GREENPEACE Briefing

Greenpeace position on f-gases (HFCs) in the Copenhagen deal

Background

F-gases include CFCs, HCFCs, HFCs, PFCs and SF_6. Three of these, chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs) are widely usedaround the world in refrigeration and air-conditioning, as refrigerants and as insulation foam blowing propellants.

- Most F-gases are potent greenhouse gases. CFCs and HCFCs also deplete the ozone layer;
- Under the terms of the 1987 Montreal Protocol, CFCs are to be phased-out globally by 2010. CFCs have been primarily replaced by HCFCs and HFCs;
- In September 2007 Montreal Protocol agreed to an accelerated phase-out of the use of HCFCs in industrialised countries by 2020, and in developing countries by 2030;
- HFCs are currently not regulated by the Montreal Protocol but are included in the Kyoto Protocol basket of greenhouse gases.

There are HFC-free alternatives to HCFCs in most applications. However, the commercial and political influence of the chemical industry means unless legislation to phase out HFC use is agreed, there is a significant risk they will dominate the global market for HCFC replacements.

The vast majority of HFCs are super greenhouse gases with very high global warming potential. For example, kilo for kilo, HFC-134a, the most widely used HFC, has 1,430 times greater global warming potential than CO_2 (on a 100 year time span). The global warming potential of HFC-134a, on a 20-year time span, is 3,830 times greater than that of CO_2.

Most recent studies indicate that the climate risks from HFCs are rising rapidly. The use of HFCs and their release to the atmosphere is now accelerating at a time when emissions from all greenhouse gases must be drastically reduced. Among the findings are the following:

- The IPCC-TEAP & SRES[1] scenarios significantly underestimated 2007 HFC emissions and future HFC emission trends;

- Furthermore, even under the worst case scenario, where both CO_2 and HFC emissions continue on a business as usual trajectory, the annual global warming impact of Kyoto F-gas emissions would grow significantly in proportion to total greenhouse gas emissions. A 2009 Greenpeace-commissioned study[2] indicates that under such dire circumstances, HFCs, PFCs and SF6s emissions will expand from their current 1% of total greenhouse gas emissions to about **5.9% (GWP_{100}) /7.9%(GWP_{20})** of total greenhouse gas emissions (Co2, CH4, N2O) by 2050.

- New scientific evidence[3]shows that uncontrolled HFC emissions will represent a large percentage of all global warming pollution by mid-century. The scientists compared the

[1] [1]IPCC/TEAP special report on safeguarding the ozone layer and the global climate system: issues related to hydrofluorocarbons and perfluorocarbons Intergovernmental Panel on Climate Change, Bert Metz, United Nations Environment Programme. Technology and Economics Assessment Panel Cambridge University Press, 2005

[2] Oko- Recherche 2009 Projection of global emissions of fluorinated greenhouse gases in 2050

[3] Velders et al 2009,,www.pnas.org_cgi_doi_10.1073_pnas.0902817106 (June 2009)

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global warming impact of growing HFC emissions to several CO_2 reduction scenarios. Their analysis shows that, if left unchecked, HFC emissions could equal **45%** of the climate impact of **CO_2 atmospheric concentration** in **2050**, thus potentially counteracting a large part of the global effort to de-carbonise the energy sector.

- Developing country HCFC use is larger today than the historical peak use of HCFCs in industrialized countries, and HCFC use is still growing. This means that there will be a massive demand for HFCs should they become the primary replacement for HCFCs;

- Growing HFC emissions could counteract the substantial net climate benefits of the phasing out of CFCs and HCFCs under the Montreal Protocol.

The catastrophic implications of such scenarios is unthinkable and is a clear indication that these gases must be dealt with immediately- which is entirely possible, given the wide range of alternatives available right now.[4]

If the majority of HCFCs are replaced by HFCs currently dominating the global market, there will be extremely negative climate impact. If, however, HCFCs were replaced by natural refrigerants and foam blowing agents that have low or zero global warming potential, the climate benefits of the accelerated HCFC phase out could be enormous.

Natural refrigerants are non-synthetic chemicals such as propane, isobutane, propylene, ammonia and carbon dioxide. There are proven and commercially available technologies using natural refrigerants for most cooling applications including domestic, commercial and mobile air conditioning and refrigeration. Typically, systems using natural refrigerants are equal to, or more energy efficient than those using HFCs, and they are less expensive to operate.[5]

There are additional measures that need to be taken to reduce the global warming impact of cooling technologies. Among many others, these include: enhanced energy efficiency of refrigeration and air conditioning equipment; intelligent design and construction of buildings to reduce cooling demand; and district cooling.

Greenpeace position

1. **HFC phase out by 2030, at the latest:** Greenpeace calls for immediate action to ensure overall greenhouse gas emissions peak no later than 2015, and decline rapidly thereafter reaching as close to zero as possible by mid-century.

Phasing out HFCs is part of this challenge. Massive uptake of HFCs worldwide as replacements for HCFCs must be avoided. HFCs must be phased out in industrialised countries by 2020, and in developing countries by 2030, at the latest.

The HFC phase-out should be synchronised with HCFC phase out dates, to provide incentives for a direct shift from HCFCs to sustainable alternatives. A combination of phase out targets, financial incentives, technology cooperation and capacity building is needed. Governments must set progressive restrictions on the use of HFCs to encourage the uptake of low climate impact technologies. This will guide industry in both industrialised and developing countries towards the uptake of presently available technologies that use natural refrigerants and insulation foam blowing agents. It will further guide industry towards intensified research and development of

[4] This doesn't even include the emissions from deforestation and land use

[5] For more examples, see: Greenpeace. 2008: Cool Technologies: Working Without HFCs: Part Two. Examples of HFC-free Cooling Technologies in Various Industrial Sectors. www.r744.ccom/files/news/greenpeace_report.pdf

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additional HFC-free alternatives.

2. **Phase out must be coordinated between the UNFCCC and the Montreal Protocol:**

The UNFCCC and the Montreal Protocol both have important collaborative roles to play in the phase-out of HFCs. Both bodies may require adjustments to enable the collaboration needed.

3. **HFC emission reductions should remain the responsibility of the UNFCCC:**

- HFCs should remain within the regulated basket of gases under the UNFCCC and an HFC phase-out must be incorporated in the Copenhagen agreement.
- HFC emissions must remain included in the greenhouse gas emission inventories of industrialised countries.
- Developing countries should register their HFC restriction and phase-out policies and measures as part of their Nationally Appropriate Mitigation Actions (NAMAs). Industrialised countries must provide the necessary funding for the implementation of NAMAs.
- Greenpeace opposes the inclusion of HFC emission reductions in developing countries in the carbon market.

4. **Montreal Protocol to support phase out of consumption and production of HFCs:**

The Montreal Protocol should act as a key facilitating body for limiting the production and consumption of HFCs around the world, through technology development and cooperation and capacity building. The funding policies of the Montreal Protocol must ensure that the Multilateral Fund of the Montreal Protocol will no longer fund HFC projects.

5. **Action to prevent emissions from banked f-gases:** Greenpeace also calls for financial resources to be secured by the international community for the establishment of a global network for recapturing and safe destruction of ozone depleting substances and HFCs stored in products and equipment. These so-called 'banks' of CFCs, HCFCs and HFCs contain many billion tons of CO_2-e that will otherwise be inevitably released into the atmosphere.

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