Climate Change: An Ethical Dilemma

Climate change affects every country, but the world's *largest* polluters are also the *least* vulnerable to the effects of climate change, making it difficult to motivate governments to inact mitigation policies. Furthermore, it raises the question of whether it is ethical for developed countries to keep polluting while developing countries and small island nations are forced to deal with the costs.

Who squished the EU?
Many European countries are better off in the face of climate change because of stable governments and infrastructure. Norway is considered the most likely to survive climate change because it has systems in place that reduce vulnerability.

How is "vulnerability" determined?

Researchers analyzed the University of Notre-Dame's ND-Gain Index to determine vulnerability and readiness scores.

The ND-GAIN Country Index measures vulnerability by considering 6 life-supporting sectors: food, water, health, ecosystem service, human habitat, and infrastructure.

The U.S. has the 2nd highest GHG emissions: 6,135 $MtCO_2e$ in 2011. However, some argue that this number should be even higher because the U.S. should also be responsible for emissions produced from imported goods (for some of China's emissions for example).

China is the world's largest polluter. Its GHG emissions in 2011 were about 10,300 Million tons CO_2e. In 2016, emissions had risen to 11,200 $MtCO_2e$.

The existence of low-lying island nations is directly threatened by climate change. The melting of ice sheets and glaciers contribute to sea level rise. Small island nations like Fiji, the Soloman Islands, New Caledonia, and the Maldives could disappear completely if actions aren't taken to stop warming.

What does this map show?

Countries that appear larger on the map are more vulnerable to the effects of climate change.

Countries that are darker red have higher greenhouse gas emissions.

Bolivia is the most vulnerable country in South America, in the top 60 most at risk countries in the world.

Why does Africa look so big?
24 of the 54 African countries are considered most at risk & least likely to survive in a warmer climate. This is due to less-developed infrastructure, unstable governments, insufficient healthcare access, and resource scarcity.

2011 Total GHG Emissions Including Land-Use Change & Forestry ($MtCO_2e$)

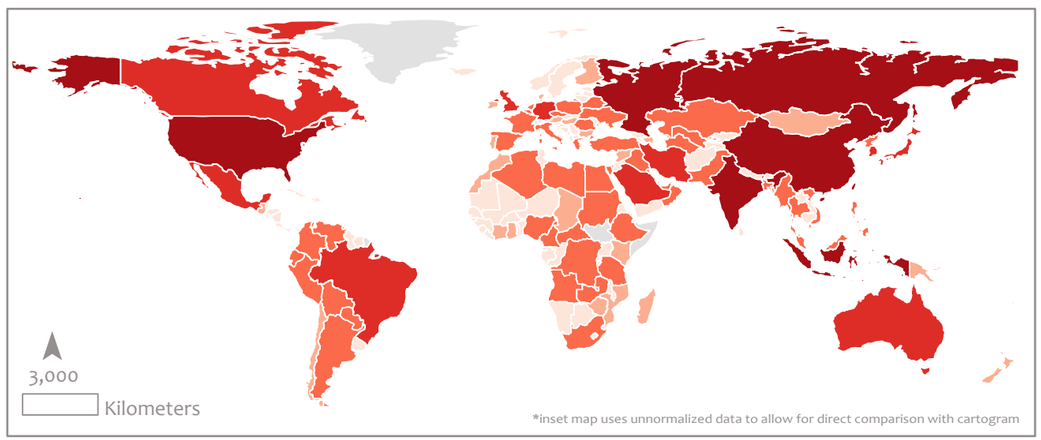
- 2,000.–10,300.0
- 500.1–2,000.0
- 100.1–500.0
- 50.1–100.0
- 0.1–50.0
- No data

$MtCO_2e$: Million tons Carbon dioxide equivalent (takes all different types of GHG emissions and represents them as an equivalent amount of CO_2 relative to warming potential.)

What does this mean? (GHG: "greenhouse gas")
Fossil fuel burning is the main source of GHG emissions, but GHGs can also be produced when humans alter the natural environment through deforestation, clearing land for agriculture, and soil degradation. This data recognizes both fossil fuel emissions and land-use changes.

*Antarctica Removed from both maps

The Data: Climate change vulnerability determined using the ND-GAIN Index: Notre Dame Global Adaptation Initiative.
GHG Emissions data from the World Resources Institute Climate Watch (CAIT) Country Greenhouse Gas Emissions Data.
Inset map is an equal-area projection of World Countries by Esri Open Data Portal.
Auxiliary text uses information from Andrea Steffen's article, "These Maps Show Which Countries Could Survive Climate Change"
Created by Julia Tuttle on 12/10/2021



*inset map uses unnormalized data to allow for direct comparison with cartogram