POLICY BRIEF

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Promoting Low-GWP Refrigerants through Public Procurement

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Introduction

Hydrofluorocarbons (HFCs) are greenhouse gases that are widely used as refrigerants in air conditioning and refrigeration applications. Following the Kigali amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer in 2016, HFCs will have to be phased down from all applications in India from 2028 onwards. For India to be ready for this transition, it is vital to create and encourage a marketplace for low global warming potential (GWP) refrigerants right now so that they will be widely available by the time India's transition schedule begins. Early transition to low-GWP refrigerants will also bring associated benefits of climate mitigation and energy-efficiency improvements in some applications.

Public procurement can be an important tool in enabling this transition, as it would help bring down the cost of currently expensive technologies that use low-GWP refrigerants. For example, air-conditioners (ACs) that use R-290 as a refrigerant are among the more expensive room ACs in the market in this range.

This policy brief highlights the role of public procurement and its importance in promoting climate-friendly refrigerants in the public sector in India, particularly through the example of low-GWP refrigerant ACs.

Relevance of public procurement to sustainability

Public procurement can be loosely defined as the purchase of goods and services by the public sector. According to World Bank data, India procures 20% of its gross domestic product (GDP) publicly.[1] Some departments like the Indian Railways spend as much as 50% of their annual budgets on procurement.[2] Government spending of such magnitude can direct and influence consumer and market behaviours. It is safe to infer that public procurement is a key economic activity of governments that can offer a host of advantages, depending on their modalities. For example, the Ministry of Commerce and Industry, Government of India recently issued Public Procurement (Preference to Make in India), Order 2017 to encourage employment and income generation in the country. This order is a nod to the government's Make in India programme and prescribes that preference be given to local suppliers wherein local content shall amount to 50%, where applicable.[3]

Similarly, **Green Public Procurement** (GPP) is a way to encourage the use of environment- friendly technologies such that there is growing awareness of, and familiarity with, the said technology, it encourages the sale of less known or more expensive environment-friendly options, and it also supports greater innovation by providing incentives, and signals, to industry at large. GPP refers to the purchase of goods with a reduced environmental impact throughout their life-cycle when compared to goods, services,

and works with the same primary function that would otherwise have been procured.[4]

GPP policies may be instrumental in meeting environmental targets both at home and abroad.[5] Various principles could be adopted to direct Green Procurement Policies in order to reap the various advantages of environment-friendly technologies. These range from bringing down market costs for spurring innovation in such sectors, to simply internalising the environmental costs of government-procured goods and services and ensuring longer-term sustainability of the products being used. For instance, in 2008, the Indian Railways procured 1.41 million high-quality CFL (compact fluorescent light) bulbs for use in its employees' residential colonies, and the cost of the bulbs was recovered through the sale of certified emission reductions (CERs) after registration as a Clean Development Mechanism project.[6]

Life-cycle cost assessment is the most common criterion for GPP, since most public procurement agencies accept the lowest price bids. In addition to the purchase price, operating costs, and associated costs, life-cycle cost assessments take into account end-of-life decommissioning and disposal costs, energy savings (if any), as well as externalities such as greenhouse gas emissions and raw materials used, thereby ensuring that green products can compete with other products on a level playing field.

Countries like the United States, Germany, and Japan have been leading efforts to increase GPP. Nevertheless, there are many perceived barriers to GPP. Some governments find the increased capital expenditure to be a roadblock, while others have highlighted issues like lack of suppliers, inadequate monitoring mechanisms, and lack of incentives to make life-cycle assessments of goods and services purchased.[7]Another significant challenge is the lack of national standards for some products.

Public procurement by the Indian government

Public procurement by all the ministries and departments of the Central government is done in accordance with the General Finance Rules (GFR), with the latest iteration being the 2017 Rules. The GFR lays down the general principles governing all public procurement:[8]

1. The description of the goods or services required should be objective, functional, generic, and measurable and should specify technical, qualitative, and performance characteristics. It should also not indicate a requirement for any particular trademark, trade name or brand.
2. Where applicable, the technical specifications should be based on the national technical standards (those specified by the Bureau of Indian Standards), and in their absence, should be based on the relevant international standards.
3. Generally, the winner of the bid is the seller meeting all technical prerequisites and offering the lowest price for the required quantity of goods or services required.

For many commonly used products, the government has set up the "Government e-Marketplace" portal to facilitate procurement by government departments. Use of the e-Marketplace has been made mandatory for Central government bodies for the procurement of goods and services available within certain monetary limits. Vendors (original equipment manufacturers or OEMs) are pre-verified and can list their goods on the -Marketplace. ACs are included in the list of goods available in the e-Marketplace.

Green refrigerants in public procurement

Since refrigerants are entirely dependent on the AC system in use, the type of refrigerant used in a system will be locked in at the time of the purchase or installation of the AC system. As India phases out the use of ozone-depleting refrigerants, many government departments and buildings will have to shift to new AC systems, thereby creating an opportunity for these departments to adopt green cooling technologies. Instead of moving to HFC-based technologies, leap-frogging to climate-friendly refrigerant-based technologies offers many benefits. When refrigerant transition happens along with energy-efficiency improvements, the emissions benefit doubles as opposed to either policy taken in isolation.[9]

In 2013, the Ministry of Finance updated its procurement policy to include a minimum energy-efficiency requirement for some types of electronic equipment. Under the new policy, all split ACs that are anticipated to be used for more than 1,000 hours under normal conditions must be 5-star, while all other ACs have to be 3-star and above.[10] However, there are no specific criteria requiring or prohibiting the use of any particular type of refrigerant.

