SECOND Comment In Addition to the First Comment

Submitted on December 3rd

All Issues in the First Comment are Valid and the Second

Comment Only Gives Additional Detail

CAR U.S. ODS Project Protocol vs. 1, November 2009

1. **Exclusion of blowing agent from project emissions**
2. **Exclusion of substitute refrigerants**
3. **Crediting without control of all CFC**

Imported ODS Protocol

4. **Unsubstantiated assumptions about Article 5 countries' refrigeration industry**
5. **Unacceptable assumptions about recycling investments**
6. **Imperatively connecting foam to refrigerants in imports**
7. **Project emission in A5 foam blowing and refrigerants**

The reasons for the second comment are the striking choices in CAR boundary and baseline. The ODS Workgroup contains much competence about substitutes, technology trends and international trade. However the Workgroup hides more information and than it brings to CAR. GTZ-Proklima here repeats its warning of the possible backlash against what can be perceived as HFC marketing through US offsetting.

1. Exclusion of blowing agent from project emissions

CFCs in use satisfy a demand for a service. Of course all CFC is in banks so this is true by definition of “banks”. Banks not in use are negligible. The ODS Workgroup postulates that when the CFC is removed this demand is being served by another installation or equipment and thus other blowing agents must be in use, the net effect for emissions would be negligible. The justification is that “a functional unit has to be replaced by another unit”. This postulate is logically inconsistent and furthermore insufficient. It cannot be used for constructing a CFC baseline.

Destruction of CFC causes new functional units to provide equivalent services. “Banks” imply that this causality is strong. ISO 14064-2 states “controlled, related to or affected by” (5.3, p.10), and this is independent of any other criteria playing a role in equipment replacement. Additionality considerations do not obscure boundaries. The expression in ISO “related to” clearly implies an inclusion in the boundary irrespective of the reasons for equipment replacement.

Substitute foam blowing agents are part of SSR 6, Figure 4.1 page 11. A CFC baseline should take into account that,

a - new units will emit some of their blowing agent
b - in most cases the new blowing agent is not the same as the old units’, so the difference in GWP makes a difference in emissions.

Situation that the ODS Workgroup plausibly seeks to hide:

US CFC banks are different from banks in most OECD countries because contrary to most OECD countries, US industry continues to rely to >90% on HFCs. This is also evident in the unjustified inclusion of HCFC-141b among the eligible gases in the baseline of the CAR protocol.

> This ODS Workgroup postulate is logically not consistent and largely motivated by commercial interests of maintaining HFC markets and preventing incentives for non-GWP/ODP blowing agents.

It is also of concern that the protocol only refers to foam composition in landfilling of foam after car shredders. Surely there is much data on foam in other use forms and foam applications but they are not used. The data on foam in landfills shows that CFCs can be chemically decomposed in anaerobic conditions but the protocol does not address the GWPs of the chemicals into which CFC-11 and CFC-12 break up.

2. Exclusion of substitute refrigerants

Removing the CFC refrigerant is assumed to create project emissions from re-using the CFC in an average application, that is clearly what equation 5.6 does. The text in 5.2.1 is not consistent with equation 5.6 because the text mentions substitutes but the calculation omits them.

The CAR Workgroup assumes that equipment replacement happens only for other reasons, therefore refrigerant project emissions are defined as the average re-use of CFC rather than the actual or likely substitutes. Again the replacement decision is misused to pretend a simplification that has mainly commercial motivation of avoiding non-GWP/ODP substitutes. This is what Proklima wants to point to.

A separate remark necessary is that the replacement decision should not be subsumed under a boundary. For the exclusion of blowing agents (point 1), the CAR ODS boundary is cut and this is justified with the replacements' impact while to exclude substitute refrigerants, it is not the replacements' impact but something independent of the replacement, the re-use of CFC. Whereas the straightforward baseline is the continued use of CFC in the functional units and the project emissions what the new functional units entail. It is thus not necessary to include any consideration in the equipment replacement decision in the emissions' assessment.

Another solution would be that all CFC refrigerant will be emitted by BAU at some point, a part in the existing functional unit and the other part in re-using equipment. That baseline would simply be 100% emission, a preferable simplification compared to what the proposed protocol contains.

Appendix D calculates the average leakage and the average GWP of substitute refrigerants, again with commercial bias. Table 5.1 gives the results for leakage, Table 5.3 for substitutes' GWP. Certainly the market shares of equipment types calculated for leakage and the market shares for substitutes' GWP calculation cannot be the same because the CFC equipment in use is not large refrigeration and large AC. Domestic refrigeration is the largest share of CFC and this should be used in Table D.3 and D.4. Instead D.3 and D.4 have been chosen so that non-GWP/ODP substitutes do not appear.

One way to remove the HFC marketing impact would be to fully use the EPA Vintaging Model as it contains data for "dozens of subcategories" (as correctly said on p.65). In the monitoring requirements, chapter 6.4, the number of appliances shall be recorded. The subcategories in the Vintaging Model should be used, the number of appliances in each subcategory recorded and the average substitute GWP calculated respectively. This seems the straightforward way to apply the rationale of Appendix D.

