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Viewpoint

How carbon credits could drive the emergence of renewable energies

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ABSTRACT

The shift to renewable energy options and low-carbon technologies, in response to the concerns over energy security and climate change, is proceeding more slowly than many would like. The usual argument against rapid deployment of new technologies is the costs imposed on the economy, commonly interpreted in terms of upfront costs to be borne or involving large cash transfers to fund, for example, efforts to preserve rainforests. In this contribution I argue that such a perspective provides a continuing barrier to taking effective action, whereas a perspective based on creation and use of carbon credits provides a means of avoiding the shock of abrupt industrial change. Carbon credits granted for bona fide carbon load reductions could be created through private initiative, for example by merchant banks, to constitute a market that will complement regulatory-based initiatives such as national emissions trading systems. This is not a novel idea; indeed it is the way that capitalism has funded every major change, including the Industrial Revolution, through the creation of credit. The emergence of a global carbon credit economy is likely to precede a global regulatory system governing climate change and will doubtless help to stimulate the emergence of such a global system.

1. Introduction

The slowness of humanity's effective response to climate change is usually attributed to difficulties in bridging international divergences in views and preparedness to take action. The obstacle is invariably depicted as the costs to be borne, either upfront costs to be imposed on carbon-intensive industries or large funds to be created to finance efforts such as the preservation of rainforests. But the way that the issues are posed could also be at fault. The economics of climate change tend to be posed in terms of trajectories of gradual reductions in carbon emissions and the costs associated with these, with the focus on whether these costs will be greater or lower depending on when action is taken to change the industrial structure. But this framing of the issues obscures an important feature of capitalism, which is that it has always facilitated changes in industrial structure through the creation of credit. It is not that costs are unimportant; but capitalism has always provided a means of distributing costs and phasing them over time through the operation of banks and the creation of credit. Had entrepreneurs in the 18th and 19th centuries focused only on costs and not on the returns available through use of new technologies, and had banks not become involved to advance the industrial entrepreneurs credit to buy the new machines, then the transformation we call the Industrial Revolution would probably never have happened. Likewise I propose in this Contribution that the involvement of merchant banks in creating carbon credits where reduction in carbon load can be demonstrated will likely provide a key to accelerating and driving the uptake of renewable energies and the 21st century transformation to a low-carbon economy, and thereby make inroads on the twin problems of energy security and global warming.

The market for carbon credits is undoubtedly growing rapidly and is already helping to drive a shift away from fossil fuel energy sources towards various renewable energy options and a low-carbon economy. But the role that could be played by carbon credits and the new currency their trading could create still seems to be poorly understood. For example, the *International Herald Tribune* ran a story in December 2007, just after the Bali Conference of the Parties on the Kyoto Protocol, where it asked: 'How will rich nations help pay the cost of reducing emissions in the developing world?'[1] The question implies that a transfer of cash is needed to kick-start transformative action that will lead to a low-carbon economy in developing countries, and conjures up visions of vast funds needing to be created to tackle the problem. But would this be the only—or even the most sensible—way to approach the matter? Importantly, it ignores the power of capitalism to create new productive forces from the potency of

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[1] 'At climate conference, progress in name only', International Herald Tribune, Mon 17 December 2007, p. 1.

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credit. Let us rephrase the question to read: 'How can sufficient carbon credits be created to lead to a low-carbon economy in the developing world?' This is a much more tractable version of the question—and we have some history to guide us in answering it.

Before answering the question, let us ask how dollar credits are paid for. Suppose you are a business and you want to sell widgets. You need what is known as working capital. So you go to the bank and ask for an overdraft—and that enables you to write cheques to buy materials with funds that you did not have. The bank allows you to do this because you are 'credit-worthy'—and it believes that you will be able to pay back the loan (the line of credit, or overdraft) with revenues from the sale of the widgets you produce. A well-structured economy hums along on this invisible engine of credit creation.

Now consider the case of a business where the 'product' is conserved rainforest. Instead of producing 5 tonnes of widgets worth $100 million, you 'produce' rainforest that sequesters 5 million tonnes of carbon. You go to a merchant bank and make the case that you have ownership of the rainforest concerned, and can provide guarantees that the forest's carbon sequestering capacity will not be disturbed, and—above all—that your approach to sequestering carbon is in line with the approach flagged by the UN Kyoto Protocol's Clean Development Mechanism (CDM). Note—you do not have to have a project that has actually received approval under the CDM. It merely has to look as though it would secure approval if approval were to be sought. On the strength of this, the merchant bank issues a 'credit' for 5 million tonnes of carbon (or the comparable sum in terms of dioxide-equivalent), and you can then use this in any way you like. You might just sell it straight away on the nearest carbon exchange, which is trading (let us assume) such CDM proxies for $20 a tonne—and so you pocket the proceeds of $100 million. Or you keep the carbon credits, in the expectation that their price will rise. Or you might use them as collateral in a further expansion of your business, say into growing oilseeds on land adjacent to your rainforest for conversion to biodiesel. In none of these cases are any upfront funds needed to finance the carbon reduction activity.

