



# **Economic Growth, Equality & Sustainability**

**An analysis of the UK alongside other competitive nations**

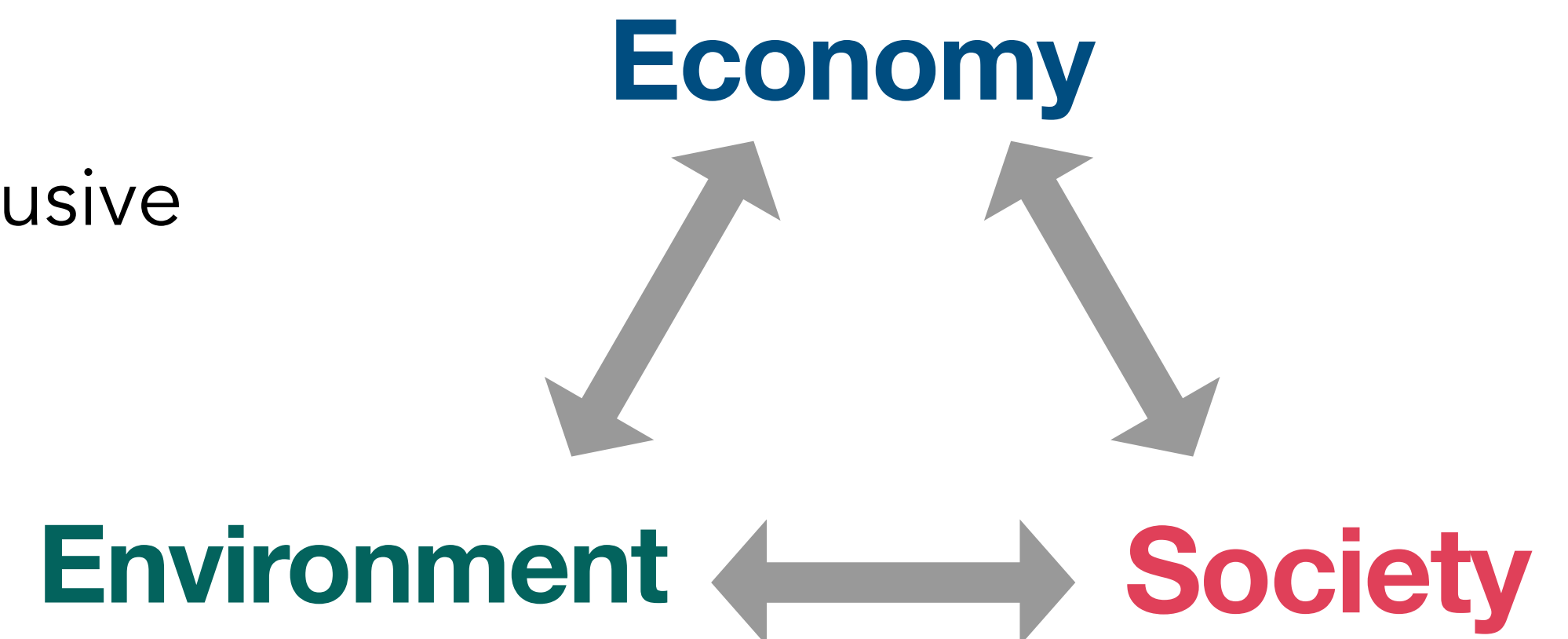
# The project brief & my approach

According to a report by the World Economic Forum, growth in the last decade has been underwhelming. While there are a wide range of factors that influence economic growth, it highlights the lack environmental sustainability and social equity as being important factors limiting long term growth.

The report states that productive, low-carbon, inclusive economies are the only viable option going forward, yet few economies are on such a trajectory.

This project addresses:

- 1) Which countries are excelling in creating sustainable & inclusive economies?
- 2) How does the UK compare to these countries?
- 3 In which areas can the UK improve?



# Data Sources

## SolAbility

- Global Sustainability Competitiveness Index



## World Bank World Development Indicators

- Global Competitiveness Index
- Global Gender Gap Index
- Gini Index



## Our World in Data / National Atmospheric Emissions Inventory

- CO2 & Emissions Data



## Global Footprint Network

- Ecological Footprint & BioCapacity



## BP

- Renewable Energy Consumption & Generation

## Sustainable Development Solutions Network

- World Happiness Score

# Tools & Workflow

- R & RStudio
- Data wrangling: tidyverse, janitor, countrycode
- Data visualisations: ggplot2
- Cluster analysis: base R, factoextra, broom
- Spatial data tools: sf & rworldmap

