



Climate Change – an alternative approach

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The key objective in the face of climate change is to reduce the atmospheric concentration of carbon dioxide from the combustion of fossil fuel. Certainly there are other aspects, it would be useful not to cut down forests for example and there are other greenhouse gasses but as this is The Oil Drum we'll focus on fossil fuels and CO₂.

The entire debate when it comes to fossil fuels and climate change is focused on demand, the consumption of fossil fuels and the resultant emissions. This is not the only approach. Here I propose an alternative approach that totally ignores emissions but instead focuses on the extraction of fossil fuels from the ground.

Last month I was at an event where George Monbiot (www.monbiot.com), the environmentalist writer for The Guardian newspaper and energetic campaigner on climate change gave a speech. The speeches and Q&A sessions were interesting enough but as the event wore on I grew more and more uneasy as it dawned on me that the speakers and several hundred people in the room were missing what seemed to me to be the key issue.

People were only talking about demand. About aviation expansion, food miles, road construction, China's coal power stations etc.. This created an unwieldy monster with 6.5 billion individuals and millions of corporate and government stakeholders. The way forward seemed impossible.

This observation characterises the whole climate change debate – it only considers demand. The solution is identified as behavioural and technological change delivering reduced demand and resulting emissions. The Kyoto Protocol, whilst its objective is:

“stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.”

...attempts to achieve this by signatories all reducing their emissions by agreed percentages. The language of the climate change debate is emissions, national and per person. Carbon trading and offsetting is presented as a way of using the market to achieve cost effective emission reductions.

I think there are problems with such a demand focused approach.

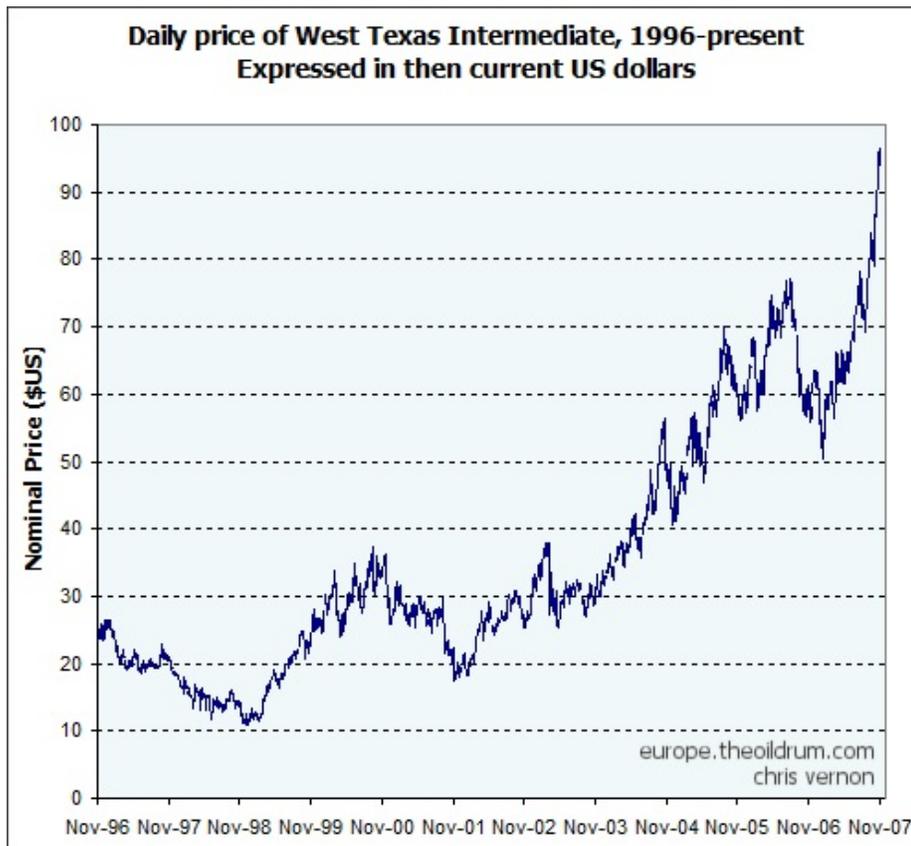
Let's go back to first principles. Climate change is largely caused by increased CO₂ concentrations in the atmosphere. This comes about from the combustion of carbon rich fossil fuels pumped or mined from the Earth. To be successful, any action that hopes to reduce the atmospheric CO₂ concentration from what it would otherwise have been must result in reduced fossil fuel extraction from the Earth (one exception to this rule is post-combustion sequestration). When considering action the following simple test should always be applied:

Will considered action leave fossil fuels in the ground that would otherwise be extracted?

