

Sustainable Efficacy Index

by **group6**

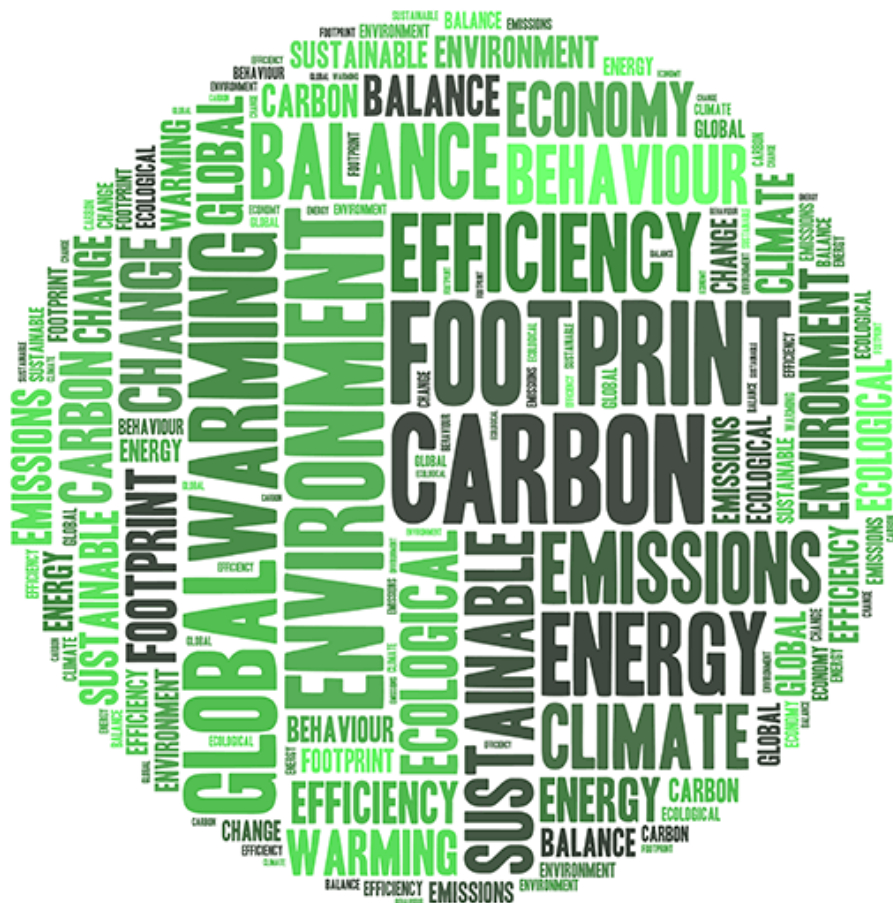
Nazmi Ahmed, Yefan Chen, Jeffrey Haviland, & Lindsay Lewis
URP 4273 / Fall 2015



Sustainability

“Sustainability is an adaptive art wedded to science in service to ethical vision. It entails satisfying current needs without sacrificing future well-being through the balanced pursuit of ecological health, economic welfare, social empowerment, and cultural creativity.”

(Thiele 5)





Introduction

- ▶ Importance of sustainability
- ▶ How does one measure sustainability?
 - ▶ People, Profit, Planet
- ▶ We used maps showing indicators about percent of land use for agriculture also utilizing population density, co2 emissions, human development and GDP.