3. Crediting without control of all CFC

RDE is the ratio between destroyed CFC to total CFC, but contains no requirement how the total CFC amount is established. The TEAP Report of the Task Force on Foam End-of-Life Issues introduces RDE (chap. 6.1.4) but gives no information how to quantify "Blowing agent in foam immediately prior to decommissioning".

US ODS p.23: Separation must be conducted in a manner that achieves at least a 90% recovery and destruction efficiency (RDE), per the recommendations of the TEAP Report of the Task Force on Foam End-of-Life Issues

US ODS p.29: 90% recovery and destruction efficiency shall be demonstrated through a standard of performance that must be followed by all project developers.

The monitoring requirements and the parameters (Table 6.2) include no variable on the total amount of foam. Table 8.4 indicates that the 90% RDE is subject to professional judgment. No other qualification what this means appears.

Numerically the goal of 90% is the same between RDE and WEEE (that was in the September version). The real difference is that RDE implies nothing about how one decides what is 100%. WEEE has a test procedure and a formula for establishing 100%. There are other ways to establish 100%, but RDE says nothing about any one of them. The argument from the ODS Workgroup that WEEE would be an unknown standard is not plausible. WEEE does not contain any European condition but uses a simple mass balance that, as a universal tool, does not require any learning. It is revealing that the ODS Workgroup does not refer to any particular aspect of applying WEEE to justify their choice. Furthermore it is revealing that the US ODS protocol contains much detail on scales and weighing in 6.5.1. Thus the kinds of operations needed for WEEE are included only for other measurements.

The only condition in the protocol about foam treatment is "shall be extracted under negative pressure". No qualification of the level of negative pressure is given and no information how verification could occur. It is not contained in Tables 6.2 and 8.4.

> The protocol contains nothing that would allow to verify how much foam blowing agent is extracted. Measurements of CFC in liquid form and nothing to measure foam before or after signifies any amount of CFC is eligible and eliminates any influence on the main part of ODS abatement, the extraction from appliances.

Furthermore, choosing RDE weakens the CDM methodology AMS III.X that uses WEEE (Proklima produced AMS III.X in order to create emission reductions with high socio-economic co-benefits). CAR might see this as a stark choice between raising obstacles between emission trading schemes, or (with WEEE), aligning parameters so that environmental integrity can be strengthened.

Summary US ODS protocol

These three biases from the ODS Workgroup described above also ignore the larger technology part. Any large scale demanufacturing of refrigerators or AC is an integrated process and that process decides the overall impact on all ODS banks. These three use a similar rationale, they disentangle the demanufacturing and thereby suggest that the destruction part decides the emission reduction. After 20 years of Montreal Protocol implementation, the CFC left is attainable only via dealing with appliances and that part is more decisive than the CFC destruction part.

These biases seek to suggest that the CAR ODS protocol will result in CFC destruction and since nobody would destroy ODS in the absence of CAR, BAU is CFC are emitted (besides CFC fixed in landfills) as if CFCs exist for themselves, independently of the tubes, the compressors, the valves and the other components of appliances.

4. Unsubstantiated assumptions about Article 5 country refrigeration industry

The ODS Workgroup assumes that without a CAR protocol, all CFC in Article 5 countries would be emitted and thus any amount of imported CFC being destroyed in the US would be additional. Such an assumption is likely to reinforce itself and ignores that Article 5 countries have refrigerant recovery and recycling capacity (not only from the Montreal Protocol's MLF). In urban areas in most Article 5 countries, informal sector workshops provide maintenance on refrigeration and AC systems. Even without outside incentive, these workshops recycle refrigerants. There is no data available on the share of workshops that use vacuum pumps (provided by MLF or locally made) and those workshops that usually vent the refrigerant circuit.

Successive evaluations from the MLF show that low prices for CFCs are the main reason why much of the recycling capacity it funded remains idle (for example UNEP/OzL.Pro/ExCom/48/12, 6 march 2006). Prices for CFC-12 range from as low as 3 US$/kg in Cuba and Indonesia up to 9 US$/kg in Colombia and Sudan (Annex I, p.3, *op.cit.*). 9.47 CRT per kilogram of CFC-12 can certainly increase the recycling rates as it multiplies the economic incentive that MLF evaluations see as the prime determinant.

For example in Brazil, the MLF paid for CFC recovery equipment and four companies across the country operate that equipment under the obligation to pay a fixed price for refrigerants delivered to them. Refrigerants from domestic refrigerators from UNFCCC CDM projects in Brazil have been treated there and the substances are being re-used. CAR could include such practices for its ODS protocol and use the information about the "Refrigerant Management Plans" in CAR project monitoring. The refrigerant baseline scenarios in Table 5.1 in the Imported ODS Project Protocol ignore the Montreal Protocol.

