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Global Trends in KIP Sectors

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KIGALI in Acti ON





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Technologies

What is available

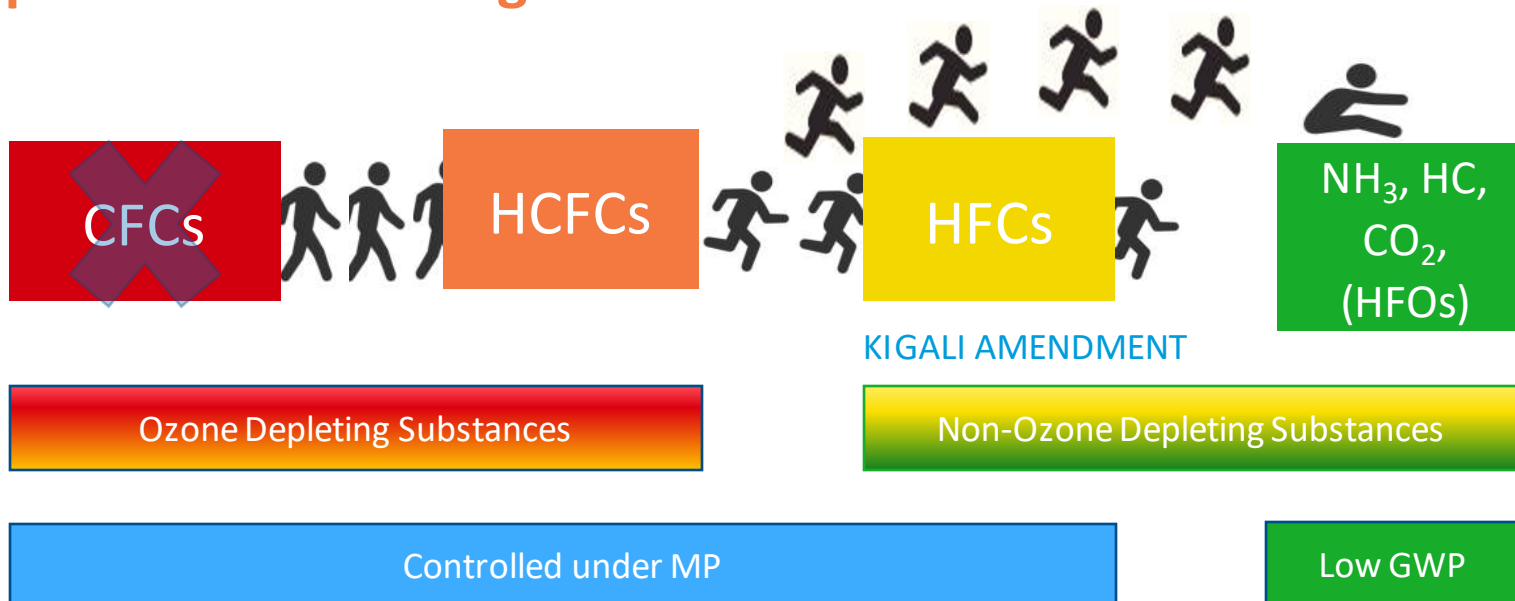
