

Dr Diesendorf, thanks very much for joining us today. It's really great to be able to share with our members the insights you've gained as a truly interdisciplinary scholar working across important issues like energy policy, energy technology assessment, and sustainable development.

There's been a trend in the last 30 years in Australian schools and universities of declining enrolments in economics, particularly among female and low socioeconomic background individuals. And we think one reason might be that young adults just don't think there are great reasons to choose economics given the whole range of other subjects now available.

So why should students consider studying economics today?

Before answering your question, I should explain that I was originally trained as a scientist and nowadays, as you pointed out, I do interdisciplinary research on sustainability and on renewable energy and energy policy. So I'm looking at economics from outside. I haven't actually studied neoclassical economics in a university, but I've read numerous critiques of it, and I've published some research papers in ecological economics, which of course is not a branch of neoclassical economics.

This has both advantages and disadvantages. The main advantage is that I'm less likely to be indoctrinated into, forgive me, the unscientific nonsense that is often taught in neoclassical economics, especially in macroeconomics. The disadvantage is that I've missed out on some very useful knowledge taught in microeconomics. So to your question: why should students consider studying economics? Well if you're not already studying conventional economics, my answer is simply: don't!

However, if you're interested in economics generally, then there's a lot of value in studying economic history or political economy, or ecological economics. Unfortunately, neoclassical economics has a stranglehold on economics in most Australian universities, so these alternative approaches to economics are not widely available.

If you are studying neoclassical economics and are unhappy with it, then it's great that you're involved with Rethinking Economics, because economics certainly needs rethinking, and you can read some of the excellent critiques of neoclassical economics. Of course, you still want to pass your exams, so you still have to regurgitate the stuff that the economics faculty tries to instil in you. But I hope in your private thinking, you treat neoclassical economics as a book of fairy stories, at least as far as macroeconomics goes.

As you just mentioned, at Rethinking Economics we're committed to reforming the university economics curriculum so that it reflects the broader pluralism of current research that hasn't filtered down, as you say to undergraduates, it's very focused on the neoclassical approach.

What would an ideal economics curriculum look like to you, and if it's different to the current curriculum, why do you think it's important to make the adjustments you'd advocate?

Let's think of it as a recipe, and possibly the main ingredient I would recommend would be ecological economics, which is an interdisciplinary field and is not a branch of neoclassical economics. To this I would add to the mixture a course on political economy. I would also strongly recommend replacing neoclassical macroeconomics with a course on Modern Monetary Theory. And then, of course, conventional microeconomics is very useful, particularly if it would place more emphasis on market failure, which is really most of the real world.

Let's talk a little bit more about those elements.

Ecological economics is needed because conventional neoclassical economics treats the environment simply as a source of resources and as a waste dump. Now, on the other hand, ecological economics recognises that we humans are totally dependent upon the environment for our survival and our thriving. Ecological economics also recognises that continuing economic growth on a finite planet is simply unsustainable.

Then the course on *political economy*. The problem with conventional economics is that it ignores power structures and any kind of institution apart from the household and the corporation. Yet, it's really impossible to understand, for example, why there's a climate crisis without recognising the immense political power of the fossil fuel industries and how they exercise that power to delay the growth of renewable energy. This is occurring even though renewable energy from the sun and the wind for generating electricity is now much cheaper than electricity from coal and natural gas. The conventional economics approach simply cannot understand why anyone is clinging to fossil fuelled electricity when renewable electricity is so much cheaper. You need an analysis in terms of power structures. And so, that's really is the justification in my mind for studying political economy.

Then *Modern Monetary Theory*, which I'm recommending to replace neoclassical macroeconomics. I could never make any sense of neoclassical macroeconomics. It assumes, incorrectly that the economy of a country that has sovereignty over its own money system has to be managed like a household with a budget. In fact, when you actually start thinking about it, if you've got control of the money, and in Australia the Federal Government has complete control over the money supply, and similarly in the USA, the United Kingdom, Japan and China, these countries have control over their own currency. So they can actually create debt-free money without necessarily driving inflation. And they won't drive inflation so long as the creation of debt-free money doesn't exceed the capacity of the economy in terms of labour, raw materials and available technologies.

The main response of neoclassical economists to Modern Monetary Theory is to try and frighten people with fears of massive inflation. But when you think about it, any government spending has the potential to create inflation if that spending takes the economy beyond its current capacity in

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terms of labour and technologies and raw materials. So there's nothing special in that regard about actually creating money. You just have to be careful that, whenever a government creates money, it avoids driving inflation. I recommend Modern Monetary Theory which to me is the way to make sense of macroeconomics.

So there you have my recipe. It's not a complete recipe, but it's a start I hope.

Your research covers, as we mentioned before, a wide range of important issues and disciplines and across multiple mediums as well, including books like *Sustainable Energy Solutions for Climate Change* in academic journals, such as in *Ecological Economics*, *Energy Policy* and *Nature*. You've also consulted for government organisations, thinktanks and NGOs. And you've written lots of op-eds as well, so clearly your work reaches a wide audience.

Why should students like us be interested in your research?

Okay, well thanks for the plug for my book *Sustainable Energy Solutions for Climate Change*!

Now, why should students be interested? Well, that's up to them, but I should say that my research is very relevant to one of the biggest issues of the 21st century, which is human-induced climate change, and I certainly hope that some students find that interesting.

Because climate change is already affecting all of us: we've seen the terrible bushfires, the droughts, the heat waves, the floods, and they have become more frequent and more severe as the result of climate change. So we're all going to be affected — we're already being affected, and the younger generation that's still studying unfortunately will be affected much more.

