

PUBLIC PROCUREMENT OF EFFICIENT AIR CONDITIONERS

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AGENDA



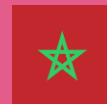
Public Procurement Definition



EPP Implementation Strategies



Success Story: India E-SEAC



Case Study from Morocco



Case Study from Brazil

PUBLIC PROCUREMENT

- Bulk purchasing involves large orders of the same item which enables economies of scale and allow manufacturers to reduce the unit price
- Buyers' clubs increase the benefits of bulk purchase via price reduction and better quality of standardized products
- Public procurement is one form of bulk purchasing that enables large volume and provides manufacturers with the volume needed to supply products in quantities that will transform the market towards sustainable climate-friendly technologies
- Organizing public or private bulk procurement or buyers' clubs is may overcome barriers to create and aggregate demand and get access to climate-friendly cooling technologies
- Sustainable public procurement achieves value for money on a whole life-cycle basis in terms of generating benefits not only to the organization, but also to society and the economy, whilst significantly reducing negative impacts on the environment – UNEP 2017

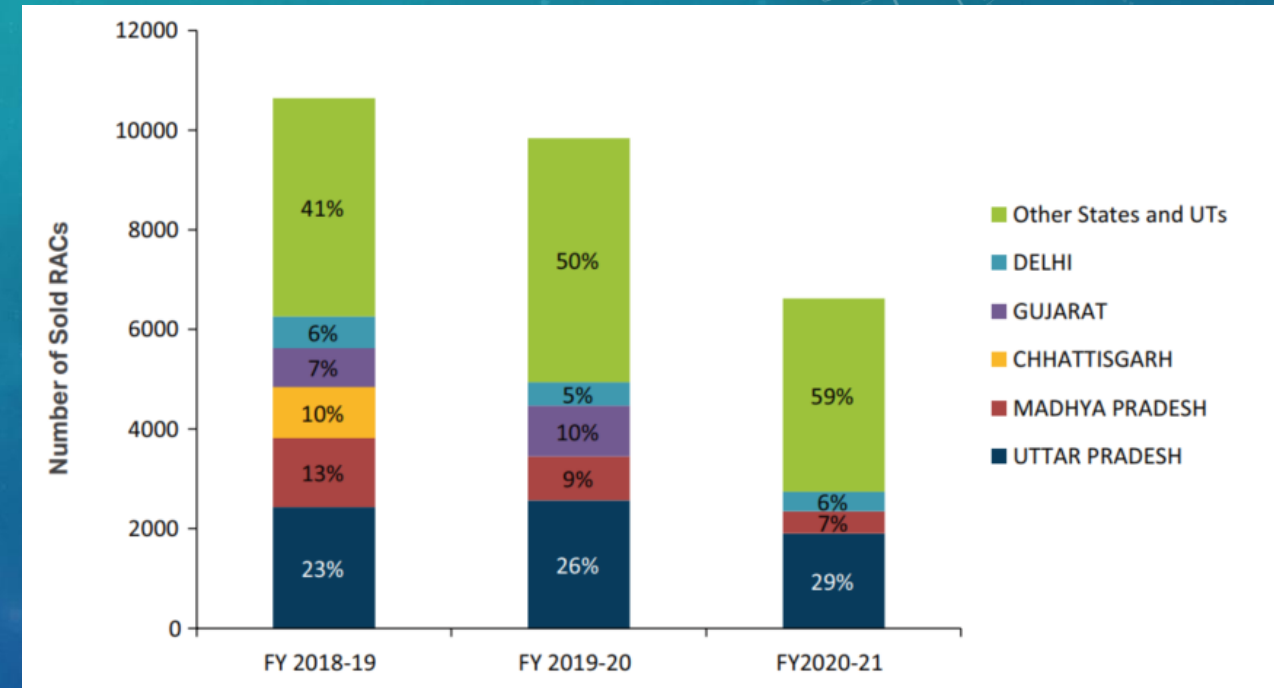
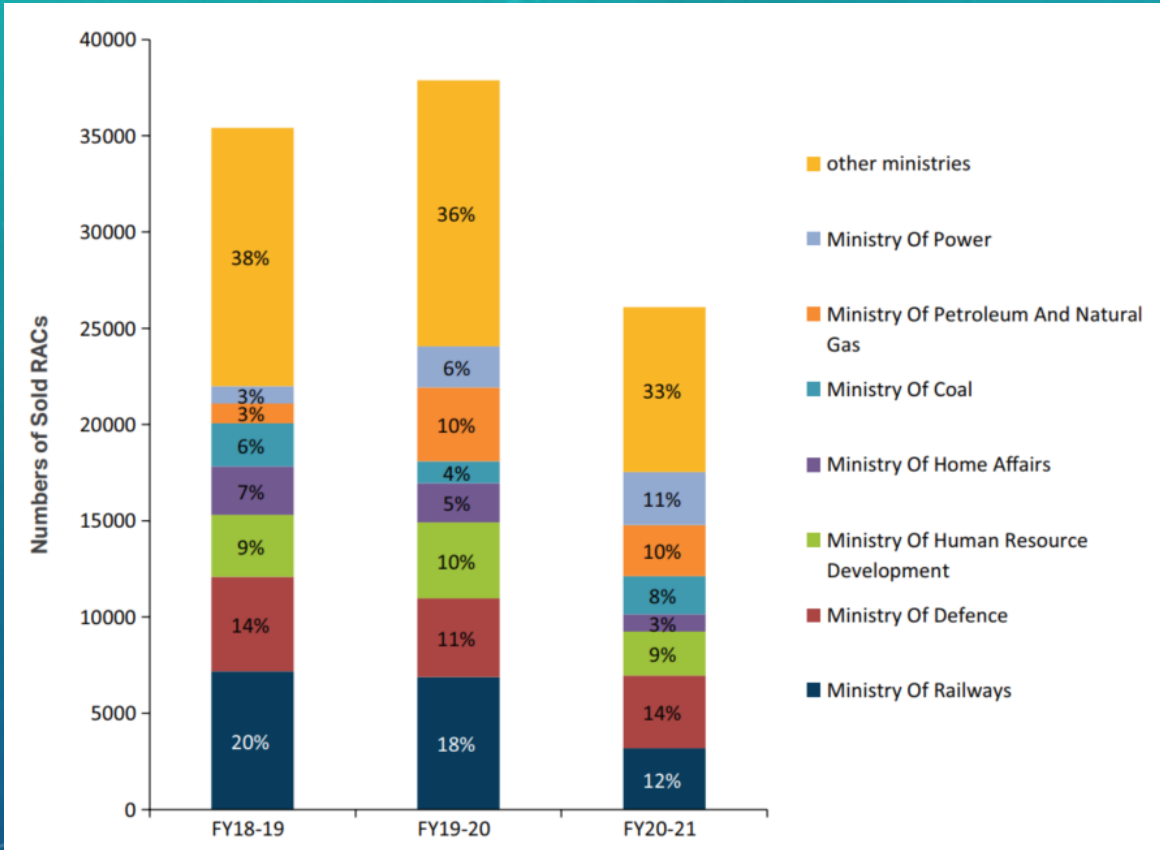
IMPLEMENTATION STRATEGIES

- Identify market with largest potential – include all subsectors
 - Government/federal buildings and offices
 - Universities/Schools
 - Banks
 - Hospitals
 - Other, ...
- Develop/assign centralized procurement agency; ensuring fair and competitive bidding
- Work with experts and stakeholders to define target specifications (cost effectiveness, climate friendly)
- Work with RAC OEMs and suppliers to identify the required volume to induce substantial discounts
- Identify financing mechanisms (federal loans, on-bill financing, on-wage financing, etc.) to enable the required purchase volume
- Seek international support (MLF: Ozone Unit, gef, etc.)
- Long-term plans for continuous specification updates towards lower carbon footprint and better affordability

ENERGY EFFICIENT PUBLIC PROCUREMENT



SUCCESS STORIES: INDIA – PUBLIC PURCHASING POWER



<http://ozonecell.nic.in/wp-content/uploads/2021/09/Public-Procurement-Report.pdf>

