Comment on Draft U.S. Ozone Depleting Substances Project Protocol Version 1.0 and the Draft Imported Ozone Depleting Substances Project Protocol of the Climate Action Reserve

GTZ-Proklima acts as an implementing agency under the Multilateral Fund for the Implementation of the Montreal Protocol (MLF) since 1996, in over 150 projects in 40 countries with a budget volume of US$ 43 million. GTZ-Proklima is the largest bilateral implementing agency. The four major implementing agencies are multilateral bodies (WB, UNEP, UNDP, UNIDO). Based on this experience, Proklima submits the following for the consideration of the Climate Action Reserve so that the particular strength of the Climate Action Reserve can reflect the outcome of the 20 years of MLF implementation.

Summary:

- Changes between September and November versions are detrimental and should be reversed,
- all CFC substitutes accounted for incl. non GWP/ODP ones,
- site-specific substitutes allowed,
- WEEE used for controlling CFC recovery,
- foam blowing agent substitutes included in the boundary,
- criteria in the Imported ODS protocol raised and the same quality as in the US should be applied in Article 5 countries,
- CDM methodology eligibility criteria be kept effective,
- and most importantly, recovery of refrigerant without foam treatment in Article 5 countries should be prevented.

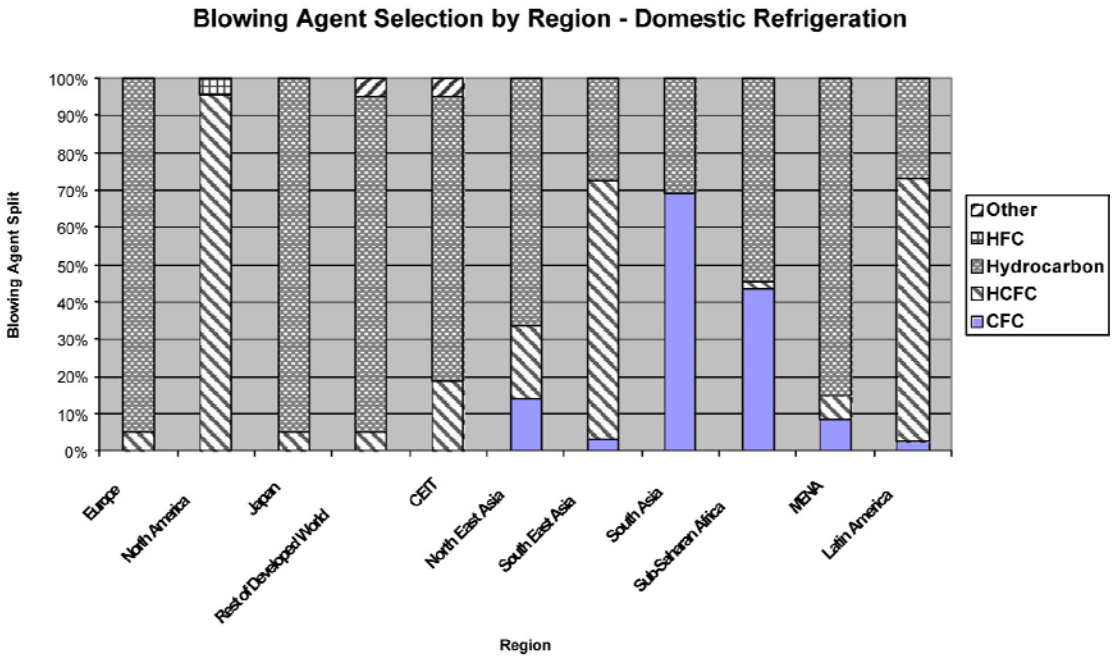
1. CAR ODS eligibility

All ODS production ended in OECD countries by 1995 and the Multilateral Fund (MLF) of the Montreal Protocol used some 2.3 bn US$ to fund conversions of CFC-using equipment in the Article 5 countries ending 1 Jan 2010. This has left two ODS issues persisting at present. Those ODS that MLF funds could not reach in polyurethane (PUR) foam and those ODS that were intermediate replacements for CFC, the so-called double phase-out via HCFC-22 and HFC-134a.
The CAR ODS vs.1 protocol addresses these two issues by restricting the eligible ODS to four CFCs and one HCFC, and to refrigerants and intact foam. All eligible ODS appear in a highly distributed and diverse number of small quantities (that is the MLF leftover). The CAR ODS project boundary requires a compromise between accuracy and cost. However, the boundary proposed seems to be in favor of commercial interests of fluorocarbon producers.

