ICPSR – elements of a data management plan

This mapping project is intended to visual a number of important pieces of information relevant to global carbon emissions and the impact that the Paris Climate Accords have had on emissions reduction. It is intended to answer for the public the following questions: What is the per capita intensity of carbon emissions in different parts of the world (at smallest administrative unit possible – state/province or even county)? What types of emissions pledges were made at the conclusion of the Conferences of the Parties by each nation-state? How do the actual changes in emissions since the adoption of the Paris Agreement (December 12th, 2015) compare to the commitments made by each nation-state?

Use dmptool.org?

Things to keep track of when going about the project:

- What data is needed?

a.) Paris Climate Accord national emissions reduction plans/commitments.

b.) Historical (2015 and possibly before) co2 equivalent.

c.) Most recently available emissions statistics for each country.

d.) Shapefiles for national borders and smallest administrative unit for which climate data can be obtained.

- Where do I expect to find the data?

United Nations? COP data? NOAA? National environmental agencies (supplemental)?

Found data at Globalcarbonatlas.org through 2016. Why doesn’t UN, World Bank, etc. have such recent data? What sources are used by this site and are they authoritative/trustworthy? Is this data co2 emissions or co2 equivalents for total emissions?

- What types of files do I expect to be dealing with?

CSV? JSON? For emissions data.

Global Shapefile (What projection?) for national/administrative borders.

Emissions Reduction Commitments Sources

The Nationally Determined Commitments (NDC’s) are publicly available in PDF format at the UNFCCC’s website. Rather than read each of these, I used a summary of the NDC’s published by carbonbrief.org (<https://docs.google.com/spreadsheets/d/1LtaBOv70pvXVPDgLUGtTKnSxofjfZy7jx06bTSaMaH4/pubhtml?gid=14385633&single=true>). While it was in a spreadsheet format, it was not laid out in a way that made it possible to parse the relevant data – namely: Type of Commitment, Base Year, Target Year and Emission Reduction Goal. So, I took the relevant data and entered it into a new spreadsheet which was organized in a format which was suitable to the analytical tasks I plan to carry out.

Emissions Data Sources

First data set came from GlobalCarbon Atlas.org, which covers 1960-2016. This data was compiled from a number of sources, depending on the year. For this reason, the data may not be reliable, as the methods for determining co2 equivalent emissions are complex and divergent.

The UNFCCC also maintains an online repository of National Inventory Reports (NIR). This data would likely be the most appropriate to use because it is the same source for the Nationally Determined Commitments (NDC’s). However, there are two issues. First of all, very few of the NIR’s contain data past 2014, which is before NDC’s were submitted. This means that an analysis of the progress made by each nation towards their emissions goals could not be made without supplementation of this dataset with another. Secondly, each nation submits its own reports individually for each year. This, coupled with the level of detail and complexity of presentation, makes extraction of the desired data a laborious task.

However, the World Bank maintains a data portal that allows users to compile statistical data at the national level in a single spreadsheet. The temporal scope, however, only extends to 2014. The source for the World Bank’s co2 emissions data is Oak Ridge Laboratory’s Carbon Data Information Analysis Center (CDIAC), which is the same source for GlobalCarbonAtlas.org.

I also checked the CDIAC directly to see if more recently updated data was available. But, on the laboratory’s own site, more recent data is taken from the same sources which appeared in GloablCarbonAtlas.org. I therefor decided to use the GlobalCarbonAtlas.org dataset.

- What are the rights associated with the various sources used?

- What metadata schema would you like to use?

- Where will the data be stored/backed up? How many copies?

Github? Open Science Framework? Google Drive? Dropbox?

- Look at Open Science Framework to backup data/project?

- What roles do team members play in carrying the project forward?

It me do work.

- Who is the potential audience of this information?

- How long should the data be held for? How will it be archived/preserved?

- What naming convention will you use for files?

Issues:

- What emissions metrics should be used? Should metrics used in climate commitments be taken or is there a better, more accurate representation of emissions?

- Are self-reported emissions from nation-states accurate? Does China (or other countries) underreport or misrepresent in some way their emissions?

- How to represent complexity of different commitments (e.g. percentage reduction from historical baseline, percentage increase from current emissions in case of developing country, population-based emissions cut-off, etc.)

- What type projection/GCS to use for output maps. Probably use equal area, so country size accurately can be related in a visual sense to emissions. [Hammer?, Mollweide?, Goode Homolosine?, Cahill?, Dymaxion?]

- Emissions data with or without LULUCF (land use)?

Maps:

1. Type of commitment made (% reduction, %increase, etc.)
2. Emissions per capita (at signing of accords? Or over course of COP meetings?)
3. Emissions change in each year since accords were signed.
4. Global per capita co2 emissions by smallest possible administrative unit.