

Book Review:

Hans-Werner Sinn (2008), *Das grüne Paradoxon: Plädoyer für eine emissionsfreie Klimapolitik (The Green Paradox: Programme for an Illusion-Free Climate Policy)*, Berlin: Econ

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Most of the literature on climate change mitigation explores what can broadly be termed ‘demand-side’ solutions. These aim to reduce global demand for fossil fuels by improving energy efficiency, generating renewable energy, or changing consumer behaviour. It is assumed that each tonne of CO₂-equivalent (CO₂e) saved through such means will follow through into a tonne less CO₂e emitted worldwide, and that even if only a minority of countries reduce their CO₂e emissions, or even if yours is the only country to do so, this will make a difference to climate change. Every little bit helps.

Hans-Werner Sinn is one of a small number of academics who disagree. The only way to guarantee a reduction in CO₂e emissions from fossil fuels, he argues, is to proactively keep them in the ground, or at least drastically reduce their extraction rate. Since by far the major portion of global CO₂e emissions comes from the burning of fossil fuels, restricting their supply - the amount that can be extracted - should be the focus of our climate change mitigation endeavours.

Sinn has strong credentials as one of Germany’s leading economists. Professor of economics at Munich’s LMU and President of the German Institute for Economic Research, his contributions have covered topics such as the theory of economic risk, business cycle theory, and the efficient allocation of economic resources. Though speaking from a broadly orthodox basis, he parts company with both mainstream and radical-green thinkers on the key question of what is useful and what is a hindrance to genuine climate change mitigation.

The core of Sinn’s argument for supply-side climate change mitigation was presented in English, in heavily mathematical form, in *International Tax and Public Finance*¹. A sketchy account may be found in his speech to the 8th Munich Economic Summit, *Climate and Energy: Right Goals, Wrong Approach?*² But it is in this 470 page book, *Das grüne Paradoxon (The Green Paradox)* that the details of his argument are fleshed out and expressed in language that non-economists can easily follow.

There are three main pillars to Sinn’s argument. The first concerns the psychology and business economics of ownership of fossil fuel resources; the second the business habits of fossil fuel consumers; and the third the realistic limitations of technical solutions to climate change mitigation.

¹ Sinn, Hans-Werner (2008) ‘Public policies against global warming: a supply side approach’, *International Tax and Public Finance*, 15: 360–394.

² Sinn, Hans-Werner (2009), ‘The Green Paradox’, 8th Munich Economic Summit: *Climate and Energy: Right Goals, Wrong Approach? CES Ifo*, 10(3): 10-13.

Firstly, he argues, owners of fossil fuel reserves generally want to maximise their long-term profits. Since their extraction costs are just a few percent of their selling price, they can drop the price so as to increase their sales to ecological ‘sinners’ whenever a green-minded country reduces its demand by increasing its energy efficiency or its supply of renewable energy. Hence, demand reductions by green-minded OECD countries do not translate into one-to-one supply reductions. They are highly likely to be partially or even completely offset (depending on the elasticity of demand) by increased demand as the price falls.

Further, this is exacerbated by the business psychology inherent in ownership of fossil fuel reserves. If owners foresee a future where more and more countries will gradually go green, and fear that at some future date (such as the oft-mentioned 2050) they will have no markets for their fuels, good business sense tells them to sell as much as they can as early as they can, to avoid being left with useless stocks in a few decades` time. This is exactly the reverse of what the climate needs, yet, Sinn argues, it is just what current policies are causing.

The only solution, says Sinn, is to effectively ambush the owners of fossil fuel reserves with a sudden, enforceable pact among all countries to reduce their demand on a strictly, globally agreed trajectory. Only a certain amount of fossil fuel, based on the tonnage of CO₂e it would produce, would be permitted to be extracted each year, and this would diminish, year by year, on a clearly defined path. Reserve owners would have no choice but to follow this path. An international controlling body – Sinn suggests the UN – would distribute permits to countries on an agreed basis, and their governments could auction them, or in some other way distribute them, to their consumers. Like the current EU carbon certificates, they would be internationally tradeable, but unlike the EU certificates they would cover all fossil fuel.

Two important consequences would follow. Firstly, the price of fossil fuels would fall, as reserve owners competed with each other for sales in the diminishing market. Consumers, of course, would pay more overall, as they would have to compete among each other for the certificates. But governments would reap a windfall from the auctioning of the certificates, and this money could be distributed to offset hardship to low income people due to rising fuel prices. Secondly, fossil fuels would be locked up in the ground, to be extracted gradually over whatever time span was deemed safe for the climate. Owners of fuel reserves would have a lower income, but one that would last far longer into the future, than the current situation allows.

