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20 Jul 2016

World Energy Usage:

Seven Charts and Ten Main Points

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ICAP Technical Analysis

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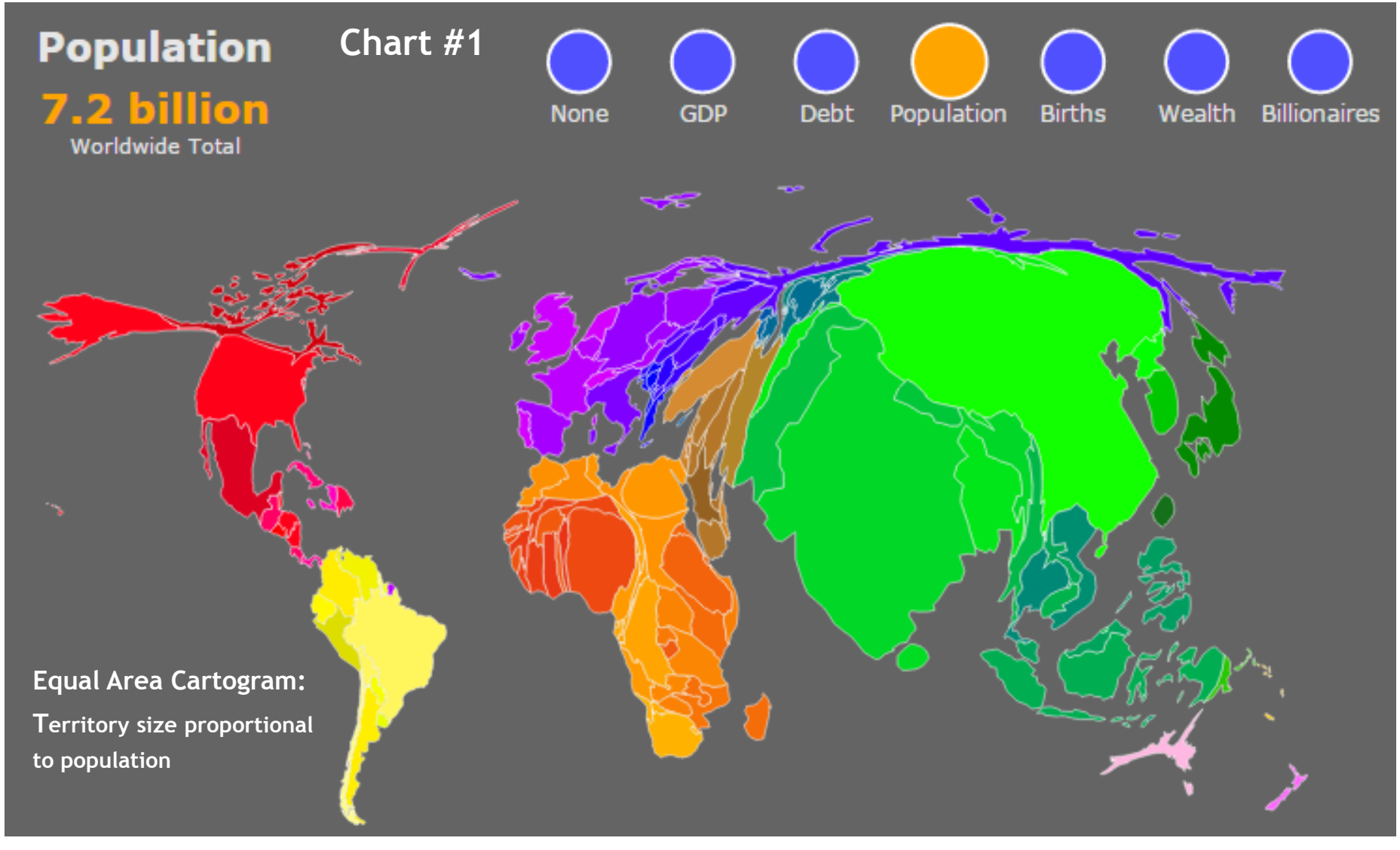

