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LAWYERS

GETTING SMART ABOUT GREENHOUSE



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January 2007

For some time there have been two schools of thought as to how the world might go about abating global warming. Both involve very considerable increases in the price of fossil fuel energy.

On the one hand there are the overwhelming majority of industrialised nations who have ratified the Kyoto Treaty. They include all the European nations and Russia together with non-europeans such as Canada and New Zealand. These nations subscribe to the 'cap and trade' approach by which greenhouse emissions are permitted up to a capped level (which is continuously reduced) and any excess emissions are required to be off-set either by purchasing the surplus permits of other emitters or carbon credits representing CO₂ that has been captured and will be safely retained for a lengthy specified period (probably 100 years).

The rival school of thought comprises only two nations, the United States and Australia both of which say they are committed to reducing global warming by 'technological means'. So far, this has translated into the proposed introduction (or re-introduction in the US) of nuclear energy and the proposal for burying at least some of the CO₂ produced by the burning of fossil fuel to produce electricity.

Whichever school of thought you support, the cost of energy is going to rise substantially. An emissions trading market that 'cap and trade' requires as part of its system, will take the cost of energy to whatever level is necessary to make consumers willing to switch to some other source of energy which will produce either less greenhouse gas or no greenhouse gas at all. The technological solutions, on the other hand, are far more rough and ready because they lack any flexibility. Nuclear energy has

regularly been touted as comparable with the cost of fossil fuel energy, but in practice, has always been dearer and is likely to be substantially dearer than the present cost of energy from coal sources. 'Clean coal'-so called because most of the carbon dioxide it emits is buried, is likely to be considerably more costly than this and rising sharply once it becomes understood that the underground storage of liquid CO₂ presents dangers that have so far largely been left unstated. 'Clean coal' or geosequestration and its costs and risks are dealt with in earlier papers on this website.

Whichever approach is taken, the cost of energy will increase from about 2008 and probably continue to increase for several decades at least. To get smart about greenhouse, starts with this assumption as a fundamental cornerstone. It acknowledges, however, that other factors, primarily the diminishing supply of some fossil fuels will accentuate the problem and push the cost of energy even higher.

Starting with this cornerstone, what needs to be understood next is that all products (from extracted raw materials to finished products and product used in the production of other products) contain energy. That energy is the total of all energy consumed in the winning and production or making of those products whether directly or indirectly. That energy, we call, "**embodied energy**", because it is 'incorporated' in the products themselves. It is not just the energy used in the materials and constructing of a product or even in transporting them. It is, instead, the energy used, the cost of which, is eventually included in the cost of the product. This includes indirect as well as direct energy costs such as energy used in mining raw materials (direct), producing and operating the equipment used, operating the company offices and facilities of the businesses which are in any way involved in producing the products or components of it (all indirect).

It is now possible to calculate with reasonable accuracy the embodied energy comprised in most products including, for example, high rise buildings that are each 'products' comprised of thousands of other products (or material) such as concrete, steel,

bricks, glass, electrical and other equipment and many others together with the energy used in the construction processes.

To be smart about greenhouse is to commence recognising as of now that if you can assess the quantity of embodied energy in an existing or planned product, and its individual components, you are a long way along the road to accurately predicting its future cost. If you know what the embodied energy content of a product is and what its present cost is you can also calculate what that cost is likely to increase (or decrease) to. In addition, you can make these calculations whether Australia adopts an emissions trading market, as the States and Territories have vowed to do (either with or without cooperation from the Commonwealth) or whether the 'technological solutions' the Commonwealth contemplates are introduced.

Once businesses are able to 'read' the embodied energy levels of existing or planned products and what this is likely to mean in cost terms under each of the scenarios referred to, they are placed in a position where it is possible to consider the future of those products fairly accurately. This can also be extended to a review of the embodied energy content of rival products and an assessment of their future cost.

For example, armed with the level of knowledge referred to it then becomes a matter of making decisions such as: -

- is a product likely to be priced out of the market?
- can an existing product be made more cost-effective by reducing the energy consumed in its production?
- can a product be produced cost-effectively using different materials that require less energy in the construction of the materials?
- can a product be made more cost effective if it, or components of it, are made using a different energy source?
- is there a competitive product available that will be cheaper than the product if energy prices increase?
- can the manufacturing methodology be changed by reducing energy costs to a cost-effective level?
- should production of a product be discontinued and an entirely different product produced in its place?

The process is largely a matter for designers, architects and those who "create" the products which industry makes. It is they who realise that the future of any manufacturing business is that its products remain cost-effective by comparison with all competitive products and that this process requires a continuous investigation of existing products and possible new products largely on the basis of their comparable costs.

The process also involves the designers and other professionals mentioned, trying out new materials and process and reviewing unused materials and processes that were unacceptable previously but which may be readily acceptable under charged market conditions.

In any event designers need as much lead in time as can be given, in order to get to know how best to use new materials and processes and how to put old materials to new uses.

McKean & Park have created the **CarbonCost Calculator**. This is a world first, designed to enable a designer to look at different materials, configurations, structures etc to see which requires the least embodied energy. We, and those we associate with, may be able to assist you along the same lines whatever your product happens to be.

We are also available to speak to your people and to assist them in evaluating ho

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