

STEFAN SCHÄFER

Institute for Advanced Sustainability Studies
Berliner Str. 130
14467 Potsdam, Germany

CURRENT ACADEMIC POSITIONS AND AFFILIATIONS

- Since
01/2018 HARVARD UNIVERSITY
Visiting Fellow, Program on Science, Technology and Society, Harvard Kennedy School.
Research Affiliate, Harvard Solar Geoengineering Research Program.
- Since
09/2017 UNIVERSITY OF OXFORD
Associate Fellow, Institute for Science, Innovation and Society (InSIS), Oxford Martin School.
- Since
01/2017 INSTITUTE FOR ADVANCED SUSTAINABILITY STUDIES (IASS), POTSDAM
Research Group Leader, Climate Engineering in Science, Society and Politics. Supervision of three PhD students.

PAST ACADEMIC POSITIONS AND AFFILIATIONS

- 04/2017-
06/2017 UNIVERSITY OF OXFORD
Oxford Martin Visiting Fellow, Institute for Science, Innovation and Society (InSIS), Oxford Martin School.
- 09/2012-
12/2016 INSTITUTE FOR ADVANCED SUSTAINABILITY STUDIES (IASS), POTSDAM
12/2015-12/2016: Program Leader, Emerging Technologies and Social Transformations in the Anthropocene. Budget responsibility for 830.000 EUR, personnel responsibility for 8 staff, 4 fellows.
06/2013-11/2015: Academic Officer and co-leader, Interdisciplinary Research Microcosm on Climate Engineering.
09/2012-05/2013: Project Scientist.
- 09/2009-
08/2012 BERLIN SOCIAL SCIENCE CENTER (WZB)
Guest researcher in the research unit Transnational Conflicts and International Institutions (now Global Governance).

Stefan Schäfer

2006-2008	INTERNATIONAL RELATIONS CENTER, UNIVERSITY OF TÜBINGEN 10/2007 – 03/2008: Teaching assistant. 03/2006 – 08/2006: Research assistant.
10/2005-02/2006	KNOWLEDGE MEDIA RESEARCH CENTER, UNIVERSITY OF TÜBINGEN Research assistant.

RESEARCH STAYS

07/2016	Harvard University, Solar Geoengineering Research Residency.
04/2015	Harvard University, research stay in the Program on Science, Technology and Society, Harvard Kennedy School.
10/2013	University College London, research stay in the Department of Science, Technology, Engineering and Public Policy (STeAPP).

EDUCATION

10/2009-07/2016	FREIE UNIVERSITÄT BERLIN Dr. Phil. in Political Science.
10/2003-08/2009	UNIVERSITY OF TÜBINGEN M.A. in Political Science, Philosophy and History.
08/2006-05/2007	CORNELL UNIVERSITY Graduate studies in International Relations (Department of Government).

GRANTS AND FUNDING

Starting 01/2018	Research Grant from the Solar Geoengineering Research Program, Harvard University (35.000 USD).
Since 02/2017	Principal Investigator, Contextualizing Climate Engineering and Mitigation: Illusion, Complement, or Substitute?, in collaboration with the University of Hamburg, the Potsdam Institute for Climate Impacts Research and the University of Graz. Funded by the German Research Foundation (DFG).
11/2009-08/2012	PhD scholarship from the Dahlem Research School and the Hertie Foundation.
2010-2012	Four Travel Grants to visit international summer schools and conferences (granted by the Universities of Heidelberg, Calgary, Montana, and Oxford).
10/2008	Hugo Rupf Scholarship for an internship at the UNESCO World Heritage Centre in Paris.

