A £10.8 million project, co-financed by the European Regional Development Fund, is the first Smart Islands Partnership project to launch. It will show how smart software can support a reliable, cost-effective, low-carbon energy system that delivers savings to homeowners and the community.

Smart Energy Islands will establish new renewable energy generation on the islands with solar photovoltaics (PV), smart heating and battery storage technology. At the moment, less than two per cent of Scilly’s energy is generated from local renewable sources.

Working with leading UK smart energy companies and local partners, Hitachi Europe will draw on its experience from a demonstration project on Maui in the Hawaiian Islands that incorporated renewable energy and all-electric vehicle solutions into Maui’s electrical grid.

An innovative Internet of Things platform – sometimes called ‘IoT’ – will be deployed connecting the Islands’ energy infrastructure and enabling it to be managed digitally in the future. The platform will be able to respond quickly to changing electric demand on the islands and it has the interactive capacity to redistribute energy to where it is most needed.

The leading energy services company, PassivSystems, will supply home energy management systems for domestic buildings.

Building energy monitoring systems for commercial properties will be installed as part of a business support package.

Moixa, the UK’s leading smart home battery company, will supply systems to allow home batteries and electric vehicle batteries to be managed by the Internet of Things platform and support the Islands’ energy system.

Journey to reduce carbon footprint begins

The Smart Islands Partnership has welcomed the Smart Energy Islands project. It provides a model for how other communities can make a rapid transition to a low carbon footprint.
The Smart Islands Programme is intended to tackle some of the Isles of Scilly’s main infrastructure and utilities issues, whilst providing a model for how other communities can profit from a rapid transition to having a low carbon footprint.

The portfolio of projects within the Programme (www.smartislands.org) includes the Smart Energy Islands ERDF-funded project delivered by Hitachi and its technology partners, and the creation of a community enterprise.

The Isles of Scilly is currently a carbon intensive community, relying heavily on imported fossil fuels and electricity to meet the community’s needs. This current situation is in contrast to the opportunity the Islands unique natural environment and engaged community presents.

The current challenges are considerable. Providing affordable and reliable electricity, drinking water, sewage treatment and waste disposal for Scilly’s remote islands population is expensive and it presents practical challenges. Solutions must all be achieved within the beautiful but sensitive environmental and heritage context of the islands. But there is an exciting opportunity on Scilly to take a fundamentally different approach to waste, water and energy.

The ambitious goals can be achieved by the introduction of an Internet of Things (IoT) platform, smartly controlling energy from waste, sewage and a mix of renewable energy sources.

Smart Islands Partnership: A new chapter for Scilly

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A low carbon transition

Smart Islands will demonstrate the potential to move rapidly from a carbon intensive to a low carbon community – and a model that can be replicated. Whilst the foundation for Smart Islands is based on developing a new integrated energy infrastructure it also has the potential to benefit other aspects of people’s lives.
The first project to be delivered by the Smart Islands Partnership is the Smart Energy Islands project, led by Hitachi Europe Ltd and supported by the European Regional Development Fund.

It is a fundamental pillar of the Smart Islands programme. The main role of the project will be to develop an Internet of Things (IoT) platform that will monitor electricity loads in houses and businesses, as well as electric vehicles, home batteries, smart heating technologies and other infrastructure, to optimise local energy use. Without this solution the Smart Islands ambitions could not be met.

The Isles of Scilly has world-class natural resources, including plenty of sunshine for solar energy and a coastline with extensive wind, tidal and wave energy options. But as highlighted in the Council of the Isles of Scilly’s 2007 Sustainable Energy Strategy, much of this has yet to be harnessed for local energy production.

‘Island Futures’, the Strategic Economic Plan published in 2014, identified key priorities for strengthening and diversifying the economy of the islands over the long term, as well as making the islands more self-sufficient and more resilient to future changes. It also suggested how these priorities might be delivered.

Consultation in 2016, during the creation of the Energy Infrastructure Plan, identified an ambition to develop a programme of domestic- and community-scale renewable energy projects. These projects will deliver local energy generation and greater energy self-sufficiency.

Up until now, only a small number of the islands’ buildings have installed solar PV due to higher costs when compared to the mainland. This is also reflected at a community scale for small solar gardens, where the cost of connecting new sites is relatively high due to electricity network constraints.

A community enterprise for Scilly

An independent community enterprise will be at the heart of the Smart Islands programme once the Internet of Things platform and renewable energy are in place. It will partner with a licenced electricity supplier to develop energy products for Scilly.

**Smart Energy Islands**

By the end of 2019, the project will deliver:

- Islands-wide energy control system providing cheaper, reliable, renewable power
- Solar PV panels on 100 homes (starting with social housing) and two solar gardens
- Updated energy monitoring for 200 businesses with support and energy efficiency advice
- A pilot of ten ‘smart’ homes with a combination of heat pumps, solar PV and storage batteries installed
- Support for a community enterprise to share the benefits of cheaper electricity
Smart sustainable buildings

There is already a strong track record for smart, sustainable buildings in the Isles of Scilly.

The design and construction of a new modular timber frame extension to the existing island hall on St Agnes is just one example. The original building built in 1874 backs on to the Browarth SSSI, in a designated Area of Outstanding Natural Beauty and a Heritage Coast and Conservation Area.

One of the main objectives was for the development to be sustainable in order to keep running costs low.

Features include underfloor heating, rooftop solar PV panels, LED light fittings, a rainwater harvesting system, and any surplus electricity generated can be stored locally or sold back to the grid.

The project received a Sustainable Cornwall Award in the Sustainable Built Environment category in 2014 and was shortlisted for ‘Eco Project of the Year’ in the Michelmores South West Property Awards.

Smart homes

There are many technologies that can be used in smart homes. For example intelligent heating controls that automatically adjust the amount of heating required to give the same level of comfort. These controls, when combined with a programme of retrofitting better insulation, and more efficient heating can result in much more energy efficient homes, lowering the cost to keep them warm.

The majority of houses on the Isles of Scilly use oil, wood or inefficient electric heaters for heating. Whilst there are modern, well-insulated houses, many are old and poorly insulated and building costs on the Isles of Scilly are up to 40% higher than the mainland to rectify older homes.

Solar energy (electricity and heat) can, in a smart home, be optimised, by automatically turning on appliances or charging electric vehicles when the home is generating surplus electricity. Homes can store their own energy to use during the evening in domestic batteries. This intelligent use of energy across the network can also support the wider energy system by smoothing out peaks in electricity supply and demand.