

Energy Policy Is Infrastructure Policy

Presentation by Walt Patterson

Associate Fellow, Energy, Environment and Development Programme, Chatham House

When politicians say 'energy', they don't mean 'energy'. They mean 'oil, coal, natural gas and electricity'. They've used the word 'energy' as shorthand for 'all fuels and power' since the early 1970s. Until then we had 'fuel and power policy'. Since then we've had 'energy policy'. But the policy focus is still the same - supplying fuels and power, 'power' meaning electricity, to run unspecified technologies. The usage is unfortunate, misleading and dangerous. We need to change it, fast. Using the word 'energy' in this sloppy way used to be merely annoying. Now, however, it could be fatal for the planet. If we want to do something about climate change while we still can, we have to change the way we use energy.

We ought to start by changing the way we talk about it. If we can't even describe the problem accurately, we can't hope to solve it. To call, for instance, both oil and electricity 'energy' implies that they are the same commodity - that they are interchangeable, that you can substitute the one for the other. You can't - not without changing the technology you want to run. You can't run an ordinary car on electricity. You can't even run a petrol car on diesel, or vice versa. In modern industrial, any particular technology we use usually requires its own particular fuel or particular form of electricity. We get the energy services we want - comfort, cooked food, illumination, motive power, refrigeration, information - not from fuel or electricity alone but from the whole system. The fuel or electricity is likely to be useless without the technology. What matters is not just the fuel or electricity, but the entire system, including the physical assets we call energy technology.

We're not used to thinking about energy in terms of systems. We tend to take the existing physical assets, the buildings, lighting, motors, chillers, computers, and so on, for granted, and focus on ensuring we can supply enough commodity fuel and electricity to run them. That's what politicians now mean by 'energy security'. We forget the timescales involved. Ensuring future supplies of oil, gas or electricity entails major investment in oil and gas fields, pipelines, terminals, power stations and other physical assets - the infrastructure to deliver energy carriers. Implementing such investment on the requisite scale can take not just years but decades.

Within those years and decades, however, we could also invest in upgrading the buildings, lighting, motors, chillers, computers and so on - the infrastructure that delivers the services we actually want. Within these human energy systems are major tradeoffs, in time, finance, opportunity and performance. We can choose to redirect our efforts. Instead of trying to expand the infrastructure to deliver fuels and electricity, we can upgrade our energy service infrastructure. We have known, not merely for years but for decades, how to do so. We also know that upgrading our buildings and other service infrastructure will be faster, cheaper and less risky than building new pipelines and power stations. Why, then, don't we do it?

I think the main reason is that governments, politicians and policymakers don't know what they're talking about. I mean that literally. They think they're talking about 'energy', but they're really only talking about fuel and electricity. This is most obvious when they talk about electricity. They talk about electricity as though it were a fuel, a commodity. But electricity is a process, happening simultaneously throughout an entire interconnected system of physical assets. You can start the process anywhere, at any scale, if you have the appropriate physical assets. You can have electricity

without fuel - hydro, wind, photovoltaics, any system that turns the ambient energy of natural systems into electricity we can use. You can have electricity without fuel, but not without infrastructure. Electricity is a process in infrastructure. The whole infrastructure has to be in place and functioning to deliver the services. The better the infrastructure, the better and more reliable the services. What's more, you can improve the electricity service infrastructure anywhere on the system - not only by upgrading generation or networks, but also by upgrading the end-use facilities that actually deliver the services.

If you're talking about the services we desire the most, particularly comfort, the infrastructure that matters most is buildings. Buildings are the most important part of the energy service infrastructure of our society, including the electricity service infrastructure. That's why microgeneration is so promising. Microgeneration encourages us to take a systems approach, to optimize entire local systems.

First you get the building right, with maximum use of natural ambient energy flows for comfort, illumination, ventilation and the other services that buildings give us. Then you select the best available appliances. Then, and only then, do you arrange to provide the fuel and electricity to run the whole place. Getting the building and other assets right means that you need as little fuel and electricity as possible to get the services you want.

This ought to be obvious. But it isn't, because we have the wrong language, regulations, standards, finances, business relationships, and incentives. We expect too little from our energy systems, because we don't think of them as systems. That, however, we can change, and change rapidly, if we so desire. We had better, because time is short. The climate won't wait.

In recent months I've found myself reciting a short syllogism or mantra. For me it sums up the change of mindset we urgently need to foster. It goes like this:

Climate is an energy issue.

Energy is an infrastructure issue - not a commodity issue, an infrastructure issue.

Therefore climate is an infrastructure issue.

The implications are profound. If we're serious about climate - and we'd better be - we should be talking about investment in infrastructure - in energy service infrastructure - with all the policy levers we can bring to bear; and we have plenty available.

This is a crucial realization, one we should make explicit from now on. Energy policy is infrastructure policy. Climate policy, too, should be infrastructure policy. Once we get that clear, we open a whole new vista of opportunities.

© Walt Patterson 2006