Why the energy transition is hard, and why it matters more than ever

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The "no brainer" view of sustainable energy

For those of us who work in this field, sustainable energy often feels like a no-brainer.

The technology is there. It saves money. It cuts greenhouse gases. It tackles a crisis we can literally see unfolding in real time. Why wouldn't we just roll it out as fast as possible?

I used to believe, and I think many of us did, that once the pieces fell into place, once wind and solar became cheaper, once electric cars matched petrol cars on cost and convenience, and once the pervasive damage of climate change became so clear, then the transition would be unstoppable. That the logic of clean energy would simply speak for itself.

If you pick up an IPCC report, or most books about climate solutions, the tone is similar: here's the huge problem, here are the proven answers, we just have to act.

But why isn't that happening?

Yet in country after country, we're seeing at best, a failure to meet targets and political promises. At worst, populist pushback is setting back progress by a decade.

In the US, with President Trump cancelling wind energy projects that are almost built! Even though they bring jobs in red states and bring huge economic benefits. It defies conventional logic.

It's not just political opposition. Take for example, Ireland's famous, or infamous EV target, set out in the 2019 Climate Action Plan – we were to have 1 million EVs by 2030 – a target that's moderated somewhat since then. Like many, I was deeply sceptical of the feasibility of this target. It rested on the assumption that EVs would reach upfront price parity with combustion vehicles by around now, and this combined with their dramatically lower running costs would mean they would dominate the market by now. The technology and the economics would win.

Many were sceptical this would happen. But they were wrong – battery technology has exceeded expectations, and EVs have reached parity on upfront costs, and offer many benefits..... But their market share is still lower than 20%, and the sale of combustion engines (including hybrids) is as strong as ever, and public sentiment towards EVs is actually falling. We could have actually met the 1 million EV target, if the forces of technology improvement and the market won. But we didn't.

So the real question is: if the technology is ready, if the economics are sound, and if the climate imperative is so clear, why is the transition proving so hard?

This gap between technical feasibility and political reality is what we must face honestly.

Something I think we don't talk about enough is – why is this problem so uniquely challenging to address? This is a question I have begun to think about constantly, and

Unintended consequences & path dependency

One answer is unintended consequences & path dependency

Let me tell a story from my own family. In the 1970s, during the oil shocks, my grandfather left the Limerick cement factory to become a plumber. Back boilers, those solid-fuel stoves that heat radiators, were in high demand, supported by a government grant to help people diversify from oil, and he made a living installing them. For his family, this was opportunity, dignity, security, and for many homes it meant lower energy bills and energy resilience.

But we now know that back boilers locked us into decades of burning coal, turf and wood in our homes. The health toll was immense. It took a smoky coal ban in Dublin to save 350 lives every year, a good policy that came decades late. We're still living with this legacy, solid fuel accounts for a disproportionate share of emissions from our housing stock, and these homes tend to be poorly insulated and suffering from energy poverty.

We can look to countries like the Nordics for examples of better choices: they responded to the 1970s oil crises by focussing on efficiency – lowering energy demand by building denser and higher quality housing – and on clean, domestic energy supplies – electricity from renewables, district heating from waste.

The lesson is clear: choices made in a crisis echo for generations. If we don't weigh consequences carefully, we risk repeating the same mistakes, and I am deeply concerned that we are repeating some of these mistakes.

Fairness

A second answer to my question lies in fairness.

The energy transition is landing in a society that is already unequal. And when policies feel unfair, they provoke backlash.

Take EV grants. They're mostly used by people who can already afford to buy a new car. Renters, who make up a growing share of our society, can't access retrofit grants — and often can't install an EV charger even if they wanted to. Some rural communities feel they carry the burden of wind or solar farms while the benefits flow elsewhere.

These are often people with real, longstanding grievances against "the system". If climate action is presented in ways that seem, or indeed is unfair, it sparks anger, and politicians, understandably, pull back. But when ambition weakens, we all lose ground.

Entrenched status quo

Then there's the status quo. Fossil fuels are deeply embedded in our lives and our infrastructure.

Psychology works against us — we discount the future, we prefer present comfort to long-term gain. Infrastructure works against us too: the billions sunk into motorways, gas grids, car parks. Politicians work on short cycles, while climate change demands planning over long horizons.

The result is inertia. Not because solutions don't exist, but because changing the system feels harder than keeping things as they are. Professor Pete Lunn from the ESRI has said that "people experience change as a cost, even if it's for the better". Systemic inertia is a greater barrier than technology.

False solutions

And into this gap step what I call false solutions. Climate politics rewards easy wins over real solutions. Symbols often beat substance

They sound attractive: hydrogen blending in the gas grid, biofuels, carbon capture, hybrid cars, renewable diesel. They promise continuity for existing industries. They don't require systemic change, new disruptive infrastructure, and they don't ask the population to do anything differently.

But compared to the real solutions – the "big 5" - electrification, wind and solar, compact settlements with public and active transport, clean heat - they are weak medicine and often are blind alleyways. They divert attention and resources, and they buy time for the status quo.

And they are politically appealing: Even though they're higher in cost for the public, they typically offer greater profits for incumbents. This is why we don't have strong lobby groups for bike lanes and retrofits, but we do for car parks and biogas.

