

Hugo Le Boulzec

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Transdisciplinary researcher: raw materials, energy, climate, air pollutants, integrated modelling.

EDUCATION

Université Grenoble Alpes (UGA) <i>Ph.D in Earth and Environmental Sciences</i>	2017 - 2022 Grenoble, France
Université Grenoble Alpes (UGA) <i>Master in Energy Economics</i>	2016 - 2017 Grenoble, France
Grenoble INP - Ense3 <i>M.Eng. in Mechanical Engineering</i>	2013 - 2017 Grenoble, France
Lycée Dupuy de Lôme <i>Preparation for French engineering schools exams - Mathematics and Physics</i>	2010 - 2013 Lorient, France

EXPERIENCE

Postdoctoral Fellow <i>Grenoble Applied Economics Laboratory (GAEL)</i>	Sep 2022 – Grenoble, France
ACRA - Accord de Paris : Cobénéfices et Risques liés à la qualité de l'Air. Coupling of POLES (GAEL) and GAINS (IIASA) models.	
Research stay <i>International Institute for Applied Systems Analysis (IIASA)</i>	April 2022 – May 2022 Vienna, Austria
PhD Fellow (supervised by Olivier Vidal & Sandrine Mathy) <i>Institute of Earth Sciences (ISTerre) - Grenoble Applied Economics Laboratory (GAEL)</i>	Nov 2017 – July 2022 Grenoble, France
The raw materials conundrum of the energy transition: an energy and building sectors approach <ul style="list-style-type: none">Co-developed a multi-regional stock-flow consistent model of the world's infrastructures over period 1900-2100 (DyMEMDS/MATER model)Co-developed the building, fossil fuels and renewable energy sectors in DyMEMDS/MATERExplored the raw materials-energy nexus	

PEER REVIEWED PUBLICATIONS - ENGLISH

- 2023 **Le Boulzec, H.**, Mathy, S., Verzier, F., Andrieu, B., Monfort-Climent, O. & Vidal, O. (2023). Material requirements and impacts of the building sector in the Shared Socioeconomic Pathways. *Journal of Cleaner Production*. doi:10.1016/j.jclepro.2023.139117
- Delannoy L., Auzanneau M., Andrieu B., Vidal O., Longaretti P-Y., Prados E., David J. Murphy D., Bentley R., Carbajales-Dale M., Raugei M., Höök M., Court V., Carey King C., Fizaine F., Jacques P., Kuperus Heun M., Jackson A., Guay C., Aramendia E., Wang J., **Le Boulzec, H.** and Hall C. Emerging Consensus on Net Energy Paves the Way for Improved Integrated Assessment Modeling. *Energy & Environmental Science*. doi:10.1039/D3EE00772C
- 2022 **Le Boulzec, H.**, Delannoy, L., Andrieu, B., Verzier, F., Vidal, O., & Mathy, S. (2022). Dynamic modeling of global fossil fuel infrastructure and materials needs: Overcoming a lack of available data. *Applied Energy*. Elsevier BV. doi:10.1016/j.apenergy.2022.119871
- Andrieu, B., Vidal, O., **Le Boulzec, H.**, Delannoy, L., & Verzier, F. (2022). Energy Intensity of Final Consumption: the Richer, the Poorer the Efficiency. *Environmental Science & Technology*. American Chemical Society (ACS). doi:10.1021/acs.est.2c03462
- 2018 Vidal, O., **Le Boulzec, H.** & François, C. (2018). Modelling the material and energy costs of the transition to low-carbon energy. *EPJ Web of Conferences*. doi.org/10.1051/epjconf/201818900018

PUBLICATIONS UNDER REVIEW - ENGLISH

- Andrieu, B., **Le Boulzec, H.**, Delannoy, L., Verzier, F., Winter, G. & Vidal, O. Mapping global greenhouse gases emissions: an interactive, open access web application. Under review at *Communications Earth & Environment*. doi.org/10.21203/rs.3.rs-2617637/v1
- Vidal, O., Andrieu, B., **Le Boulzec, H.**, Verzier, F. & Arndt, N. Modeling production energy and thermodynamic prices of metals from 1900 to 2100. Under review at *Resources, Conservation and Recycling*

WORKING PAPERS - ENGLISH

2024 Verzier, F., **Le Boulzec, H.**, Andrieu, B. & Vidal, O. Building MATER, a multi-regional stock-flow consistent model of the world's infrastructures.

Andrieu, B., Verzier, F., **Le Boulzec, H.**, Berthe, A., Vuillard, T. & Vidal, O. Material requirements of the transport sector in the Shared Socioeconomic Pathways.

Baillard A., **Le Boulzec, H.**, Appert E. & Consonni V., Criticality and performance in material science.

Le Boulzec, H., Andrieu, B., Towards new criticality frameworks.

PUBLICATIONS AND REPORTS - FRENCH

2023 Hodencq S., **Le Boulzec, H.**, Prados E. (2023), Face à l'urgence, faut-il encore prendre le temps de modéliser les crises qui viennent? in *Les limites à la croissance : Meadows : questions raisonnées*, Collectif Zoé Steep.

Le Boulzec, H., Hodencq S., Prados E. (2023), Les outils de modélisation numérique actuels peuvent-ils nous aider à penser et faire face aux crises? in *Les limites à la croissance : Meadows : questions raisonnées*, Collectif Zoé Steep.

2022 Vidal, O. & **Le Boulzec, H.** (2022). Ressources minérales et systèmes énergétiques, La Revue de l'Electricité et de l'Electronique (REE).

2021 Ademe, Projet SURFER - Inventaires des besoins en matière, énergie, eau et sols des technologies de la transition énergétique, 222 pages.

PRESENTATIONS

2023 Scientific: 7th International Exergy Economics Workshop, Chambéry; 9th International Degrowth Conference, Zagreb; Openmod, IIASA, Austria