

## Research Proposal

**Title: State sovereignty in the age of Climate Engineering – implications on liberal democratic state, moral obligations and responsibility.**

**The main idea: The rising possibility of "climate engineering" (Geoengineering) as a solution to global warming has significant implications on the concept of state sovereignty. Different proposed geoengineering schemes could influence the concept of sovereignty in a variety of new ways. These schemes, proposed as solutions, have become a governance and international cooperation challenge by their own. It seems that an unprecedented level of interdependence among countries is required for their implementation and deployment. This would be one of the most updated (and futuristic) challenging of interdependence issues posed to humanity in the era of globalization and global warming. The intention of the proposed research is to analyze some emerging ramifications posed by main geoengineering schemes for the concept of state sovereignty, and to study what new moral obligations and responsibilities emerge in relation to them from liberal-democratic morality points of view.**

Global warming is one of the most perturbing processes taking place in our time. A broad international recognition concerning the need of taking action so as to reduce emissions of greenhouse gases in order to stop global warming led to the convening of the "2009 United Nations Climate Change Conference" (the Copenhagen Conference). Even though the international community attempted to reach an agreement regarding the actions that should be taken to prevent further global warming, this conference failed, and no binding agreement was achieved. Since then, greenhouse gas emissions have been increasing, and there is no solution in sight for curb emissions. This is when time is short and urgent action is needed, otherwise global warming will intensify,<sup>1</sup> and bring about disastrous and dangerous results. Under these circumstances, thoughts characterized by technological optimism are rising, whereby the solution of the global warming problem will emanate from "climate engineering" (geoengineering), and not from cutting emissions.

The idea of climate engineering is about a deliberate, large-scale intervention in the Earth's natural systems so as to cope with climate change. Scientists have been raising a variety of suggestions and methods for large-scale intervention in the Earth's climate in order to stop global warming. Some of the suggestions may seem science fiction (i.e., reducing the solar radiation on Earth by positioning sun-shields in space),<sup>2</sup> but there are ideas that are technologically feasible (i.e., injecting aerosol

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<sup>1</sup> The Royal Society, "Geoengineering the Climate: Science, Governance and Uncertainty," (London2009), ix.

<sup>2</sup> Ibid., 32.

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particles into the stratosphere to reflect some of the solar radiation).<sup>3</sup> Much more work is still needed for implementation, inter alia, because of the uncertainty concerning the risks and side effects involved. However, geoengineering research is increasing and is seriously being examined by scientists from around the world, including the English Royal Society and the American Meteorological Society.<sup>4</sup> Its successful implementation could reduce significantly human suffering which is expected to occur as a result of global warming. Yet, as the Earth climatic system is very complex, intentional interference can cause unexpected bad results. In other words, climate engineering involves new dangers.

One can find about 45 notable geoengineering schemes proposed in scientific journals,<sup>5</sup> and the scientific research of "techno fix" is under ongoing development. It seems that geoengineering proposals will be increasingly relevant for implementation as global warming intensifies, and different proposed techniques reach a high level of development. This relevance will increase when climatic emergency occurs. In addition, as global economy and industry go on operating mainly with traditional fossil energy, the "business as usual" scenario will urge humanity towards the solution of climate engineering. Economic incentives are pushing into this direction as well, since the implementation of some geoengineering schemes suggests much cheaper solutions than cutting emissions.

The domain of climate engineering raises not only scientific questions, but has significant implications on the concept of state sovereignty. As humans have the ability to alter deliberately the global climate, and some of the geoengineering options are relatively cheap, states are becoming more sensitive, vulnerable and dependent on others regarding the climate within their territory. The concern about the possibility of unilateral implementation by states, nongovernmental organization, and even private

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<sup>3</sup> The release of aerosols into the stratosphere is supposed to neutralize the effect of the greenhouse gases increase (as caused by the impact of the Mount Pinatubo eruption in the Philippines in 1991. Following this eruption, the average temperature on earth dropped by half a degree Celsius or so in 1992). *ibid.*, 29-31.

<sup>4</sup> American Meteorological Society, "Ams Policy Statement on Geoengineering the Climate System," (2013); Clive Hamilton, *Earthmasters: The Dawn of the Age of Climate Engineering* (New Haven & London: Yale University Press, 2013); David W Keith, "Geoengineering the Climate: History and Prospect 1," *Annual Review of Energy and the Environment* 25, no. 1 (2000); Adam Corner and Nick Pidgeon, "Geoengineering the Climate: The Social and Ethical Implications," *Environment: Science and Policy for Sustainable Development* 52, no. 1 (2010): 26; The Royal Society, "Geoengineering the Climate: Science, Governance and Uncertainty."

<sup>5</sup> Clive Hamilton, *Earthmasters: The Dawn of the Age of Climate Engineering.*, *Earthmasters: The Dawn of the Age of Climate Engineering* (Yale University Press, 2013), 1.

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wealthy people, could threaten the sovereign state, and open an era of "colonisation of the skies".<sup>6</sup>

The opposite course of action in the form of positive international cooperation for climate engineering research and implementation also involves reduced sovereignty. Sovereign states will have to agree on an international system of governance with regard to climate engineering, and to subject themselves to it. This raises questions about the appropriate governance and procedure systems for making international decisions in this context, as well as social, legal, economic, ethical, and political questions.<sup>7</sup> When dealing with most of these questions states will have to examine, clarify, and elaborate whether they have obligations to take into account the interests of foreign states, individuals and communities who could be affected by implementation of climate engineering. And if so, what are these obligations.

