Main Project

The main project consists of creating a Sankey diagram representing energy flows. Developing this tool is twofold: first, it’s the basics of energy macro analysis. It will help analyst at StatsCan as well as many external users. Second, it’s a great occasion to familiarize yourself with data visualization programming.

To help you getting started, we will provide you with a simplified version of the publicly available Table [128-0016](http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=1280016&&pattern=&stByVal=1&p1=1&p2=-1&tabMode=dataTable&csid). This dataset will give you just enough information to create an **energy flow diagram at the Canadian level for the year 2015**. The dataset will be sent the morning of the first day: **April 17th at 8:00am**.

Requirements:

* **Clear coding:** We are as much interested in your code as in the final output.To be useful, your code needs to be understood not only by programmers. Please add comments to your code when needed.
* **Documentation:** There are many ways of organizing the variables in a Sankey diagram. We need to understand your decisions!

Once that simple version of the energy flows’ diagram is built, you are free to go!! There is a lot that can be added to the diagram. Since many other databases could be used to complement the project, we suggested you some “side projects” that could give you ideas.

Reference documentation

For energy related questions, you can refer to the [Report on Energy Supply and Demand in Canada](http://www.statcan.gc.ca/pub/57-003-x/57-003-x2017002-eng.htm) or ask the energy specialist of your team. There is also plenty of documentation on StatCan and other departments’ website (Natural Resources Canada, National Energy Board and Environment Canada):

* StatCan (CANSIM) : <http://www5.statcan.gc.ca/cansim/a33?lang=eng&spMode=master&themeID=1741&RT=TABLE>

<http://www5.statcan.gc.ca/cansim/a33?lang=eng&spMode=master&themeID=1762&RT=TABLE>

* Natural Resources Canada: [https://www.nrcan.gc.ca/energy/energy-sources-distribution](%20https://www.nrcan.gc.ca/energy/energy-sources-distribution)
* National Energy Board: <http://www.neb-one.gc.ca/nrg/sttstc/index-eng.html>
* Energy Conversion Calculator: <https://apps.neb-one.gc.ca/Conversion/calculator-calculatrice.aspx?GoCTemplateCulture=en-CA>

Here are some examples of energy flow diagrams (Sankey) produced from different software:

* [D3.javascript](https://bost.ocks.org/mike/sankey/)

[D3.javascript](https://bl.ocks.org/mbostock/ca9a0bb7ba204d12974bca90acc507c0)

* [SAS 9.4](https://blogs.sas.com/content/graphicallyspeaking/2015/03/21/sankey-diagrams/)
* [D3.js & php](http://www.eco-data.fr/news.php)

[D3.js & php](https://github.com/eco-data/open-sankey)

* [Javascript](https://tamc.github.io/Sankey/)
* [Python](http://matplotlib.org/examples/api/sankey_demo_basics.html)
* [R.studio](https://christophergandrud.github.io/networkD3/)