This seems blindingly obvious however I don't see anyone asking or evaluating this question, certainly nobody did in the meeting last month. When I started looking at this I realised it was not at all obvious that the current approaches to climate change would pass that test. The difficulty is that the relationship between demand and supply is anything but absolute.

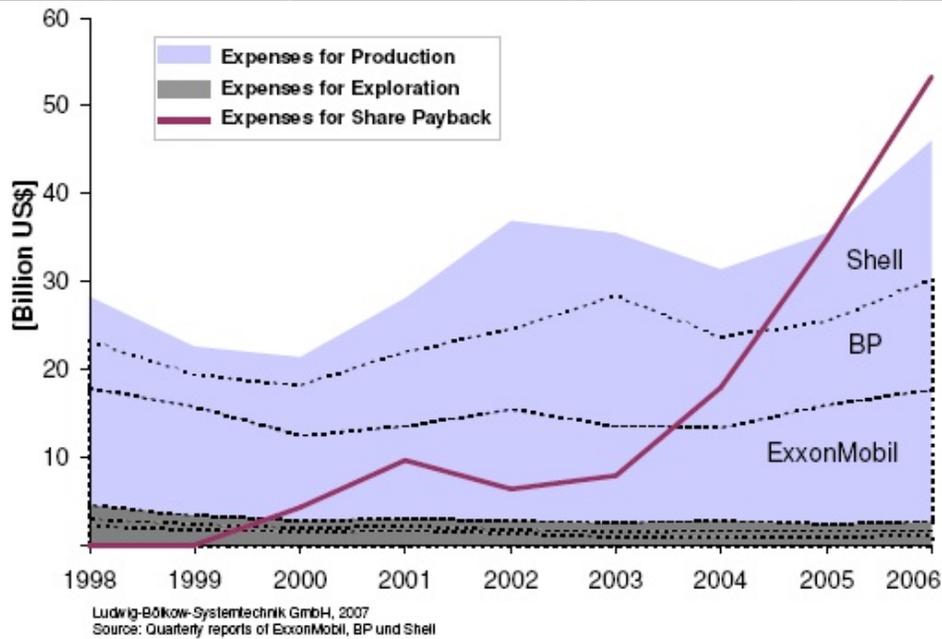
One comment from Monbiot particularly grated. He was talking about flying to Sydney and stated that if you chose not to fly you were making an immediate carbon saving (as apposed to offsetting the flight where the saving was at least delayed if it ever happened at all). Does tearing up your ticket to Sydney reduce carbon emissions? Ask the question, have some fossil fuels been left in the ground that would otherwise be extracted? The answer, absolutely not, and I'm not talking about how the plane's still going to fly without you.

I'm talking about the fact that oil extraction is not determined by demand, it's determined by supply. It has been since earlier this decade when the market price diverged markedly from the production costs.



Source: [EIA](#)

We know the market price has diverged from production costs as the amount of money the oil companies are spending on exploration and production has not increased in step – resulting in a the large profits reported in recent years.



Source: Energy Watch Group [Oil report Oct 2007](#)

When a market exhibits this it means there is shortage, marginal supply is no longer determined by marginal price as it would be in a normal market and as such whether you fly to Sydney or not, even assuming British Airways then burns less oil that day as a result, does absolutely nothing for global oil production. It fails the test and does nothing for atmospheric CO₂ concentrations.

With BA bidding for slightly less fuel, the market price will be marginally reduced enabling the previously marginally out-priced consumer to take up the slack. Some reallocation will have occurred, however Exxon's production and resultant global CO₂ emissions will remain unchanged.

An Alternative Approach

There is another way. Instead of attempting to change the behaviour or technology of billions of stakeholders we could instead just concentrate on the few dozen fossil fuel producing countries. A few dozen vs. billions – that has to be easier?

If a government accepts that climate change is serious, that atmospheric concentrations of CO₂ must be reduced, all they have to do is to reduce the extraction of fossil fuel from their territory. We don't even need to worry that there could be dozens of companies operating in a country – the government licences their operations.

To grasp just how simple this is we can return to oil. Oil is extracted from ~98 countries in the world today. In ~60 of these countries oil extraction is already in terminal decline ([Oil Depletion Atlas](#)). Would the US sign up to an international climate change bill that only had one clause:

Annual oil extraction from the USA will reduce from year to year.