Changes on production lines

EU regulatory updates and standards

Conclusions and recommendations

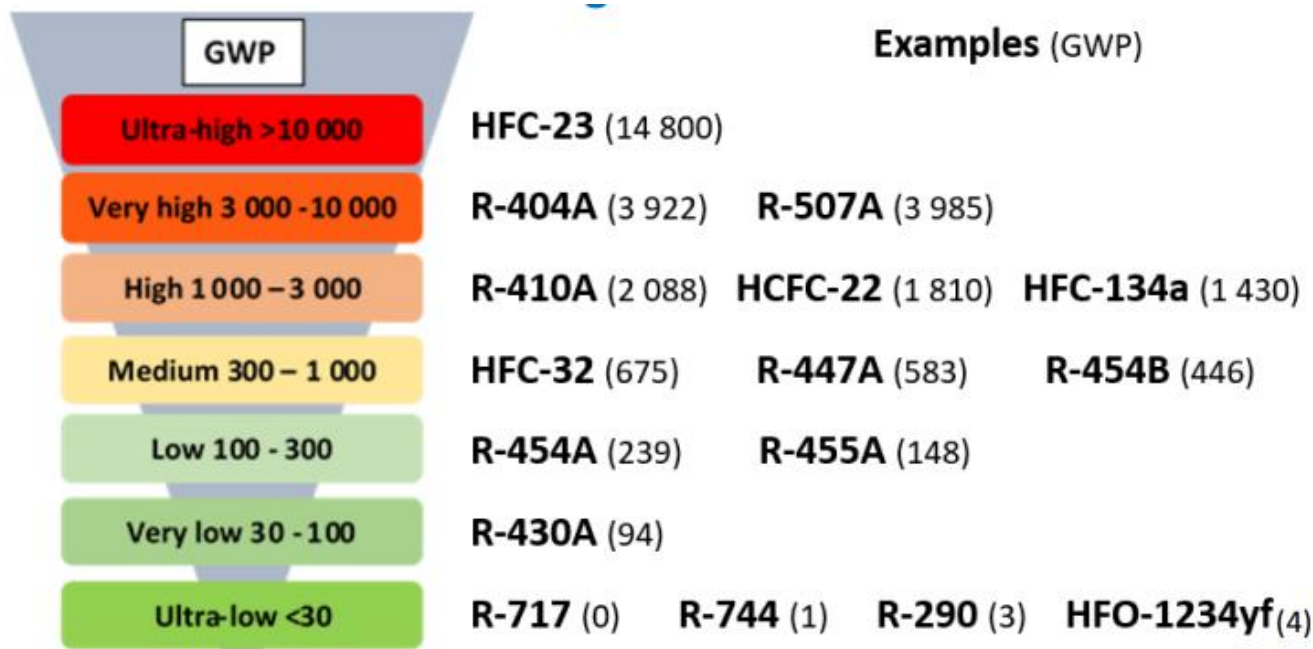


Implications of the Kigali Amendment





Implications of the Kigali Amendment – Refrigerants range



Based on TEAP Task Force Report