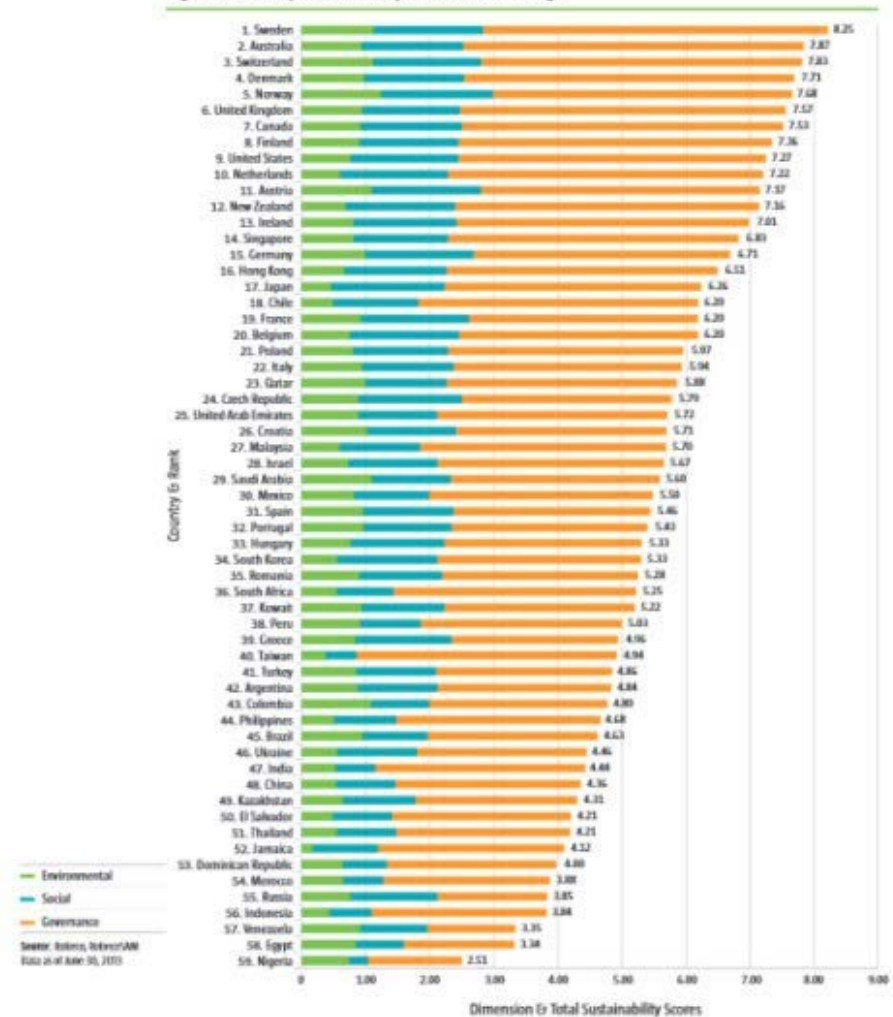


Objective

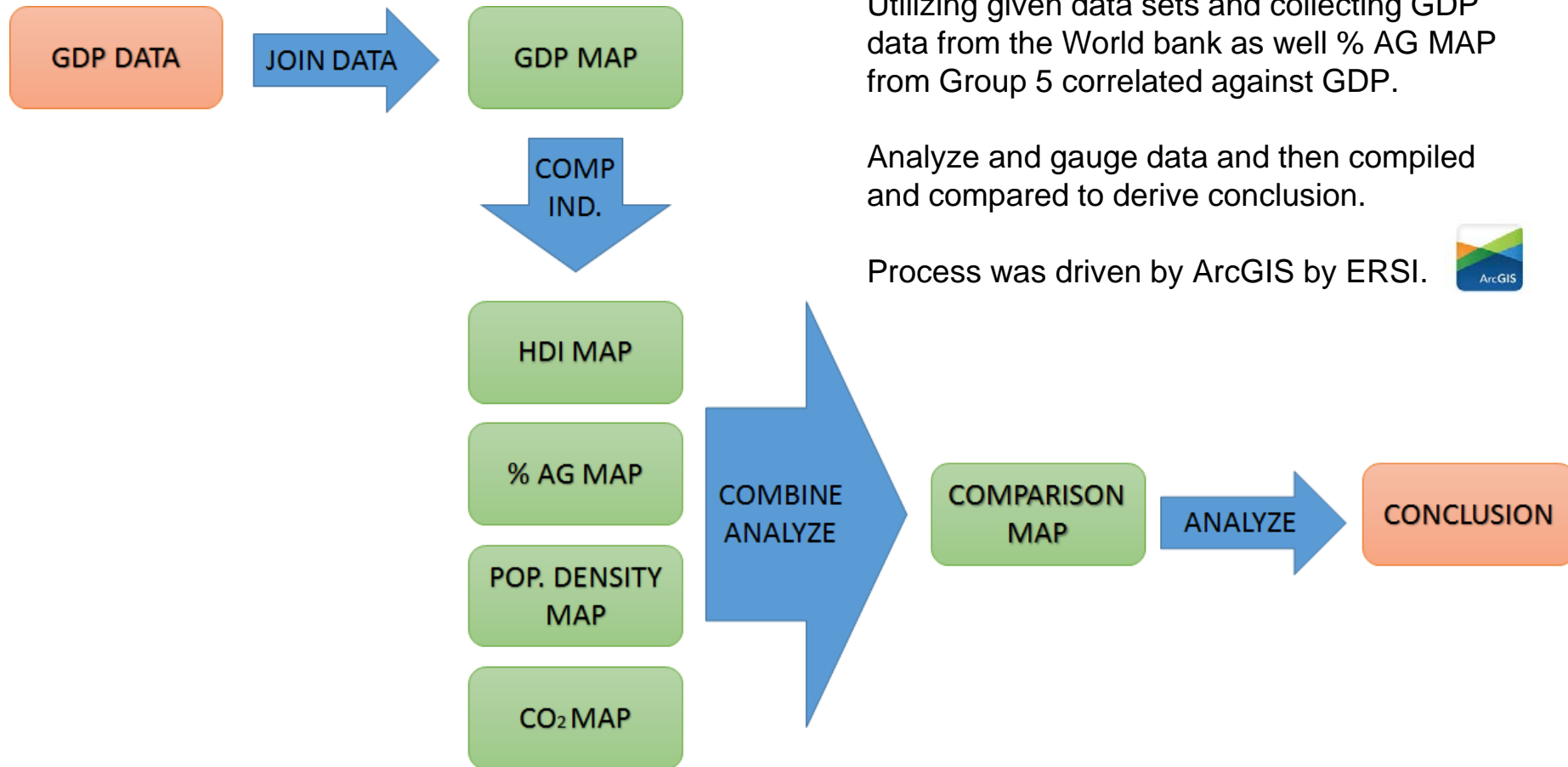
Our main goal is to measure high sustainable efficacy in the world through low CO2 emissions, a high Human Development Index, and a high percent of land used for agriculture. With the utilization of the population density as a control for outliers/extremes.

After taking those indicators into account it is found that when sustainable efficacy rates are high the GDP is also high, and when the GDP is low the sustainable efficacy rates should be low. Therefore, we hope to prove through the GDP our index is an important factor in determining the sustainable efficacy of a county.

Figure 2: Country Sustainability Scores and Rankings



Process



Utilizing given data sets and collecting GDP data from the World bank as well % AG MAP from Group 5 correlated against GDP.

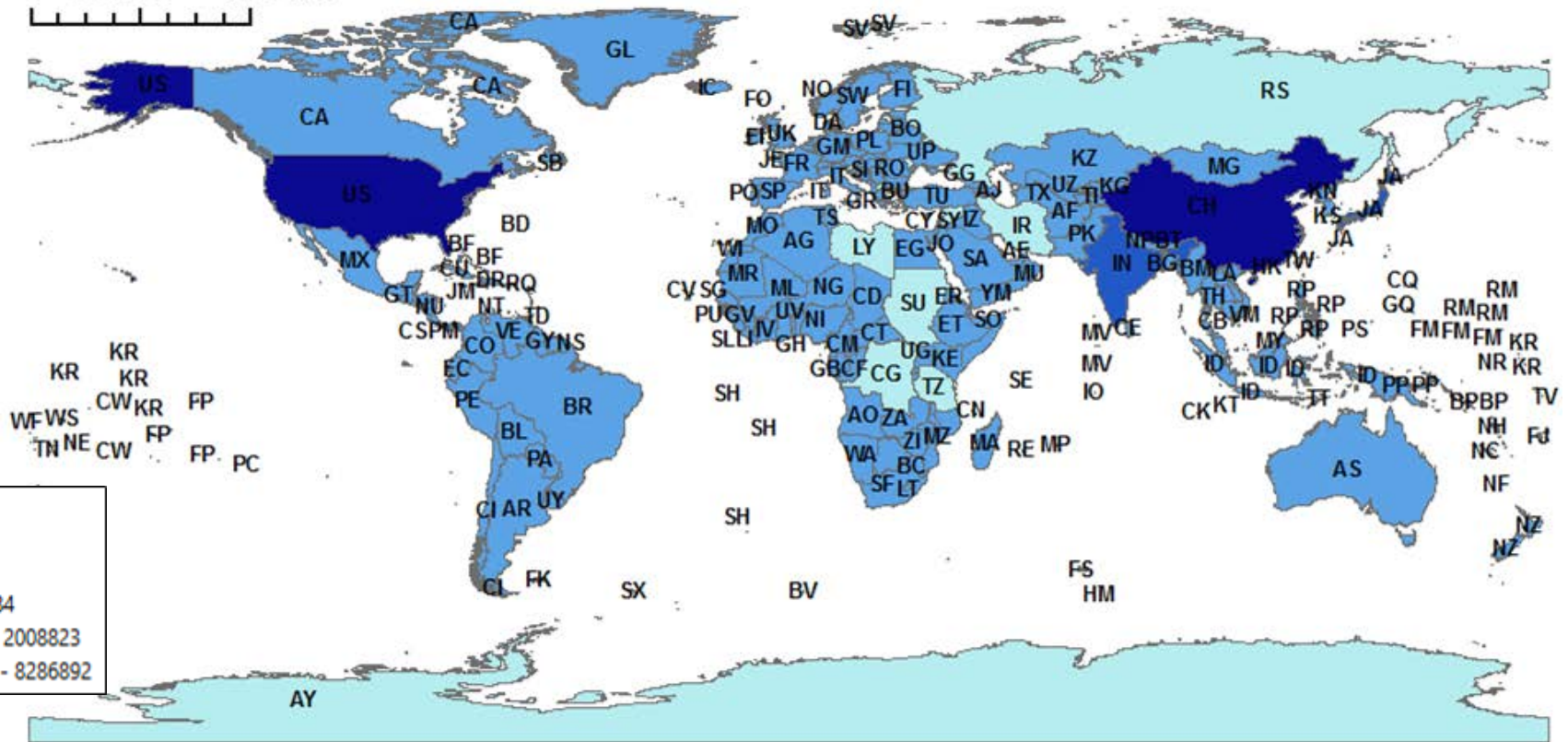
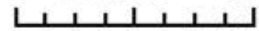
Analyze and gauge data and then compiled and compared to derive conclusion.

