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From Climate Change to Mountain Range

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The notion of global warming and climate change is well known worldwide, yet many turn their head and brush off this notion viewing it as a hoax or some unrealistic consequence of increased chlorofluorocarbon's and carbon dioxide parts-per-million in Earth's atmosphere that has been fabricated. For those that are unfamiliar, these increased molecules stem from anthropogenic sources – and by anthropogenic I mean human beings. Ignorance is bliss to those uneducated; therefore it is the job of few to get the message to many about the consequences of global warming. It is unfair to scoff at a puppy that hasn't been taught where to use the restroom, just as it is unfair to scoff at someone who drives a Hummer 100 miles a day that ignores that global warming is a joke because he/she has been shielded from the true social and economic costs they are creating. Alas, once those true costs are understood, systems that give incentives to naïve individuals to do the “right” thing must be implemented through governmental policies. Such a system could involve taxing fossil fuels, or simply subsidizing solar panels and wind turbines (as we currently do for oil).

Climate change will affect many things throughout our home planet in many ways, which will be consensually unfavorable. Those consequences will include, but are not limited to: increased overall global temperatures, melting of glaciers and of polar ice caps, change in weather patterns, the loss of biodiversity, and more. These consequences lead to one startling conclusion – that we are losing the number of *species* at an excelled rate when compared to

ecosystems. Data and studies suggest that climate shifts induced by human activity may alter the particular biodiversity found in all the different biomes on Earth. As models project increasing overall global temperatures, the scientific community can assume that the problems that biodiversity will have to overcome will continually be more difficult. Warming temperatures across landscapes may elicit the invasion of a parasitic organisms leading to the loss of one or many native species in that region. Likewise, it may elicit the extinction of species adapted to a cold ecosystem (the polar bear is a popular example).

Comprising close to 25 percent of the global land surface, mountains are home to half of Earth's global biodiversity hotspots. Having a spectrum of climates and ecosystems compressed in such a confined area arises the opportunity for an even more diversified range of flora and fauna. Mountains provide a great potential for climate adaption due to their topographic and bio-cultural richness. Due to elevation shifts, mountains provide opportunities for species to move up or down the mountainside in order to survive climate change. In addition, mountains provide half of Earth's people with freshwater. Most river flows originates from these "water towers". As it is well know, many cities, as well as villages across the globe reside on or very near a river. Fishing is very important to many people, as it is a main source of their food diet. As many Nebraskans have recently experienced with the second proposed Keystone Pipeline, when it comes to securing our water supply, communities *can* come together to circumvent a great oil power like TransCanada to keep intact a precious natural resource. Moreover, mountains have socioeconomic, ecological, and aesthetic value, which employs a vast amount of wealth locally, and from those from far away. Those who have had the opportunity to go mountain-biking or skiing know of the marginal benefit these activities reward. It would be a tragedy for those in future generations to have that opportunity stripped from them.

Biodiversity falls under the “common” category. That is to say that every person in a region or the world has an equal right to a certain property (i.e. the beauty of a sunrise or the oxygen we breathe). A consequence we often see with commons is referred to as the “the tragedy of the common.” This is defined as a dilemma that arises from a situation that involves many different individuals, who acting independently and in self-interest will eventually deplete a resource.

Hopefully my point has been made; that mountain regions have many reasons why they should be protected from the consequences of climate change. Hopefully, now that it is clear, the question of “how do we avoid advancing climate change” perpetuates. People need to get the idea through their head that climate change is not avoidable... but it is manageable. As a student of sustainability, I have come to reckon with the creed that, “we must avoid the unmanageable, and manage the unavoidable”. One of the most acceptable methods of managing the unavoidable is by implementing policies through government, which will subsidize clean-energy technology and usage, while simultaneously punishing the use of dirty, old means of energy. “Bye-bye, oil tycoons – and what a relief that will be to say.

Many who are reading this article, I know, are scoffing at me right now. “What,” they are saying, “he really wants me and my family to suffer with more governmental interference in my life and the way I conduct my daily activities?” Unfortunately, yes, that is what I am saying. What needs to be understood is that you; your community; your state; your nation; are littering the Earth – literally killing it – and there needs to be a cost for those who are imposing damage. If there is no consequence for the harm being done, then future generations will have to suffer a great more deal than our current generation is.

However, there are ways in which governmental interference can be limited. Many research projects generate datasets that are relevant for the wider scientific community, but are not adequately shared across such a scientific network. GBIF is a foundation that is making it a mission “to make the world’s primary data on biodiversity freely and universally available via the Internet.” This will allow those datasets, which include vouchers of credibility, to be shared across the world, giving scientists reliable, scientific evidence.

So, now that the importance of biodiversity conservation in mountainous regions (and of course, the importance of biodiversity conservation in all other biomes is just as important) has become known, it’s imperative that action be taken at every social level – individual, family, community, etc. – to overcome the great adversity accompanied in conjuncture with climate change. This big question is, “How will we overcome this adversity?” Well, one thing known for certain is that it is not going to be easy. There is one fact that can be implied about a clean energy system kick-start; it’s that persuasion is not enough. Incentives for using clean and renewable energy must be implemented using the market system that would incite people, business, and nations to start investing in these energy markets. For example, by subsidizing solar panels, rather than oil, a government would be swaying the market in favor of clean energy. And ultimately, this market design will not only account for private costs and benefits, but it will also cover social costs and benefits (both private costs and external costs, such as pollution). This will eventually lead to a sustainable energy system that the world can depend on.