OzonAction Kigali Fact Sheet 3



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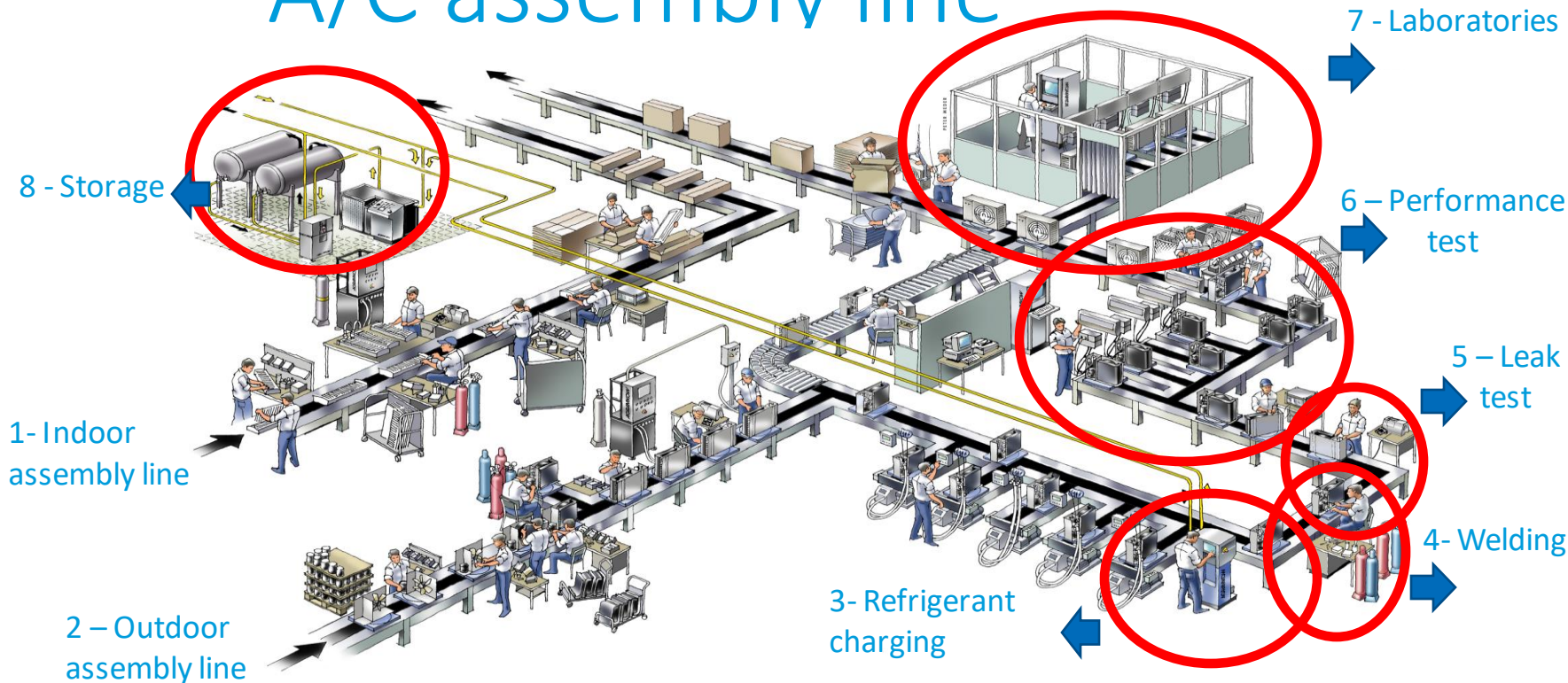
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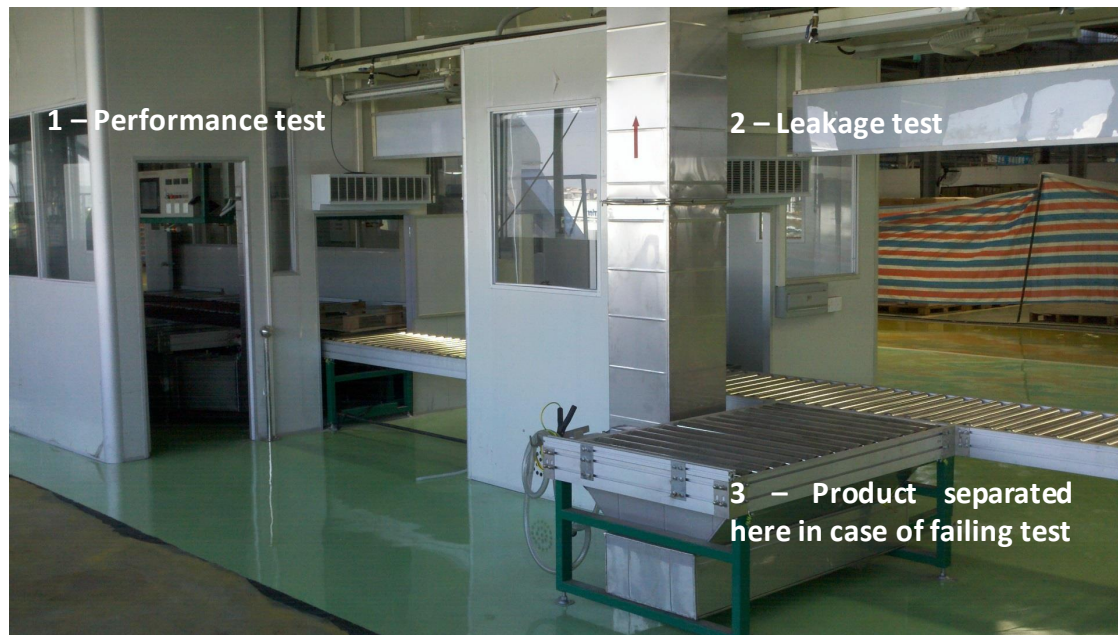
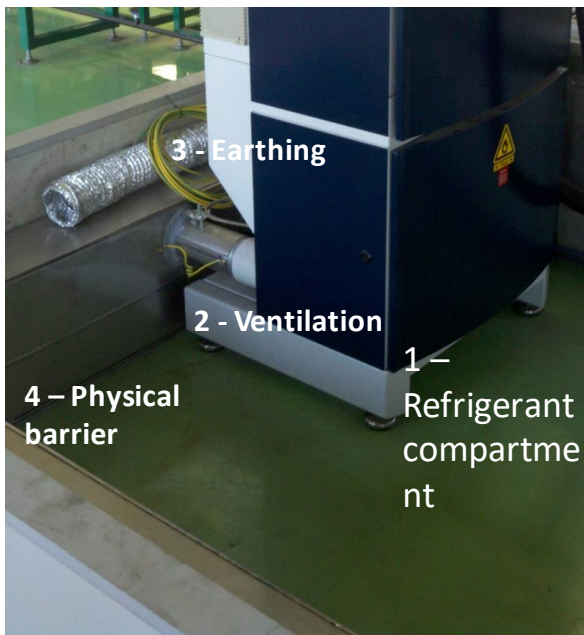