Likewise in the case of dollar credit, noone had to 'pay for' the credit that allows your business to run. The bank simply created credit with a stroke of the pen (an entry in your account) and other businesses recognized this as 'money' and were prepared to do business with you. Eventually the total 'dollar credit' in the economy is matched by the value of the real widgets produced, and everything goes on to the next round. In the case of carbon credit, again noone has to 'pay for' the carbon sequestered in your rainforest. If it is recognized as being 'credit-worthy' (a highly appropriate term in this case) then it too will attract business partners who are prepared to do business with you. The bank—in this case the merchant bank—creates a book entry that enables you to go to the markets and turn your credit into cash. Eventually the economy will produce a price for your carbon credit that allocates carbon risk appropriately. The limit to the number of carbon credits that can be created is set by the rate at which carbon is emitted into the atmosphere—which is currently at the rate of 50 billion tonnes of carbon dioxide-equivalent per year (50 Gt CO_2-e/year).

This example sets the scene for this Viewpoint contribution. My starting premise is that the debate over the 'costs' of emissions reduction and control, promoted by the Kyoto model of emissions reduction and government-set limits to these reductions, captures only a part of the picture. The power of capitalism lies in its capacity to conjure up productive forces through little more than the creation of credit. Now, with climate change and the development of renewable energies and the numerous pathways they promise to a low-carbon economy, capitalism has the scope to demonstrate this capacity once more, this time in the creation of the new industrial economy based on renewable energy foundations that many regard as necessary to deal adequately with climate change. In this contribution I wish to demonstrate why the role of carbon credits is likely to be central to the creation of these new, post fossil fuel energy systems.

2. Towards the low-carbon economy

The word carbon was coined in the 1780s by the French chemist Lavoisier, drawing on the French word for coal, *charbon*. The cognate word charcoal stems from root words found in all Indo-European languages signifying burning, or glowing, or fire. Thus carbon as a concept and a name is ancient, while its modern use dates from the Industrial Revolution, which was of course responsible for bringing about unimagined increases in productivity through the use of fossil fuel sources that embodied high levels of carbon. We now know the consequences of tapping into these high-carbon energy sources.[2] The consequences are global warming—or, to express the same point more graphically, the consequences are that we are cooking the planet. Carbon is indeed fire.

The next great industrial transformation is most likely to be one that will swing the world behind low-carbon sources of energy, without loss of growth and productivity. Supply-side technologies (such as solar, wind, geothermal) have dominated discussion of this question for decades, and latterly government-mandated reductions in carbon emissions under the Kyoto Protocol have also entered the discussion. But the real changes will only come when there is a demand-side carbon credit economy established, one that tracks the phasing out of high-carbon activities in the 'real' economy and facilitates the process through attaching an unavoidable price to carbon emissions and a credit to carbon sequestration. If the power of capitalism is mobilized in this way, then low-carbon energy systems can be created without loss of economic growth and productivity enhancement—as called for in concepts like the Chinese 'circular economy'.[3]

The post-Kyoto global regime is likely to be focused on the overall goal of achieving a low-carbon economy—through a variety of means. There will be emissions reductions, to be sure. But there will also be a variety of direct carbon sequestration processes (such as those associated with bio- and geo-sequestration) and new possibilities such as linking construction processes utilizing cement to carbon sequestration. There will be indirect but very powerful initiatives, such as improvements in fuel efficiency in private motor vehicles, which will have an important impact (but not directly quantifiable overall, since they depend on distances driven by private motorists). All these various means to be adopted for reducing carbon levels in the atmosphere will have their counterpart in the carbon credit economy, which will likely come to be the largest part of the economy over the next two decades. As it grows, it will bring the pricing of carbon to the very core of economic decision-making. Investment decisions will then be taken in the light of the impact of the price of carbon. In this way, the costs of adjusting to a low-carbon economy will be felt throughout the economy.

To date the main vehicles discussed for bringing about the low-carbon economy are carbon taxes and cap-and-trade

[2] See the latest reports from the Intergovernmental Panel on Climate Change (IPCC), released in 2007: IPCC (2007a–c) as well as independent reviews by Stern (2006) and in Australia by Garnaut (2008).

[3] In China there is advanced discussion on how to promote the emergence of a low-throughput economy based on recirculation of commodities and high energy efficiency; see Ren (2007) for a recent discussion.