

Dr. Markus O. Häring
Vice-President Carnot-Cournot-Network

March 9, 2021

Bill Gates
Seattle, Washington, 98102
sent by e-mail to info@gatesfoundation.org

This is an open letter, that will be published on the website of the [Carnot-Cournot-Network](#).

The incentive must be respect for nature, not fear

Suggestions to “How to avoid a climate disaster”

Dear Mr. Gates,

Your book is an impressive manual to lead our world into a healthy and livable future. Thank you for this effort.

We do have indeed a problem with man-made emissions. Emissions of different kinds of waste polluting soils, water, and the air. If we want to preserve our environment and share a life with ten billion people in peace and dignity, we must not point at CO₂ as the main culprit and must not focus all our efforts to just reduce this probably least harmful output of human activity.

As a geologist, who has devoted his professional life to develop sustainable energy resources that have the least impact on nature, and as a geologist humbled by the infinite beauty, complexity, and resilience of our planet, I cannot share your view of apocalyptic climate change.

The title of your book is like Greta Thunberg’s outcry: “We want you to panic.” Fear is an old proven political tool. But panic, fear and terror are poor advisors.

Over the last century mankind multiplied and developed in an unprecedented way, due to abundant and affordable energy. Energy that is however neither sustainable nor clean. The challenge to solve the trilemma of abundant, affordable, and sustainable energy has dominated my entire professional career. Of course, the environmental impact of exploitation and consumption of energy must be minimized.

The current efforts focus on sustainability, but neglect affordability, supply security and – paradoxically – even environmental impact. The focus on “51 to zero” is not only too simplistic, but also wrong. The only consequence of too much CO₂ is additional warming to an



already existing natural warming trend. But CO₂ is not a pollutant. It is plant food and from this point of view the least harmful waste product of human activity.

Geologists learn to read the history of earth by studying rocks and observing natural processes. There I learned about the resilience of nature. Life on earth thrived at CO₂ concentrations that were orders of magnitude higher than today. Earth survived countless catastrophes in its billion-year history. As an example, about eleven thousand years ago, the Scano-Siberian ice shield collapsed and made sea-levels rise faster than today. Nature will even survive the explosive growth of homo sapiens. Like the “population bomb”, the “climate disaster” will not happen in the apocalyptic way as portrayed. Nature is far more resilient than human society. Even forests, that cannot physically move, will master climate change. In Europe beeches give way to oak trees. Pine trees start growing in higher elevations. Our planet experiences in fact a rapid shift to a greener surface.

Biological diversity suffers far more due to agriculture, water- and air-pollution, than through climate change. When forests can adapt, even more so can animals. They migrate. The obstacle for animals to migrate and adapt is again man, not the climate.

The adaptability of people seems to be the problem. Mass migrations have so far always been caused by overpopulation, wars, and corruption. And if ever the climate was the reason, it was the cold not the heat. Wealthy societies can adapt, poor societies will suffer. The Dutch have mastered to live below sea level. The inhabitants of Bangladesh cannot copy this, unless they become as wealthy as the Dutch.

Reduce fossil fuels, not CO₂

Having said this, I share the urgency to find a way out of the dependence on fossil fuels. CO₂-reduction is only part of the solution. Our impact on the environment must decrease. If emission reduction leads to increased environmental impact, something is wrong. Renewables like wind power occupy irresponsibly large areas on land and sea. Solar panels are perfectly well on rooftops, the environmental impact comes with the need for vast landscapes and the need for seasonal and short-term storage, the use of rare earth materials and the energy needed for recycling. Energy returned on energy invested (EROI) from source to sink must be as high as possible. EROI is an indirect measure of environmental impact. Therefore, nuclear power will definitely play an important role. Actually, fission is the most efficient energy source per mass unit. It is a source of energy which is not used by any biological process; hence we are not taking anything away from nature. The substitute of fossil fuels has ultimately to become cheaper than coal. Radioactive waste must be treated as the fuel of tomorrow. We must learn to depend on less natural resources.

A couple of years ago I was contracted by the Swiss government for a feasibility study of CCS in Switzerland. In that study, I concluded that CCS is technically feasible, but only with an unacceptable expenditure of energy. That is why I'm not a friend of DAC either. Separating a gas at the point of greatest dilution simply makes no sense. It requires too much energy.



Energy that is better used in a productive process. And without subsequent sequestration – an additional sink of energy – nothing is achieved at all. CO₂ in the subsurface is just another environmental impact.

The biggest known experiment in geo-engineering are the emissions of anthropogenic greenhouse gases. To counteract geo-engineering with geo-engineering cannot be the answer. It requires additional resources instead of reducing them. I'm a supporter of recycling to reduce environmental impact and the reduction of waste of primary resources.

There is no silver bullet to solve the climate and energy challenge. I am however confident that human ingenuity, which develops best in free societies, will meet the challenge. But creating fear is not the right incentive and in the long run is ultimately counterproductive.

No one said this better than Abraham Lincoln: "You can fool some of the people all of the time, and all of the people some of the time, but you cannot fool all of the people all of the time." I don't think you want to fool anybody, but the title of your book might imply this.

Yours respectfully,

[Markus O. Häring](#)