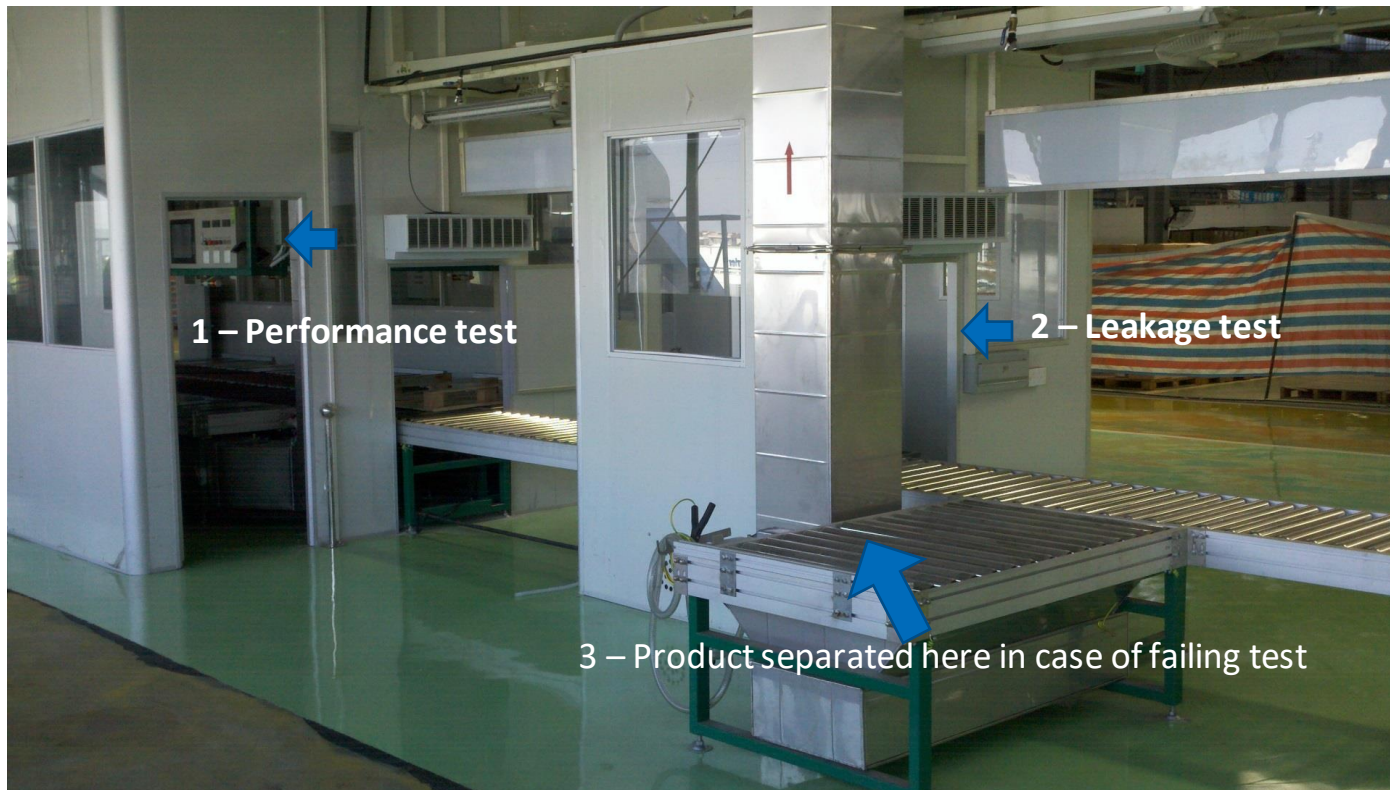
Low-GWP solutions exist in most applications !!!