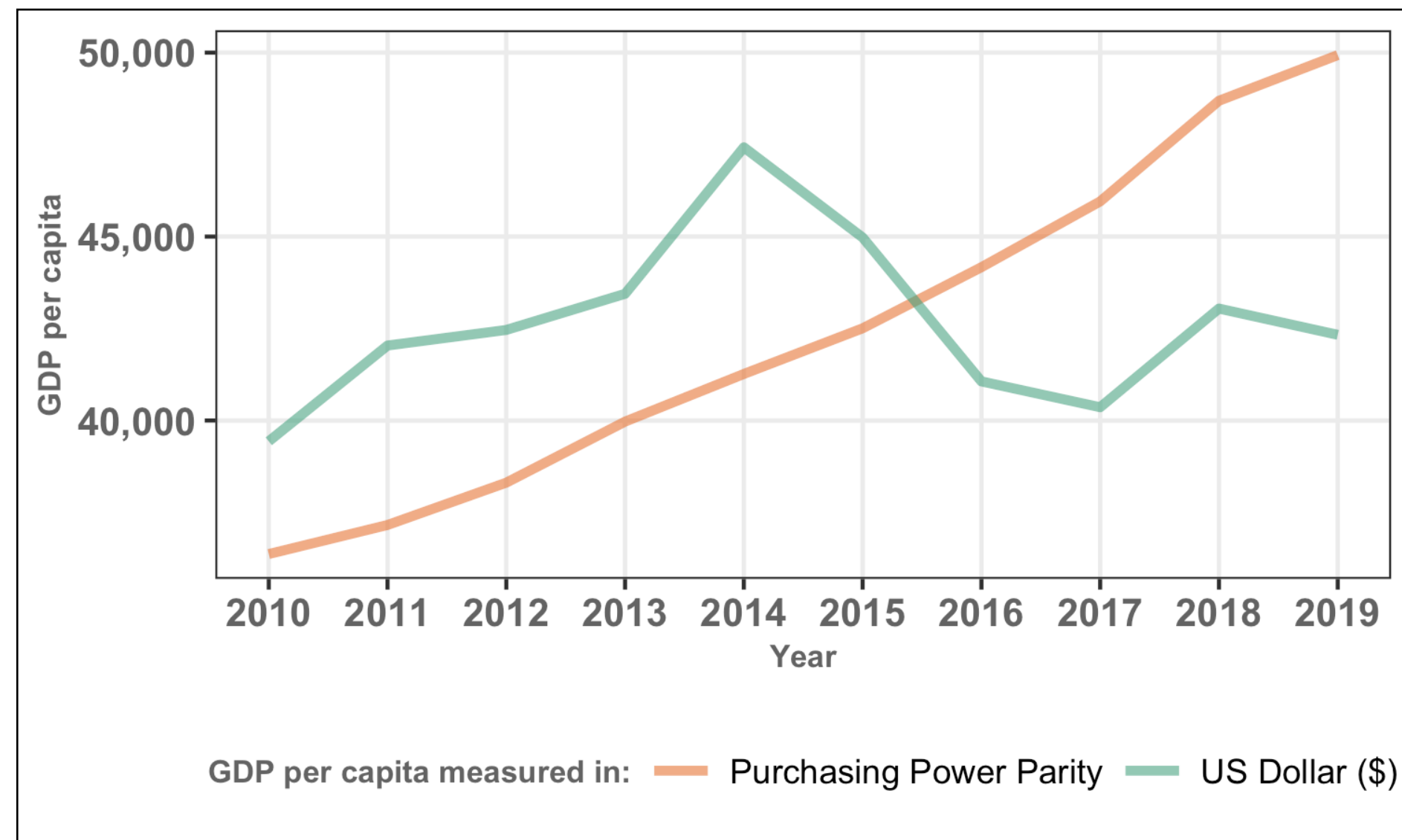




# Economic Snapshot

## From 2010 until 2019

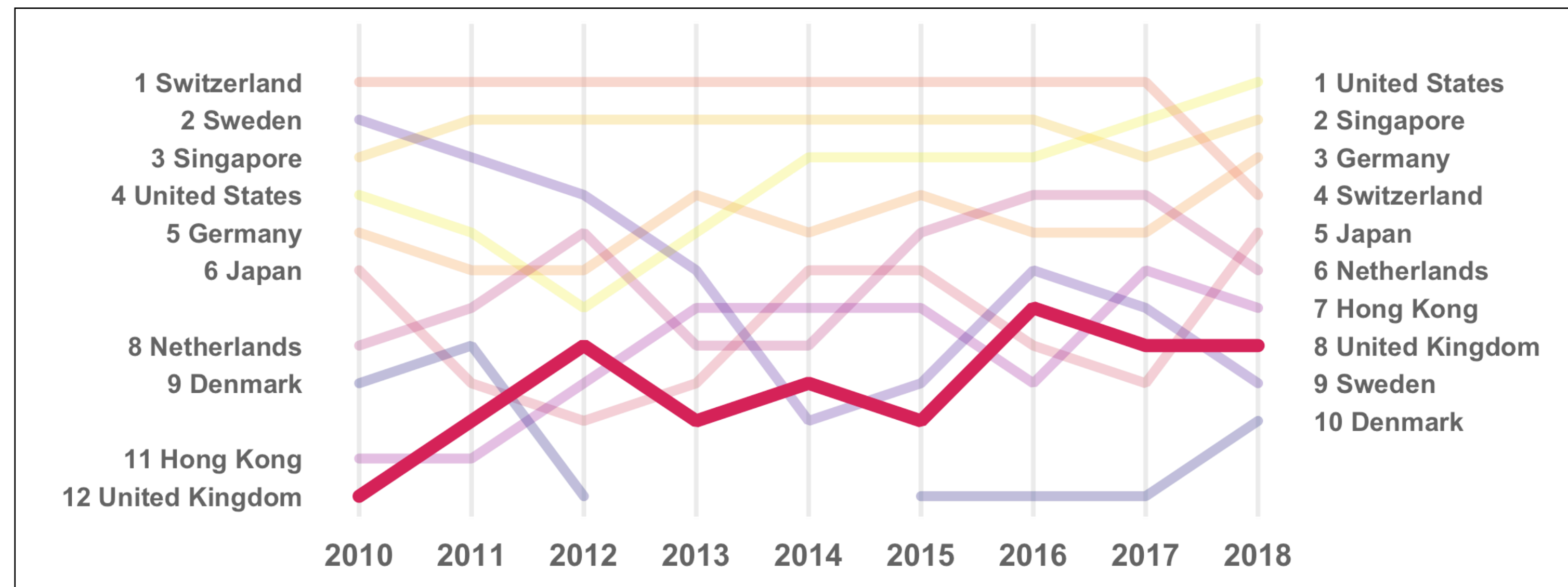
### GDP per capita in the United Kingdom



### GDP per capita

- Steady increase in GDP per capita when measured in Purchasing Power Parity instead of US \$

### Country Rankings of Global Competitiveness Index



### GCI

- UK's ranking has stayed at 8th place as of 2020 report
- Rankings are fairly stable

# What is Global Competitiveness & how is it measured?

The World Economic Forum defines **global competitiveness** as  
"the ability of a country to achieve sustained high rates of growth in gross domestic product GDP per capita."

The GCI is an index of 0-100, comprised of 108 metrics from 12 pillars to reflect:

