LUCAS KRUITWAGEN

CLIMATE CHANGE & AI FOR SUSTAINABLE FINANCE

Lucas.Kruitwagen@gmail.com
+44 754 231 3401
https://linkedin.com/in/lkruitwagen
https://github.com/lkruitwagen

ACADEMIA

DPhil in Geography and the Environment — 2016.10 – 2021.03

University of Oxford

- Title: *Technology, Information, and the Governance of Environmental Risk*
- Supervisors: Professor Cameron Hepburn, Associate Professor Ben Caldecott
- *SusTec Academy* Presenter: Invitational PhD academy hosted by ETH Zurich in Appenzall, CH
- *DescartesLabs* Impact Science Grant
- *Microsoft* AI for Earth Grant
- *NeurIPS Climate Change AI* Reviewer and Expert Mentor
- *Frontier Development Lab Europe 2020* Applied AI Researcher; *ML4Floods 2021* MLOps Developer

Visiting Scholar, Global Projects Center — 2018.01 – Present

Stanford University

Visiting Researcher, Centre for Environmental Policy — 2015.09 – Present

Imperial College London

MSc, Distinction in Sustainable Energy Futures — 2014.10 – 2015.09

Imperial College London

- Climate-KIC Master's Label Programme

BEng in Mechanical Engineering — 2007.08 – 2012.04

McGill University

- LORAN Award – Canada's highest-value undergraduate scholarship

EMPLOYMENT HISTORY

Oxford Earth Observation *Oxford, UK* — 2017.08 – Present

Co-founder, CTO

- Developing an environmental risk intelligence service for fund managers, beginning with water risk
- Combining AI and earth observation, climate science, and a comprehensive infrastructure asset database
- Member of *European Space Agency Business Incubation Center* and *the Creative Destruction Lab*

Oxford Sustainable Finance Programme *Oxford, UK* — 2015.09 – 2019.03

Data Lead

- Lead the technical development of *2 Degree Pathways* wargame and decision support tool, allowing finance, NGO, and policy analysts to roleplay energy company decision making through energy transition scenarios
- Lead the technical development of *Risk, Impact, & Opportunity Tool*, assessing the asset-level exposure of companies in the power, steel and cement value chains to hypotheses of environment-related risk

Ecosystem Energy Services *Toronto, Canada* — 2012.05 – 2014.08

Solutions Engineer

- Developed, sold, and implemented customized energy efficiency and renewable energy solutions worth $23M

SKILLS

Geospatial Data Science: Matlab, GDAL, Python: (Geo)Pandas; Dask; Tensorflow; Pytorch

Stack: Linux, PostgreSQL/PostGIS, Flask, Dash, AWS, Azure, GCP, Heroku

AWARDS

2020	Copernicus Master's Finalist	European Space Agency Phi-Week
2019	Best Paper Prize - Innovative Methods	GRASFI Conference 2019
2018	Best Pedagogical Innovation	UN Principles for Responsible Investment
2018	Doctoral Fellowship	Social Science & Humanities Research Council
2015	Research Prize for Best MSc Thesis	Energy Futures Lab, Imperial College London

SELECT PUBLICATIONS

Shivakumar, A., Weinstein, M., **Kruitwagen, L.**, Spiteri, S., Arderne, C., Almulla, , Y., Usher, W., Howells, M., & Hawkes, A. (2021). A techno-economic and financial analysis of a Gulf-India undersea electricity interconnector, *Climate Compatible Growth Programme Working Paper*.

Kruitwagen, L. (2021). Towards *DeepSentinel*: Self-supervised Sentinel-1, Sentinel-2 sensor fusion for general purpose semantic embedding, Presented at *NeurIPS 2020 Climate Change Workshop*.

Kruitwagen, L., Klaas, J., Lakeh, A. B., & Fan, J. (2021). Transition Risk in the global coal, oil, and gas supply chains, *Institute for New Economic Thinking Working Paper*.