A/C assembly line –







1 – Performance test

2 – Leakage test

3 – Product separated here in case of failing test



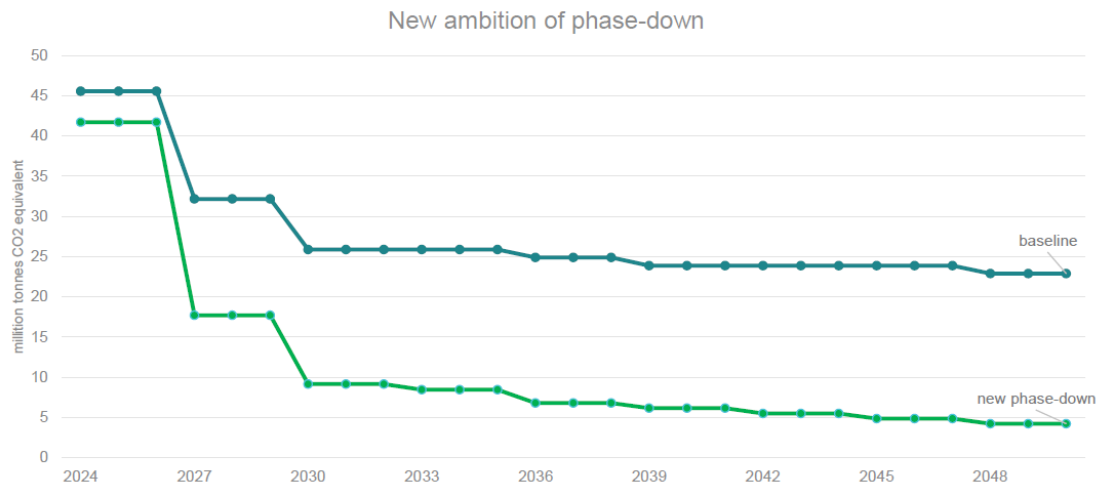
Regulatory certainty - EU



Strasbourg, 5.4.2022
COM(2022) 150 final
2022/0099 (COD)

Proposal for a

REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
on fluorinated greenhouse gases, amending Directive (EU) 2019/1937 and repealing Regulation (EU) No 517/2014





Safety standards

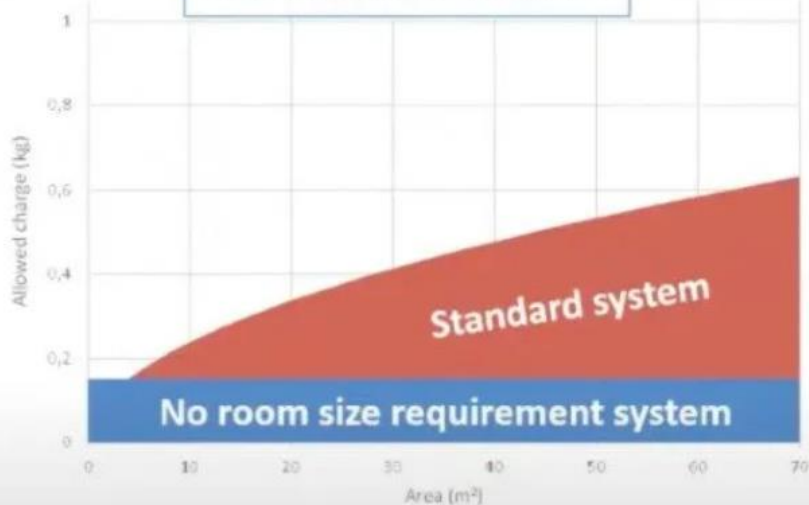
- IEC 60335-2-89;
- Commercial refrigeration equipment;
- Revision will allow up to 500 g A3 refrigerant;

- IEC 60335-2-40;
- Stationary A/C and heat pumps;
- Significant expansion of potential A2L and A3 refrigerants.



Regulatory certainty - IEC

IEC 60335-2-40 Ed. 6



IEC 60335-2-40 Ed. 7





Other environmental issues

PFAS/TFA

PFAS = Per – and Poly Fluoro Alkyl
Substances

TFA = Trifluoroacetic Acid

- Highly persistent chemicals;
- Accumulate in human body;
- Cause damage to liver and immune system;
- In particular harmful for children;
- Decomposition products of HFC and HFO.