2. Down-stream boundary problems

CAR ODS vs.1 assumes that refrigerant and foam blowing agents are uniform around the globe whereas in fact the US situation is particular. As shown in the following graph, the majority of countries stopped using HCFCs for domestic refrigeration foam blowing agent. Likewise for the refrigerants in domestic

refrigerators, the US industry uses HFC-134a, whereas the whole of Europe, China and some of India and Brazil have shifted to Hydrocarbons as refrigerants.



Source: UNEP 2002, Foam TOC, p.3

By only considering the particular CFC phase-out route taken in the US, CAR contributes to incompatibility and barriers between different emission trading schemes, e.g. between the US and countries that chose another phase-out.

The September version of CAR ODS includes in Table 5-3, the refrigerants' substitutes. Citing the need for standardization, the November version excludes the substitutes' GWP and states on page 22 "*site-specific substitute parameters are not permitted*". This allows US industry to ignore emission reductions that have already been addressed 10-15 years ago in most other OECD countries. It also provides no incentives for non GWP/ODP substitutes.

The substitutes' exclusion uses two further steps, both unwarranted. The first step is calculating project emissions for substituted CFC, Table 5.3 in the CAR ODS November version. Averaging GWPs is difficult because each CFC is used in a wide and changing range of equipment. Averaging project emissions for the substituted CFC is less accurate than averaging the substitutes and moreover quite unwarranted, we cannot find an explanation why this part of the September CAR ODS was changed. Averaging substitutes automatically creates incentives to refill existing equipment for instance with HFC-134a, leaving equipment where this is not possible. Averaging for substituted CFC aggravates this even more.

The second step is in Annex D of the CAR ODS November version, where only large AC and refrigeration are listed and small refrigeration and AC are not included.

Table D.2 shows that small AC and refrigeration are included in the EPA Vintaging Model. Leaving out small AC and refrigeration increases the project emissions from substitutes and avoids incentives for non-HFC substitutes used already. The selectiveness of Tables D.3 to D.6 is also contrary to ICF's study of ODS destruction that otherwise informs the CAR protocol, which concludes in Table 1 page 23 (ICF 2009) that CFC refrigerant available in the US would come only from domestic refrigeration and industrial processes (minor error in D.3 to D.6 is the GWP 77 for HCFC-123).

The detailed tracking system proposed by the CAR ODS vs.1 for quantities above 227 kgs (500 lbs) allows to ascertain the substitute refrigerants and foam blowing agents because CFC recovery plants treat the equivalent number of appliances within a single day. When origin is being established for each batch of several hundred appliances, the administrative expense for ascertaining substitutes should not be significant (also by applying the Vintaging Model on substitutes, a self-evident but omitted improvement).

Averaging substitute refrigerant emissions for the substituted refrigerants leads to a preference for HFC refrigerants. If averaging refrigerants' GWP is acceptable or favored, then there is reason for averaging actual substitutes (as in the September version) and thereby improve the accuracy of the baseline.

This is further expressed in the CAR Imported ODS Protocol that uses only HFC-134a to account for project emissions in Equation 5.5, page 16. Thereby CAR omits emission reductions that have already been realized by replacing HFC-134a, especially in China and India, and thereby protects continued markets for US industry.

Finally, CAR ODS does not address project emissions from foam blowing agents (neither in the September nor the November versions) and thus the foam blowing related HCFC and HFC emissions from source SSR 6 (Figure 4.1) are not accounted for (new appliances and new foam put to the usage that CFC provided). This reduces the project emissions accounted for and avoids incentive for replacing HCFC-141b as blowing agent as already done in most countries. In the CAR Imported ODS protocol this applies to source SSR 4 (Figure 4.1).

Both by excluding substitute foam blowing agents and by averaging GWP for substituted refrigerants, the CAR ODS protocol contributes to an unnecessary continuation of fluorocarbon use and protects the US industry from efforts already implemented in other OECD countries.

It seems that these two arbitrary boundary choices are intended to hide the switch from HFC to non-GWP/ODP so far avoided in the US. Averaging substituted refrigerants removes isobutane and excluding substitute foam removes cyclopentane from the emission accounting.

3. Up-stream boundary problems

3.1 Demanufacturing

The September version of CAR ODS cites the WEEE recycling standard, thereby requiring CFC recovery to be calculated from the total weight of appliances. The November version replaces WEEE with the RDE, so that CAR does not account for the total CFC in appliances but only the CFC in the removed foam. Under the disguise of selectively using Montreal Protocol TEAP documents, the November CAR ODS gives credit to any appliances recycling activity without control of what share of CFC is recovered from the foam and refrigerants circuits respectively.

