"Fantasy Climate Control" (or "Cap and Regulate"?)

- **some ideas for others to shoot down or pick up and run with**

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This note was prompted by frustration at the lack of visible vigorous debate about alternatives to the current 'voluntarist' UN approach to climate change mitigation, which seems to me highly unlikely to result in a substantive effect on the state of the global climate system towards the end of this century. Key missing elements seem to me to be:

- a robust, enforceable mechanism to secure a cap on the cumulative stock of anthropogenic carbon in the atmosphere, and
- a framework that will result in rapid implementation of carbon capture and sequestration/storage (CCS) at the necessary scale.

I am aware that the ideas below have a lot in common with the "Cap and Share" (C&S) concept (www.capandshare.org) advocated by www.CapGlobalCarbon.org (CGC) who also call it "Cap and Dividend". However, C&S as presented by CGC seems to frame climate change as primarily a humanitarian issue, whereas the ideas below seek to frame future unregulated fossil carbon extraction as a global security issue akin to unregulated production of fissile nuclear material; hence "Cap and Regulate".

I also note that an OECD Insights[1] blog "The other CCS" in April 2016 by C&S advocate Laurence Matthews has also suggested a link between C&S and CCS.

The suggested approach is to tackle the fossil carbon issue as directly as possible while retaining a role for national governments, and not attempting directly to solve other issues such as funding for climate adaptation.

I am a practising scientist (geologist) but not a climate scientist; I am just a concerned UK citizen who has read some books and articles on the subject.

My current thinking goes something like this:

- There are clear non-climate-related benefits in addressing at least some climate forcing agents other than fossil carbon (e.g. deforestation, black carbon) and those are not my concern here. Separate international agreements could help realise goals relating to these forcing agents.
- Fossil carbon[2] accounts for the majority of current and projected climate forcing.
- "Well below 2°C" (here abbreviated to "<2°C") is now the international political consensus on what is a tolerable rise in global average temperature since pre-industrial levels.
- Estimates as to how much fossil carbon can be released depend on an as yet undefined consensus on the global appetite for risk in not meeting the <2°C objective. The current discourse still seems to be framed around 50% (which is not exactly comforting).
- The signing of the UNFCCC in 1992 could be taken as a date after which fossil fuel combustion was recognised globally as having significant associated risks. Fossil fuel use prior to 1992 could be written off as "guilt-free" for humanity as a whole.

[1] www.oecdinsights.org

[2] Mainly from burning fossil fuels, but also carbon released from limestone in cement manufacture.

- A post-1992 “fossil carbon budget” could be scientifically defined to be compatible with the <2°C objective and the risk factor.
- The post-1992 fossil carbon budget could be divided by the global population to give an all-time per-capita fossil carbon extraction allowance.
- The per-capita carbon extraction allowance would then be allocated to each country on a population basis, in the form of carbon extraction permits. This could be done in tranches, say every 10 years, to allow for future science-informed changes to the fossil carbon budget.
- Countries which have extracted fossil fuels[3] from their territories since 1992 would have their permit allocations reduced accordingly.
- The permits would be administered by a new International Carbon Extraction Agency (ICEA) with some resemblance to the International Atomic Energy Agency (IAEA), with accountability to the UN, and in particular the UN Security Council.
- The permits would be tradable between nations and corporations[4].
- The ICEA would have intrusive audit and inspection powers akin to the IAEA.
- Responsibility for compliance would rest with the governments of the countries within whose territories the permitted extractions are implemented. Non-compliance by corporations would lead to a permit being revoked by the relevant government, which could then re-allocate/sell the revoked permit as it saw fit.
- The ICEA would have the power to issue additional permits only upon verified delivery of CCS schemes. There would be no such arrangements available in relation to other types of carbon emissions mitigations[5], including so-called “geo-engineering" schemes.
- Any countries which opted out of this process would be barred from the institutions of the UN (or at least from the UN Security Council).
- The ICEA would be responsible for reporting serious violations to the UN Security Council.

No doubt there would be huge resistance from many quarters to consider seriously such a different approach from the “voluntarist” approach embodied in the 2015 Paris accord. However, it does seem to me to have a better chance of delivering the required outcome in a way that could accommodate a number of highly desirable attributes, including:

- Demonstrable global equity
- Harnessing market forces effectively
- Relative simplicity (e.g. in comparison to emissions-based carbon taxation or cap & trade schemes)
- Practicable verification and policing
- Predictable long term market conditions for energy companies and states holding fossil fuel reserves and/or CCS capability.

[3] I doubt if it would be worth attempting the equivalent accounting for post-1992 extraction of limestone for cement production.

[4] I am not remotely literate in economics, so I will not expand on this in any detail. That said, I imagine the permit trading system should create a functioning market that would drive up the value of “burnable” reserves, provide a real economic basis for engineered CCS and create a level playing field for renewables and nuclear without the need for subsidies.

[5] Soil carbon bio-fixation schemes might also qualify, but they are inherently more susceptible to being non-permanent, due to unforeseen land use pressures, and might be more difficult to verify.