

# Interviewing Alastair Fraser

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Alastair Fraiser spent the Fall of 2022 at EnergyEcolab. David Andrés-Cerezo interviews him.

**Decarbonizing transportation over long distances is one of the main challenges of the Energy Transition. What aspects of transportation should we focus on?**

Clearly, road and rail are relatively easy to electrify and decarbonise compared to air and ocean transport, due to the latter's reliance on energy dense fossil fuels. So I think decarbonizing long distance transport

will be as much a question of *how* goods are moved, as *whether* they are moved or *where* they come from, and it's important to consider how policies to reduce transport emissions will also affect production emissions.

The method of transport matters a lot. Ordering a new Macbook from Hong Kong to Barcelona by sea would release about 225g of CO<sub>2</sub>. Long-haul trucking causes about 5 times the emissions per tonne-km as sea shipping, so shipping the Macbook by road to Madrid from Berlin would release about the same 225g CO<sub>2</sub>. But as air shipping is about 100 times (potentially up to 300 times!) more emissions intensive than sea shipping, flying the computer half way to Valencia from Madrid would cause as much global warming as the entire ocean journey from Hong Kong. Also important is that all transportation emissions are small compared to production emissions. That journey of the Macbook from Hong Kong to Barcelona by sea would release only about 0.2% of the total production emissions!

In the absence of a global policy, it is straightforward for unilateral policies on shipping—especially ocean shipping—to increase emissions if production shifts to more emission-intensive locations or transportation modes. It may also be that the lowest cost way to produce goods with lower lifecycle emissions is to *increase* our long-distance sea shipping, in order to take advantage of differences in emissions intensity across countries. For example, aluminum smelting is extremely electricity-intensive, and it's already common to put smelters in remote locations—like Iceland—to take advantage of cheap low emissions hydroelectric power.



**In your view, what do you consider the most significant obstacles to a more ambitious climate policy? Do you see a significant role for ESG ratings in overcoming these obstacles?**

An interesting trend over the past 5 years—also visible in Google Trends—is the slight decline in the use of the phrase “Paris agreement”, and large rise in the phrase “net zero.” I think this reflects a growing focus on the actions and emissions of individual companies and a move away from pinning climate policy hopes on broad international agreements like Paris. The rise in Environmental, Social, and Governance (ESG) ratings and other ‘climate finance’ methods is partly a result of this shift.

It’s not clear this is a positive development. It may be that a more targeted focus on specific companies will drive larger emission reductions—even if at a higher cost—than broad, politically tricky policies like a price on carbon. Yet this shift in focus could create substantial obstacles to ambitious climate policy. **By moving the climate change goal posts away from the Paris Agreement towards the shiny new goal of ‘net zero’, we may risk spending another 10 years talking about how to act—developing methods, targets, policies, and so on—rather than actually reducing emissions.** A further risk is that the emis-

sion reductions a company or investor should undertake are harder to define and verify than countries’ territorial emissions. The shift to net zero risks putting us on a path where the world is awash in strong statements about action and ambitious net zero pledges that aren’t backed up by physical emission reductions.

While progress is being made, **the initial methods widely used by the finance industry are not promising.** For example, Australia’s largest independent oil and gas company is rated as the “AAA” top tier of ESG investments, and a recent paper of mine shows how one of the most widely used methods of assessing emission reductions for investments allows one to claim large ostensibly Paris-aligned reductions in ones ‘financed emissions’, even when the *physical* emissions of the same companies are increasing. So **I see methods like ESG ratings as a possibly tentative step in the right direction, but such approaches shouldn’t become a substitute for substantive government policy action.**

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### **What other research topics are currently working on?**

One is **how peak electricity demand will change as we electrify other energy uses, like driving and natural gas heating**. It's already challenging for electricity grids to reliably meet peak demand at times, particularly during unusually hot or cold weather when many of us turn on our air conditioning or heating. Meeting peak demand could become even more challenging if driving patterns—and EV charging if it is not coordinated—are also correlated with peak demand through weather, holidays, and other causes.

**A second set of topics is understanding what, exactly, transition risks are to companies and how these can be measured.** Transition risks are the risks and potential benefits to companies that arise as we transition to a low-carbon society, and measuring and disclosing such risks is a large focus of finance methods for incorporating climate change concerns into investing decisions. My research here shows how there are a variety of types of transition risks—like various demand shocks and supply shocks, and how these affect companies depending on their supply chains and technology. As a result, we show that some current methods of measuring 'risk' to firms can have the wrong sign for major sources of risk like technology changes.

### **Your research spans several topics of interest related to the Energy Transition. What would be your advice to other scholars on the most promising research questions for the next few years?**

Decarbonising electricity generation at the current margin is already challenging, and will presumably get more difficult as the share of renewables grows. And it may get even more difficult if we expand generation in order to electrify other uses like natural gas and transport. So I think **the energy transition has only barely just began, it's long term, and it's going to require important and interesting research to be done for our entire careers.**

But, how to find the promising questions? What I'm trying to do more myself is engage with industry. Read the reports that energy regulators put out. Go ask people who work outside of academia directly on integrating renewables how they're struggling with it. Ask energy regulators what makes them worried about maintaining grid stability or keeping prices low. Attending industry conferences and events is a great way to do this, as asking people from the industry for coffee can also generate great ideas—my job market paper resulted from one such coffee chat with an electricity startup.

### **After spending some weeks in Madrid, did you notice any important difference regarding environmental awareness and climate policy between Spain and Australia? and with respect to Canada?**

Well, despite my efforts and much friendly help from the cafetería staff at UC3M I must admit mi español es muy malo! So I am not well informed about Spain. One difference, however, was the greater focus in Australia and Canada on the loss of oil, gas, and coal industry jobs and income that will come with a low-carbon transition. Canada and Australia each extract about 5,000 times (yes, times!) more fossil fuels on an energy basis than Spain does, so energy transition policies there are intimately linked to political concerns about the demise of the fossil fuel industry •