08/2006- Tuition waiver granted by the Cornell University Government Department.
05/2007

PUBLICATIONS

Peer reviewed journal articles

- 2018 Lawrence, M., S. Schäfer, H. Muri, V. Scott, A. Oeschles, N. E. Vaughan, O. Boucher, H. Schmidt, J. Haywood and J. Scheffran. Evaluating climate geoengineering proposals in the context of the Paris Agreement. Revised and resubmitted to Nature Communications.
- Horton, J. B., J. L. Reynolds, H. J. Buck, D. Callies, S. Schäfer, D. Keith and S. Rayner. Solar Geoengineering and Democracy. Accepted for publication in Global Environmental Politics.
- 2017 Boettcher, M. and S. Schäfer. Reflecting upon 10 years of Geoengineering Research: Introduction to the Crutzen +10 Special Issue. *Earth's Future*, DOI: 10.1002/2016EF000521.
- 2014 Schäfer, S. and S. Low. Asilomar Moments: Formative Framings in Recombinant DNA and Solar Climate Engineering Research. *Philosophical Transactions of the Royal Society A* 372, 2031.
- Schäfer, S., A. Maas, H. Stelzer and M. G. Lawrence. Earth's Future in the Anthropocene: Technological Interventions between Piecemeal and Utopian Social Engineering. *Earth's Future* 2, 4, pp. 239–243.
- 2013 Schäfer, S., P. J. Irvine and A. Maas. Bridging the Gaps in Interdisciplinary Research on Solar Radiation Management. *GAIA* 22, 4, pp. 242-247.
- Zürn, M. and S. Schäfer. The Paradox of Climate Engineering. *Global Policy* 4, 3, pp. 266-277.

Book chapters

- 2018 Schäfer, S. and S. Low. The Discursive Politics of Expertise: What Matters for Geoengineering Research and Governance?, in Rivera, M., F. Trentmann and A.-B. Sum. *Work in Progress: Economy and Environment in the Hands of Experts*, Munich: Oekom.
- 2016 Bruhn, T., S. Schäfer and M. Lawrence. From the Garden of Eden to Eden's Garden-er? – Experiences from Dialogues with Religious Groups on Climate Engineering and Possible Implications for Transdisciplinarity, in Clingerman, F. and K. J. O'Brien. *Theological and Ethical Perspectives on Climate Engineering: Calming the Storm*, Lexington Books.

Edited publications

- 2016 Boettcher, M. and S. Schäfer. Crutzen+10: Reflecting on ten years of geoengineering research. Special issue of *Earth's Future*, available at <https://goo.gl/SPzRsh>.

Reports, working papers, commentaries, other

- 2018 Honegger, M., Derwent, H., Harrison, N., Michaelowa, A. and S. Schäfer. Carbon Removal and Solar Geoengineering: Potential Implications for Delivery of the Sustainable Development Goals. Carnegie Climate Geoengineering Governance Initiative: New York.
- Boettcher, M., S. Schäfer, S. Low and A. Parker. Climate Engineering Conference 2017: Critical Global Discussions. *Conference Report, IASS Publication Series*.
- 2017 Lawrence, M. and S. Schäfer. Herausforderungen des Pariser Abkommens und Diskussionen um Klima-Geoengineering. Tagesspiegel Background, 17 July.
- Schäfer, S. and M. Lawrence. Geo-Engineering: Klima schützen statt manipulieren. *bizz energy*, June.
- Geden, O. and S. Schäfer. Unter Null: Negative Emissionen als neue Herausforderung für die Klimapolitik. *VIK Mitteilungen* 1/17.
- Geden, O. and S. Schäfer. Die unpopulären Wege aus der Klimafalle. *Frankfurter Allgemeine Zeitung*, p. N2, 11 January.
- 2016 Geden, O. and S. Schäfer. „Negative Emissionen“ als klimapolitische Herausforderung. SWP-Aktuell 2016/A 70, Stiftung Wissenschaft und Politik: Berlin, <http://bit.ly/SWP16A70>.
- Geden, O. and S. Schäfer. Weniger als null. *NZZ am Sonntag*, Nr. 43, p. 59, 23 October.
- Habets, D., C. Hu, S. Schäfer, A. Schmidt, I. Louro. Frontier Moods. Video performance, <http://goo.gl/AO8kLw>.
- 2015 Schäfer, S., H. Stelzer, W. Born, S. Low, M. Lawrence, A. Aaheim, P. Adriázola, G. Betz, O. Boucher, A. Carius, P. Devine-Right, A.T. Gullberg, S. Haszeldine, J. Haywood, K. Houghton, R. Ibarrola, P. Irvine, J.-E. Kristjansson, T. Lenton, J.A. Link, A. Maas, L. Meyer, H. Muri, A. Oschlies, A. Proelß, T. Rayner, W. Rickels, L. Ruthner, J. Scheffran, H. Schmidt, M. Schulz, V. Scott, S. Shackley, D. Tänzler, M. Watson, N. Vaughan. The European Transdisciplinary Assessment of Climate Engineering (EuTRACE): Removing Greenhouse Gases from the Atmosphere and Reflecting Sunlight away from Earth, *Funded by the European Union's Seventh Framework Programme under Grant Agreement 306993*.
- Haraguchi, M., R. Liu, J. Randhawa, S. Salz, S. Schäfer, M. Sharma, S.C. Shifflett, A. Suzuki, Y. Yuan. Human Intervention in the Earth's Climate: The Governance of Geoengineering in 2025+, *Robert Bosch Stiftung*.
- Low, S., N. Moore, A. Parker, A. Maas, M.G. Lawrence and S. Schäfer. Climate Engineering Conference 2014: Critical Global Discussions. *Conference Report, IASS Publication Series*.
- 2014 Moore, N., S. Schäfer and M.G. Lawrence. Procedural Governance of Field Experi-

