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"Restrictions on import and use of RACHP equipment with high GWP and/or poor energy efficiency"

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OPTIONS FOR REDUCING THE SUPPLY OF RAC EQUIPMENT RELYING ON HIGH-GWP REFRIGERANTS

EXAMPLES FROM ALBANIA, NORTH MACEDONIA AND ARMENIA

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How to reduce HFC consumption?

1. Strengthening national policies and legal and regulatory framework for HFC reduction and their implementation

   - Legal and regulatory measures (laws, other legal acts)
   - Economic measures (import quotas, permits)
   - Control measures (bans of import of equipment)
   - Further development of national standards for safety in dealing with toxic or flammable refrigerants
   - Training of Customs and enforcement officers

2. Provision of trainings to RAC technicians

   - Operation of a certification scheme
   - Improving good servicing practices and reducing leakages
   - Recovery and recycling scheme

3. Promotion of low-GWP alternatives with climate benefits that align with the Kigali Amendment
   This approach minimizes environmental impacts, in particular impacts on climate, as well as meeting other health, safety and economic considerations.
   It also pays attention that elimination of HCFCs does not cause their replacement by high-GWP HFCs.

4. Engaging all relevant stakeholders
   and encouraging them to better integrate the HFC phase-down plan with their business plans.

At the same time, introducing measures to promote energy efficiency of products and equipment.

Possible regulatory measures

- Regulatory measures to prevent venting of HFCs during installation, servicing and decommissioning of RAC equipment (including establishing penalties for contraventions);
- Regulation requiring leakage checks for larger equipment based on HFCs (e.g., above 3 kg of refrigerant);
- Record-keeping practices (e.g., controlled substances and equipment logbooks for systems above certain charge);
- Regulation requiring the recovery of HFCs during servicing of RAC equipment;
- Mandatory recovery of HFCs from containers and equipment at their end-of life;
- Establishment of a code of practice for RAC technicians;

Possible regulatory measures (cont'd)

- Prohibition of import of HFCs in non-refillable containers;
- Mandatory labelling of containers/cylinders containing HFCs;
- Differentiated bans of installation of new systems using HFCs with high GWP;
- Bans of import, transit and export of HFCs and products and equipment containing and relying on HFCs from/to non-Parties;
- Mandatory certification scheme for RAC&HP specialists and companies; including sale of HFCs only to certified technicians and companies;
- Establishment of codes and standards for managing flammable refrigerants;
- Introduction of environmental tax for import of HFCs.

Import bans need to be carefully premeditated.

An assessment should be conducted on the market availability and accessibility of alternative technologies per sector and sub-sector and the impact on the economy, before deciding on the type of HFC-based equipment whose imports will be banned and the introduction date of the bans.

HFCs and blends in use in the RAC servicing sector in Albania by sub-sector and type of appliance and low-GWP alternatives in use and potential further alternatives

Sub-sector	Type of appliance	HFCs and blends used	Alternatives in use	Potential further alternatives
Domestic refrigeration		HFC-134a	R-600a	
Commercial refrigeration	Stand-alone	HFC-134a, R-404A, R-507A	R-600a, R-290	
	Condensing unit	HFC-134a, R-404A		R-600a, R290, R-744
	Centralized	HFC-134a, R-404A		R-448A, R-449A
Industrial refrigeration	Small- and medium-sized systems	HFC-134a, R-404A		R-744
	Large distributed systems	R-404A, R-507A		R-744
	Industrial chiller systems	HFC-134a, R-407C, R-410A		R-717
Transport refrigeration	Road vehicles	HFC-134a, R-404A		R-452A, R-744
	Trailers	HFC-134a, R-404A, R-507A		R-744
	Containers	R-404A		R-452A, R-744
	Fishing vessels	R-404A		R-448A, R-449A
Air-conditioning	Small-split	R-410, R-407C	R-32	R-290, broader use of R-32
	Large single and multi-split	R-410A	R-32	R-290, broader use of R-32
	VRF systems	R-410A, R-407C		R-32, R-446A, R-447A
	Ducted and packaged rooftop	R-410A , R-407C		R-32, R-744
Chillers	Small- and medium-sized	R-407C, R-410A	R-32	Broader use of R-32, R-446A, R-447A
	Large	HFC-134a		R-717
Heat pumps		R-407C, R-410A	R-32	Broader use of R-32, R-446A, R-447A, R-290
Mobile air-conditioning	Cars and small vans	R134a	R-1234yf, R-744	HFC-152a
	Large vehicles	R134a		HFC-152a, R-1234yf, R-744
	Buses	R134a		HFC-152a, R-1234yf, R-744

