PROJECT REQUIREMENT FORM

Project title

Solar Offset

Client name

Andy Stratton

Project advisor

Project description

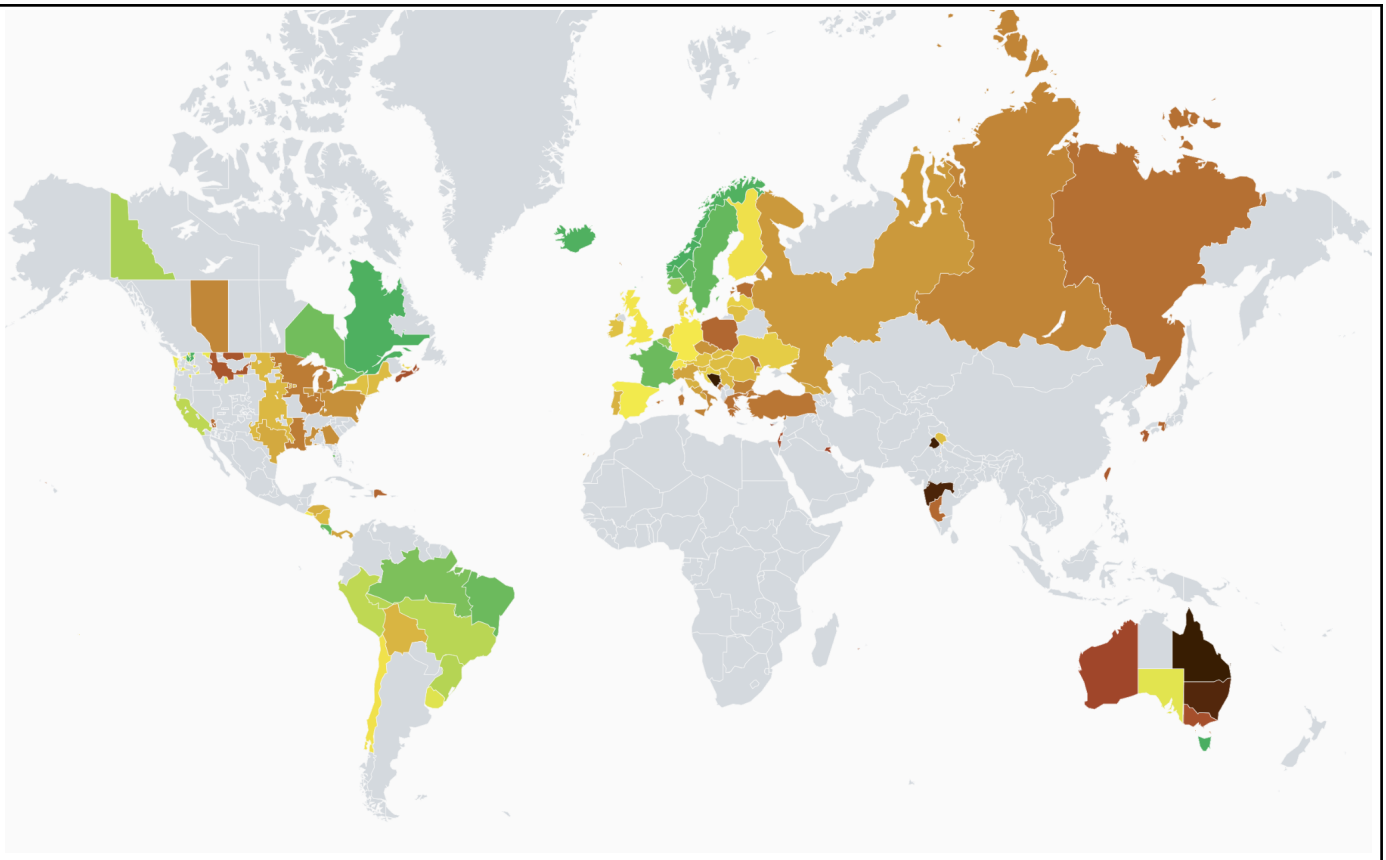
In the UK solar power currently provides ~4% of electricity in the UK with upto 20% efficiency. However, many UK properties have little or no possibility of adding solar panels since they have no roofs or gardens to site panels in. These households may wish to go Carbon neutral but cannot do so through solar panels.

A further issue is that Gas boilers, which are in dire need of being replaced with (potentially carbon neutral) Hydrogen ready boilers, are only in very early stages of being available. Even if households do buy Hydrogen ready gas boilers, they will not be switched over to Hydrogen until the whole street is switched over, since the same gas supply is used for the whole street. This could take 10 years or more before this happens.

In the meantime, in parts of the world where Solar might be a better option, solar power is even rarer; for example, the UK generates 2.86 times the solar electricity of the **whole of Africa**. This despite the low potential for solar in the Uk compared to Africa - see also https://globalsolaratlas.info/

This project proposes that households in the UK wishing to reduce the world's carbon footprint might do so by funding solar power in other countries, where the benefits include the seed capital infrastructure development, localised power generation (i.e. off grid), carbon reduction (that can be replacing much 'dirtier' power stations than the UK has), employment, etc..

The project aims to offer a web application that allows households to fund solar panels/power in a country of their choice and then see the carbon saving that they are making compared to their own carbon footprint. It could be useful to use the electricity API at https://electricitymap.org/ which might be used to show comparisons with other countries that could be funded to reduce their carbon footprint, though only 50 countries are currently included. See also the map below from https://app.electricitymap.org/map



The Web Application will include a web server/database and a desktop or mobile interface should be developed.

Features list

What are the key features of the software? Please list at least 8

1. Standard account registration and login.
2. Allows householders to compare carbon benefits for different countries, i.e against the current carbon production for electricity.
3. May also be used to compare electricity availability, e.g. power grid/network availability.
4. Shows current solar funding with electricity generated and carbon footprint savings.
5. Allows householders to identify their household current carbon footprint, preferably through a third party, by age of property, insulation, electricity usage (by yearly or monthly adjusted for time year).
6. Shows total cost of installation for solar panels by country - typically only two countries would be initially available since this data may be hard to come by.
7. Should also allow households to compare countries by their potential solar power generation as well as to consider other aspects such as the population and the benefit to the communities.
8. The countries available should be included with (realistic) descriptions that would allow a household to fund with more knowledge and confidence.
9. Admin accounts and likely staff accounts for non user management processes.
10. Admin role can upgrade accounts for staff.
11. Payments should be via paypal and stripe (sandbox only).
12. An Admin dashboard will need to be available for managing users accounts.
13. Relevant reports should be available for staff, e.g. countries chosen, panels bought, totals for carbon offset, etc.

Application users

Who are the primary users of the application?

Householders who are most likely to be home owners or long term renting, who are concerned about their carbon footprint but have no realistic methods of generating, or currently using, carbon neutral energy.

Programming language required

What programming language does the customer require students to use?

Web application GUI - i.e. Html and CSS with JavaScript. Server to be Python with Flask/Django, Ruby on Rails, NodeJS or Go(lang). Database to be SQL (or MongoDB).

Database required

Does the system require a database?
What database does the customer require students to use?

Yes. (My)SQL or possibly MongoDB should be used.

Data provided

What data (or document) is the customer providing?

N/A

Out of scope

What is considered out of scope?

Investing in Solar Power is not an option - this is funding for infrastructure and a one way spend which cannot be ‘traded’ to others. This is to bring about real change, not to invest in green energy which would likely give better financial, but not carbon reducing, returns in the Global North.