Background information

* Research what is a carbon footprint

<https://books.google.co.uk/books?hl=en&lr=&id=GCkU1p_6HNwC&oi=fnd&pg=PA1&dq=what+is+carbon+footprint&ots=D2zVKGbjPu&sig=bpMQlpoQMsCzp03IINOPUdnUG4M&redir_esc=y#v=onepage&q=what%20is%20carbon%20footprint&f=false> amount of gaseous emissions that are relevant to climate change and associated with human production or consumption activities.

* ~ GHG <https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1029/99EO00325> - needed to warm up the earth and be able to sustain life on earth, but too much causes global temp increase which leads to climate change.

~What is carbon dioxide/ what does it do. <https://direct.mit.edu/rest/article-abstract/80/1/15/57053/World-Carbon-Dioxide-Emissions-1950-2050> is the product of burning fossil fuels but this contributes to long-term climate change.

<https://www.climate.gov/news-features/understanding-climate/climate-change-atmospheric-carbon-dioxide#:~:text=Carbon%20dioxide%20concentrations%20are%20rising,in%20just%20a%20few%20hundred>. Reacts with the ocean and creates carbonic acid which lowers the oceans pH and overall affects all living organisms in the oceans.

~What contributes to it. <https://www.sciencedirect.com/science/article/abs/pii/S1364032116310693>

<https://www.jstor.org/stable/24966657> – travel, cars, planes to export food to different countries, using electricity,

~What is the lasting affect of it and how can we prevent it.

* R shiny vs VSC

~Making a website as it is more accessible as everyone has access to the internet and a device.

~VSC pros and cons for using this as making a website – can’t use graphs.

~R studio pros and cons for using this – can make graphs to display.

Rshiny:

<https://www.rstudio.com/products/shiny/>

<https://posit.co/products/open-source/rstudio/>

Access the RStudio IDE locally

Syntax highlighting, code completion, and smart indentation

Execute R and Python code directly from the source editor

Quickly jump to function definitions

View content changes in real-time with the Visual Markdown Editor

Easily manage multiple working directories using projects

Integrated R help and documentation

Interactive debugger to diagnose and fix errors

Extensive package development tools

RStudio is an integrated development environment (IDE) for R and Python. It includes a console, syntax-highlighting editor that supports direct code execution, and tools for plotting, history, debugging, and workspace management. RStudio is available in open source and commercial editions and runs on the desktop (Windows, Mac, and Linux).

Shiny is an open source R package that provides an elegant and powerful web framework for building web applications using R. Shiny helps you turn your analyses into interactive web applications without requiring HTML, CSS, or JavaScript knowledge.

For the framework of the application, there were two suitable options: R shiny and Visual Studio Code.

R shiny is an open source R package that provides a framework to build a web application using the language R. It allows web applications to become interactive. RStudio is an Integrated Development Environment for R. It has lots of useful functions that helps beginners to code. It provides syntax highlighting to help find any syntax errors, smart indentation to make the code more neat and readable. It has code completion which is a useful tool for a beginner as it suggests relevant code and helps to ensure any variable names are accuratly spelt. The IDE has an interactive debugger to diagnose and fix errors. R has lots of different packages that can be installed within the IDE, which is convenient as it shows within the library which packages are available to use.

VSC:

editor - can open as many as you like so can code multiple things at once.

minimap - allows you to see full code in a minimap and jump to any section

From FS - For the framework of the application, Visual studio code is the best option as it is the most user friendly. It helps users to code by highlighting any syntax errors, matching brackets and it allows users to debug any errors whilst offering helpful solutions (Why visual studio code? 2021). Visual Studio Code provides an Integrated Development Environment (IDE) which supports coding in JavaScript, JSON, HTML, CSS etc. (Language support in visual studio code 2021). HyperText Markup Language (HTML) will be used to create the user interface along with Cascading Style Sheets (CSS), which will be utilised to format and style the interface. JavaScript will be used to code the backend of the application to make sure the user interface runs smoothly.

Rshiny is the better option as it allows for graphs to be shown and is more interactive with the user. This helps to engage the user and show them the visual affect they have.

* Think about colour – green colours maybe? Accessible for colour blind people

~Heuristics

~Green is associated with leaves and the environment.

~However, some people struggle to see green so needs to be more accessible to them.

~Evidence for colour blind and what colour to do instead so they can see it.

* How to calculate carbon footprint (look at all the potential calculations and compare)

~[Carbon footprint: current methods of estimation | Environmental Monitoring and Assessment (springer.com)](https://link.springer.com/article/10.1007/s10661-010-1678-y)

~[Carbon footprint calculator (carbonindependent.org)](https://www.carbonindependent.org/index_v3.html)

~ [CoolClimate Calculator (berkeley.edu)](https://coolclimate.berkeley.edu/calculator)

~ [carbonfootprint.com - Carbon Footprint Calculator](https://www.carbonfootprint.com/calculator.aspx)