SWOT analysis for introduction of alternative refrigerants in North Macedonia

Strengths	Opportunities
• Smooth ratification of the Kigali amendment. • Operational ODS and HFC import licensing system. • North Macedonia has so far always been in compliance with its maximum allowable consumption of HCFCs. • Comprehensive legal framework for HFCs has been and will continue being introduced. • Government is showing support to the RAC sector, and climate and ozone-related commitments. • North Macedonia's NOU has gained large amount of knowledge and know-how during the implementation of the HPMP. • RAC technicians and secondary vocational schools have been equipped with servicing equipment and tools. • Technical expertise of RAC technician communities has been systematically developed through training on alternative technologies. • Successful R&R scheme that will be further extended during Stage II of the HPMP.	• Synergies between the phase-out of HCFCs and phase-down of HFCs. • Adoption of Acquis communautaire of the EU, that is in some respects stricter that the Kigali Amendment. • There will be a ban on imports of majority of HFC-based equipment, starting with 2024. • Growing activities of the RAC sector. • Introduction of the certification scheme. • Adoption of standards on safety for flammable/toxic refrigerants. • Activities are planned to increase female participation in the RAC sector and Montreal Protocol activities.
Weaknesses	**Threats**
• Slow introduction of new alternatives on the market and proliferation of high-GWP technologies. • There are still several by-laws and rulebooks to be adopted. • Presence of the informal sector and ability and mechanisms to involve it in activities. • Aging RAC equipment using HFCs. • The price of alternatives to HFCs is still relatively high. • Large consumption in the foam sector. • Insufficient knowledge of the manufacturing/assembling sector.	• Importing second-hand equipment has led to dumping of old, inefficient technologies in the market and impacted the proliferation of low-GWP, high efficiency appliances.

Questions to take into consideration:

- Should there be differentiated bans for used and new equipment?
- How to approach the bans in the MAC sector?

Most commonly discussed candidates for bans

- Domestic refrigerators based on HFC-134a
- Commercial refrigeration based on R-404A and R-507A
- Residential air-conditioners using R-410A

Dates for bans for placing on the market of products and equipment as determined in the F-gases Law of Albania