Christensen, M., Jones, W., Kusner, M., **Kruitwagen, L.,** Pearce, T., Saeongkyongam, S., & Watson-Paris, D (2020). Aerosol effects on mesoscale structures in marine boundary layer clouds, *Frontier Development Lab Europe 2020 Technical Memo*.

Kruitwagen, L., Story, K., Freidrich, J., Skillman, S., & Hepburn, C. (2019). A global inventory of utility-scale solar photovoltaic generating units, Presented at *NeurIPS 2019 Climate Change Workshop,* currently *4th* round peer review at *Nature*.

Moore, C., **Kruitwagen, L.,** Mendiola, J., R., Morel, A., & Malhi, Y. (2019). Classifying Land Use in Complex Mosaic Landscapes using Drone Imagery and Machine Learning, submitted to *Remote Sensing of Environment*.

Kruitwagen, L.. (2018). Power Sector Asset Networks: determinants of the diffusion of renewables 2007 through 2017, presented at *ETH SusTec Academy*, June 17-22, Appenzell, CH.

Caldecott, B, **Kruitwagen, L**., McCarten, M., & Zhou, X. (2018). *Climate risk analysis from space: remote sensing, machine learning, and the future of measuring climate-related risk*, Smith School of Enterprise and the Environment, Oxford, UK.

Kruitwagen, L., Collins, S., & Caldecott, B. (2017). 'Thermal Coal Power Stations', in *Coal in the 21 st Century*, ed. R. Hester, Royal Society of Chemistry, Cambridge, UK.

Kruitwagen, L. (2016). 'Financing 1.5 Degrees', Conference Proceedings of 1.5 Degrees: Meeting the challenges of the Paris Agreement, September 20-22, 2016, Environmental Change Institute, Oxford, UK.

Kruitwagen, L., & Holmes, I. (2016). 'Future Pathways to 1.5°C/2°C-Compatible Oil & Gas Majors: Survey of energy outlooks and key uncertainties', Conference Paper presented at *Fossil Fuel Supply and Climate Policy*, September 26-27, 2016, Oxford, UK.

Kruitwagen, L., Madani, K., Caldecott, B., Workman, M. H. W. (2016). Game theory and corporate governance: conditions for effective stewardship of companies subject to climate change risks. *Journal of Sustainable Finance and Investment*, 6(3): 1-23.

Caldecott, B., **Kruitwagen, L**., & Kok, I. (2016). Carbon Capture and Storage in the thermal coal value chain. *Oxford Energy Forum*, 105: 50-55. Oxford Institute for Energy Studies, University of Oxford, Oxford, UK.

Caldecott, B., **Kruitwagen, L**., Dericks, G., Tulloch, D. J., Kok, I., Mitchell, J. (2016). *Stranded Assets and Thermal Coal: An analysis of environment-related risks*, Smith School of Enterprise and the Environment. University of Oxford, Oxford, UK.

OTHER ENTREPRENEURIAL ACTIVITIES & PROJECTS

Oxford COVID-19 Impact Monitor *Oxford, UK* 2020.03 – 2020.06

- Develop insight for policy makers into the development of COVID-19 in the UK using cellphone user data

OpenWatt (Founder) *London, UK* 2015.02 – 2016.09

- A start-up to enable the rapid integration of legacy equipment into 21st-century electricity systems
- Finalists at *Mayor of London's Low Carbon Entrepreneur 2015*; the *Cleantech Challenge* hosted by UCL and LBS; *Climate Launchpad 2015*

Solar Cargo (Cofounder) *London, UK* 2014.09 – 2016.05

- A start-up to deliver deployable thin-film photovoltaic power from a standard shipping container
- Kick-start funded by the Climate-KIC Greenhouse Programme

Lucas.Kruitwagen@gmail.com https://github.com/lkruitwagen +44 754 231 3401