## Enabling Environment



Pillar 1  
**Institutions**



Pillar 2  
**Infrastructure**



Pillar 3  
**ICT adoption**



Pillar 4  
**Macroeconomic stability**

## Markets



Pillar 7  
**Product market**



Pillar 8  
**Labour market**



Pillar 9  
**Financial system**



Pillar 10  
**Market size**

## Human Capital



Pillar 5  
**Health**



Pillar 6  
**Skills**

## Innovation Ecosystem



Pillar 11  
**Business dynamism**

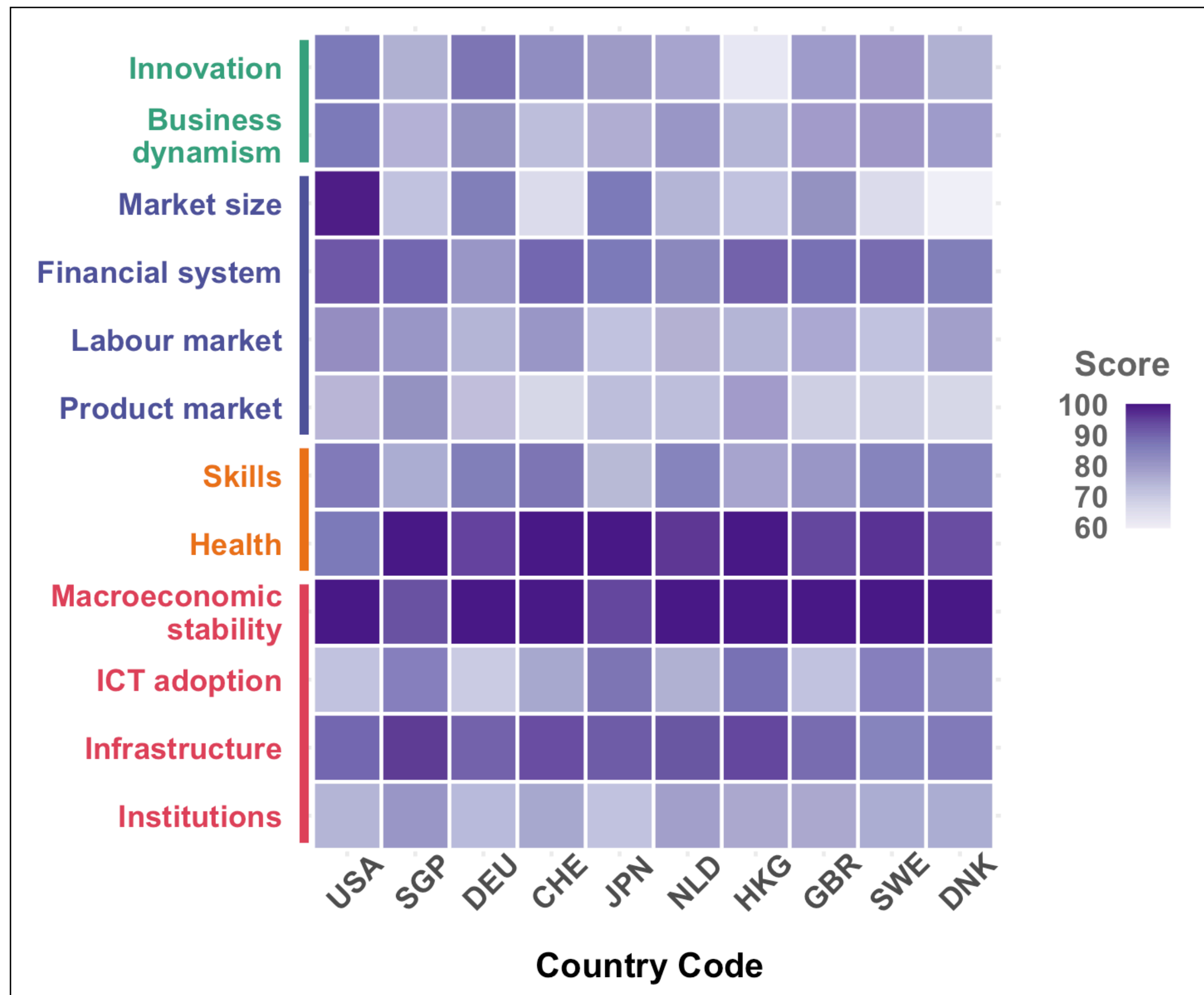


Pillar 12  
**Innovation capability**

# Global Competitiveness Index Pillars

## World Economic Forum 2018

### GCI Pillar Scores by Country



*"It has become clear that environmental, social and economic agendas can no longer be pursued separately and in parallel: they must be merged into a single sustainable and inclusive growth agenda."*

**- WEF GCI Report 2018**

Criticisms of the GCI include:

- weighted too heavily on purely economic factors
- a lot of the values are derived from surveys completed by business executives, and may not reflect the real situation

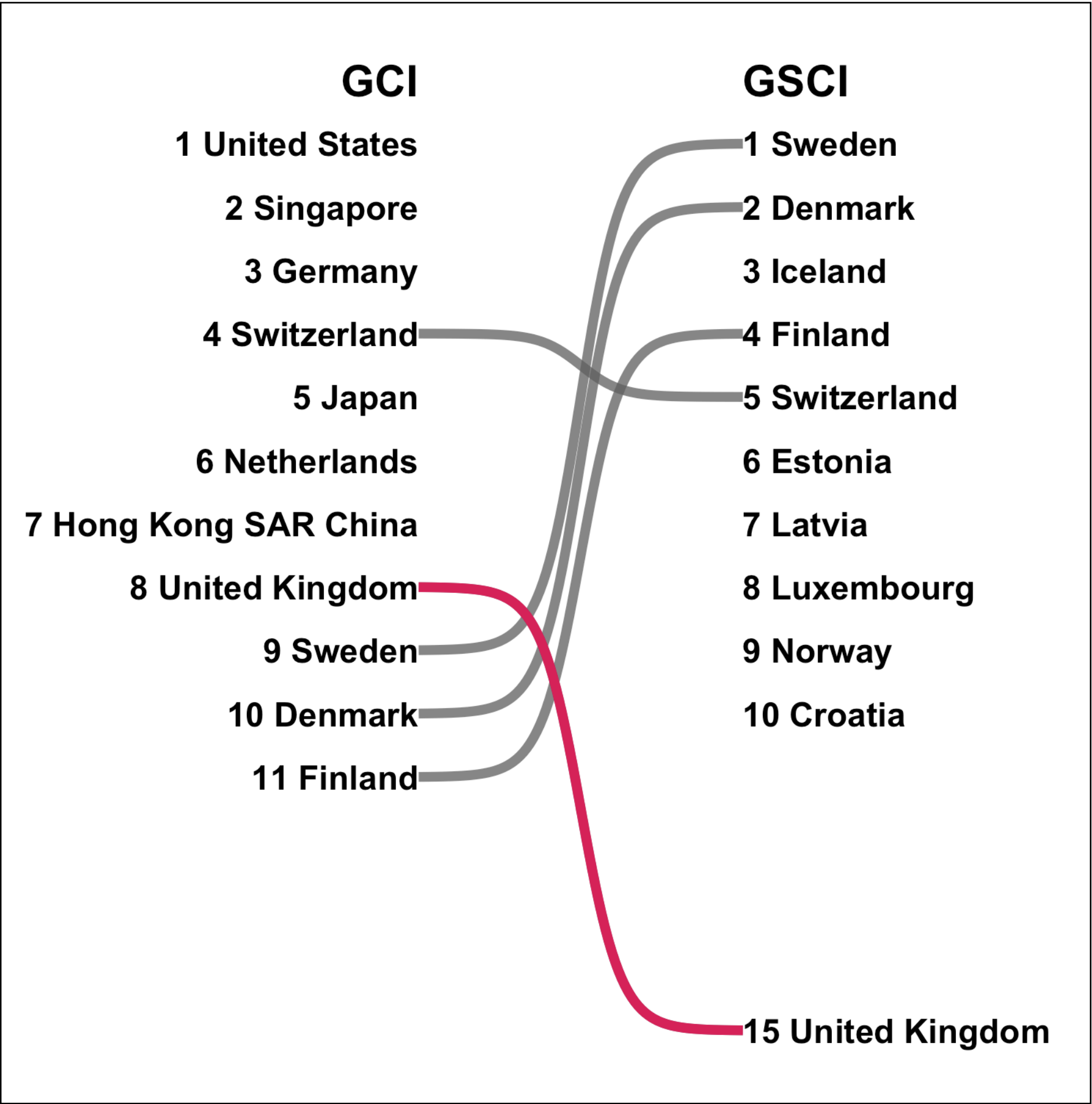
# Global Sustainability Competitiveness Index

## SOLABILITY

Calculated by Solability, a sustainability think tank, giving greater weighting to sustainability than the GCI.  
Index from 0-100 comprised of metrics from the following:

Natural Capital	Governance	Intellectual Capital	Resource Efficiency	Social Capital
Agriculture	Government cohesion	Education	Resource management	Wellbeing
Biodiversity	Infrastructure	Research & Development	Energy	Equality
Emissions	Business Environment	Innovation capacity	Water	Health
Pollution	Corruption		Raw Materials	Crime
Resources	Financial Stability			Freedom