It seems that the technological-scientific development of geoengineering is much faster than the comprehension progress of its meaning by the general public, decision-makers and scholars, from the above mentioned points of view. This is one reason why research about the above aspects of climate engineering is urgent. Another reason is that the use of technological solutions should be subject to ethical decisions and to proper-agreed international governance system and legal framework.

The subject matter of the current research proposal is: (1) the influence of different geoengineering schemes on state sovereignty; and (2) the states new moral obligations and responsibilities emerging from some liberal-democratic morality points of view. Hereinafter I will refer briefly to these two research directions.

The influence geoengineering could have on national state sovereignty is complex and hasn't yet been examined sufficiently. The mere idea of geoengineering schemes and their scientific development, as opposed to the implementation ability, challenges the "old" or "pre" geoengineering" concept of sovereignty, since, inter alia,

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<sup>6</sup> The Royal Society, "Geoengineering the Climate: Science, Governance and Uncertainty," 40. The "colonisation of the skies" metaphor was mentioned by: Mike. hulme, *Can Science Fix Climate Change?* (Cambridge UK & Malden, MA, USA: Polity Press, 2014), 31.

<sup>7</sup> Stephen M Gardiner, "Some Early Ethics of Geoengineering the Climate: A Commentary on the Values of the Royal Society Report," *Environmental Values* 20, no. 2 (2011); Wil CG Burns and Andrew L Strauss, *Climate Change Geoengineering: Philosophical Perspectives, Legal Issues, and Governance Frameworks* (Cambridge University Press, 2013); Corner and Pidgeon, "Geoengineering the Climate: The Social and Ethical Implications."; Christopher J Preston, "Ethics and Geoengineering: Reviewing the Moral Issues Raised by Solar Radiation Management and Carbon Dioxide Removal," *Wiley Interdisciplinary Reviews: Climate Change* 4, no. 1 (2013); Marlos Goes, Nancy Tuana, and Klaus Keller, "The Economics (or Lack Thereof) of Aerosol Geoengineering," *Climatic Change* 109, no. 3-4 (2011); Ralph Bodle, "Geoengineering and International Law: The Search for Common Legal Ground," *Tulsa L. Rev.* 46(2010); The Royal Society., *Geoengineering the Climate: Science, Governance and Uncertainty* (London2009).

it promotes field experiments. Their effects (which could be harmful) would cross national borders and violate the sovereignty of states that haven't given their consent in advance. This intensifies when full implementation is at stake. In addition, as different geoengineering schemes or their variations have different characteristics, they influence the atmosphere, the planet, its different regions and its future in various ways. Thus, these different characteristics can affect differently the sovereignty of states. The proposed research will not deal with the empirical side or with predicting the effects of different engineering schemes on the sovereignty of one state or another. The study will focus on the conceptual aspect of sovereignty and its relationship with selected types of climate engineering ideas, such as two main climate engineering approaches: carbon dioxide removal [CDR] techniques and solar radiation management [SRM] techniques.

As different geoengineering schemes have different characteristics and would affect in diverse ways different regions, human populations and Earth's global and local natural systems, they could result in manifold ethical meanings and issues. Although some of them would be of the kind that could be found in other areas (like questions of social justice), it seems that this time the subject for examination is different in an unprecedented manner, and raises significant new ethical concerns.<sup>8</sup> This is because "the earth would be remade in a way and on a scale that humans have never before accomplished or witnessed",<sup>9</sup> which means taking intentionally the responsibility for all life on earth.<sup>10</sup> Trying to control the future of the earth climate in this way is an unprecedented idea, with possible ethical meanings that are not fully understood. Whether one tends to support or oppose it, the idea of artificial climate and the techniques of achieving it would alter our thinking about sovereignty, global interdependence, ethical responsibility and moral duty of states toward foreigners in other territories. Therefore, geoengineering has to be checked in these contexts under strict and detailed examination.

Ethical arguments often confront worldview considerations, including different concepts of political morality and social commitments. As the awareness of geoengineering would increase, it would penetrate the public and political discourse.

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<sup>8</sup> Christopher J. Preston, "The Extraordinary Ethics of Solar Radiation Management," in *Engineering the Climate: The Ethics of Solar Radiation Management*, ed. Christopher J. Preston (Lanham, Boulder, New York, Toronto, Plymouth, UK: Lexington Books, 2014), 2.

<sup>9</sup> Hulme, *Can Science Fix Climate Change?*, 105.

<sup>10</sup> Preston, "The Extraordinary Ethics of Solar Radiation Management," 1.

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The discussion about ethical questions concerning geoengineering will find its way to the political debate. This would confront democratic countries with new challenges.<sup>11</sup> At the level of the democratic state, the position of climate engineering would be determined by the opinions of citizens and politicians. Their views would be affected, among other things, by their political moral views. Therefore, it is important to explore the theoretical attitude of different existing political ideologies about different climate engineering options. The proposed research will investigate what theoretical attitudes emanate from selected liberal political morality points of view, in relation to different climate engineering schemes. The proposed research will also try to find out whether and how these theoretical attitudes would influence the way in which democratic state should take decisions that affect the climate of other territories, populated by foreigners.

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<sup>11</sup> Bronislaw Szerszynski et al., "Why Solar Radiation Management Geoengineering and Democracy Won't Mix," *Environment and Planning A* 45, no. 12 (2013).