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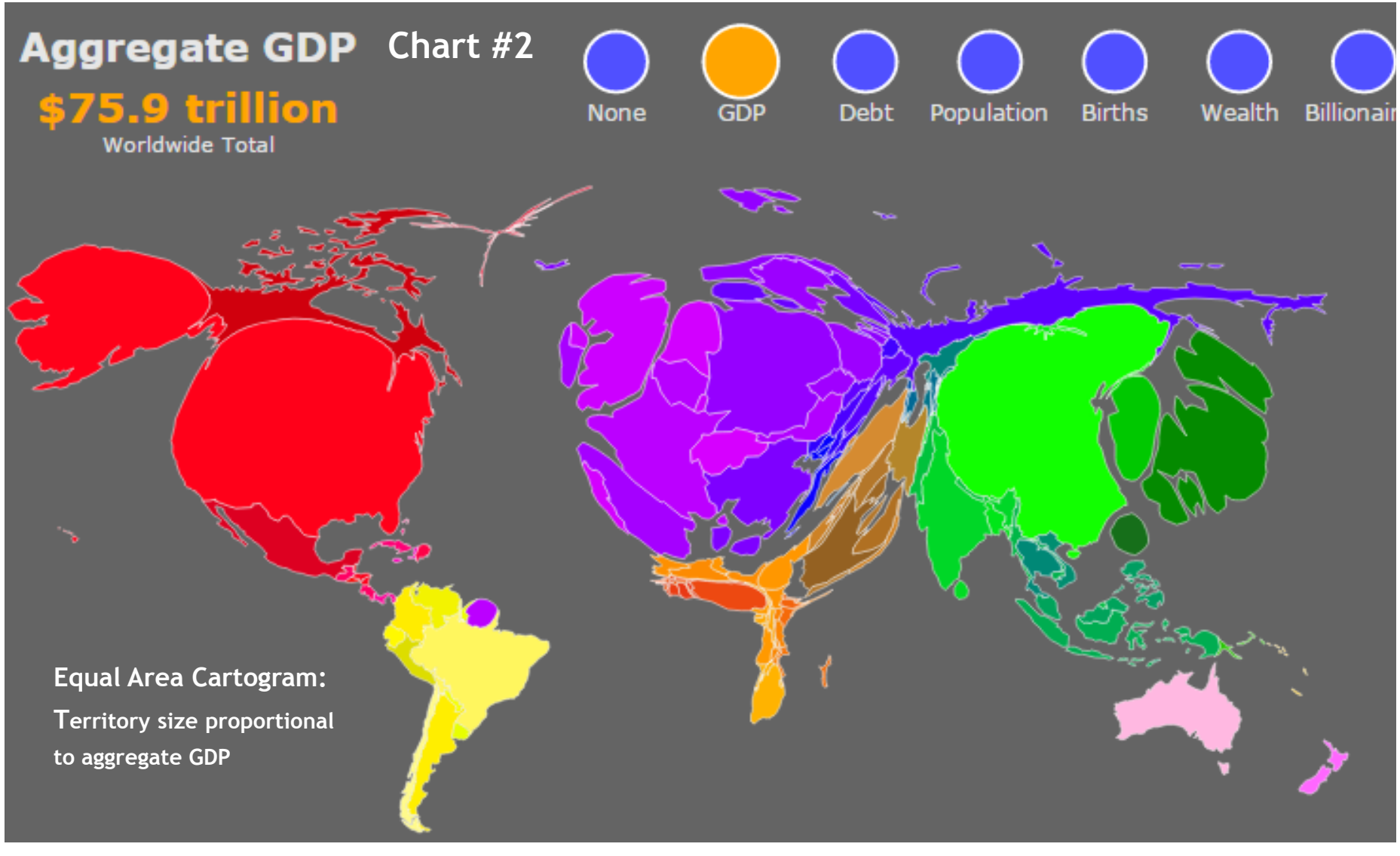
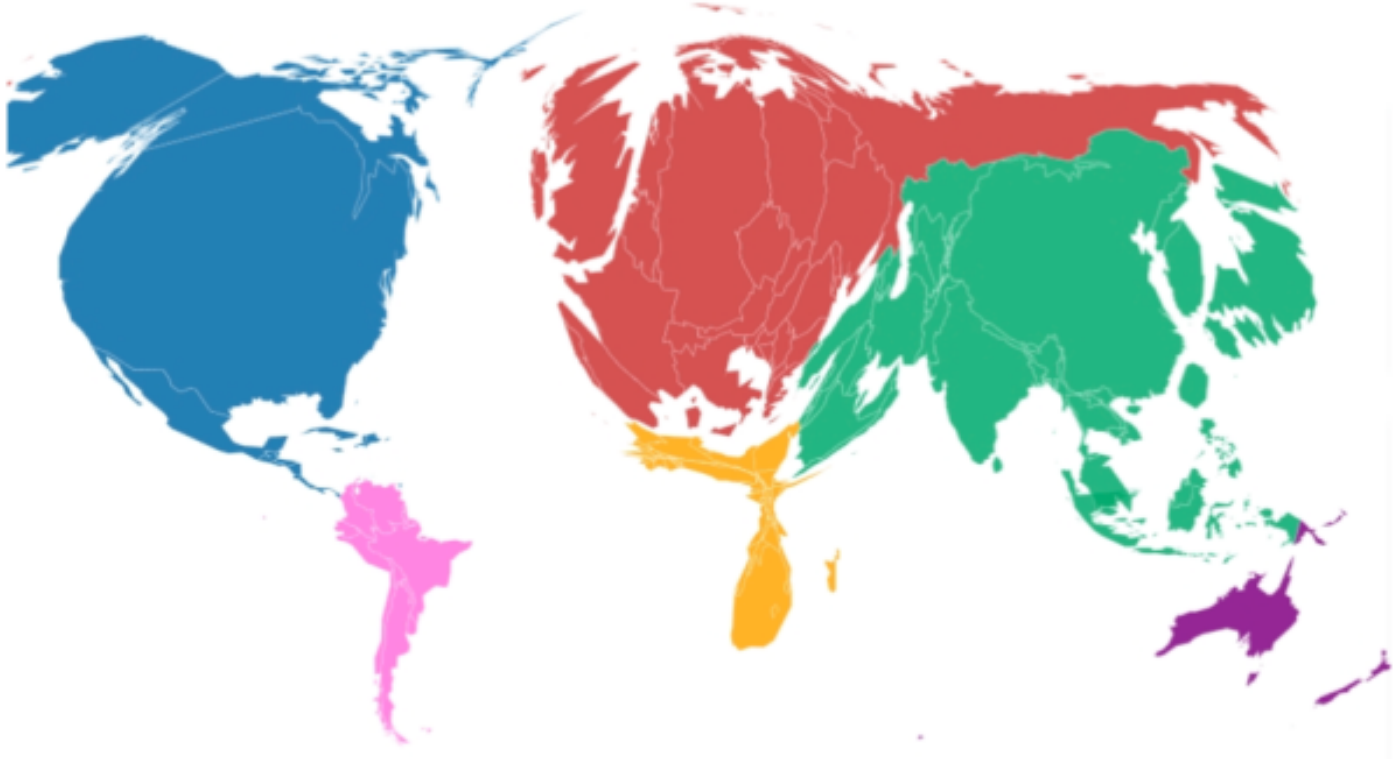