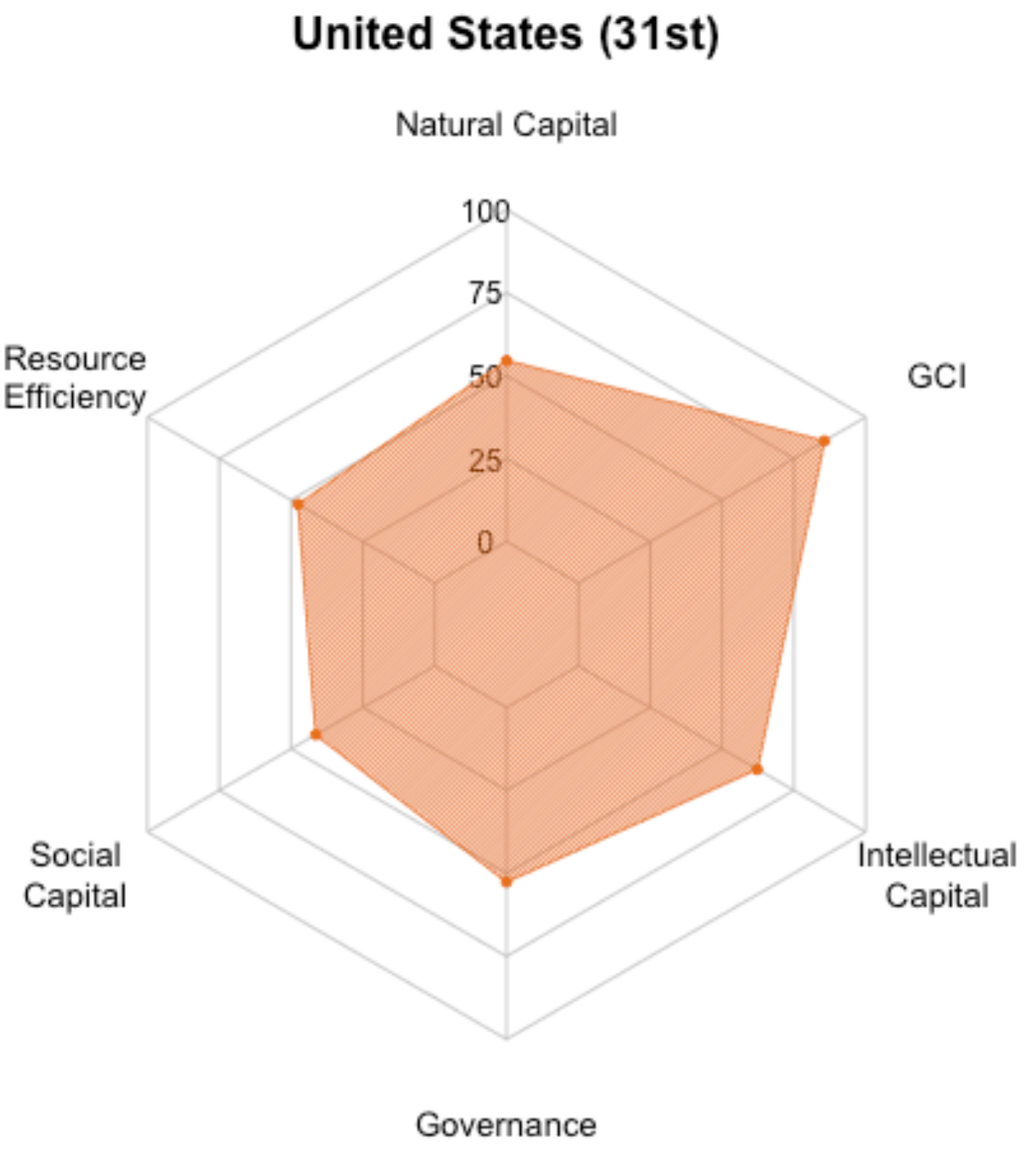
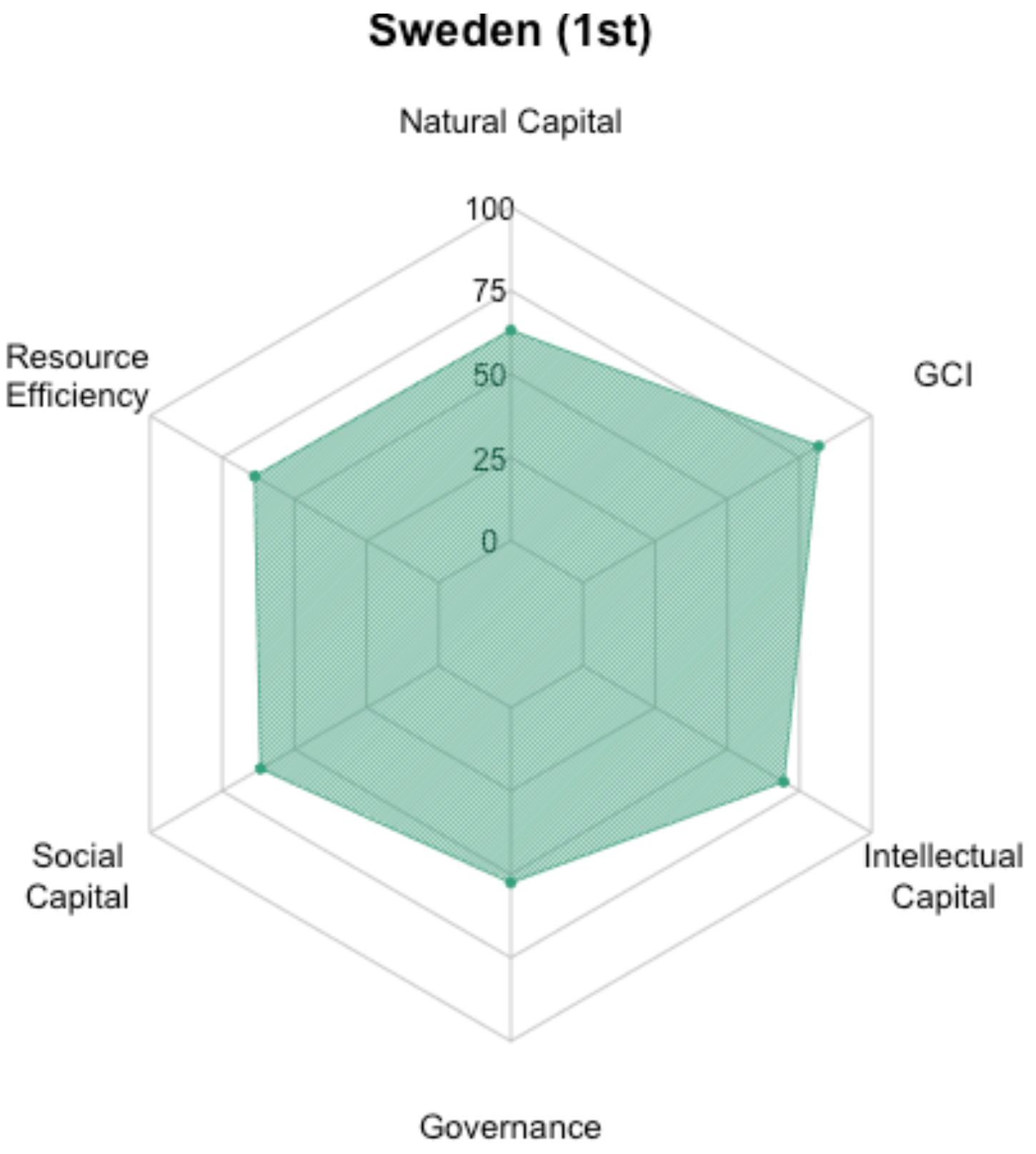
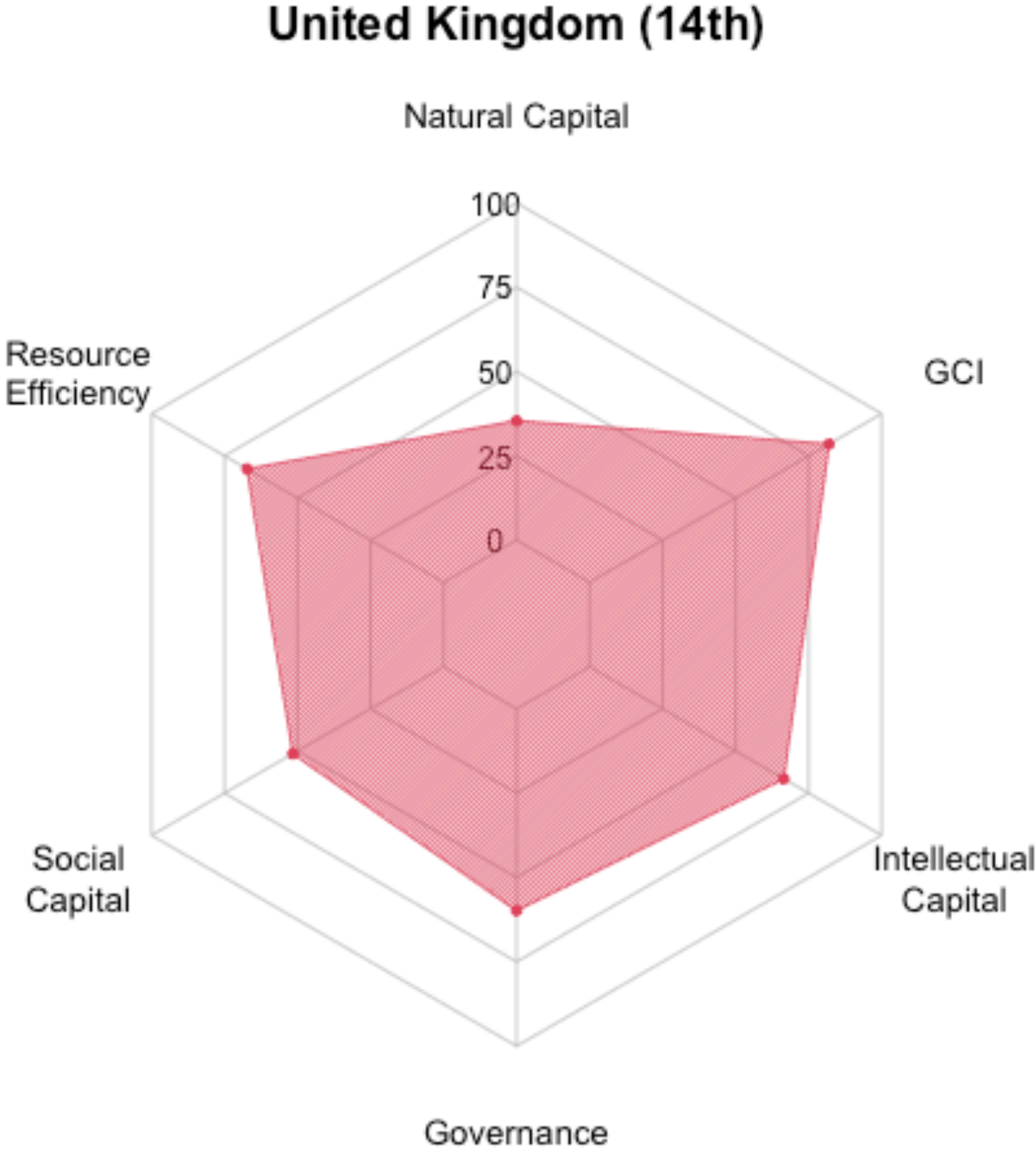
Global Competitiveness Country Rankings 2018