Bitzer view

Energy efficient refrigerant:

- Misperception; with proper design, most refrigerants can obtain same energy efficiency;

Refrigerant for the future (in EU):

- No ODP;
- GWP less than 10;
- No harmful decomposition products;
- Design to optimize energy efficiency;
- Minimum energy needs to produce refrigerant;
- Minimum energy to dispose refrigerant;
- Leaves us with natural refrigerants and maybe a couple others !!!



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KIP funding not unlimited;

Will need to cover new sectors such as:

- Domestic refrigeration;**
- Mobile A/C;**
- Assembly sector;**

Need for countries to set priorities to ensure compliance.



Conclusions and recommendations

- Technology choices are available.
- Not possible to have “one-for-all” solution.
- Recent trends on policy, standards, and industry will set the pace.
- Qualifications, training, certification, enforcement are vital.
- Make your priorities (sustainability, cost effectiveness, national vision and strategy, etc...).



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Thanks for your attention



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Workshop on Kigali Implementation Plans
Session 3 : Prioritizing Sectors for KIP Stage I
Introduction and theoretical description

Bassam Elassaad- International Expert

14 June 2023 Vienna, Austria

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Need for Prioritization of sectors

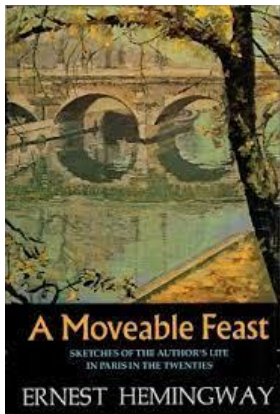
Why prioritize?

- Number of sub-sectors has increased from those under HPMP;
- KIP Stage I coordination work with HPMP;
- Limited funding for Stage I for some countries/brackets;
- Effective distribution of funding for the KIP Stages;
- Uniformity of KIP approach;
- Justification for funding request by sector.



Application & Caveats

- Tool was developed for the servicing sector; can be adapted to manufacturing;
- It is a moveable* tool:
 - adaptable by country for different sub-sectors and different factors;
 - every application introduces improvements. This is version 2.5;
 - Can be used for other applications needing prioritization;
 - A mental reminder for data needed for KIP.
- Don't manipulate it to skew the result: when the team does the scoring, and the tool does the calculations, you will get the result.



**adapted from Ernst Hemingway's, "If you are lucky enough to have lived in Paris as a young man then wherever you go for the rest of your life, it stays with you, for Paris is a moveable feast."*



Factors: Weighting, Rating, and Scoring

Factors are conditions that affect the implementation of KIP activities:



- **Weighting is giving importance to factors;**
- **Rating is the methodology for scoring according to criteria;**
- **Scoring is a teamwork reached by consensus with all stakeholders.**



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About Rating!





Factors ratings table

Ratings	Low-GWP technology	Local/regional EE standards	Training courses	Banks of refrigerants in CO ₂	Geographic spread	Age of equipment	Installation and service of alternatives	Equipment imported or locally assembled	Investment needed for stage I of the KIP
0	Not available	Not used	Available and planned	Not used	Not used	Less than 2 years	All technicians are skilled	Not used	Cannot be covered by stage I
1	Available but not accessible	Not planned at regional level	Available	Less than 10 %	Used in one region	Between 2 and 5 years	20 % skilled technicians	Totally imported	Requires more than 10 % of stage I funds
3	Limited availability	Planned within next 5 years	Early development	Between 10 and 20 %	Used in more than one regional capital	Between 5 and 10 years	10 % skilled technicians	Imported and locally assembled	Requires between 5% and 10 % of stage I funds
9	Easily available	Available or planned in 3 years	Not Available	More than 20 %	Used in all regions	More than 10 years	No to low level of expertise	Mostly locally assembled	Requires less than 5 % of stage I funds