SUCCESS STORIES: INDIA

- Energy Efficiency Services Limited (EESL) launched the Super-Efficient Air Conditioners (SEAC) program by using competitive bidding and bulk procurement to overcome the high cost associated with efficient Acs
 - Phase-I (2017) tender floated with mentioning the requirement of AC units of 1.5 TR with non-ODS technology and $ISEER_{min}$ 5.2
 - Awarded to 2 manufacturers for a total of 100,000 units with 30% discount
 - 40% of the SEACs procured were with low-GWP refrigerant (HC-290)
 - Phase-II (2019) increased the minimum ISEER to 5.4 and added a clause for low GWP(<700) requirement with target of 50,000 units in the retail sector

KEY STRATEGIES TO CONTROL COST BY EESL

Procurement done through competitive bidding

Bulk purchase to reduce the cost/piece

Partnership with banks to provide further discounts

Availability of 0% EMI option

Application of ESCO model for institutions i.e., sharing a portion of the bills with institutions

Engagement of city DISCOMs to promote the use of RACs to their customers

Demand aggregation

Buy back programs for retail consumers

<http://ozonecell.nic.in/wp-content/uploads/2021/09/Public-Procurement-Report.pdf>

ENERGY EXPENDITURE AND EMISSIONS SAVINGS POTENTIAL

Stars Rating	GeM data (FY 2019-20) Number of Units	Annual Electricity consumption (MWh)	Annual Cost of electricity (Lakhs INR)	Annual Indirect emissions (tCO ₂)
1 star	233	297.08	14.85	243.60
2 star	576	691.20	34.56	566.78
3 star	16518	18665.34	933.27	15305.58
4 star	885	858.45	42.92	703.93
5 star	21140	18391.80	919.59	15081.28
Total	39352	38903.87	1945.19	31901.17
Scenario-I (All 5 star)	39352	34236.24	1711.81	28073.72
Savings in scenario-I		4667.63	233.38	3827.45
Scenario-II(All 5.4 ISEER rating)	39352	29789.46	1489.47	24427.36
Savings in scenario-II		9114.40	455.72	7473.81

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CASE STUDY IN MOROCCO BANKER'S AC BUYERS CLUB

- Why Morocco?
 - Strong advocate of the Kigali Amendment and its energy efficiency provision
 - BMCE Bank of Africa's and l'Agence Marocaine pour l'Efficacité Energétique's (Moroccan Agency for Energy Efficiency -- AMEE) are also motivated to leap-frog from high global warming potential (GWP) and ozone depleting HCFC-22 refrigerant directly to super-efficient RACs using next-generation lower-GWP refrigerants
- EESL and TERI, IGSD provided support and held a buyers club organizing meeting in Casablanca with BMCE Bank of Africa
 - BMCE Bank of Africa believe that finance has an essential role in building a sustainable, positive, and inclusive economy
 - BMCE Bank of Africa has operations in 31 countries including 20 African countries, which will be important as the Buyers Clubs success in Morocco is expanded throughout Africa and beyond

MOROCCO BANKER'S AC BUYERS CLUB PROGRESS

- Analysed current practices and found that purchased RACs are:
 - Inefficient
 - Badly installed
 - Poorly maintained with dirty heat exchangers that further increase energy use
- Developed a comprehensive and localized (EL-LCCP) that accounts for the effect of temperature on the carbon intensity of electricity delivered to RACs
- Identified suppliers of super-efficient RACs willing to supply equipment once the market is ready
- Designed a test procedure to compare current purchased technologies and practices against super-efficient environmentally friendly RACs that are properly installed and maintained
- Organized the replacement of all older RACs with new specifications under proper end-of-life management (e.g. recovery and destruction of ozone-depleting greenhouse gas refrigerant)
- Reached out to the Morocco Hotel Managers Association to recruit additional buyers
- Explored the economic and environmental feasibility of collecting HCFC-22 and HFC-410A from the mass replacement of RACs for destruction in local cement kilns
 - Profitable for entrepreneurs
 - Significant to climate protection and synergistic in contributing to Morocco's NDC