The WEEE (and similar standards in Switzerland, RAL and so on) requires accounting for the total weight of appliances in relation to total weight of CFC and of refrigerant lubrication oil. This is an effective quality control requirement as it makes it more difficult to mix recovered CFC with other CFC (also from illegal production). Weighing lubricant oil as required in WEEE is effective to assure that all refrigerant has been removed because to collect the oil a certain level of vacuum must be attained, and moreover double-checks the CFC volumes reported.

The November CAR ODS vs. 1 requires that the number of appliances and the year of appliance manufacture (if the foam is destroyed intact) is recorded (page 28). Separated foam must be stored in pieces > 1.6 ltr (100 cubic inches) according to ODS species and year of manufacture. The destroyed CFCs must be above 90% recovery and destruction efficiency (RDE as suggested by TEAP).

WEEE and RDE each has advantages and disadvantages and neither is better for all aspects than the other. WEEE uses appliance volume categories (<180 ltr, 180 – 350 ltr and 350 – 500 ltrs) to calculate a minimum CFC recovery amount. This has proved to be an effective quality indicator and control variable for demanufacturing in Europe. RDE replaces this by measuring “blowing agent in foam immediately prior to decommissioning” and excludes the quality control for demanufacturing.

By using RDE, CAR excludes foam that is not separated from the appliances from the accounting because with only foam samples it is impossible to know how much foam was there at decommissioning. Furthermore RDE introduces a new uncertainty since CFC content in foam varies by a factor of 2 to 3 within one appliance (door and sides) and among units of the same appliance model. This uncertainty is the reason for the 1000 unit test procedure in WEEE, so that these differences average out. Manufacturers of appliances with CFC as blowing agents have typically not installed any measurement equipment in the foaming part that would allow to predict how much CFC per foam volume is contained, only a range of 12 – 17% by PUR weight is often cited.

The control variable RDE leaves any amount of CFC foam to count as emission reduction, and thus the demanufacturing process itself is verified only via the PUR foam shape which should also lead to a discarding of unfit foam shapes.

The November CAR ODS seeks to minimize foam tearing and requires that 90% of foam is in pieces > 1.6 ltr. The quality indicator chosen assumes that the foam emits CFC when cut or torn and leaves this to indicate the demanufacturing quality. In other words, it seeks to assure a treatment of the foam in place of the treatment of the whole appliance. Thereby, CAR ODS implicitly influences what technologies are being put in operation, for example dismantling appliances vs. demanufacturing, instead of defining quality criteria and letting technologies compete.

Furthermore, the foam collection and management requirements (chap. 6.4) are not used in the CAR Imported ODS Protocol. Therefore any imported ODS is accountable irrespective of the appliance treatment that produced it. This puts the CAR ODS protocol in conflict with the UN-FCCC CDM methodology AMS III.X because it erases the effect of the eligibility criterion in AMS III.X that requires applying the WEEE or any better demanufacturing standard, to the extend that CRT income is likely to be superior to CER income. Since the WEEE was used in the September CAR ODS version, it seems that CAR intentionally decided to undercut the CDM methodology.

The foam collection and management requirements (chap. 6.4) seem effective to address the current practice in the US of treating appliances in car shredders and to prevent ODS from shredders to be accountable under CAR. This objective could also be attained with WEEE. Besides, it should be noted that preventing appliances going to car shredders should also be an objective in Article 5 countries.

By replacing WEEE with RDE, all CFC irrespective of equipment used to separate CFC can be applied in a CAR project since the only other criteria besides foam shapes, extraction under negative pressure, can not be ascertained when CFC recovered is not imperatively compared to the total weight or volume of appliances that contained CFCs. WEEE provides better protection against fraud as well as against operational problems in demanufacturing from being hidden.

3.2 Demanufacturing in Article 5 countries

Not including the foam collection and management requirements (chap. 6.4) in the CAR Imported ODS Protocol creates a larger problem, aggravated by avoiding WEEE, because it is impossible to know where CFC-11 and CFC-12 originates, from foam or from refrigerants.

Great care should be used to define the CAR Imported ODS Protocol so that it contributes to preventing poor recycling practices in Article 5 countries and gives incentives to establish demanufacturing capacity since transport costs for appliances are a mayor barrier to ODS abatement. By allowing import of ODS refrigerants without condition, CAR ODS vs.1 will **severely damage** recycling in Article 5 countries in two ways:

1. attracting cheap to recover ODS for destruction in the US

2. not crediting quality demanufacturing in Article 5 countries

A CAR Imported ODS protocol that does not assure that foam blowing agents are destroyed when crediting destroyed refrigerants prevents demanufacturing investments in the majority of Article 5 countries because project developers' costs for collecting refrigerants are very small compared to the cost of collection blowing agents. Only a few large Article 5 countries have recycling industries where demanufacturing would be economically viable because of the use of recycled metals and plastics and the number of appliances is sufficiently large to assure a return on an investment in so-called Step 2 plants. The economies of scale are crucial. A CAR project developer that only collects refrigerants in a country reduces the possibility of investments in demanufacturing. A race to the bottom between project developers can appear.