# Global Sustainability Competitiveness Index

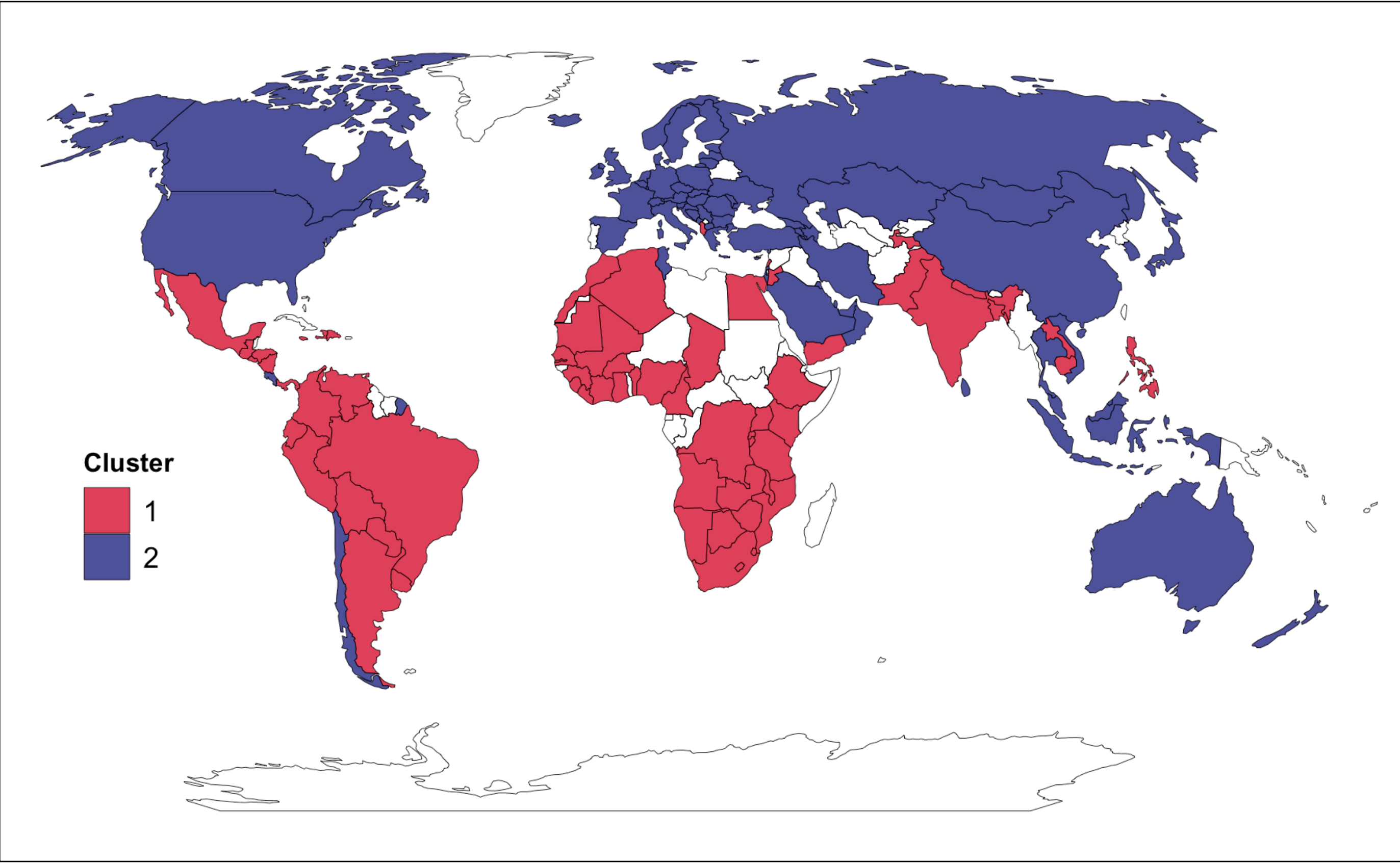
## Comparisons between highly competitive countries