PILOT PROJECT IN MOROCCO – ATM RAC

Quantity requested	TBD based on the number agreed by banks
Included	RAC system and hardware necessary for basic installation (e.g. up to 5 meters separation of inside and outside units), basic installation by trained technicians
Available at specified additional cost	Additional time and materials if an installation is not basic (e.g. a specified additional cost at X\$/linear foot if needed)
Cooling capacity	As determined by local climate, frequency of entry and exit, and ATM room size and construction (solar orientation, windows, and insulation)
Minimum efficiency	TBD after consultations with likely local and global sources
Maximum Global Warming Potential (GWP)	<700
Allowed refrigerants	Available: HC-290 (GWP=3), HFC-32 (GWP=675) Soon to be available: R-452B (GWP=676)
Safety	Maximum charge and safety according to relevant safety standards specified in the tender (ISO, UL, ASHRAE, etc.)
Minimum warranty	3 years all inclusive, non-transferable
Minimum Bids	Two are recommended. If superior technology is only available from one source, it may be possible to negotiate a bulk purchase at a favourable price even without competition.

CASE STUDY: BRAZIL AC MANUFACTURER'S BUYERS CLUB

- Financed BY K-CEP to support energy efficiency policy and market transformation of the AC market
- implemented by Instituto Clima e Sociedade (iCS)
 - Organized a coalition with AC manufacturers, industry associations, academic institutions, testing and government energy policy authorities, and environmental and sustainability NGOs
 - Leveraged IGSD's Byers Club experience
 - Expert advice, hired by the project, from Lawrence Berkeley National Laboratory (LBNL) and the Collaborative Labeling and Appliance Standards Program (CLASP)
- Reached a consensus in October 2019 to transition from EER to CSPF
 - ISO 16358:2013 using three test points (35°C full load, 35°C half load and 29°C half load)
 - Metric to be formalized by The Brazilian regulatory agency that evaluates AC products manufactured in or imported to Brazil

CASE STUDY: BRAZIL AC MANUFACTURER'S BUYERS CLUB

- Proposed new levels of energy efficiency labelling based on new energy efficiency test metrics (start as voluntary labels)
 - Stakeholders are discussing how voluntary labelling can evolve into a mandatory labelling integrated with the new MEPS
- Initiated discussions on organizing and scaling up the manufacturer's buyers club with banks
 - Santander bank has led the process and helped to assemble a pool of Banks in order to reach minimum number of units to be replaced to enable lowering the price of new units
- Initiated discussions with the Brazilian Climate Change Forum on required AC specifications required to support Brazil's NDC
- Investigated how to specify super efficiency and lower GWP units in procurement of ACs financed by the utilities, using Brazilian utilities obligation law
- Working on improving the availability of R-32 technology at a wider range of cooling capacity and promoting the training and certification of proper installation and availability of parts and refrigerants for servicing

COMMERCIAL REFRIGERATION – BULK PROCUREMENT EXAMPLE FROM EPTA

- In 2014, Epta, worked with Lidl to develop the Sound Top by Costan, a plug-in unit that fulfilled their strict requirements on refrigerants and energy efficiency
- Specifications:
 - Use of propane as a refrigerant
 - vertical display of products that could be placed on top of an existing horizontal display unit to maximise the use of space in the stores
- Challenge – adhere with safety requirements: 150 g refrigerant charge
- Solutions:
 - Improve energy efficiency: better insulation using doors with triple glass and better cabinet design using polyurethane foam with natural blowing agent, using LED lighting, high efficiency fans and doors without electric heating
 - Optimize heat exchanger and system component to minimize refrigerant charge



COMMERCIAL REFRIGERATION – BULK PROCUREMENT EXAMPLE FROM EPTA: IMPACT

- 500 units installed in stores throughout Europe in the first round
- Product made available to other supermarkets
- Further improvements to the energy efficiency in following years → fifth version of Sound Top in 2018 with energy consumption reduction of 50% compared to the first version
- Enabling institutional infrastructure and capabilities: fully in line with regulatory requirements following roadmaps and phase-out plans imposed by authorities (F-Gas Regulations)
- Successful procurement programmes do not have to be public procurement programmes but can also be led by private entities
 - Once the product is developed for the initial client, all other market players can benefit from this new technology
 - Positive signal from the regulation and the ambitious environmental targets of the retailer led to the development of the such a unit, that was low-GWP, energy efficient and respecting the strict safety standard

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The background is split into two main sections. The left section features a light blue background with a dark orange bottom half, overlaid with several colorful envelopes (white, green, pink, blue) arranged in a descending staircase pattern. The right section is a teal-to-blue gradient with faint, circular technical diagrams and scale markings in the upper right corner.

