

Summary of the HFC Inventories prepared by the United Nations Development Programme (UNDP) for the Climate and Clean Air Coalition to Reduce Short-lived Climate Pollutants (CCAC)

The context of the UNDP Surveys

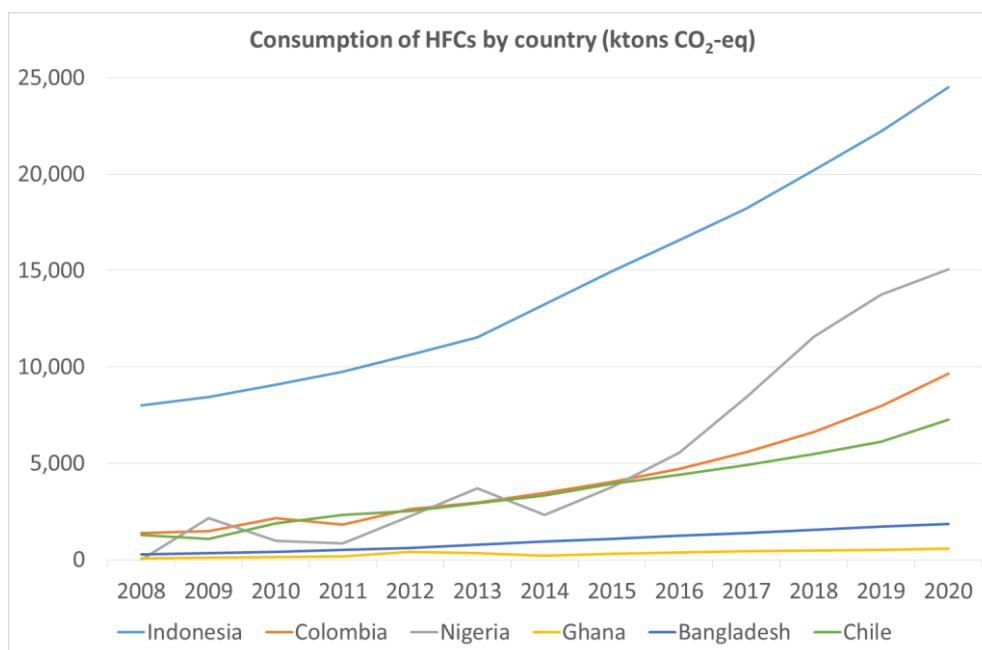
One of the main challenges facing many developing countries with respect to taking actions on HFCs has been the relatively limited data on HFC use and projected demand in these countries. To help remedy this situation, the HFC Initiative of the CCAC instigated national level inventories in 14 developing countries to record current and projected future use of HFCs, as well as to outline opportunities to avoid growth in high global warming potential (GWP) HFCs.

As of July 2016, six of these inventories have been completed with the help of UNDP, namely in Bangladesh, Chile, Colombia, Ghana, Indonesia and Nigeria. This exercise not only provides the countries with useful information and analysis to assess their situation, but also highlights the key sectors wherein HFC use exists and is growing in a variety of developing countries.

The remaining eight inventories conducted by the CCAC – in the Bahamas, Cambodia, Jordan, Kyrgyzstan, the Maldives, Mongolia, South Africa and Vietnam – are planned to be completed by October of this year. Since initiating these inventories, the Montreal Protocol’s Multilateral Fund has approved similar surveys in 129 developing countries. The pioneering work of the CCAC’s Initiative in undertaking the 14 inventories, including the various methodologies used, should significantly facilitate the work of the Multilateral Fund, the agencies and the countries in this regard.