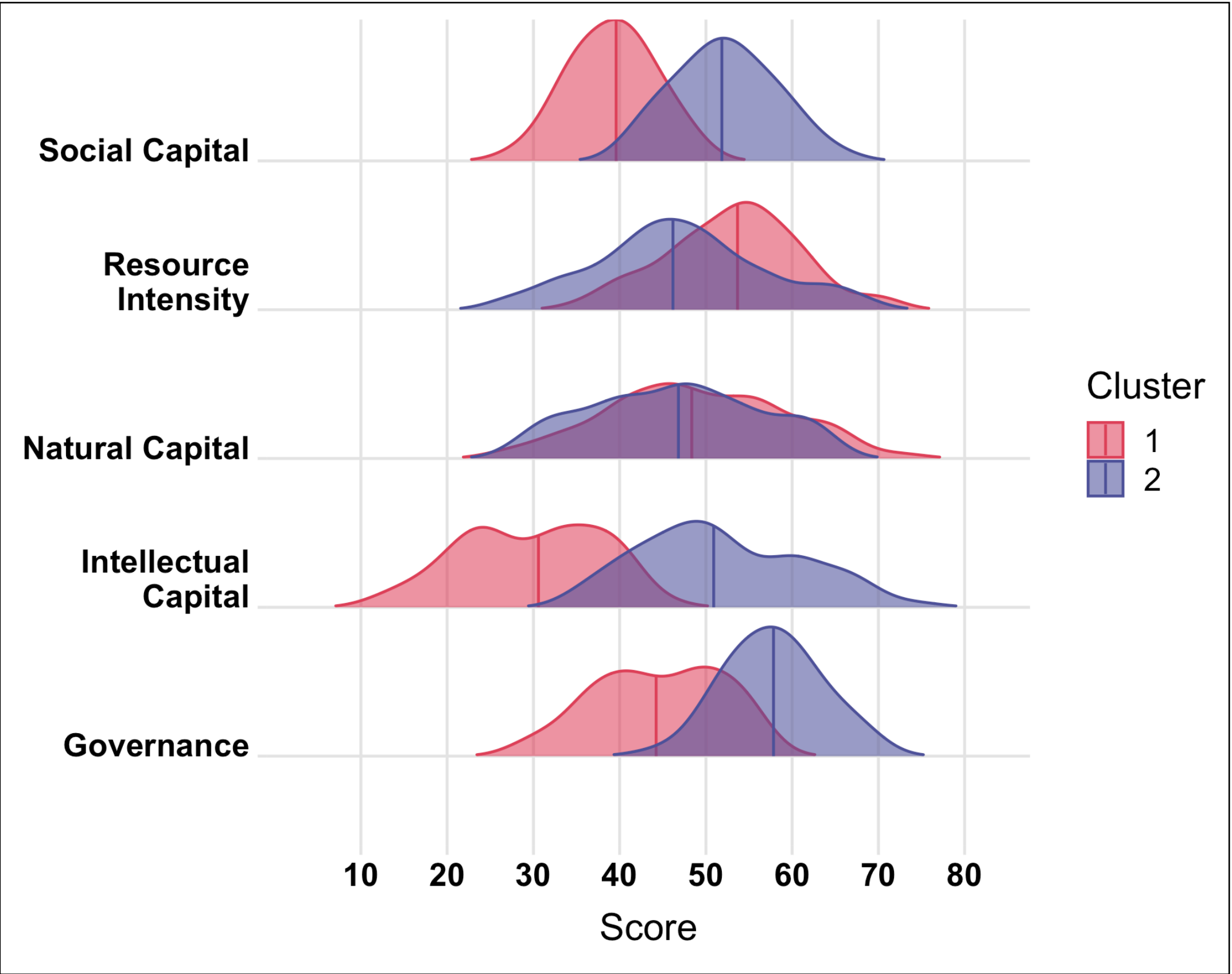
# Global Sustainability Competitiveness Index