Process was driven by ArcGIS by ERSI.



Carbon Dioxide Emissions

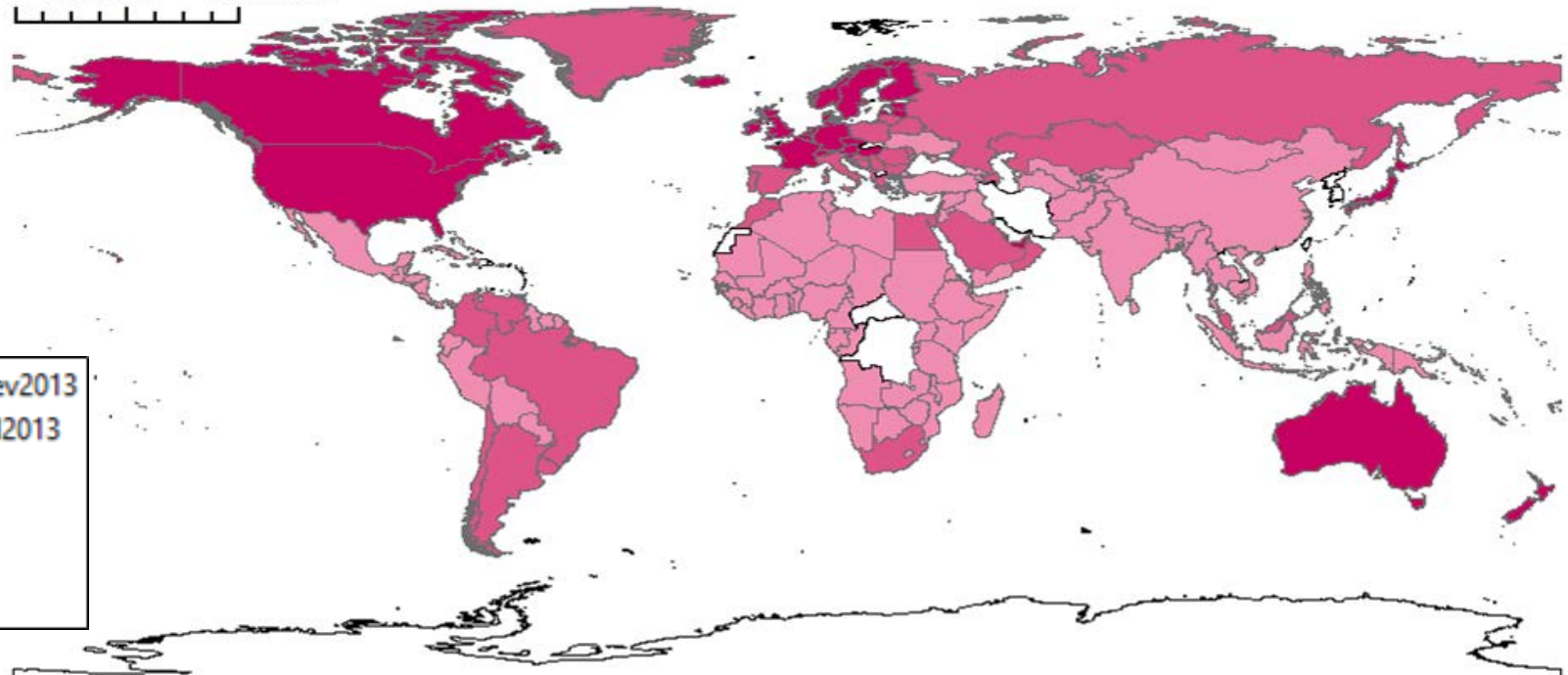
0 900 1,800 3,600 Miles



Carbon dioxide (CO₂) is the primary greenhouse gas emitted through human activities

