achieve relevant qualifications."