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President Ursula von der Leyen
First Executive Vice President Frans Timmermans

European Commission
Rue de la Loi, 200
Brussels

Dear President von der Leyen,

Dear Executive Vice President Timmermans,

I am a Royal Society Research Professor in Climate Physics at the University of Oxford. I have just given a talk to GLOBE EU on some of the latest scientific findings on climate change. GLOBE EU is a cross-party organization of members of the European Parliament who are keen to explore the viability of ambitious and more far-reaching policy proposals on sustainability. Its members strongly recommended that I write to you summarising these findings succinctly.

Next year, the IPCC will release its latest report on climate change science. An alarming new finding is that some of our leading climate models are projecting significantly higher levels of warming than was previously thought likely. This is largely due to changes in the representation of clouds in these models. The way in which clouds will respond to increasing levels of carbon dioxide in the atmosphere is a crucial aspect of the science of climate change. I published a paper in Nature earlier this year reporting that these changes in cloud representation are quite credible as they lead to improved short-range weather forecasts.

There are a number of policy implications of these results. Not least, it means that abrupt irreversible changes in climate - often called tipping points - have become more likely. It is important to understand that once such tipping points are reached, it will be impossible to undo their effects by sucking carbon dioxide out of the air at a later time. Hence an emissions policy which relies on removing carbon dioxide from the air later in the century (e.g., by planting trees or developing negative emissions technologies) may be completely ineffective.

In this sense, there may be no real alternative than very strong emissions cuts in the coming years, if we wish to reduce the risk of such abrupt changes in the future.

However, I again stress that there remains uncertainty in these results. I have argued for many years that we need an international “CERN for Climate Change” where we pool human and computational resources to produce climate models with more detail than is currently possible at the national level.

I am pleased to say that a concept like this may finally be coming together under the EU Green Deal programme. Under the Green Deal is a project called Destination Earth where it is planned to develop “Digital Twins” of the climate system with unprecedented amounts of detail. This will help

us predict such tipping points much more reliably than is currently possible. It is vital that this project has dedicated access to next-generation exascale supercomputing, and I very much hope that EuroHPC will be able to provide the Digital Twin project with the required computing resources.

Doing everything we can to understand how our climate will evolve over the coming decades is vital, not only for mitigation policies, but also for building climate resilience - in Europe, of course, but even more in developing countries where the effects of climate change are likely to be most brutal. In this way the Destination Earth project will be doing a great service to society around the world.

Yours sincerely,

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cc.:
Ms Sirpa Pietikäinen MEP
President of GLOBE EU