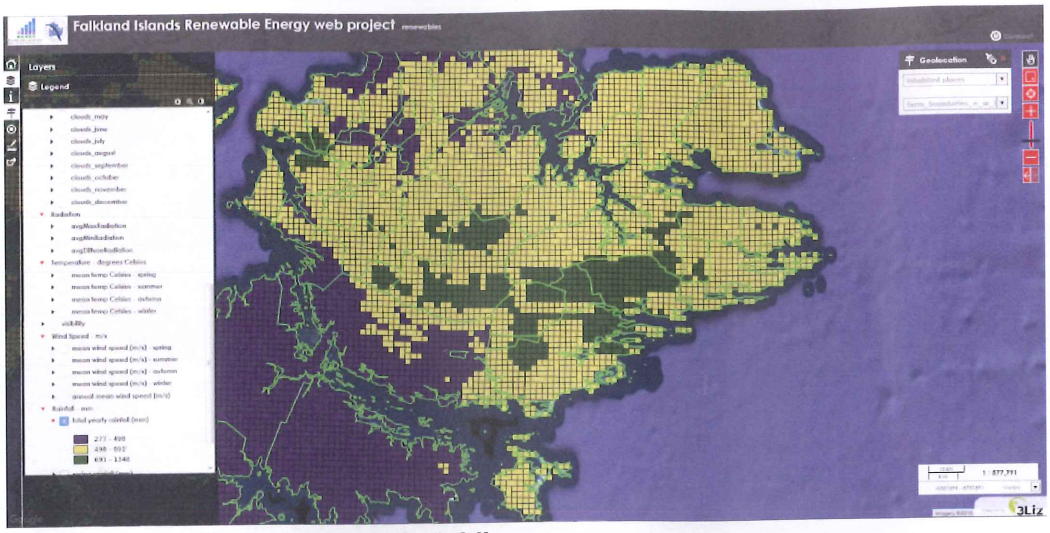


webGIS page depicting average annual rainfall

Mapping Rural Renewable Energy Resources and pooling expertise

FOR decades the Falkland Islands has been world leaders in the introduction of sustainable energy systems into their energy mix.

The current installed electricity generation capacity of the Falklands is 22.2MW (estimated 2015), of this, 18.8MW (84.6%) is from fossil fuel generation; 3.4MW(14.9%) is from wind generation and 0.07MW (0.5%) is from solar generation.

From the 3.47MW (15.3%) of installed capacity from renewable sources it is predicted that 37% of the total annual demand of the Falkland Islands (eg the electricity required by users) is covered. (information from Falkland Island Government). In other words the Islands regularly generate almost two fifths of their annual energy needs from renewable sources, an amazing achievement!

This is one of the reasons that in 2016,The Falkland Islands was declared a "Renewable Energy Champion" by the International Renewable Energy Agency (IRENA).

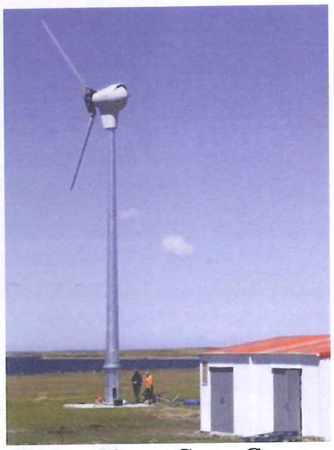
The Falkland Islands Government has set no official renewable targets but has approached the UK Government to be included as a signatory to the Paris Agreement, which one of the aims is: "Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change."

The Falkland Islands is well placed to meet all targets and challenges set by the need to increase the level of sustainable energy in the energy mix to contribute to governments worldwide meeting the above aims and the islands can set an example to other nations as to how this can be done.

The Challenge

As every resident or visitor to the Falkland Islands will know, there are a number of good sources of sustainable energy, these are wind, solar radiation, water, tidal range and sea current.

Without being able to understand the resource data it is hard to calculate the payback or saving that installation of a renewable energy technology can have to an individual or company, this could be limiting the investment into renewable technology.



Wind turbine at Goose Green

The Development Corporation (FIDC) set out to pull together all available expertise and information on renewable resources and make them available to individual households or business on an interactive internet basis.

How did we go about it?

The (UK) Falkland Islands Trust (FIT) (through its consultant, Jim McAdam) has, over the past few years, been involved in a project to assess the potential impact of climate change on plants, soils and farming in the Falklands. One part of this project was to gather all available weather records for the Falklands and surrounding regions to make them available to climate change modellers.

For such a relatively small place off the southern shores of a continent which has poor climate documentation, the Falklands has a reasonable climate record for some of the important variables which go towards making up renewable resources. The problem was to find all these and to patch together the often short-term runs of records from scattered camp stations.

Through the Trust's good linkages and relationships with the recording station at the Institute of Patagonia in Punta Arenas, it was able to get access to a long chain of rainfall, temperature and wind records from there – most of the Falklands weather comes from the westerly direction.

The Trust was able to source a landscape and environmental consultancy firm in Northern Ireland (Park Hood Environmental),give them the Falklands data on wind, sunshine, cloud cover and rainfall to produce island-wide distribution maps for these.

The next stage of the project was to make these available to the end user, this is where local experts South Atlantic Environmental Research Institute (SAERI) became part of the project.

Delivery of the product

In the last three years a lot of effort has been put into developing and building a data centre for the Falkland Islands. Based at SAERI, the Information Management System (IMS) and Geographic Information Systems(GIS) data centre provides data users, e.g. researchers, government officers, conservationists and private sector, the opportunity to learn about collecting, documenting, accessing, managing and using geographic data in a more effective, quicker and simpler way.

In this particular situation, the data centre was requested to help produce the Falklands renewable energy resources project into a webGIS service in order to make the data accessible to everyone.

The main benefit of webGIS is its simplicity, in fact there is no need to be an expert in GIS to navigate through the project, just switch on/off the data layers and obtain a map. In fact, it is all about deciding which data layer has to be displayed on the map and then click on it. The users can zoom in and out or target the zoom to farm and settlement names. Additionally, users can click on the features in the map and retrieve information on the attribute values, for example millimetres of rainfall, degrees of temperature and, type of soil, geology so on.

Where to find the map?

A link to the map can be found on FIDC website (http://www.fidc.co.fk/rural-development-stategy/gis-resourse-map) or SAERI website in the webGIS section.

Might our renewable energy resources change over time?

As mentioned above, FIT has been involved in sourcing climate change predictions for the Falklands. To date these have been carried out for temperature and rainfall only,

The prediction is that temperature will increase by about 2°C maximum over the next century with little change in total rainfall. However, given that as air warms it holds more moisture, it is likely that the frequency and distribution of rainfall will change with heavier bursts of rain predicted – and the associated flooding risks.

Andrew Crighton
Rural Energy Advisor