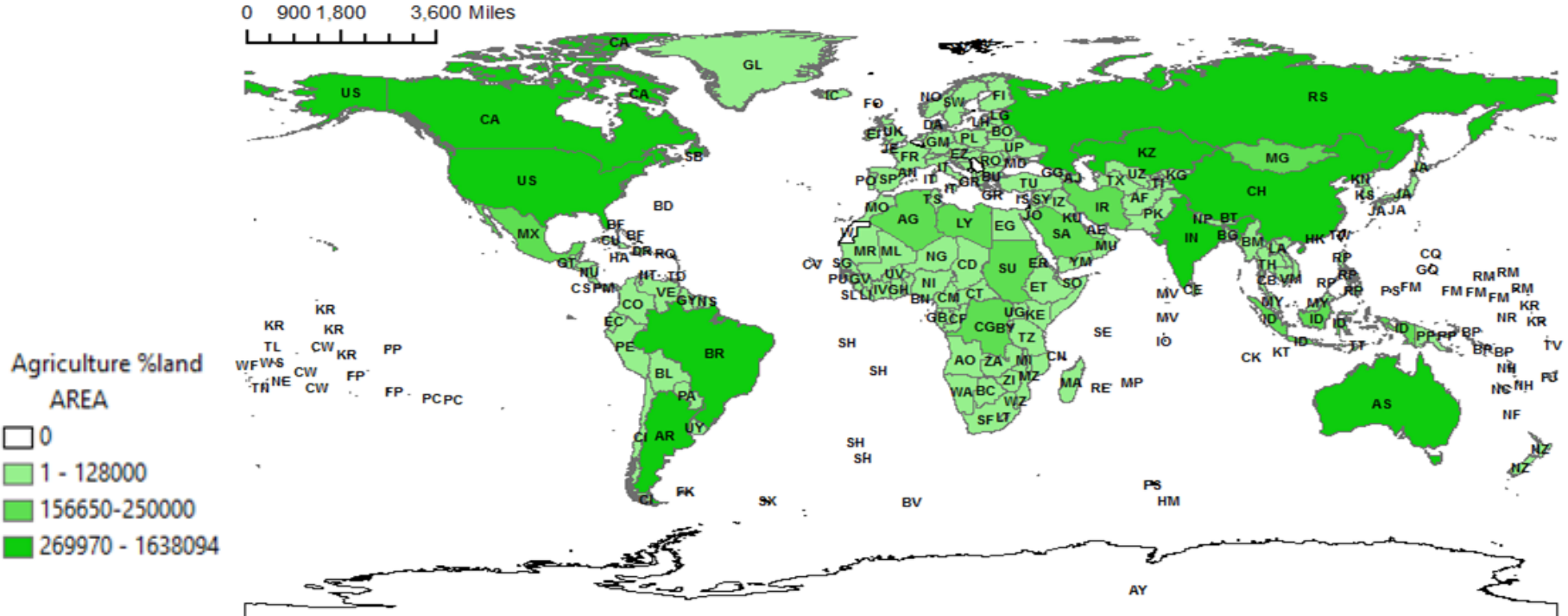
Human Development Index

0 900 1,800 3,600 Miles



The Human Development Index (HDI) is a composite statistic of life expectancy, education, and income per capita indicators, which are used to rank countries into four tiers of human development.

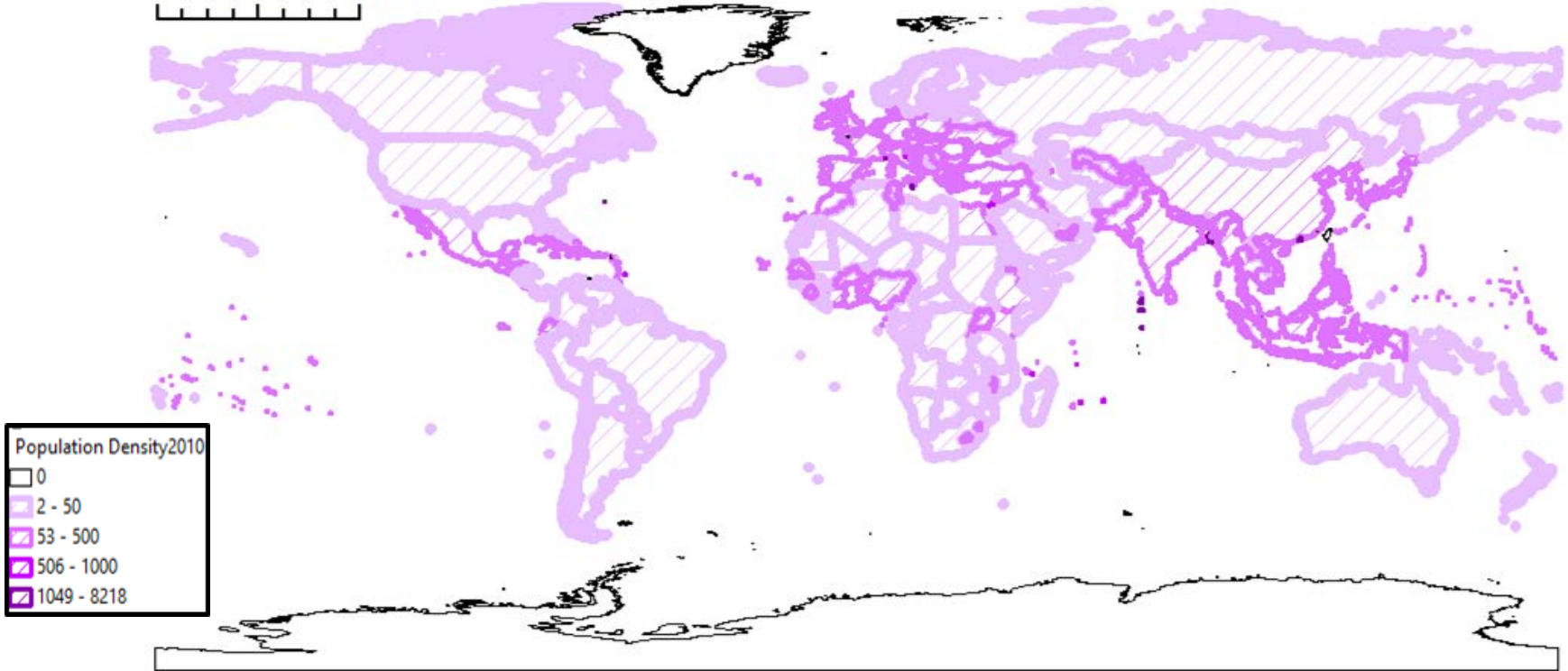
% of land use in agriculture



Land use involves the management and modification of natural environment or wilderness into built environment such as settlements and semi-natural habitats such as arable fields, pastures, and managed woods.