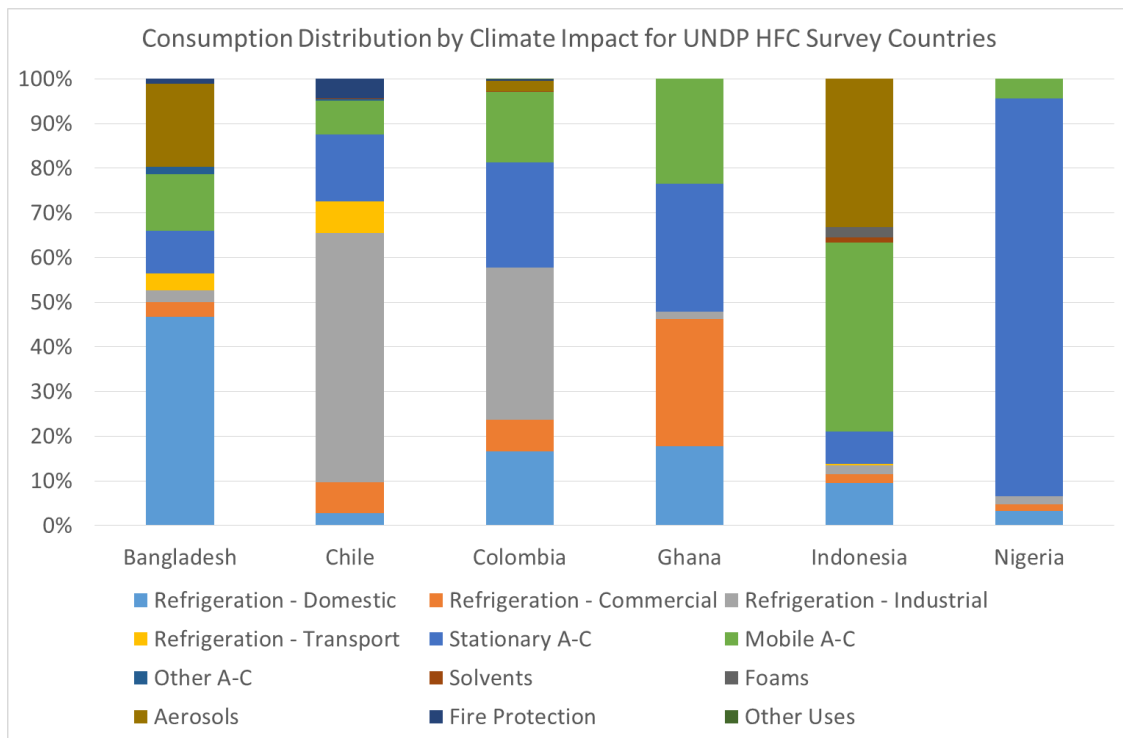
Consumption of HFCs across the six countries surveyed by UNDP

The consumption of HFCs was assessed from 2008 and projected to 2020. Since the conduct of the HFC surveys spreads across the period from 2013-2015, the split of ‘actual vs. projected’ data also varied from survey to survey with actual data being available to 2012 in some cases, but 2014 in others. The overall assessment of consumption is shown in the following graph:



Trends in HFC Use Patterns

The following graph illustrates the range of uses covered for each country and the proportional variation observed. It can be seen that patterns of use vary substantially between countries, even taking into account that there may be some differences in interpretation of the distinction between commercial and industrial refrigeration.



In the domestic refrigeration sector, HFC-134a dominates consumption, whereas in the commercial and industrial refrigeration sectors R-404A, R-410A and R-507A are more significant refrigerants. Both R-404A and R-507A have considerable proportions of HFC-143a (GWP 4,470) in their respective compositions making them particularly burdensome on the climate. For the stationary air conditioning sector, R-407C and R-410A are highly significant refrigerants across most countries surveyed. For mobile air conditioning, HFC-134a once again dominates, although there is particular use of R-437A in Colombia. Aerosols are typically propelled by HFC-134a, where these are manufactured (most notably Bangladesh & Indonesia). Finally, where the electronics industry is active (e.g. Indonesia), there are a range of solvents in use. Hydrofluoroethers (HFEs) are a sizeable proportion of this consumption and these have been included in this analysis because of their significant GWP (213 on average).

Conclusions from the Inventories

- It has proved possible to accumulate sufficient information on HFC usage from formal and informal sources in each country to justify and validate the CCAC Initiative
- Substantial growth in HFC usage is anticipated in the period to 2020 for most countries
- A standardised demarcation of sub-sectors would be helpful in ensuring a consistent approach leading to more easily comparable data for future surveys
- Where manufacturing is occurring to generate products for re-export (e.g. domestic refrigeration and aerosols), the choice of technologies will be increasingly influenced by attitudes to HFCs in those markets