Just to talk a little bit more about what I try to do. My main area of research is on how to transition an energy system, like Australia's energy system or America's energy system, or the whole world's energy system, away from fossil fuels — coal, oil and gas — to an energy system that runs entirely on renewable energy. And that is mostly wind and sunshine, and some hydroelectricity.

That's part of the challenge and the other part is to actually reduce wasteful demand for energy by means of energy efficiency and energy conservation. This is interdisciplinary research and it involves science and engineering and microeconomics and policies and also some fields that don't fit into any single discipline. And I would say sustainability studies and ecological economics span a number of disciplines.

This is indeed interdisciplinary, or transdisciplinary research, and just to give an example, a recent interdisciplinary paper of mine just published last year is entitled 'COVID-19 and Economic Recovery with Effective Climate Mitigation'. That paper tries to combine the economic recovery from the pandemic with climate mitigation — effective climate mitigation. It attempts to begin some of the discussion on how to actually do this, and we know that a European Green Deal has been proposed, and in the United States, a Green New Deal has been proposed which involves putting the emphasis on green technologies, like renewable energy, like forms of agriculture that are less damaging to the environment, and so on.

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But one of the issues that emerges from this work is that in fact, in countries like Australia, energy demand has been increasing very rapidly before the COVID pandemic and if after COVID it returns to that rapid increase, then it becomes much more difficult for renewable energy and energy efficiency to catch up with the increasing demand for energy, and most of that increasing demand is from fossil fuels for transport and for industrial and residential heating. So that's one area I've been grappling with.

Another paper that I submitted a month or so ago, and is under review, is called 'Scenarios for Mitigating Carbon Dioxide Emissions from Energy Supply', and again that's very much interdisciplinary — it involves technology, that is engineering, on one side and ecological economics on the other side. It's a much broader way of looking at the economics, and it involves socioeconomic change, because if we want the rich countries to reduce their demand for energy, that goes far beyond conventional economics, it's really changing the whole socioeconomic system to one that, instead of being based on growth like conventional neoclassical economics, is based on degrowth — transitioning to a steady state economy which can operate within the confines of a finite planet — finite resources and finite ability to absorb pollution.

So that's where I'm at and I keep plugging away at it. It's difficult because governments, particularly the current Federal Government in this country, does not want renewable energy to succeed, does not want economic growth to be transitioned to a steady state economy. So it's fairly radical stuff.

Given that some academic departments now don't really have a lot of options for students to study the topics you're talking about, would you suggest people look across the rest of the university and try to pick electives or something? Maybe from the Department of Physics or Engineering that teach subjects that are more similar analysis to the kinds of analysis you're doing.

That's an interesting question. I think if students are interested in science topics, that's great, but I wouldn't like them to have to take it like a dose of medicine. There are interdisciplinary courses at various universities. So, at my university, the University of New South Wales, there's a Master of Environmental Management, which is very much interdisciplinary. It's run by the Faculty of Arts, Design and Architecture (following the pandemic, they've combined a couple of faculties into one). So that's an example. And there's interdisciplinary work in little pockets hiding away in quite a lot of Australian universities now, but you have to search it out, so I strongly recommend trying to find some interdisciplinary subjects. I think a very good subject actually, which you can study, I believe, still at Sydney University, is anthropology.

Anthropology, although it's a discipline, really spans a wide area. It doesn't just study indigenous peoples, but modern societies as well, and some of the best recent writing on transitioning our economies to a steady state economy with low throughput comes from an anthropologist called Jason Hickel, and he has a new book out called 'Less is More'. It's a very good book and he also has a podcast, a 59-minute podcast, on a website called 'Real Progressives' and I strongly recommend that that's an excellent introduction, which brings together political economy with ecological economics and really has a great breadth of vision. So if your university doesn't have

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suitable interdisciplinary courses, do read. There's a lot of good material out there. I've compiled a little list **[see below]**.

You're probably also aware of Stephanie Kelton's work on Modern Monetary Theory, and she has a very good book that came out last year. But she also did a TED talk, that's just 15 minutes and gives an excellent concise introduction to Modern Monetary Theory that is strongly recommended. You might find after you've heard the TED talk that you just have to read her book as well! Now it won't get you through a neoclassical economics exam, but there's more to life than passing exams. You need to pass the exams, and I hope do a lot more and widen your understanding of the strengths and weaknesses of conventional economics and some of the new thinking that is out there that I think can take us a lot further forward if it's adopted more widely.

Recommended books, podcasts and videos

Herman Daly & Joshua Farley (2011). *Ecological Economics: Principles and applications*. 2nd ed., Island Press. (A textbook by one of the founders of ecological economics)

Rob Dietz & Dan O'Neill (2013). *Enough is Enough*. Berrett-Koehler. (Readable) Also see O'Neill's TedX talk (15 min.) <https://www.youtube.com/watch?v=WIG33QtLRyA>

Jason Hickel (2020). *Less is More: How degrowth will save the world*. Penguin Random House, London. (A good read, well written). For an introduction, see his podcast interview on RealProgressives (59 min.): https://realprogressives.org/podcast_episode/episode-137-when-less-is-more-with-jason-hickel/#fwdmSPPlayerO?catid=0&trackid=0

Mitchell, W., Wray, L. R. & Watts, M. (2019). *Macroeconomics*. Red Globe Press. (Textbook)

Stephanie Kelton. (2020). *The Deficit Myth: Modern Monetary Theory and the birth of the people's economy*. Public Affairs. (A readable account). Her TED talk introducing MMT (15 minutes): https://www.ted.com/.../stephanie_kelton_the_big_myth_of...