ments in Solar Radiation Management. *IASS Working Paper*.

Irvine, P.J., S. Schäfer and M.G. Lawrence. Solar Radiation Management Could be a Game Changer. *Nature Climate Change* 4, 842.

Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Edenhofer, O. et al. (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. Contributing author, chapter 6.

Schäfer, S., P. J. Irvine, A.-M. Hubert, D. Reichwein, S. Low, H. Stelzer, A. Maas and M. G. Lawrence. Field Tests of Solar Climate Engineering. *Nature Climate Change* 3, 766.

2013 Low, S., S. Schäfer and A. Maas. Climate Engineering. *IASS Fact Sheet* 1/2013, Potsdam: IASS.

2011 Zürn, M. and S. Schäfer. Climate Engineering: Internationale Beziehungen und politische Regulierung. Study commissioned by the German Federal Ministry of Education and Research (BMBF), Berlin: Wissenschaftszentrum Berlin für Sozialforschung.

Rickels, W., G. Klepper, J. Dovern, G. Betz, N. Brachatzek, S. Cacean, K. Güssow, J. Heintzenberg, S. Hiller, C. Hoose, T. Leisner, A. Oschlies, U. Platt, A. Proelß, O. Renn, S. Schäfer, M. Zürn. Large-Scale Intentional Interventions into the Climate System? Assessing the Climate Engineering Debate. Scoping report conducted on behalf of the German Federal Ministry of Education and Research (BMBF), Kiel Earth Institute, Kiel.

2009 Schäfer, S. Die Zukunft des UNESCO-Welterbesystems: Reformansätze für das 21. Jahrhundert. *Vereinte Nationen* 6/2009, pp. 243-248.

KEYNOTES, TALKS, PRESENTATIONS

Keynotes and Lectures

2018 Geoengineering: Wir machen uns die Welt, wie sie uns gefällt. Delivered as part of the lecture series Nachhaltigkeit, Martin-Luther-Universität Halle-Wittenberg, 16 May.

2017 Negative Omissions: How the way we (don't) talk about negative emission technologies perpetuates climate reductionism. Delivered by S. Rayner at the Workshop Politics and Governance of Negative Emissions Technologies, Utrecht, The Netherlands, 16 June (co-authored with S. Rayner and O. Geden).

2016 Geo-Engineering—Die internationale Perspektive. Delivered at the Hochschule für Wirtschaft und Umwelt Nürtingen-Geislingen, 04 November.

Kann Climate Engineering helfen, wo die Politik versagt hat? Delivered at the Top Management Symposium of the Wissenschaftsverein Kärnten, Abbazia di Rosazzo, Italy, 26-28 May.