## K-Means Clustering Analysis Results

World Map of Clusters



Cluster GSCI Distributions



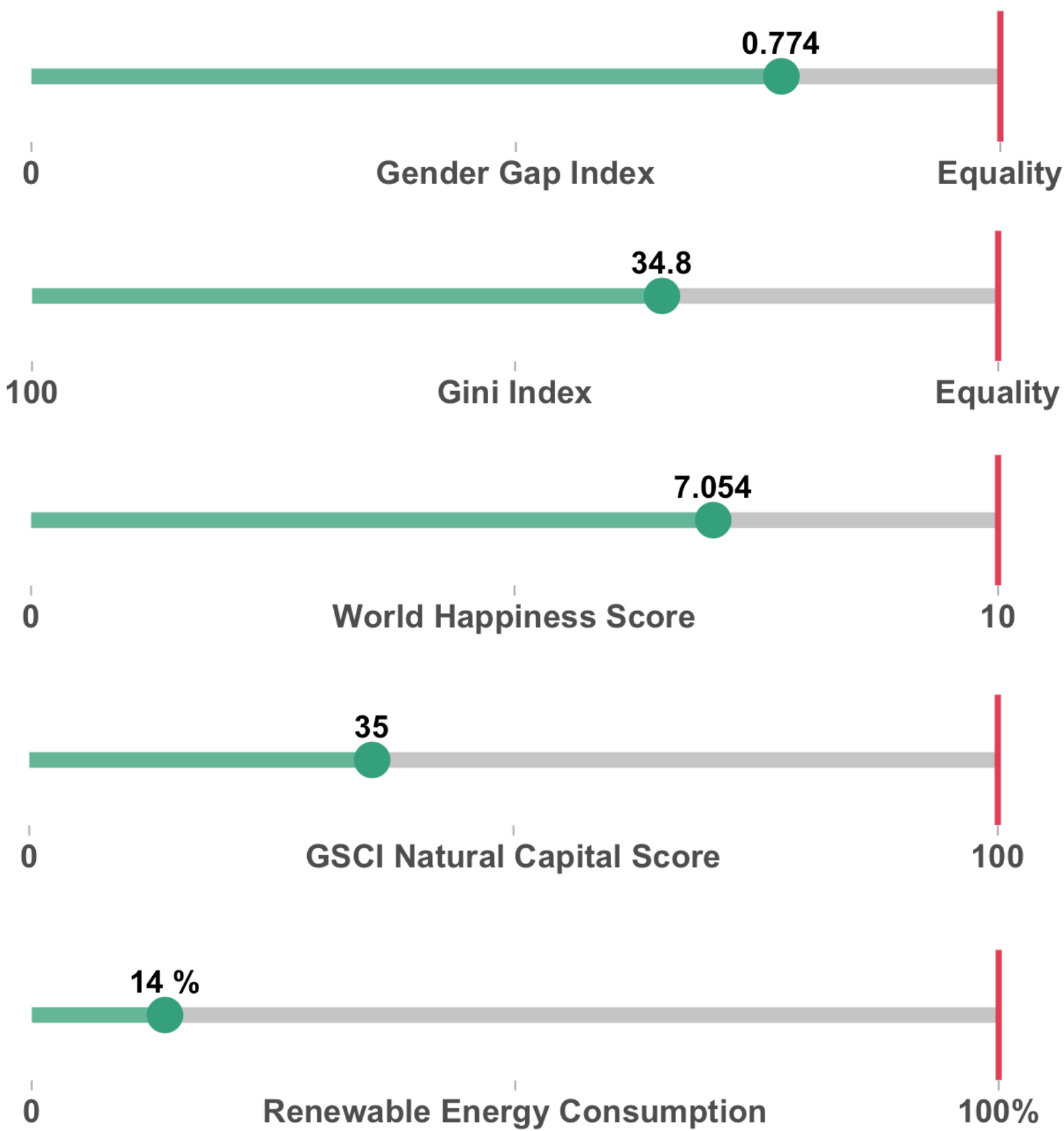


# Social & Natural Capital Progress

Measures of social equality & environmental sustainability

United Kingdom 2018

Global Rankings



15th

56th

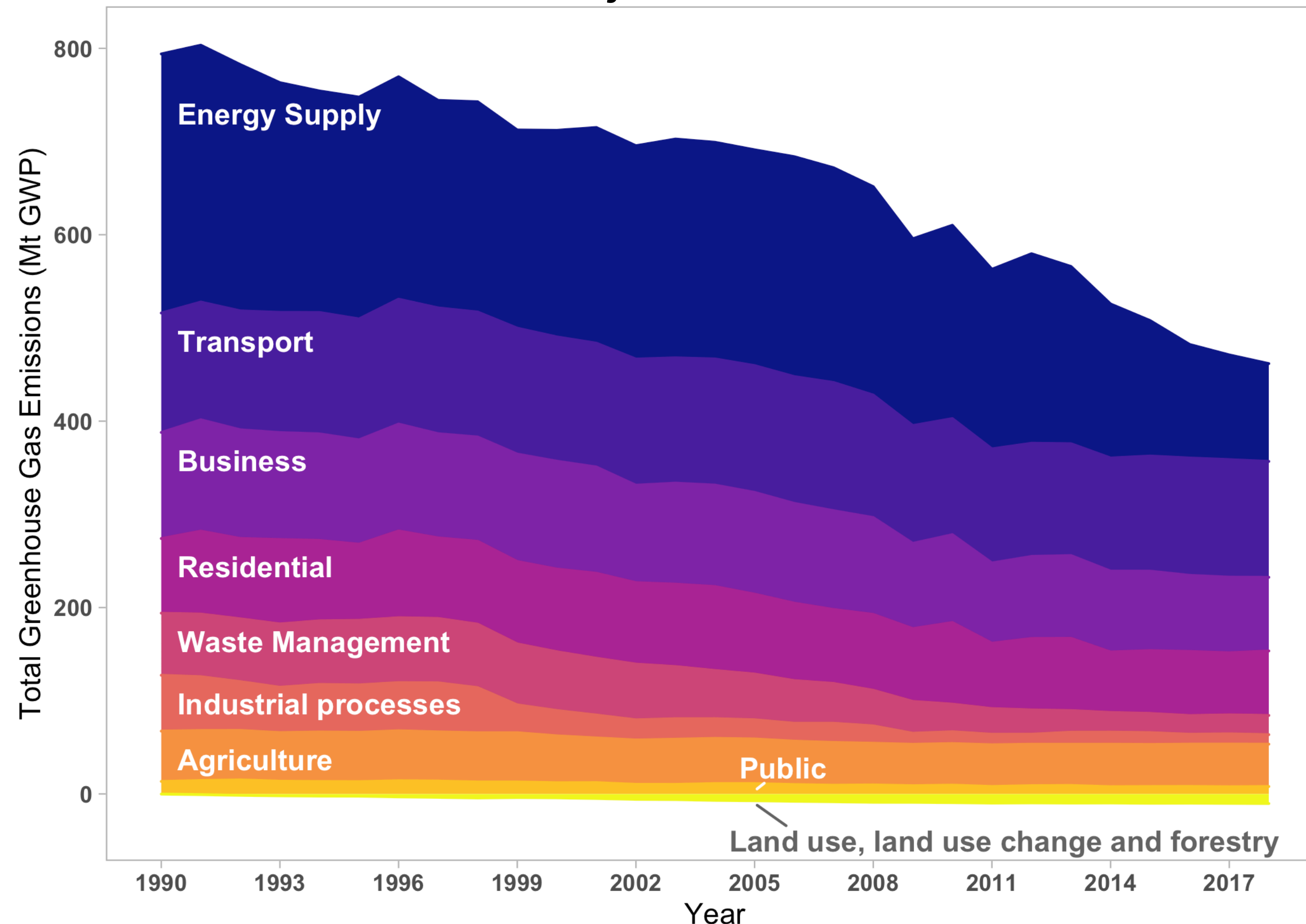
15th

139th

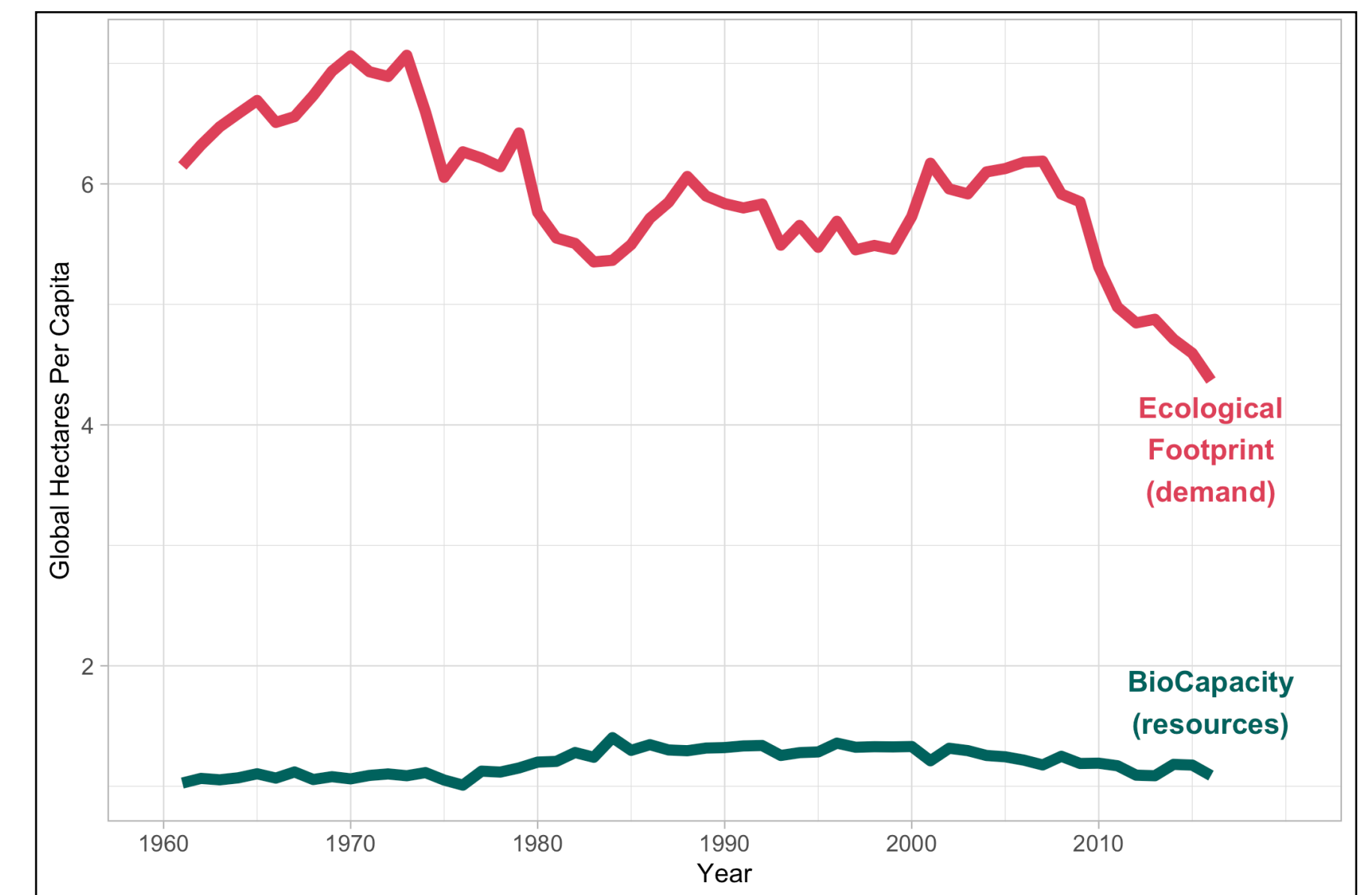
7th

# Environmental Sustainability over time

Greenhouse Gas Emissions by Sector in the UK



Resource availability and demand in the UK



## Resource availability

- The UK is narrowing the gap between its consumption ecological footprint and the resources that it has available BioCapacity

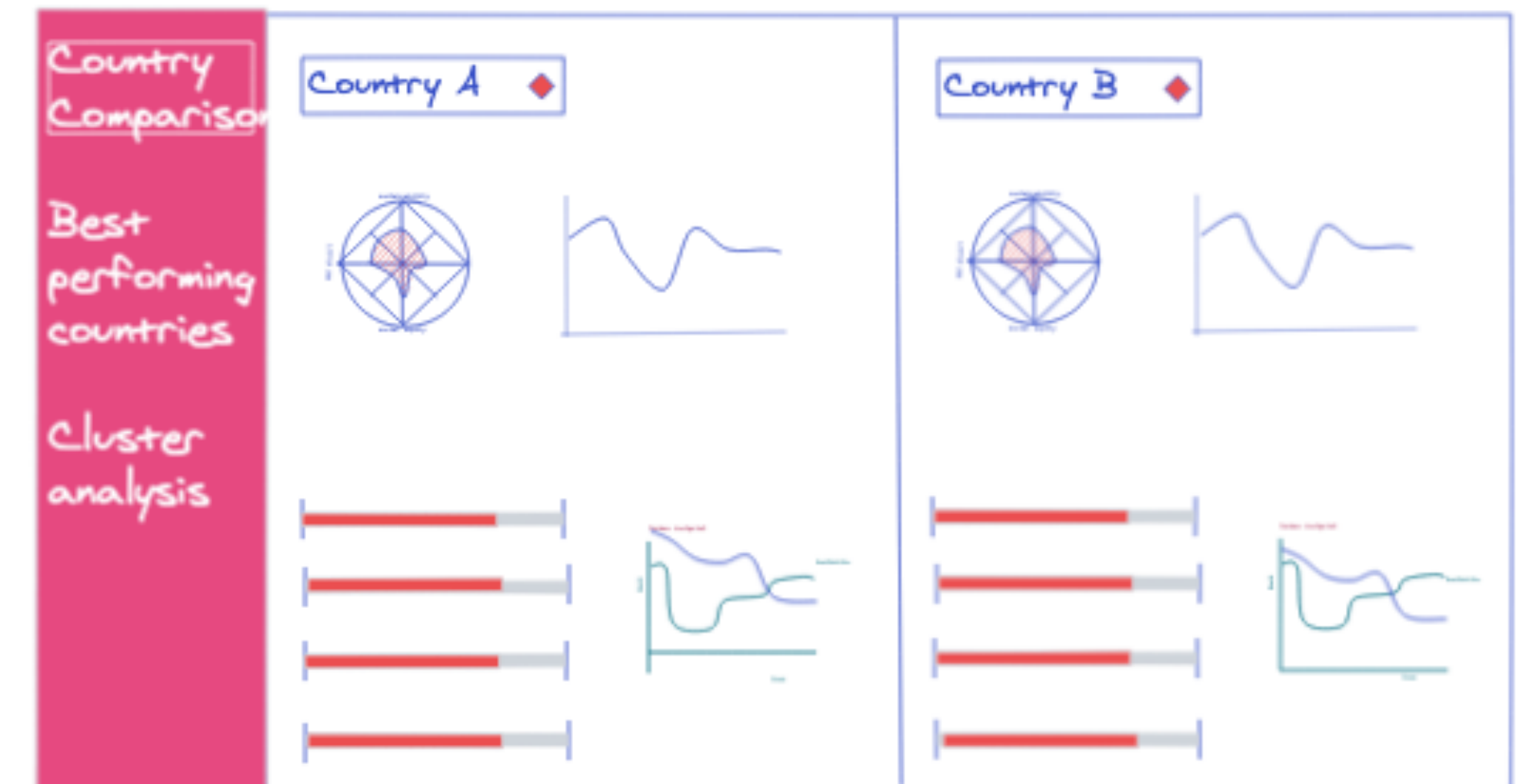


# Key Insights

- ⦿ According to the WEF, the UK ranks as the **8th** most competitive economy in the world
- ⦿ Falls to **15th** when sustainability & social equity are considered GSCI Ranking
- ⦿ Social capital requires improvement - including gender gap & distribution of wealth
- ⦿ The UK is making progress towards becoming more environmentally sustainable which should improve its natural capital rankings over time, it is currently in **139th** place.
- ⦿ **Sweden, Finland, Denmark & Switzerland** appear to be on the trajectory of productive, low-carbon & inclusive economies

# Future work

- Working on creating an **interactive dashboard** for side by side comparison of countries
- Wider selection of **metrics** to capture social equity & environmental sustainability
- Time series analysis to predict trajectories





# Thank you

Any questions?