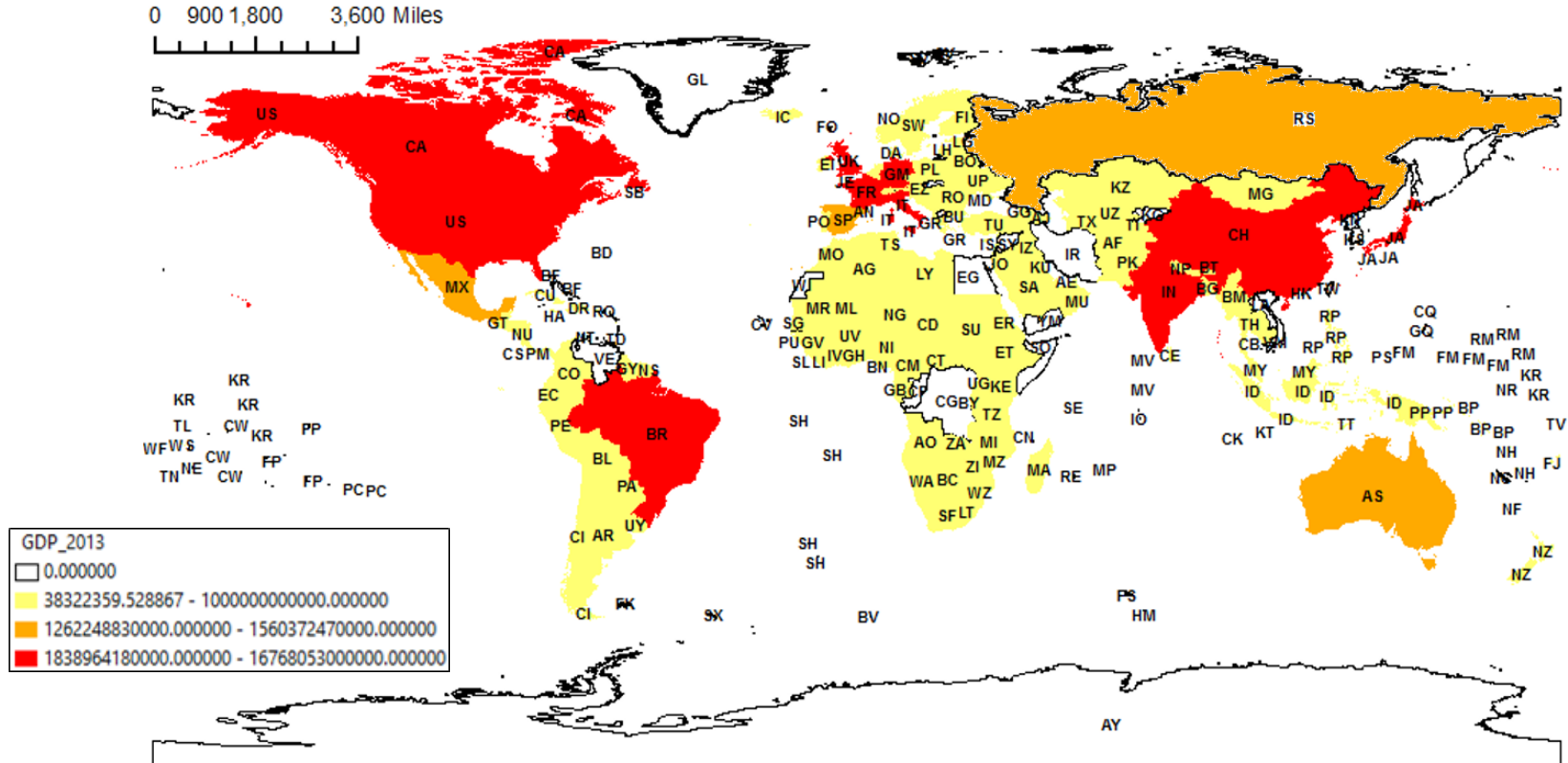
Population Density

0 900 1,800 3,600 Miles



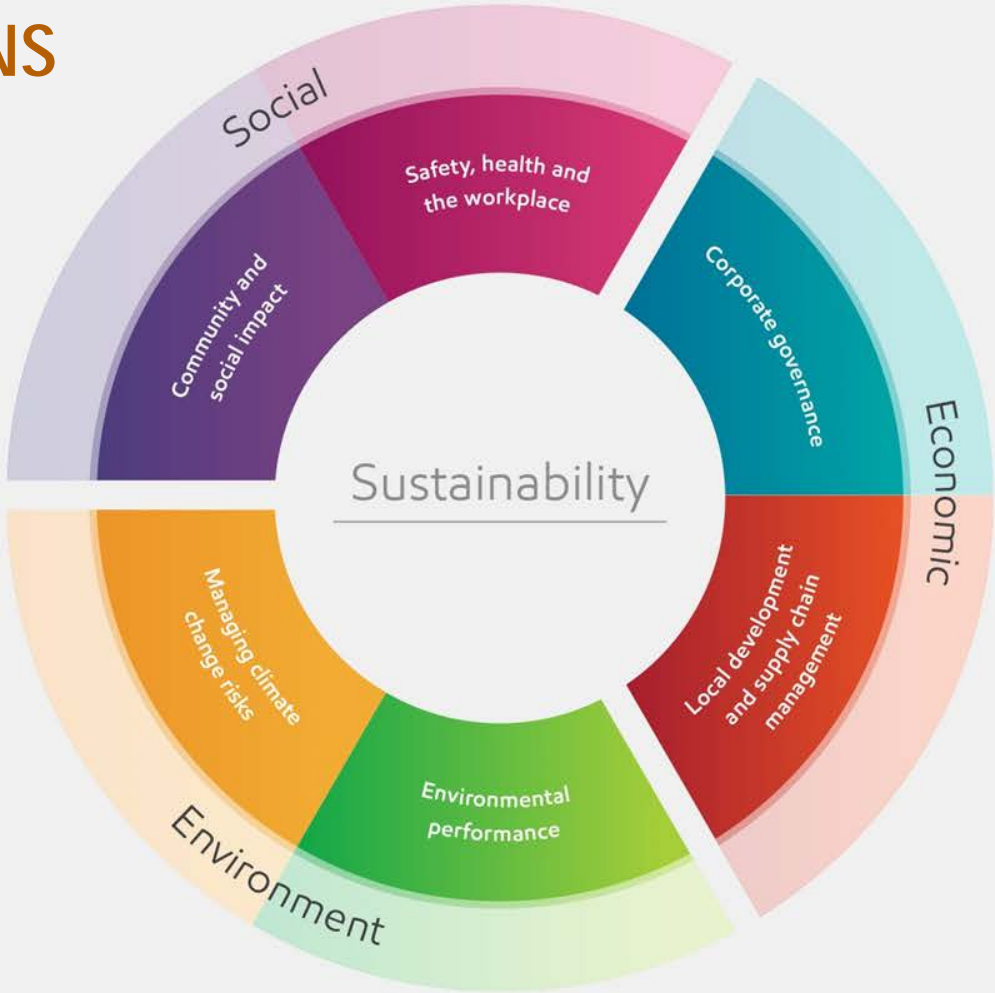
Population density is a measurement of population per unit area or unit volume.