Invited talks

- 2018 The discursive politics of expertise. Delivered at the Solar Geoengineering Reading Group, Harvard University, 28 March.
- What do we talk about when we talk about geoengineering? The historical semantics of a concept and its politics. Delivered at the Planetary Designs Workshop, Harvard University, 23 March.
- 2017 Speaker on the panel on Geoengineering: politische Folgen, technische Möglichkeiten und Risiken at the European Forum Alpbach, 28 August.
- Speaker on the 15th Anniversary Panel of the Science and Democracy Network Annual Meeting, Harvard University, 01 July.
- Speaker on the closing panel of the workshop “Governing Complex and Emerging Technologies: Lessons for the Governance of Climate Engineering”, University of California, Berkeley, 09 February.
- 2016 Understanding global climate governance from a geoengineering perspective. Delivered at the International Workshop on Emerging Issues in Global Climate Governance after Paris: Perspectives from Asia and Europe, Hong Kong, 27-28 October.
- 2015 The Governance of Solar Geoengineering. Delivered at the UNESCO conference Our Common Future Under Climate Change, Paris, 9 July.
- Projections of International Conflict and Cooperation on Geoengineering. Delivered at the Workshop on Problems and Prospects of Geoengineering, Harvard University, Cambridge, MA, 16 April.
- 2014 Geoengineering Governance. Delivered at the Geoengineering Workshop of the Senckenberg Museum and the Normative Orders Excellence Cluster, Goethe-Universität Frankfurt am Main, 17 July.
- Issues and Research under EuTRACE. Delivered at the Workshop of the UK Economic and Social Science Research Council Geoengineering Governance Project at the Institute for Urban and Environmental Studies, Chinese Academy of Social Science, Beijing, China, 13-14 May.
- Climate-related Geoengineering. Delivered at the European Expert Meeting in Preparation of the Eighteenth Meeting of SBSTTA (Subsidiary Body on Scientific, Technical and Technological Advice to the Conference of the Parties of the Convention on Biological Diversity), German Federal Agency for Nature Conservation (BfN), Island of Vilm, Germany, 7 May.
- International Law and Governance for Climate Engineering. Delivered at the Policy Briefing on Climate Engineering, Institute for Sustainable Development and International Relations, Paris, France, 19 March.
- The International Politics of Engineering the Climate. Delivered at the Institute for Advanced Study in the Humanities, Essen, Germany, 10 March.

International Governance of Climate Engineering. Policy Briefing on Climate Engineering, Norwegian Parliament, Oslo, Norway, 4 March.

- 2013 Climate Engineering Research Activities at the IASS. Delivered at the Special Session on Geoengineering Research, University of Tokyo, Japan, 18 December.

International Cooperation on Solar Radiation Management. Delivered at the International Symposium on Risk Governance of Science and Technology, University of Tokyo, Japan, 15-17 December.

The Slippery Slope(s) in Climate Engineering. Delivered at the Workshop on Geoengineering, Path-Dependence and Lock-in, University College London, 25 October.

Climate Engineering Research Activities at the IASS. Delivered at the Fourth Interdisciplinary Summer School on Geoengineering Solar Radiation Management: Exploring Uncertainties and Trade-offs, Harvard University, Cambridge, USA, 5-9 August.

Research Activities at the IASS and Some Ideas on the Role of Satellite Observations for Assessing Climate Engineering. Delivered at the European Space Agency, Noordwijk, Netherlands, June 24 (together with Peter Irvine).

- 2012 Comparing Risks and Governance of Biotechnology and Solar Geoengineering. Delivered at the Oxford Summer School on Geoengineering Research, University of Oxford, UK, 19-23 August (together with Sean Low).

- 2011 Political Science and Governance Issues in Climate Engineering. Delivered at the Scoping Workshop on Climate Engineering, Institute for Advanced Sustainability Studies, Potsdam, Germany, 10-11 June.

Conference presentations

- 2018 Constitutional climates: Solar geoengineering in the co-production of climate expertise and global order. Presentation to be delivered at the EASST Conference, Lancaster, 28 July (together with G. Dorthe).

Institutionalizing Intervention: STS in the Age of Impact. Delivered at the annual meeting of the Science and Democracy Network, Munich, 30 June.

- 2017 Claiming and making the future in climate engineering research. Delivered at the 4S Conference, Boston, 30 August (together with S. Low).

Questioning intervention with and within science and technology studies. Delivered at the 4S Conference, Boston, 30 August (together with R. Foley).