Imperfect but essential

Even the real solutions aren't perfect. Solar doesn't work at night. EV batteries require minerals with messy supply chains. Heat pumps have high upfront costs. Opponents can seize on these imperfections and amplify them, to argue that they're too costly, disruptive, and offer little environmental benefits.

But imperfection is not the same as failure. Compared to the alternatives, they are leaps forward. For example, unlike fossil fuels, the materials we mine for the energy transition can be reused again and again. We have seen time and time again that the new climate denial is not denial of the science, but obstruction of the solutions.

What's at stake

We've known about the greenhouse effect since 1856. Every year of delay means steeper cuts later.

But if we act, the prize is enormous – and you all know this.

- Cutting fossil imports saves us €5–8 billion a year.
- Air pollution from burning coal, peat, wood and diesel causes over 1,000 premature deaths annually — and clean energy can prevent that.
- Retrofitted homes mean warmer, drier, healthier lives.
- Local renewables and active travel bring jobs, security, and vitality to communities.

This isn't about hair-shirt sacrifice. Done well, climate action makes life better.

These solutions exist, technology – and cost – are not the real barriers.

So we have to go beyond this belief that these solutions make their own case – that they're so obvious that the public, the market, and the politicians will get behind them. Transitions are messy, and markets don't deliver the optimal transitions by themselves. Policy has to correct for time horizons, system inertia and the power of incumbents.

Going back to my earlier example from the 1 million EV target – the technology and the economics pulled through, but the market hasn't delivered. Why? Policies didn't sufficiently address the barriers. Those barriers included

- the relentless marketing of hybrids as a false solution – and now, the rise of supposed "renewable diesel" offers another easy, but wrong answer
- many households, especially renters, can't charge at home, and so can't realise the lower running costs
- and the perceived unfairness of offering EV grants to people who don't need them has made this a political wedge issue. I know of a cabinet minister who drives an EV, loves it, but has not said it publicly so his voters don't see him as an "elite".

And this is a pattern across the energy transition – it's not just about cars. Policies are not just needed to financially support clean energy measures. They are needed to overcome these diverse sources of inertia, in our institutions, in our culture, in our politics, in our infrastructure. Fossil fuel interests wield huge power – financial and political power - and they will not "go gentle into the good night". Energy transitions are never just technical – they're about power, justice, and winners and losers.

What SEAI can do

So where does SEAI fit in? I think your role is absolutely pivotal, in many ways. SEAI has been at the heart of Ireland's sustainable energy transition and has been a powerful, positive force. Where to go from here?

A role close to my own heart is the need for **building scenarios** – maps, models of the future. How do we get from here to there? What solutions offer the greatest potential and benefits and what are the milestones we need to hit along the way? We have legally-binding carbon budgets and Sectoral Emissions Ceilings, but we actually don't have a scenario or plan that adds up to meeting them. Maybe it's too politically sensitive to map out what it will actually take to meet our climate commitments? But this leaves a critical vacuum. It's like signing up to run a marathon without knowing what training plan is necessary!

We need **scenarios that add up our commitments**, not only to provide the evidence base, but to move the Overton window of what is possible, and necessary, to meet our commitments, and to hold the mirror to policymakers to show them the consequences of their decisions. What would be in those scenarios? Most likely, a focus not just on building clean energy technologies, but on actively phasing out fossil fuels, including managing demand. The challenge will be to balance which futures are imagined and presented – those that bring the widest possible benefits, that are transformative and disruptive, or those which are the most politically palatable and are least challenging to incumbents and the status quo? That is for you to decide.

I believe that we also need to **grow Ireland's analytical capacity**. Too much of our modelling and expertise sits in private consultancies; SEAI can focus on building that strength in house, and in universities, that better serves the public interest.

Focus on what matters – the Big Five – and call out false solutions. Your credibility lies in being evidence-based, but your influence will come from anticipating where the public or political backlash might come – and helping design the policies that overcome the many sources of inertia.

There are many other ways that SEAI is contributing to the energy transition, and can do more:

- **Engage communities early and meaningfully**: don't wait for backlash. Find local champions, design projects that share benefits, and build trust.
- **Champion fairness**: design grants and supports that work for those who need them most, not just those who can already afford the change.
- **Tell the story differently**: frame climate action not just as environment, but as health, security, fairness — like the smoking ban, which felt disruptive at first but is now seen as common sense.

This mission is uniquely challenging. The barriers are political, cultural, institutional. But it is also one of the most important missions in the world.

And the good news is that we don't need miracles. We know the five big steps that will do the heavy lifting this decade: wind and solar, electrify transport, reduce car use, retrofit and clean heat, decarbonise industry. Technology is not the main barrier.

SEAI's role, your role, is to ensure that these solutions don't just sit in reports, but take root in people's lives. To help Ireland meet its obligations, and to do so in a way that is fair, lasting, and widely supported.

Thank you.

- *Read more of my writings: https://hannahdaly.ie/blog/index.html*
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- *"The Big 5": https://www.seai.ie/sites/default/files/2024-10/The%20Big%205%20info%20sheet_0.pdf*