Gross Domestic Product



The gross domestic product (GDP) represents the total dollar value of all goods and services produced over a specific time period

COMPARISONS





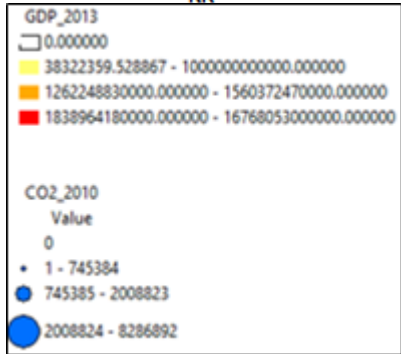
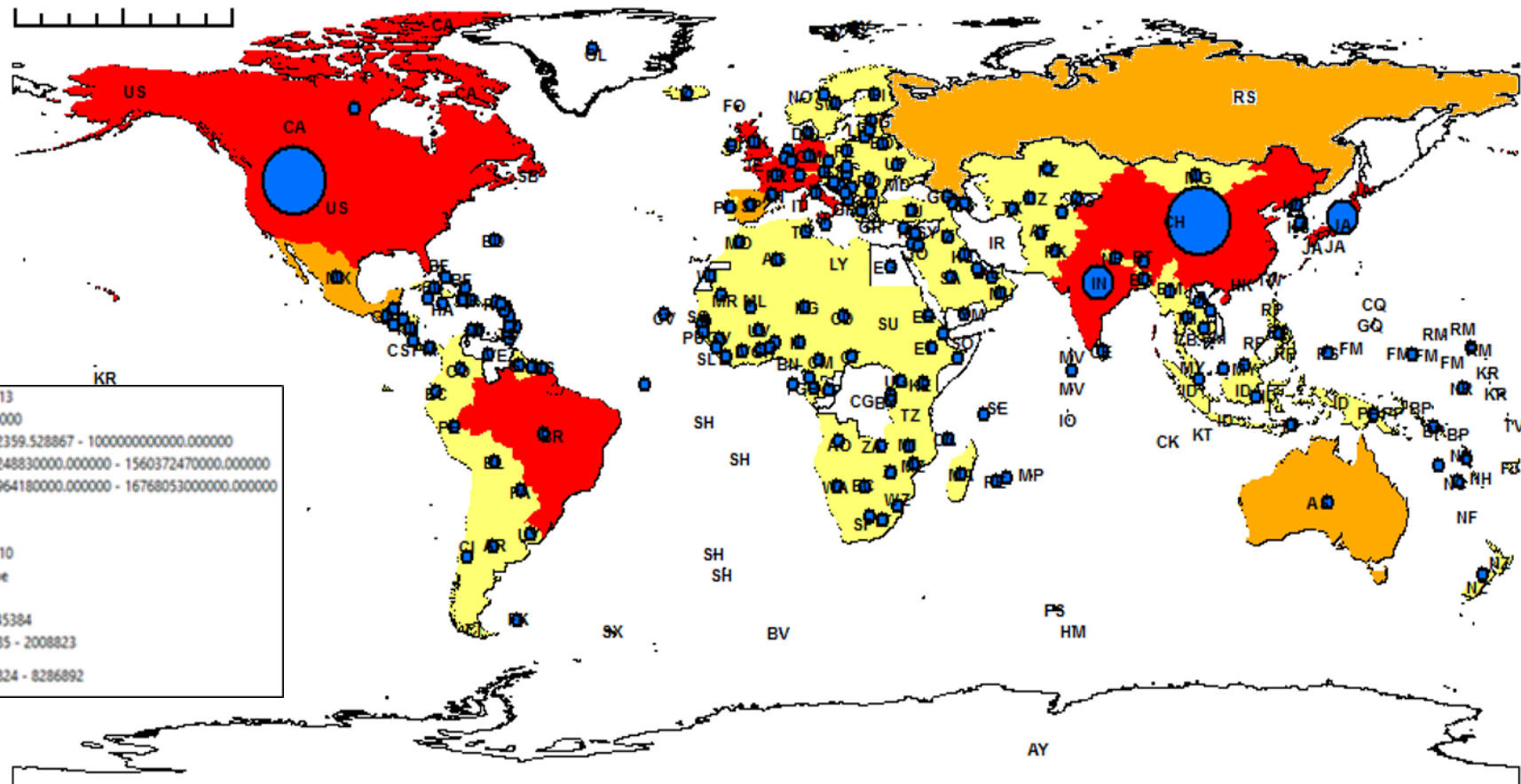
Comparison Maps

for ideal Sustainable Conditions

| | CO2 Emissions | Human Development Index | % of Agriculture Land Use |
|-----------------------------------|-------------------|-------------------------|---------------------------------|
| High Gross Domestic Product (GDP) | CO2 emissions Low | HDI High | % of Agricultural Land Use High |