THANKS!

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CRITERIA FOR DEFINING SPECIFICATIONS FOR ESEAC

Conventional Criteria	Core Criteria	Comprehensive Criteria
A. Safety and Performance		
Air conditioner shall conform to the requirements for quality, safety and performance prescribed in IS 1391 Revised /IEC 60335-2-40 (under preparation) and all other requirements specified in this standard. <u>Verification:</u> Certification (third party – accredited test agency) for compliance to be provided to the procurement agency.		
B. Product Noise		
Not necessarily included as a part of conventional tenders.	Air conditioner shall conform to the noise levels as notified under the Environment (Protection) Act, 1986 from time-to-time but not more than the limits specified under the standard issued by BIS (IS 1391 Revised). <u>Verification Instrument:</u> Certification (third party – accredited test agency) for compliance to be provided to the procuring agency	
C. Energy Consumption		
The information on ISEER of room air conditioners (RACs) is available in the public domain through the BEE’s portal. Products with higher ISEER, than prescribed by BEE 5-star are also listed. Therefore, depending upon the requirement, the comprehensive criteria shall be defined in a way only the best available technologies (in terms of ISEER) within the 5-star RAC models are selected. <i>For example:</i> <i>At present, the minimum qualification for 5 stars is ISEER 4.5 (variable capacity RAC). However, there are products available in the market with ISEER of 6.15 (1 TR), 5.6 (1.5 TR). There are 400 models registered under the BEE’s database of 5-star labeled variable speed air conditioners. At least 75</i>		

Conventional Criteria	Core Criteria	Comprehensive Criteria
<i>models from 12 brands registered, have an ISEER of 5 and above.</i>		
GeM recommends the purchase of star labeled air conditioners, however, it doesn’t specify the preferred star level for procurement.	The ISEER shall be not less than the value prescribed for a 5-star level as per norms specified by the Bureau of Energy Efficiency (BEE) from time to time. <u>Verification Instrument:</u> Approval letter from BEE for the qualification of the 5-star band and respective ISEER value.	The ISEER shall be at least 25% higher than that prescribed for a 5-star level as per norms specified by the Bureau of Energy Efficiency from time to time. <u>Verification Instrument:</u> Approval letter from BEE for the qualification of the 5-star band and respective ISEER value
D. Refrigerants		
GeM allows for manufacturers to specify if the air-conditioner has an eco-friendly refrigerant, but this is not a mandatory criterion and it is at the discretion of the procurement agency.	Refrigerants which are ozone-depleting and higher GWP as identified under the Montreal Protocol and/or Kigali protocol shall not be used in the manufacture or import of these RACs. The refrigerant should have Zero ODP. The Global warming potential (GWP) not exceeding 750 (100 years) ⁹ is recommended until a specific directive is issued by MoEFCC. <u>Verification Instrument:</u> Certification (self or third party) for compliance to be provided to the procuring agency.	

CRITERIA FOR DEFINING SPECIFICATIONS FOR ESEAC

E. Recycled plastic components		
		The product shall be designed to promote recycling, by utilizing recycled plastic components at least 80% percent by weight of plastic components in the product. <u>Verification Instrument:</u> Certification (self or third party) for compliance to be provided to the procuring agency.
F. Paint		
		Paints used in the product shall not contain heavy metals or

Conventional Criteria	Core Criteria	Comprehensive Criteria
		their compounds include mercury (Hg), lead (Pb), cadmium (Cd) and hexavalent chromium (Cr). <u>Verification Instrument:</u> Certification (self or third party) for compliance to be provided to the procuring agency
G. Packaging		
		The air conditioner shall be packed in such packages, which are made of recycled or biodegradable materials. Plastic packaging shall not contain halogenated hydrocarbon. <u>Verification Instrument:</u> Certification (self or third party) for compliance to be provided to the procuring agency.