Figure 2: Historic CO_2 emissions from energy use 1850–2011

Chart #3



Country sizes show CO_2 emissions from energy use 1850–2011. These historical (or 'cumulative') emissions remain relevant because CO_2 remains in the atmosphere for centuries. Europe and the US dominate, having released around half the CO_2 emitted since 1850.

Source: Carbonmap.org, **Data source**: Climate Analysis Indicators Tool (CAIT 2.0).

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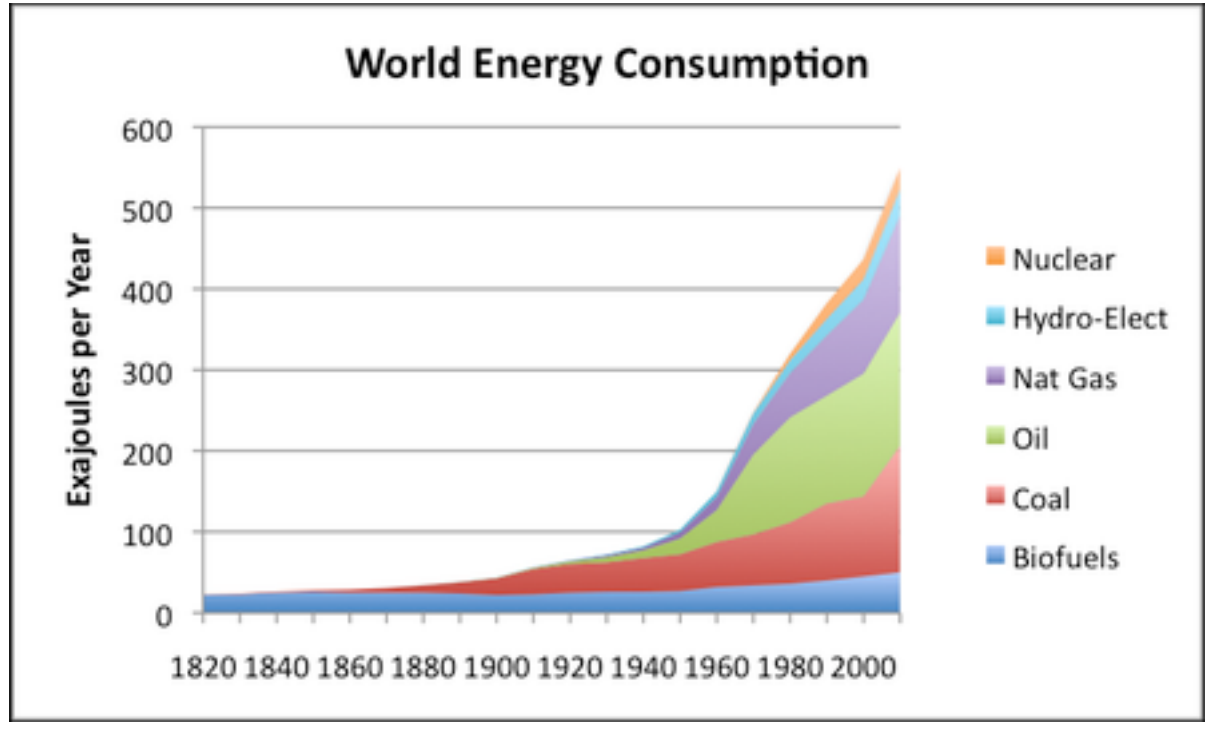
Chart #4



World Energy Consumption by Source, 1820 to 2012, Based on Vaclav Smil estimates from Energy Transitions: History, Requirements and Prospects together with BP Statistical Data for 1965 and subsequent

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Chart #5

Total Oil Consumption (Mtoe)

IEA for the year 2013, or latest avail.