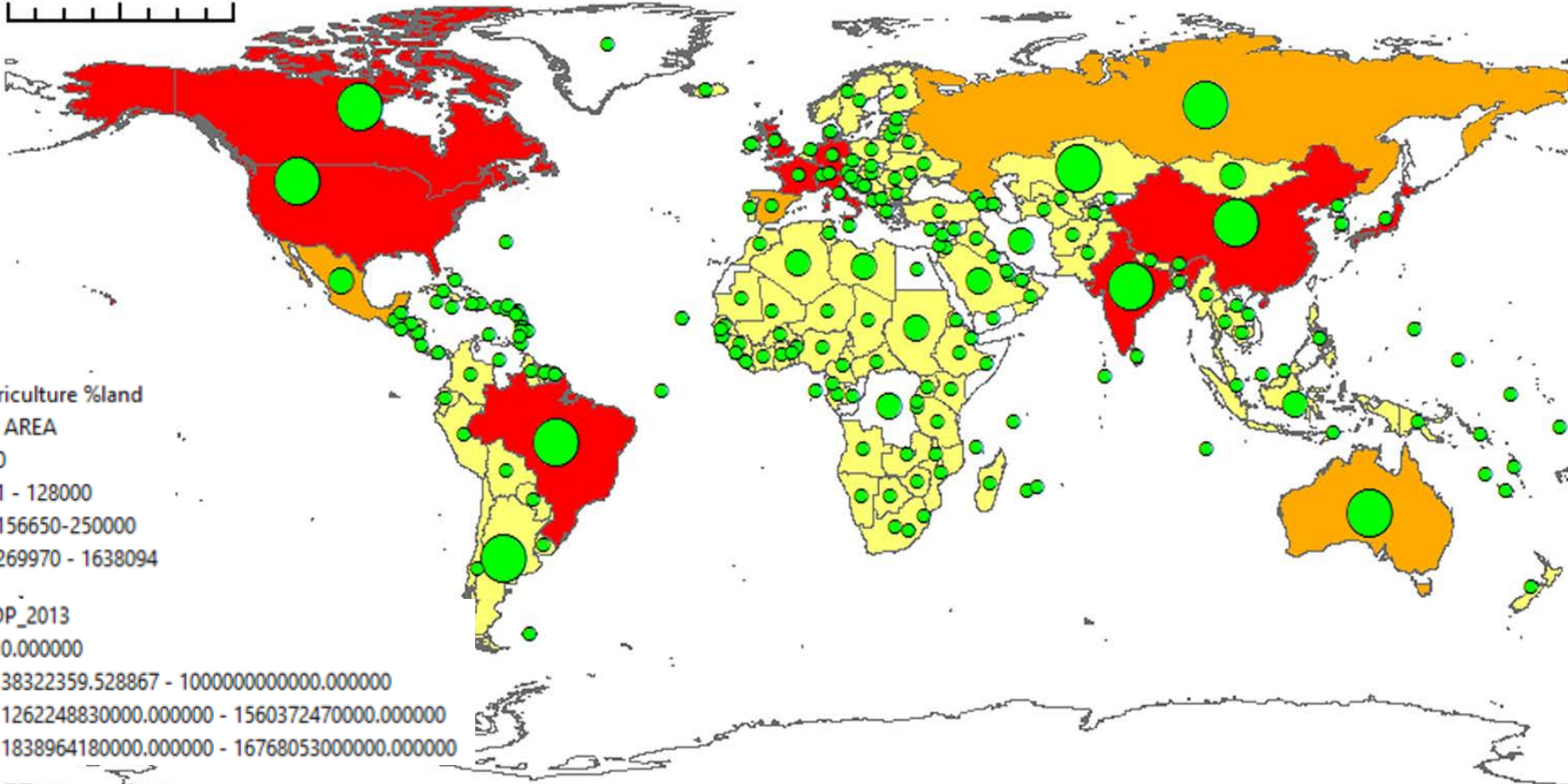
GDP | CO2

0 900 1,800 3,600 Miles



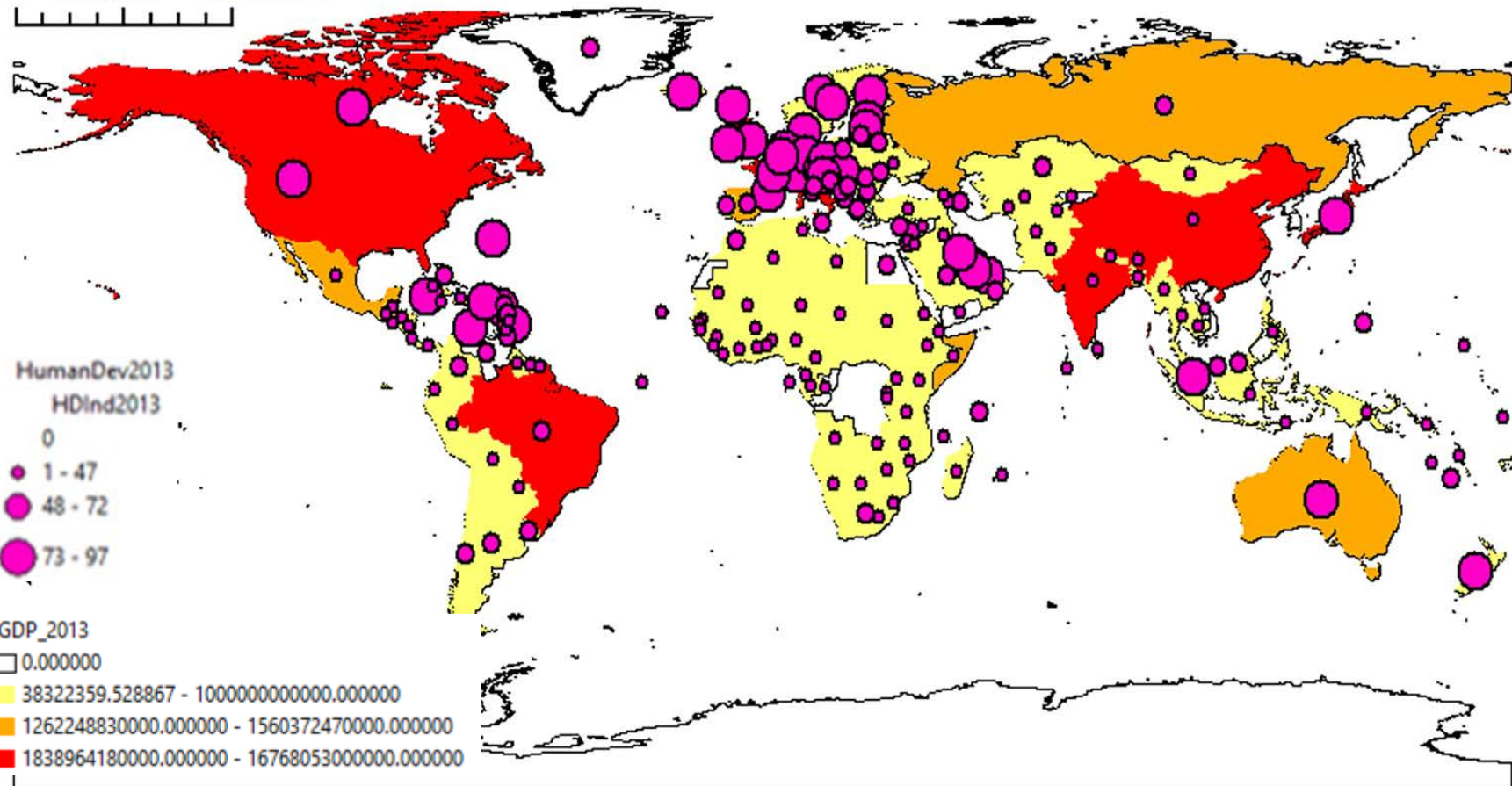
GDP %AG

0 900 1,800 3,600 Miles



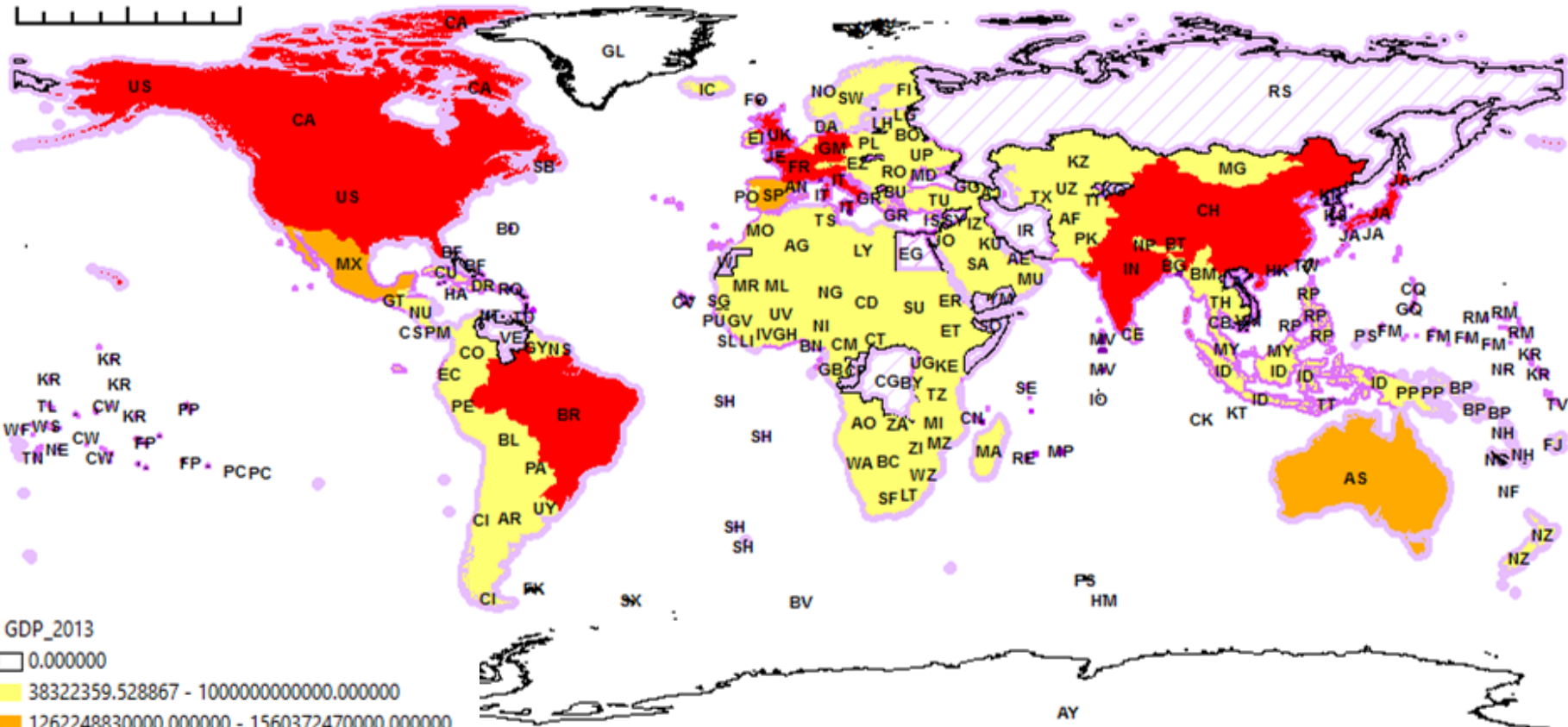
GDP | HDI

0 900 1,800 3,600 Miles



GDP PD

0 900 1,800 3,600 Miles



GDP_2013

0.000000

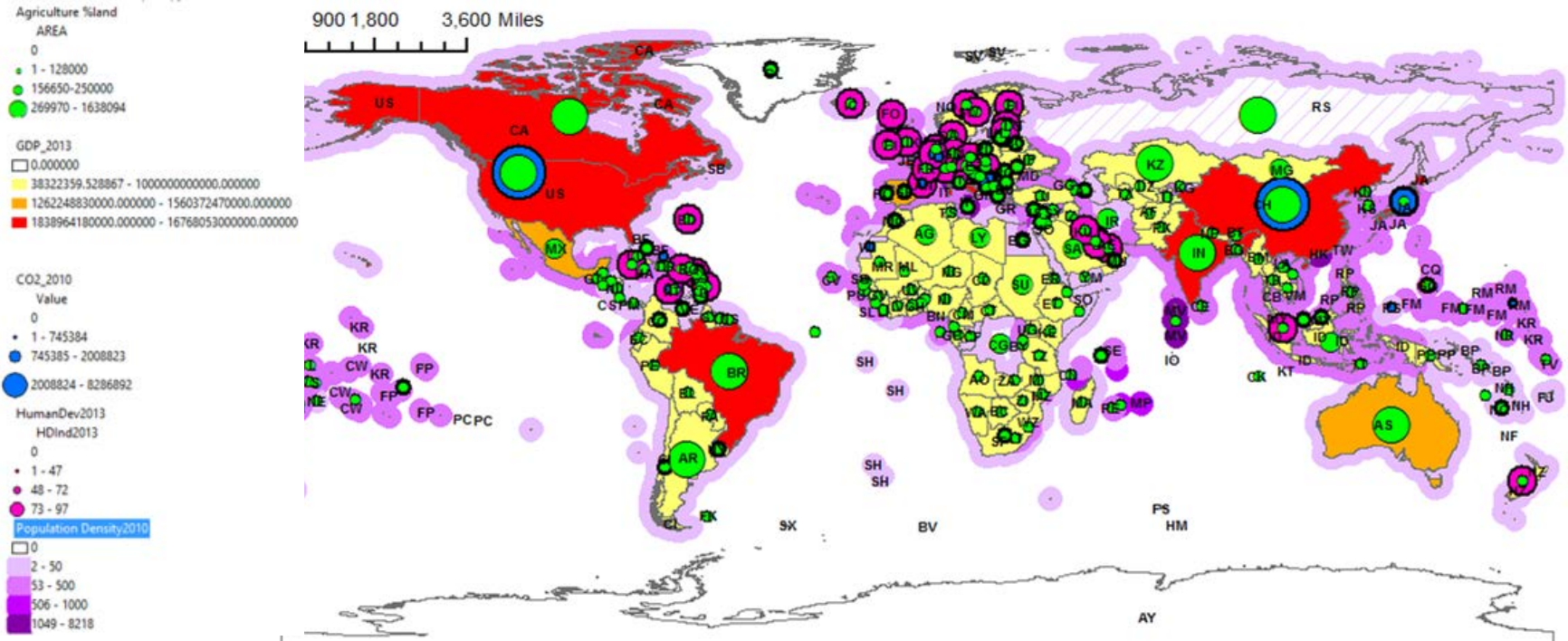
38322359.528867 - 1000000000000.000000

1262248830000.000000 - 1560372470000.000000

1838964180000.000000 - 16768053000000.000000

Conclusion

Smaller population densities with moderate food production fell into line with less CO2/Carbon footprint with less production and industrial emissions. With northern Europe being at the top of the class with the UK and then the US rounding out the bottom of the top tier. With the middle class Brazil, Australia balancing out with others. Then the least being in Eastern Europe and Africa.





Reflection on Project

So what you should take away from our presentation...

We can do better.

We can help.





Thank You!

by **group**6

Nazmi Ahmed, Yefan Chen, Jeffrey Haviland, & Lindsay Lewis
URP 4273 / Fall 2015