- 2016 Flexing and Reflexing Authority: Engagements with/in Science and Technology. Delivered at the S.NET conference at the University of Bergen, Norway, 12-14 October (together with R. Smith).

The Historical Evolution and Political Dimensions of Geoengineering Terminology. Delivered at the 4S/EASST Conference, Barcelona, 31 August.

- 2013 Limits to Self-Governance in Climate Engineering Research. Delivered at the ECPR Joint Session of Workshops, University of Mainz, Germany, 11 March (together with S. Low).

Other talks

- 2016 Making Sense of Climate Engineering. Presentation at the workshop on Futures Past: Experts, Development and Sustainability. IASS Potsdam, 27-29 April.
- 2010 Legitimacy and the International Regulation of Geoengineering with Solar Radiation Management: Prospects for Normative Institutional Design Theory. Presentation at the workshop on The Ethics of Geoengineering with Solar Radiation Management. University of Montana, USA. 18-20 October.
- 2008 Öffentlich-private Kooperation im Bereich der Welterbe-Governance: UNESCO, Zivilgesellschaft und der private Sektor. Presentation at the annual meeting of the Wissenschaftlicher Initiativkreises Kultur- und Außenpolitik. Institute for Foreign Relations, Stuttgart, Germany. 17 October.

EVENT ORGANIZATION

- 2018 Open Questions in STS and Geoengineering. Session to be held at the EASST Conference, Lancaster, 28 July.
- 2017 Climate Engineering Conference 2017: Critical Global Discussions. International conference held at the Umweltforum and the Neue Mälzerei, Berlin, 09-12 October (270 participants; chair of the conference steering committee).
- Modelling, Imagining and Making the Future in Climate Engineering. Session held at the Climate Engineering Conference 2017: Critical Global Discussions, Berlin, 09-12 October (co-organized with S. Low).
- Questioning intervention with and within science and technology studies. Session held at the annual conference of the Society for Social Studies of Science, Boston, 30 August-2 September (co-organized with M. Bernstein and R. Smith, co-chaired with Rider Foley).
- 2016 Flexing and reflexing authority in STS engagements. Session at the S.NET conference at the University of Bergen, Norway, 12-14 October (co-organized with R. Smith, A. Huber, S. Low and S. Spruit).
- „Negative Emissionen“ zur Erreichung globaler Klimaziele? Expert meeting held at the Stiftung Wissenschaft und Politik (SWP), Berlin, 10 May, in partnership between IASS and SWP (co-organized with O. Geden).
- Collective Behavior Change for Sustainable Futures. Workshop held at the Institute for Advanced Sustainability Studies, Potsdam, 8-9 February, together with the Knowledge, Learning and Societal Change Alliance (co-organized with I. Chabay).
- 2015 Climate Intervention: Evaluating its Risks, Benefits and Potentials. Co-convener of

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a session at the UNESCO conference Our Common Future Under Climate Change, Paris, 7-10 July (co-organized with A. Robock and M. MacCracken).

Member of the advisory group for the Solar Radiation Management Science conference. International conference held at Cambridge University, UK, 12-14 March.

2014 Climate Engineering Conference 2014: Critical Global Discussions. International conference held at the Scandic Hotel Berlin Potsdamer Platz, 18-21 August 2014 (340 participants; chair of the conference steering committee).

Understanding Process Mechanisms for the Governance of SRM Field Experiments. Workshop at the Institute for Advanced Sustainability Studies, Potsdam, Germany, 16-17 May (co-organized with N. Moore, J. Blackstock and N. Craik).

Self-Governance in Science and Technology. Workshop at the Institute for Advanced Sustainability Studies, Potsdam, Germany, 14-15 May (co-organized with S. Low).

Machtvolle Visionen: Technologische Großprojekte als Antwort auf den Klimawandel? Co-convenor of a session at the conference Globaler Wandel und Macht, AK Umweltpolitik/Global Change, Berlin, Germany, 10-11 February (co-organized with T. Wiertz).

2013 Religious and Spiritual Perspectives on Climate Engineering. Workshop at the Institute for Advanced Sustainability Studies, Potsdam, Germany, 24-26 April (co-organized with M. Lawrence and D. Gerten).