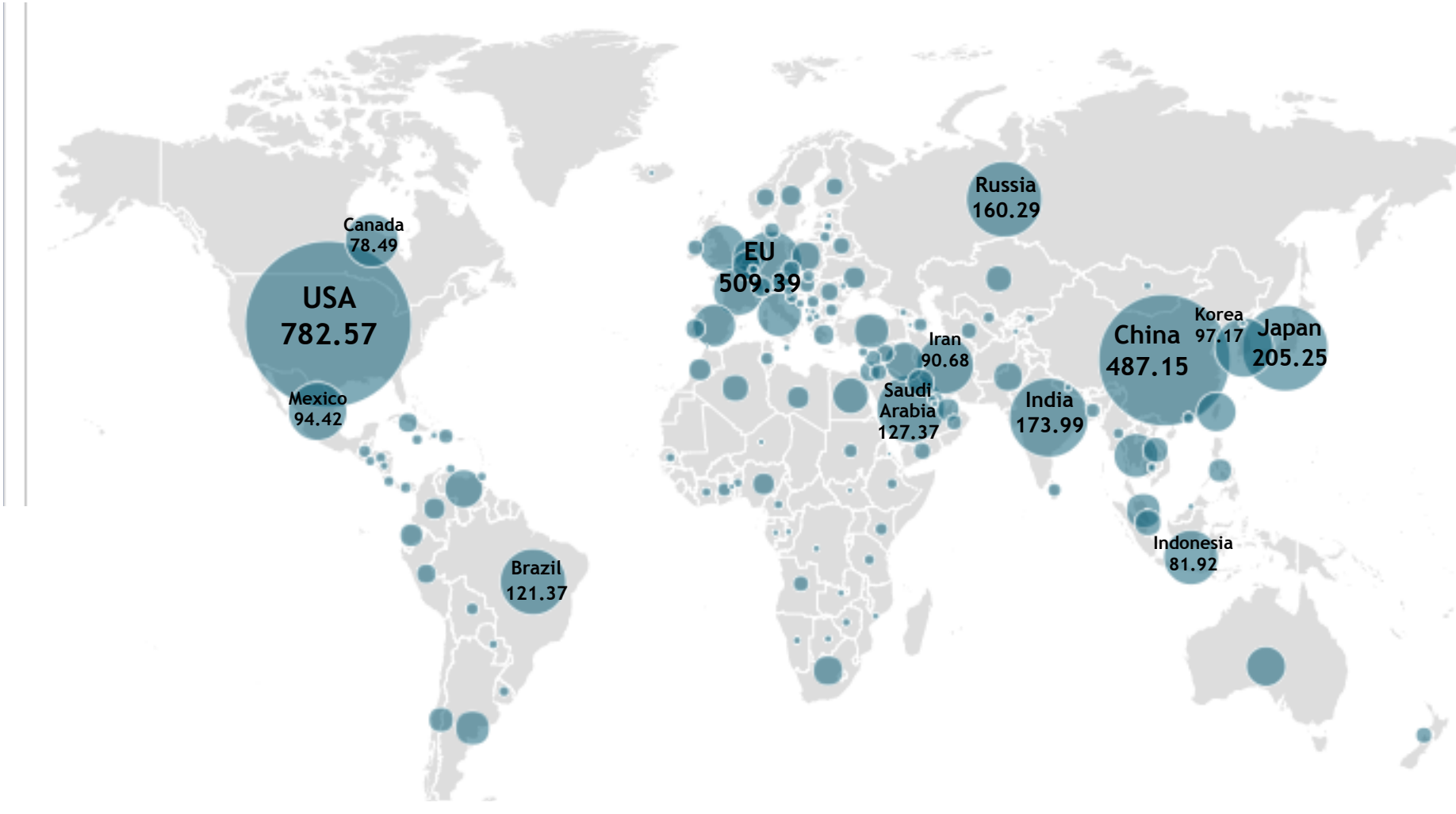

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Chart #6

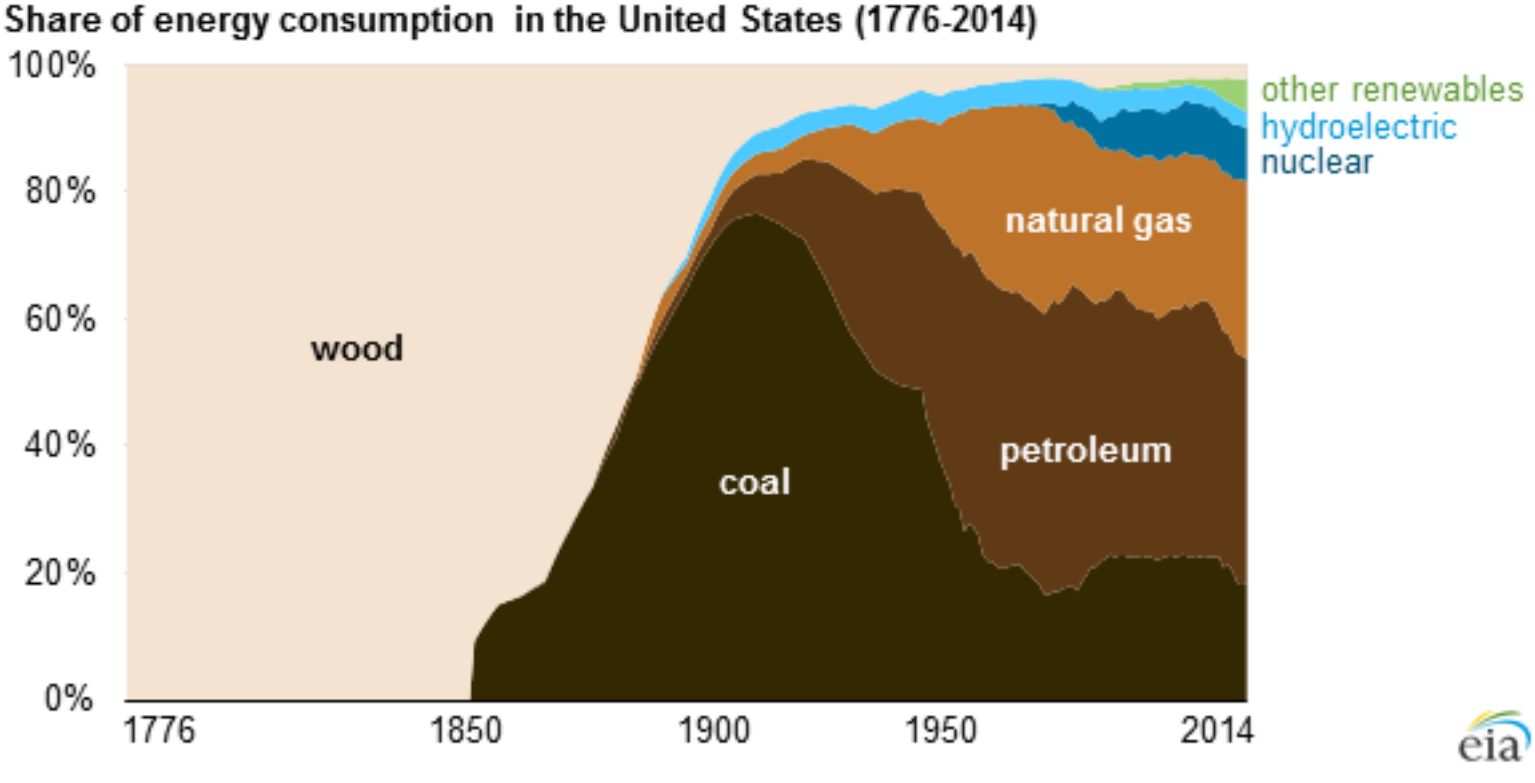

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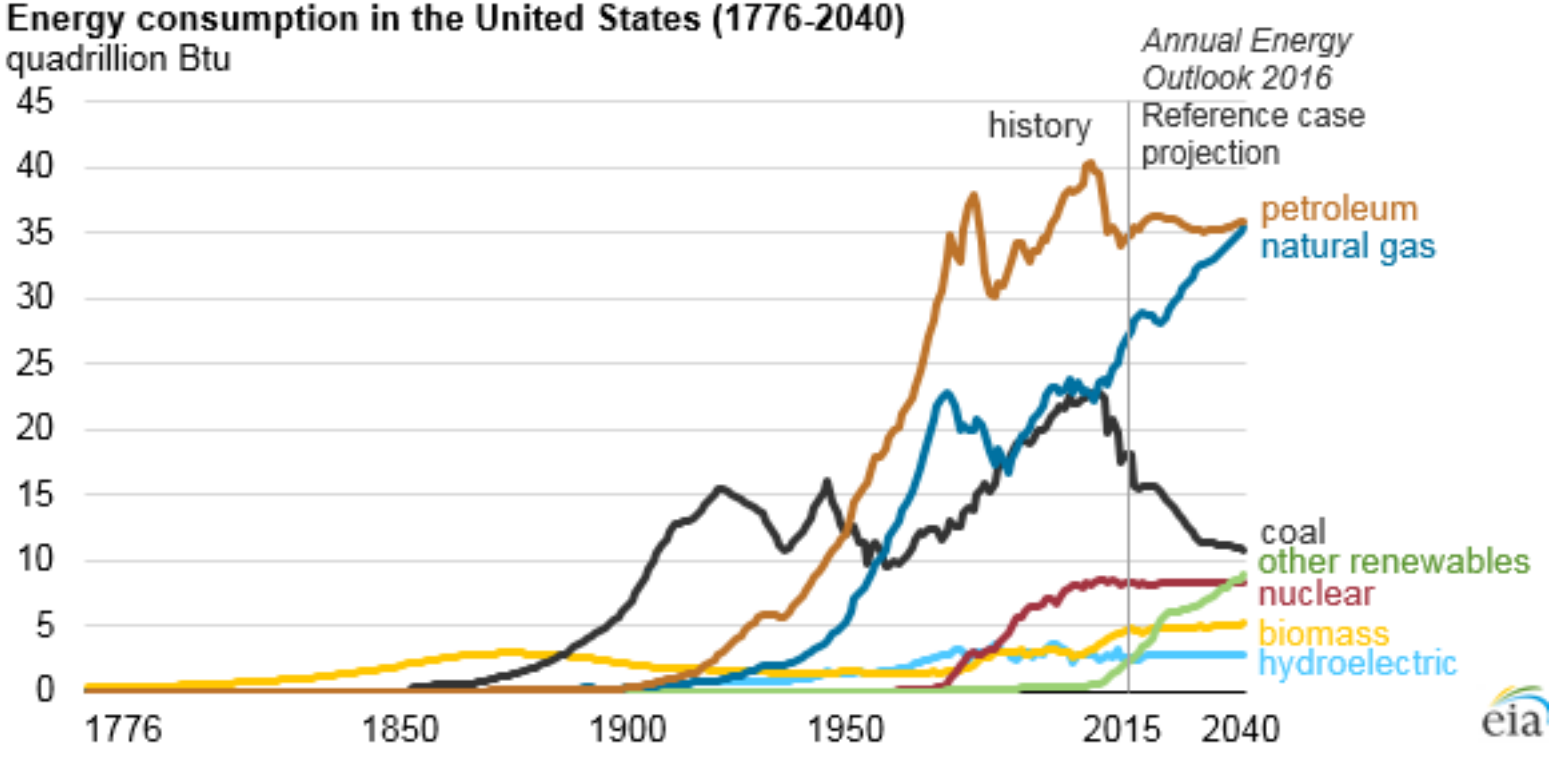
Chart #7



Main Points:

1. Energy usage is a function of wealth.
2. However it is self-evident that wealth is not a defense against nor a solution to any destabilizing effects of climate change that may result from energy usage.
3. World energy consumption is still very much in an up trend.
4. The USA is still the 800 pound gorilla in this room.
5. So a focus on USA energy trends is still appropriate.
6. As the primary source of energy usage in the USA, Wood gave way to Coal, then Coal gave way to Petroleum.
7. Natural Gas now looks capable of surpassing Petroleum.
8. Given all of the above, the importance of long term USA price trends in Natural Gas should not be under-emphasized.
9. These longer term price trends become even more important given the much lower carbon foot print of Natural Gas compared to both Petroleum and Coal
10. And this gives trends in the price relationship between Coal and Natural Gas and between Crude Oil and Natural Gas longer term importance beyond mere economics.