

The Australian

Crisis removes easy path to low-carbon world

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an illustration by Peter Nicholson.

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NO one knows how Japan's nuclear drama will end. Rightly or wrongly, however, it will greatly undermine public confidence in nuclear power. And even if new plants are built, their costs will rise substantially, as precautions are heaped on precautions.

We are therefore still far from having a widely acceptable, reasonable cost technology for large-scale power generation that is genuinely carbon neutral. But for cumulative emissions to be stabilised by "decarbonisation", some 15 to 30 terawatts of primary power would need to be provided effectively emissions-free by the end of this century. It is now clearer than ever that that goal is not achievable without dramatic progress in our scientific and technological understanding of areas such as sequestration, renewables and fission and fusion energy.

As that realisation sinks in, countries will be even more wary of committing to credible, deep cuts in emissions. The notion that meaningful global agreement is around the corner is therefore fanciful. Unilateral action by Australia, which would only damage our economy without yielding any real environmental gains, consequently makes even less sense than it did before Japan's tragedy.

To this, the stock reply of supporters of early action is that market-based mechanisms (MBMs), such as carbon taxes and emissions trading schemes, are needed to induce the innovations a low-carbon economy requires. But those claims are implausible.

Australia is far too small for our decisions to have any discernible impact on global innovation. Whether we have a carbon tax will do nothing to address the world's technological challenge.

However, even putting that aside, the induced innovation hypothesis defies economic logic, as it is based on the premise that innovators today will expect, or at least place a high likelihood on, high future prices for emissions.

But if any initial constraints on emissions are very loose, so that the base price of emissions is low, investors' expectations would then have to be that the constraint would be progressively tightened, ultimately raising the implied emissions price to some very high level. At those high prices, potential emitters would place great value on any effective abatement technologies, so that firms owning those technologies would reap gains that would help offset the technologies' development costs.

It is unclear, however, why investors would hold such an expectation. There is nothing in the mere fact of introducing an MBM that irrevocably commits to steadily and progressively increasing the implied tax on emissions. Moreover, it would not be rational for a potential investor in technology development today to assume such an increase in the implied tax rate would indeed occur.

This can be seen by considering two broad scenarios.

In the first, the technologies needed to dramatically reduce emissions do not become available in the relevant future. In that event, it is implausible that governments, merely so as to honour commitments made many years earlier, would increase tax rates on emissions to levels that would cripple their economies. Rather, the likelihood is that any commitments made would be revised or ignored, so that effective tax rates on emissions would remain low.

In contrast, in the second scenario new effectively decarbonised technologies become available at some relevant future date. In that event, governments could, if they so chose, abide by commitments to substantially increase the tax on carbon; however, it is still unclear whether they would do so.

This is quite simply because once those technologies are available, even a modest tax will suffice to create an incentive for their deployment in the marketplace. After all, the bulk of the costs involved in developing those technologies will have been sunk. So long as the tax on carbon is sufficient to cover even only the incremental costs involved in making them available, innovators will be better off providing them than they would be if they sought to hold them back.

As a result, there must be a risk that at least some governments will seek to benefit their own community by allowing innovators little or no return on their sunk costs, much as many countries now do with life-saving drugs. The absence of any effective mechanism that can compel governments to impose a high tax once the required technologies are available must make this risk all the greater.

Two further elements accentuate the disincentive this provides to research and development.

First, for eminently sensible reasons, intellectual property rights are not available for scientific breakthroughs: they apply to inventions, not discoveries. However, advances required in areas such as nuclear fusion have a very substantial scientific component. As a result, a large, if not overwhelming, share of the investment currently required to achieve atmospheric stabilisation could not be adequately induced by the hope of securing intellectual property rights over the resulting output.

Second and at least as important, the pay-off to much of the R&D required may take many decades to eventuate. While some technologies, such as sequestration, may come into use as existing generation plant is withdrawn, others, such as

geo-engineering, may not approach viability in the lifetimes of current generations.

This means that investors today, even if they could (somewhat implausibly) hope to ultimately claim the bulk of the social benefits these technologies would bring, would face the promise of rewards that, discounted to the present at the opportunity cost of private sector capital, would amount to very little indeed.

As a result, compared with the magnitude of the task ahead, the contribution of MBMs is likely to be trivial. At most, they might serve to help finance some of the investment in innovation required; but even that merely begs the question of why relying on that funding source would be efficient.

To that question, the answer must be that it would not, as there is at best an inverse relation between the tax that is appropriate now and the scale of the innovation effort that would be needed. Current high abatement costs imply that only a very modest global carbon tax is efficient as abatement should be postponed until the costs are lower. But those same high costs would justify a huge technological effort, if the risks associated with climate change are indeed as great as many claim.

Japan's nuclear crisis therefore demands a reappraisal of global climate action and its prospects. The reality is that global emissions stabilisation is less likely today than merely a week ago.

Seen in that perspective, the government's mooted carbon tax is barely a sideshow, albeit one that threatens to inflict very high costs on the Australian public.

What is needed, and completely lacking, is an informed and mature discussion of the real choices ahead.

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