Products and equipment	Date of prohibition
Non-refillable containers for fluorinated greenhouse gases used to service, maintain or fill refrigeration, air-conditioning or heat-pump equipment, fire protection systems or switchgear, or for use as solvents	1 January 2024
Non-confined direct evaporation systems that contain HFCs and PFCs as refrigerants	1 January 2024
Fire protection equipment that contain PFCs	1 January 2024
Fire protection equipment that contain HFC-23	1 January 2025
Windows for domestic use that contain fluorinated greenhouse gases	1 January 2024
Other windows that contain fluorinated greenhouse gases	1 January 2024
Footwear that contains fluorinated greenhouse gases	1 January 2024
Tires that contain fluorinated greenhouse gases	1 January 2024
One-component foams, except when required to meet national safety standards, that contain fluorinated greenhouse gases with GWP of 150 or more	1 January 2024
Aerosol generators marketed and intended for sale to the general public for entertainment and decorative purposes, as listed in point 40 of Annex XVII to Regulation (EC) No 1907/2006, and signal horns, that contain HFCs with GWP of 150 or more	1 January 2024
Domestic refrigerators and freezers that contain HFCs with GWP of 150 or more	1 January 2024
Refrigerators and freezers for commercial use (hermetically sealed equipment) that contain HFCs with GWP of 2,500 or more	1 January 2024
Refrigerators and freezers for commercial use (hermetically sealed equipment) that contain HFCs with GWP of 150 or more	1 January 2025
Stationary refrigeration equipment, that contains, or whose functioning relies upon, HFCs with GWP of 2,500 or more except equipment intended for application designed to cool products to temperatures below – 50 °C	1 January 2024
Multipack centralized refrigeration systems for commercial use with a rated capacity of 40 kW or more that contain, or whose functioning relies upon, fluorinated greenhouse gases with GWP of 150 or more, except in the primary refrigerant circuit of cascade systems where fluorinated greenhouse gases with a GWP of less than 1,500 may be used	1 January 2025
Movable room air-conditioning equipment (hermetically sealed equipment which is movable between rooms by the end user) that contain HFCs with GWP of 150 or more	1 January 2024
Single split air-conditioning systems containing less than 3 kg of fluorinated greenhouse gases, that contain, or whose functioning relies upon, fluorinated greenhouse gases with GWP of 750 or more	1 January 2030
Foams that contain HFCs with GWP of 150 or more except when required to meet national safety standards - Extruded polystyrene (XPS)	1 January 2024
Foams that contain HFCs with GWP of 150 or more except when required to meet national safety standards - Other foams	1 January 2024
Technical aerosols that contain HFCs with GWP of 150 or more, except when required to meet national safety standards or when used for medical applications	1 January 2024

Schedule of bans of import of HFC-based equipment in Armenia

Ban	Scheduled introduction date	Comment
Domestic refrigerators and freezers containing HFCs with GWP of 150 or higher	1 January 2027	
Commercial refrigeration equipment containing HFCs with GWP of 2,500 or higher	1 January 2027	
Moveable room air-conditioners containing HFCs with GWP of 800 or higher	1 January 2027	
Split air-conditioners containing less than 3 kg F-gases with GWP of 800 or higher	1 January 2027	
Trading domestically with HFCs in non-refillable containers	1 January 2028	
Stationary refrigeration equipment containing HFCs with GWP of 2,500 or higher or relying on such HFCs	1 January 2029	Except when used for medical purposes or needed for safety reasons based on national standards.

Dates for bans for placing on the market of products and equipment based on HFCs in North Macedonia

Product	Entry into force of the ban
Open systems for direct evaporation containing HFCs as refrigerants	01.01.2024
Refrigerators and freezers for domestic use containing HFCs with a GWP equal to or greater than 150	01.01.2028
Refrigerators and freezers used for commercial purposes (hermetically sealed equipment) containing HFCs with a GWP equal to or greater than 2,500	01.01.2033
Refrigerators and freezers used for commercial purposes (hermetically sealed equipment) containing HFCs with a GWP equal to or greater than 150	01.01.2035
Fixed refrigeration equipment containing HFCs with a GWP equal to or greater than 2,500, excluding equipment designed to cool product to temperatures below -50°C	01.01.2033
Multiple centralized refrigeration systems used for commercial purposes with a nominal capacity of 40 kW or more, containing HFCs with a GWP equal to or greater than 150, except in the primary cooling circuit of cascade systems that may use HFCs with a GWP less than 1,500	01.01.2035
Mobile indoor air-conditioning equipment (hermetically sealed equipment that can be moved between rooms by the end-user) containing HFCs with a GWP equal to or greater than 150	01.01.2033
Single split air-conditioning systems containing less than 3 kg of HFCs with a GWP equal to or greater than 750	01.01.2037

Conclusion

- Every country needs to thoroughly assess its market and carefully plan for the introduction of bans (scope, types of equipment, GWP limits, dates, possibly EU regulations)
- Consultation with the stakeholders (most notably, importers) are crucial for finding the appropriate balance between the needs of the market and the need to reduce HFC consumption in line with the Kigali Amendment

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Благодарам
Хвала
Teşekkürler
მადლობა
Рахмат
Sag bol
Спасибо
Thank you