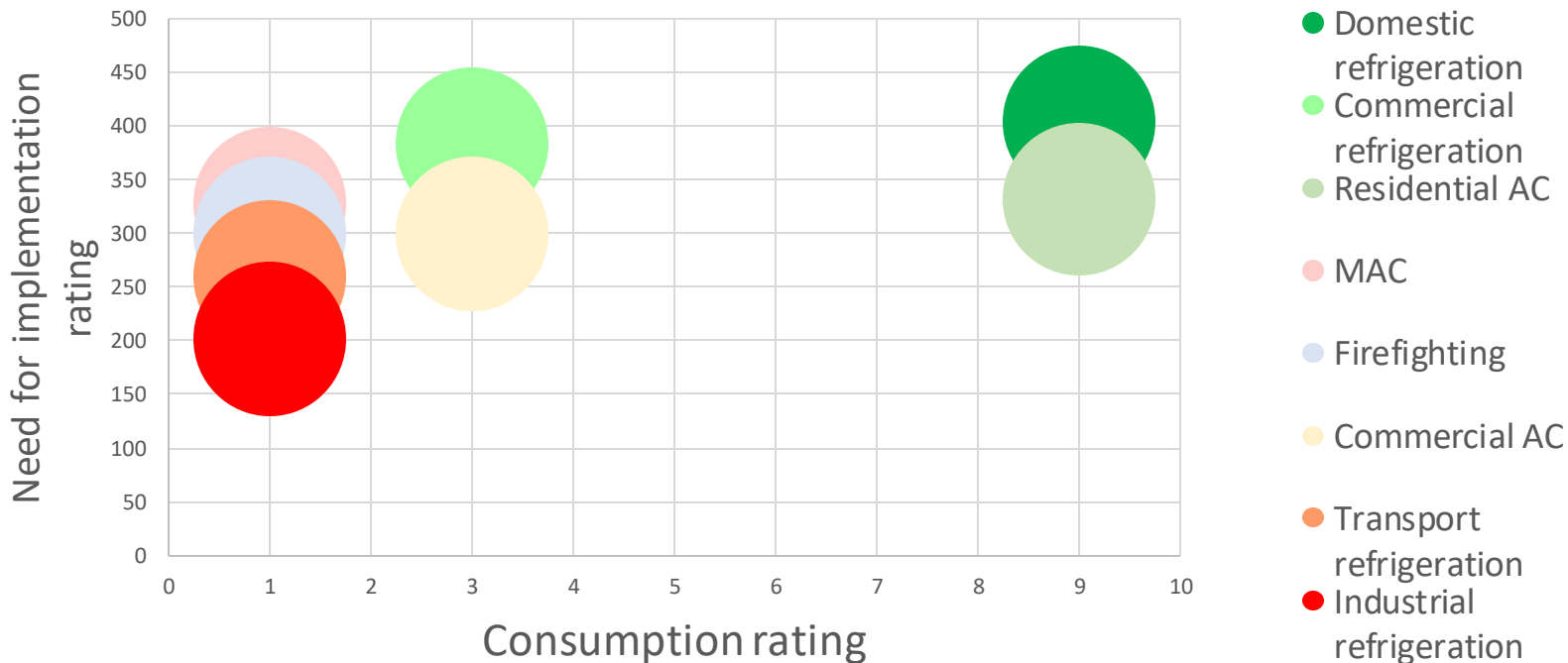
Consumption – Ratings (example)

	HFC consumption in 2022 (metric tonnes)	Consumption rating
Domestic refrigeration		
Commercial refrigeration		
Industrial refrigeration		
Transport refrigeration		
Residential AC		
Commercial AC		
MAC		
Firefighting		

Ratings	HFC consumption in 2022
0	Less than 1 metric tonne (mt)
1	Between 1 and 100 mt
3	Between 100 and 300 mt
9	More than 300 tons



Prioritization of sectors - Chart





Activity					Total cost
	Refrigeration	AC	MAC	Firefighting	(US \$)
Activities addressing the priority sectors					
Support for industry associations					
Provision of tools and equipment for training					
Technician training					
Planning and promoting R&R					
Development of codes of practice					
SME programmes					
Technology demonstration					
Subtotal activities addressing priority sectors					
Activities common to all sectors					
<i>Refrigerant management</i>					
Assessment of the economic feasibility of reclamation facilities					
Establish sound management of non-reusable refrigerants					
Study on the management of end-of-life of appliances and HFC banks					
<i>Regulatory framework and control mechanisms</i>					
Strengthening the HFC licensing and quota system					
Strengthening record-keeping and reporting by enterprises					
Provision of refrigerant identifiers to customs					
Training customs officers and enforcement officers, developing a curriculum					
Strengthening HFC import records by customs					
Improving continuous market monitoring, including surveys					
Categorizing service workshops					
Coordinating standards and labeling schemes					
Awareness-raising and environmental sensitisation					
Coordination and management of KIP implementation					
Total for stage I of the KIP					



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