The second strand of Sinn’s argument concerns the business habits of fossil fuel consumers, or at least those he calls the ‘sinners’ - the USA, China, and all other countries that have either not participated in the Kyoto process or were exempt from its restrictions. Because, currently, there are no restrictions in these countries as to how much fossil fuel one may buy or consume, the law of supply and demand operates freely here. If the international price falls due, say, to German or British successes in reducing their demand, the sinners can get cheaper fuel and so will buy more. Their increased demand puts upward pressure on the price, until an equilibrium is again reached. The net effect is that global fossil fuel usage is not reduced, or hardly reduced at all. Of course, there are many other factors influencing the day-to-day price of fossil fuels, but the most significant dynamic is ever-increasing demand as developing countries industrialise.

It follows that under the current global regime, all the efforts being put into technological and regulatory solutions to fossil fuel demand in the developed countries are, in Sinn's view, no use at all in combating climate change.

The third strand of Sinn's argument concerns these technological and regulatory measures. For example, in a cogently argued chapter (pp. 204-251) he takes issue with biofuels. Using well-sourced data he argues that these produce almost as much, if not as much, CO₂e as they save. Further, they compete with food production for arable land and agricultural resources. For the first time in history, he points out, the price of basic foodstuffs is now directly coupled to the price of fossil fuel. It is not merely that food growing requires fossil fuel for tractors and fertiliser. It is that a particular set of agricultural resources (land, fertiliser, expertise) can now be used interchangeably for either food or fuel production. The world's poor now have to compete with the rich countries' petrol tanks for their daily bread. This will get worse if policymakers continue to pursue biofuels as a means to combat climate change..

In a further section (pages 297-304) Sinn challenges the view that carbon capture and storage is a valid demand-side alternative. Assuming it works and can be made economically viable, the obvious problem is disposing of the enormous volumes of liquefied CO₂ it produces. For coal power this is 5 times as much volume as the fuel burnt; for oil 3 times as much. It cannot be stored near populated areas because if it leaks on a windless day it can asphyxiate everyone in low-lying areas. It must be held secure for hundreds of thousands of years because, unlike nuclear waste, it never decays. The idea that we can safely store the gargantuan volumes of CO₂ our power stations will produce over the next few hundred years is, Sinn argues, simply fantastical.

Sinn contrasts this with nuclear energy, where the most advanced reactors produce relatively small volumes of waste, which needs to be kept secure for tens of thousands, rather than hundreds of thousands of years.

In further chapters he takes issue with Germany's penchant for renewable energy, particularly wind turbines and solar photovoltaics. In Germany the feed-in tariff requires power companies to buy all this energy, and at high prices set by regulation. But wind power is so unreliable and out of synch with consumer demand that its real market value is tiny, and when the wind blows at the wrong time power companies often have to pay other countries to take it. Meanwhile, photovoltaics produce minuscule amounts of energy for the billions of euros of subsidy poured into them annually. A country that relied on these sources for its electricity would have a sub-standard system that could never support a modern industrial economy.

The irony, as Sinn sees it, is that so much of today's climate policy is doing nothing to save the climate. It is severely misdirected. The only way to mitigate climate damage due to fossil fuel consumption is to act directly to keep the fossil fuels in the ground.

What is especially important about this book is that, even if Sinn's economic arguments turn out to be wrong, his basic idea still stands. The argument can be set out as a syllogism:

1. The burning of fossil fuels is a sufficient condition to cause dangerous climate change;
2. The extraction of fossil fuels is a necessary condition for them to be burnt;
3. All fossil fuels that are extracted are subsequently burnt.
4. Hence, the extraction of fossil fuels is also a sufficient condition for them to be burnt.
5. THEREFORE: The extraction of fossil fuels is both a necessary and a sufficient condition to cause dangerous climate change.

In other words, we will only arrest climate change if we keep fossil fuels in the ground, or at least control their rate of extraction to suit what the climate can manage. Regardless of what we think of the effect, on global fossil fuel demand, of OECD countries reducing their own demand, arresting climate change is *guaranteed* if we act directly and successfully to keep fossil fuels in the ground. It would seem sensible, then, to direct all our policy efforts toward this goal. This is the challenge Sinn leaves us with.