The Government e-Marketplace lists "eco-friendly refrigerant" among the product specifications that

may be included by purchasing government departments when selecting an AC.[11] However, there is no clarity on how the e-Marketplace defines "eco-friendly" and whether this refers to only low-GWP refrigerants, and if so, whether R-32-based ACs would be included in this category.

Bulk procurement by the government

While public procurement is normally meant for products and services where the government is the consumer, "bulk procurement" is a type of public procurement where the government is not the final consumer. It is a type of demand aggregation policy, where the government body procures a large quantity of a certain type of product at a price per unit that is lower than the prevailing market rates and thereafter sells the product to consumers, thereby reducing market prices over time.

The Energy Efficiency Services Ltd (EESL) is a government company that operates on this model. It has previously had some success in bringing down the prices of LED (light emitting diode) bulbs by inviting bids from manufacturers and then retailing them to customers at a price that was lower than the prevailing market prices. According to EESL, its bulk procurement scheme has led to a reduction in the prices of bulbs from INR 800 to INR 200 per bulb (between 2012 to 2016), resulting in one of the fastest LED price reductions in the world and contributing to LED bulbs increasing their market share by 15%.[12]

In view of this success, EESL has replicated this programme for super-efficient ACs. ACs with an Indian Seasonal Energy Efficiency Ratio (ISEER) rating of 5.2 and above currently have a very low uptake in India due to their high cost. The largest percentage of ACs purchased in India tend to be 3-star (having an ISEER rating of 3.50 to 3.99), which means that the electricity demand on the grid and the bills paid by customers are higher than they need to be. However, since the upfront cost of 5-star ACs is higher, many customers may choose to purchase less energy-efficient ACs. Assuming that consumers tend to use ACs for anywhere between five to 10 years, HFC emissions resulting from refrigerant leakage and poor servicing practices could be avoided by encouraging the purchase of low-GWP ACs.

While the Bureau of Energy Efficiency (BEE) has a programme to increase the ISEER rating of the star categories every two years aimed at gradually enhancing the energy efficiency of products, some experts feel that greater gains could be realised by speeding up the process through other incentives or targeted programmes for customers.[13] Hence, the EESL programme hopes to bring down the cost of super-efficient ACs and to make them competitive, so that they are at par with the cheaper 3-star ACs available in the market.

However, not all super-efficient ACs contain low-GWP refrigerants, as was evidenced by the conclusion of the EESL tender. The tender for 100,000 super-efficient ACs did not include any additional technical specifications regarding the GWP of the refrigerant, since this was the first tender of its kind and EESL wanted to ensure that there would be sufficient competition. The lowest bidder for the tender was Panasonic, offering R-410A-based ACs at INR 35,000, followed by Daikin, which quoted INR 41,000 for R-32-based ACs, and Godrej, offering R-290-based ACs at INR 51,000.[14] Since the remaining bidders were given an opportunity to match the lowest bid, Godrej was able to match Panasonic's quoted price; it will supply 25% of the tender, while Panasonic will supply 75%.

In the future, EESL may consider including low-GWP refrigerant criteria to ensure that the super-efficient ACs being procured are also climate-friendly.

Policy recommendations and conclusion

While life-cycle cost assessment is considered to be the most thorough method of assessment for GPP, it can be technically challenging to implement given the complexities of the multiple tiers of assessment. Some other climate-friendly procurement policies that may be less technically cumbersome to implement are:

1. Specifying the type of refrigerant in the system that will be open for bids. For example, all split ACs that are procured could limit the bids to R-32- or R-290-based refrigerants only (that meet the requisite national standards).
2. Specifying a maximum GWP level for refrigerants used in the AC system. In such cases, the manufacturer would be free to use any refrigerant or blend as long as it meets the prescribed GWP criteria.
3. Requiring the manufacturer to take back old AC equipment at the end-of-life and specifying that disposal of the equipment must include recovery (and/or destruction) of the refrigerants.

4. Specifying that when seeking procurement of AC servicing, bid criteria should include good service practices as developed by the Ozone Cell of the Ministry of Environment, Forest and Climate Change, Government of India.
5. Instead of specifying criteria such as the minimum technical requirements for all vendors, a preferential policy for goods that meet environmental criteria could be put in place. Bids that meet such criteria would be would be favoured above the lowest bids, within a margin of 10-20% of the lowest bid amount.

While such policies would signal the government's intention of meeting its environmental commitments to the industry at large, it is important to recognise two possible downsides to such policies as well:

- **Insufficient number of competitors:** There may be insufficient competition, as only a few manufacturers of such products exist. This problem may be resolved by notifying manufacturers ahead of time about the proposed implementation of such policies, in order to give them sufficient time to meet the criteria.
- **Higher costs:** Costs to the procuring authority may increase if such technical criteria are made compulsory. However, since many low-GWP refrigerants also provide energy-efficiency gains, any upfront expenses will eventually result in energy savings down the road. As an added measure, a minimum ISEER rating of 5 could be added as a technical requirement to ensure that the equipment is highly energy efficient.

In addition to BEE's star labelling programme and EESL's bulk procurement scheme, GPP can kick-start growth in the low-GWP AC market. This is especially true given that public procurement constitutes a significant portion of the country's GDP. While there are certainly important issues to consider like the additional cost to the exchequer or the relative unpreparedness of the vendors in complying with such policies, the benefits that India stands to gain are immense. Apart from the climate-change and energy-efficiency benefits, such a programme could also drive innovation in green technologies.

Endnotes

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4 Some countries prefer "sustainable public procurement" which seeks to balance economic, social, and environmental needs when procuring goods and services by inclusion of considerations such as promoting equal employment opportunities, improving labour conditions, and ensuring social inclusion of vulnerable persons.
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