Almost 40 years after peak production, the US will have no difficulty signing that bill. There are arguably only about 30 countries in the world with an ability to maintain or increase oil production. Convince the governments of these 30 countries to reduce their annual oil extraction rather than maintain or increase it and global CO₂ emissions from oil are guaranteed to fall. Of course the countries artificially curtaining their production may feel this unfair, why should they alone bear the cost? This issue of fairness could be addressed two ways, by asking all countries to artificially curtail extraction or by financially compensating those concerned. See Ecuador below.

We haven't had to convince billions of people, we haven't had to build new vehicle fleets or infrastructure, we haven't had to do anything other than pass and enforce a single line of legislation in a couple of dozen governments, many of whom already agree that climate change is serious enough to do something about. The resulting impact on emissions would be immediate.

The same can be said for coal. Here the numbers are even better; only 10 countries are responsible for 96% of the world's hard coal extraction ([World Coal Institute](#)). Convince these governments to extract less and the job is done. Also six countries (USA, China, India, Russia, South Africa, Australia) hold 84% of world hard coal reserves. Four out of these six (USA, Russia, China, Australia) also account for 78% of world brown coal reserves ([COAL - The Roundup](#)).

Partial Adoption

Another problem with the conventional demand based approach is that a partial solution doesn't cut it. If the UK reduced the oil consumption by 10%, that newly freed up resource would be consumed by another country. However with the supply focused approach, if Saudi Arabia reduced its oil extraction by 10%, close to 1 million barrels per day, global oil supply (and the CO2 emissions associated with it) would fall. **In the alternative approach, one stakeholder can make a difference.** The same can not be said for the current approach.

Oil Depletion Protocol

In the case of oil there already exists a framework to mandate reduced extraction rates from countries that otherwise would increase their production. The Oil Depletion Protocol originally proposed by Colin Campbell states amongst other things:

No country shall produce oil at above its current Depletion Rate.
www.oildepletionprotocol.org

Depletion rate is defined as annual production as a percentage of the estimated amount left to produce.

Ecuador

A supply side approach has also been suggested by Ecuador with respect to their largest untapped oil fields in the heart of the Ecuadorian Amazon.



Ecuadorian President Rafael Correa and his government say that if the international community can compensate the country with half of the forecasted lost revenues, Ecuador will leave the oil in Yasuni National Park undisturbed to protect the park's biodiversity and indigenous peoples living in voluntary isolation.

"The first option is to leave that oil in the ground, but the international community would have to compensate us for immense sacrifice that a poor country like Ecuador would have to make," said

Correa in a recent radio address.

President Correa estimates the compensation figure at around US\$350 million per year.

...

The oil fields, known as Ishpingo-Tiputini-Tambocochoa, ITT, are the largest untapped oil fields in Ecuador. They have been estimated by Ecuador's government and analysts

to contain 900 million to one billion barrels of oil equivalent, about a quarter of the country's known reserves.

[Reference](#)

This approach passes the test. Fossil fuels will be left in the ground that would otherwise be extracted. The report was from April 2007, I'm not aware of subsequent developments.

Such wealth transfer is not without its problems though as a recent communication with David Fleming highlighted. It would transfer a lot of money to low-dependency nations, which might well be spent building highly energy dependent systems. Money will be transferred away from high-dependency nations, just when they need it to achieve the massive turn round in their economies. Traditional societies could be disrupted by sudden inflows of wealth.

Tradable Energy Quotas (TEQs)

Whilst this article has considered supply reductions and is critical of the current demand driven approach, if implemented without addressing demand the consequence could be brutal. The traditional market based approach could lead to a highly inequitable collapse in order for demand to match supply.

Any Governments favouring a more orderly response would be wise to adopt Tradable Energy Quotas (TEQs) as detailed here: www.teqs.net

TEQs is an energy-based, national system that enables a country to reduce its reliance on fossil fuel fast whilst ensuring fair access to energy for all.

Conclusion

Attempting to reduce atmospheric concentrations by demand side approaches is unlikely to succeed as it relies on billions of stakeholders making behavioural and technological changes. A partial adoption delivers a disproportionately small response and possibly none at all.

A supply side approach achieved through extraction limits, agreed by a small number of governments removes the complexity associated with billions of stakeholders. There also exists the opportunity to compensate this small number of countries for lost revenue.

Whilst this artificial limitation of global fossil fuel supplies will create energy shortages, if the climate change predictions are correct this is likely to be preferable to the impact of climate change from unchecked extraction and combustion of fossil fuels. In any event, as fossil fuels are finite their reduced supply is inevitable. Should we reduce their supply before and in mitigation of dangerous climate change or after and cause dangerous climate change?



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