Using the WEEE requirements in the CAR Imported ODS protocol would also remove the reasons for excluding imported CFC from foam. WEEE requirements give a validator/verifier ample basis to verify CFC recovered in relation to other material fractions and the refrigerant lubricants. Given the higher importance of the validator/verifier role in Article 5 countries as compared to the US, because other environmental regulations might not exist, the WEEE provides suitable control possibilities.

3.3 Foam Landfill

The CAR ODS protocol uses a baseline calculating emissions from secondary refrigerant markets and landfilling of foam. The assumptions for the refrigerants part are representative. Those for the foam part are narrow and exclude different solutions for PUR foam such as using it as adsorption material and as fuel in steel furnaces. The anaerobic landfill implied in the baseline is very conservative. Excessive conservativeness is often counterproductive.

For imported ODS only refrigerants are eligible by CAR. No explanation is given why the baseline for imported ODS does not reflect landfilling of foam in Article 5 countries. Even when only refrigerants are eligible, still the foam from these refrigeration units ends up somewhere and emits the CFC-11 in its foam to the atmosphere. It is possible to distinguish landfills in Article 5 countries and to apply the criteria use for methane to CFC emissions.

The landfilling experiments by Kjeldsen and Scheutz are the only source of data in the ODS protocol (percentages in Table 5.2 are not congruent with publications). No information is provided why the landfills used there (in Denmark and in North Carolina) are representative for landfills across the US.

> Appliances in car shredders, landfilling of foam, reuse of foam and foam as fuel substitute occurs in some Article 5 countries. CAR's sole focus on current practices in the US excludes other practices in Article 5 countries that could be expanded or reduced when accounted for.

4. Technology bias

The Multilateral Fund of the Montreal Protocol has financed CFC replacements for refrigerants and for blowing agents with non-GWP/ODP substances, such as Hydrocarbons, ammonia and CO_2. In many countries, OECD and A5 ones, the market shares of non-GWP/ODP substances are increasing rapidly. Already several CDM methodologies expand these changes. The CAR ODS protocol vs.1 and the chosen baselines run counter to these changes:

CAR ODS vs.1 technology bias in boundary:

	Foam		Refrigerants	
	baseline CFC destroyed	**Project emissions**	**baseline CFC destroyed**	**Project emissions**
HFC, HCFC	HCFC-141b all HFCs included	excluded	HCFC-123, all HFCs included	HCFC-22 excluded
Non GWP/ODP	n/a		n/a	only large systems majority excluded

The table does not reflect some differences between the US version and the Imported ODS protocol.

5. Corporate bias

The impact of CAR ODS vs.1 described so far would not be entirely clear without assessing this in light of the Waxman-Markey bill section 619 on Hydrofluorocarbons (HFCs):

> *To provide compliance flexibility, allowances may be banked and offsets may be created through the destruction of CFCs and halons, with credit equal to 80% of the carbon dioxide equivalency of the destroyed compound.*

The phase-out schedule for HFCs stretches to 2038. This long period assures that HFCs use continues while these are already replaced in refrigerants and in foam blowing agents in most OECD countries. Importing ODS and offsetting per CO_2e the domestic use of HFC further reduces the minor relevance of this HFC phase-out schedule.

The production of HFCs is dominated by two large corporations in the US, which are represented in the CAR workgroup on ODS. It should be of concern to CAR that this level of corporate influence on offsetting rules invites "retaliatory" offsetting rules in future emissions trading systems. A race to the bottom between offsetting rules could appear. The quality of offsetting credits affects prices for these credits.

CAR ODS vs.1 protects these corporations by:

- avoiding the HFC replacement in other OECD countries
- avoiding non-HFC substitutes
- avoiding foam blowing substitutes
- excluding non-GWP/ODP substitutes from the baseline
- maximizing the import of ODS to the US
- minimizing demanufacturing capacity to appear in Article 5 countries

GTZ-Proklima suggests that the Climate Action Reserve changes the core aspects of the ODS protocol because it would invariably reduce any claim on environmental integrity of the CAR scheme. Boundary and baseline are evidently chosen for other reasons than the impact and relevance of CAR offsetting.

The CAR ODS protocol in the November form does lasting damage to all emissions trading schemes besides giving reason for other schemes to exclude CRTs.

At present it reverts certain Montreal Protocol impacts and ultimately increases HFC emissions in the US and in Article 5 countries.