MEMBERSHIPS AND PROFESSIONAL ENGAGEMENTS

Since 05/2018 Member of the European Association for the Study of Science and Technology (EASST).

Since 04/2018 Member of the Integrative Research Institute on Transformations of Human-Environment Systems (IRI THESys), Humboldt University Berlin.

Since 2017 Member of the Science and Democracy Network (SDN).

Since 12/2017 Member of the Scientific Advisory Committee for the RE-IMAGINE project (Re-imagining anticipatory climate governance in the world's vulnerable regions), Universities of Utrecht, Wageningen and Oxford.

Since 10/2017 Member of the Advisory Group for the AMDEG project (Assessing the Mitigation Deterrence Effects of Greenhouse Gas Removal Techniques), University of Lancaster.

Since 04/2017 Member of the Society for Social Studies of Science (4S).

Since 02/2017 Member of the Executive Board of the DFG Priority Program on Climate Engineering: Risks, Challenges, Opportunities? (SPP 1689, www.spp-climate-engineering.de/).

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Since 08/2016	Member of the Federation of German Scientists (<i>Vereinigung Deutscher Wissenschaftler, VDW</i>).
Since 01/2016	Member of the Steering Committee for the Geoengineering Research Governance Project, University of Calgary (www.ucalgary.ca/grgproject/).
Since 06/2013	Chair of the Steering Committee for the Climate Engineering Conference Series (www.ce-conference.org).
06/2014- 05/2015	Fellow in the Robert Bosch Foundation's Global Governance Futures 2025 program.
09/2014- 03/2015	Member of the Advisory Group for the Solar Radiation Management Science Conference, Cambridge, UK.
08/2013	Appointment as contributing author for Working Group III of the IPCC Fifth Assessment Report.

FURTHER TRAINING

04/2016	HOUSE OF WORLD CULTURES (HKW), BERLIN Anthropocene Campus 2016: The Technosphere Issue.
08/2013	HARVARD UNIVERSITY Fourth Interdisciplinary Summer School on Geoengineering Solar Radiation Management: Exploring Uncertainties and Trade-offs.
08/2012	UNIVERSITY OF OXFORD Oxford Summer School on Geoengineering Research.
08/2011	UNIVERSITY OF CALGARY Second Transdisciplinary Summer School on Climate Engineering.
03/2011	BERLIN GRADUATE SCHOOL FOR TRANSNATIONAL STUDIES (BTS) Research Colloquium on Statistical Analysis.
07/2010	UNIVERSITY OF HEIDELBERG Summer School on Governing Climate Engineering.
05/2010	BERLIN SOCIAL SCIENCE CENTER (WZB) Workshop on Expert Interviews.

NON-ACADEMIC POSITIONS

04/2010- 04/2011	GERMAN FEDERAL MINISTRY OF EDUCATION AND RESEARCH Scientific consultant, member of an interdisciplinary working group on climate engineering technologies.
02/2009- 03/2009	UNESCO WORLD HERITAGE CENTRE, PARIS

Stefan Schäfer

External consultant.

09/2005 ALLGEMEINES KRANKENHAUS ALTONA, HAMBURG

Civil service in the hospital's intensive care unit.

IN THE MEDIA

I have been featured in radio, television, and online and print media, including in Süddeutsche Zeitung, Frankfurter Allgemeine Zeitung, Le Monde Diplomatique, ARTE (in German and French), Deutschlandfunk, Deutsche Welle (in German, English, French and Portuguese), rbb Inforadio, Spiegel Online, Carbon Brief, Der Kurier, and Die Furche, among others.

I have published contributions in Frankfurter Allgemeine Zeitung, Neue Zürcher Zeitung am Sonntag, and Der Tagesspiegel, among others.

REVIEWER SERVICES

Reviewer for Cambridge University Press, Nature & Culture, Nature Climate Change, Philosophical Transactions of the Royal Society A, Routledge, Climate Policy, Global Policy, Risk Analysis, Ethics & International Affairs, Environmental Politics, German Academic Exchange Service (DAAD), and others.