5. Unacceptable assumptions about recycling investments

The ODS Workgroup assumes that allowing only refrigerants into the US for destruction would be preferable since it results in the highest emission reduction per unit of investment (since CFC-12 has the highest GWP). Commercial gain masquerades as environmental gain in this assumption. Crediting refrigerants and excluding foam assumes that there is no and that there cannot ever appear treatment of insulation foam in A5 countries. Many A5 countries have advanced recycling industries for steel, copper, aluminum and plastics. Emission credits for CFC will expand investments in recycling capacity in A5 countries as much as in the US. Since foam (unlike refrigerants) cannot be transported long distance, CFC-11 abatement in A5 is prevented or reduced in some relation to the reduction in Return-on-Investments in A5 when the CFC-12 from those appliances is destroyed in the US.

Therefore the opposite of the ODS Workgroup's assumption is true, imports of CFC-12 into the US correlate negatively with ODS recovery because recycling investments in A5 countries are becoming less attractive. And this correlation could most likely be linear over a wide range, for each amount of CFC-12 destroyed in the US a certain amount of CFC-11 is less recovered in A5.

As an illustration, the following summary of a 1000 refrigerator test of a refrigerator recycling plant in Brazil, indicates good recovery rates. The data is from 2007 and the plant is in operation since 1998 (all data in kgs).

Total weight	Steel	Non-ferrous metal	PUR foam	Plastics	Refrigerant lubricant	Refrigerant	Rubber	cable	unused
47,987	21,646	9,069	6,977	8,810	417.5	149	460	249	100

At present, all insulation foam is being reused as adsorption material and as fuel in steel furnaces. The plant cannot extract blowing agent from foam. This re-use of foam is limited in volume and it is not known how much this re-use can expand. Refrigerant lubricant recovered is used as heavy fuel oil. Overall, Proklima judges these results to be representative of similar operations in India and in China. Future expansion is most sensitive to prices of scrap steel and copper. At present, foam re-use is no factor in the economics.

The refrigerants recovered in this plant are sold at a price mandated by the Brazilian government, to a private company that received funding from the Multilateral Fund to operate recovery equipment that purifies and reclaims all refrigerants. Four such companies operate in Brazil.

The Workgroup's judgment that recycling in A5 countries will remain inexistent suggests an intention to expand the CFC emission reduction credits available to US

industry. The data cited above is not publicly available, however, Proklima asserts that it is known to the Workgroup and that such parameters are achieved for many years by firms represented in the Workgroup. Current A5 recycling and future investments in demanufacturing are concealed to exclude foam in the Imported ODS Protocol baseline.

6. Imperatively connecting foam to refrigerants in ODS imports

An Imported ODS Protocol needs a baseline for refrigerant and for foam treatment in A5 countries and judgment to simplify the baselines as far as possible. Irrespective of this, imported ODS should only be eligible under CAR when the foam in these appliances and other equipment has been treated to recover a defined amount of blowing agent. For each amount of CFC-12 destroyed under CAR, a respective amount of CFC-11 would have to be destroyed irrespective whether in A5 countries or in the US. Thereby a project proponent might choose where to destroy the ODS according to relative costs to him, independently of the location of the destruction.

Such an eligibility criterion for imported ODS is necessary when CAR wants to distinguish imported ODS from ODS in the US. Alternatively, the US protocol can be extended to apply in A5 countries.

ODS banks contain hundreds of thousand tons of CFCs, thus billions tons of CO_2e, and the large majority exists in small amounts less than one kg. The costs of bringing these distributed amounts together are central. Refrigerant recovery is by a factor >100 cheaper than recovering foam blowing agent and in addition refrigerants transport is possible[1] while foam transport is economically unviable. These two factors together make it imperative for CAR to assure that crediting imported ODS destruction provides additional incentive to treat foam in the countries where the ODS originates.

> The differential in recovery cost between refrigerant and foam adds to the transportability of refrigerant. What is cheap to recover can be transported and what is expensive to recover cannot. Both together would lead the present CAR ODS protocol to increase emission credits in the US and reduce their viability in A5 countries.

[1] For example, there are weekly transports of CFC by truck from Tarragona Spain to Frankfurt Germany, where CFC is destroyed and technical grade HCl and HF acids are recovered and re-used. The same technology is operating in New Delhi and in Hyderabad, India. Recovering technical grade acids is B.A.T. and appears to spread to India quicker than to the US.

7. Project emission in A5 foam blowing and refrigerants

The comments above on substitute foam blowing agents and refrigerants in appliances and other equipment are as valid in A5 countries as they are in the US. A CAR ODS protocol should account for substitutes so that incentives for non-GWP/ODP substances exist in A5 as much as in the US. Thereby demanufacturing for example in transition economies and in the MENA countries benefits compared to India and Latin America where non-GWP/ODP are still less used than HCFC-141b.

The Imported ODS protocol has fundamental flaws and will probably be seen as a commercially motivated attempt to increase the US voluntary emission market at the detriment of developing countries.
The clause that CFC destruction must occur within the US can been seen as a mercantilist effort, similar to raw material extraction in 19th century colonies, unless CFC destruction in A5 would be more difficult to control for CAR for some essential reason.