



Ayman Eltalouny
Coordinator International Partnerships
OzonAction Programme
United Nations Environment

Refrigeration servicing sector in Article 5 countries: challenges and opportunities

2018 Ozone2Climate Industry Roundtable
Beijing, China
10th April 2018

Outline

1. Complexity
2. Opportunities
3. Engagement and Doing it Differently

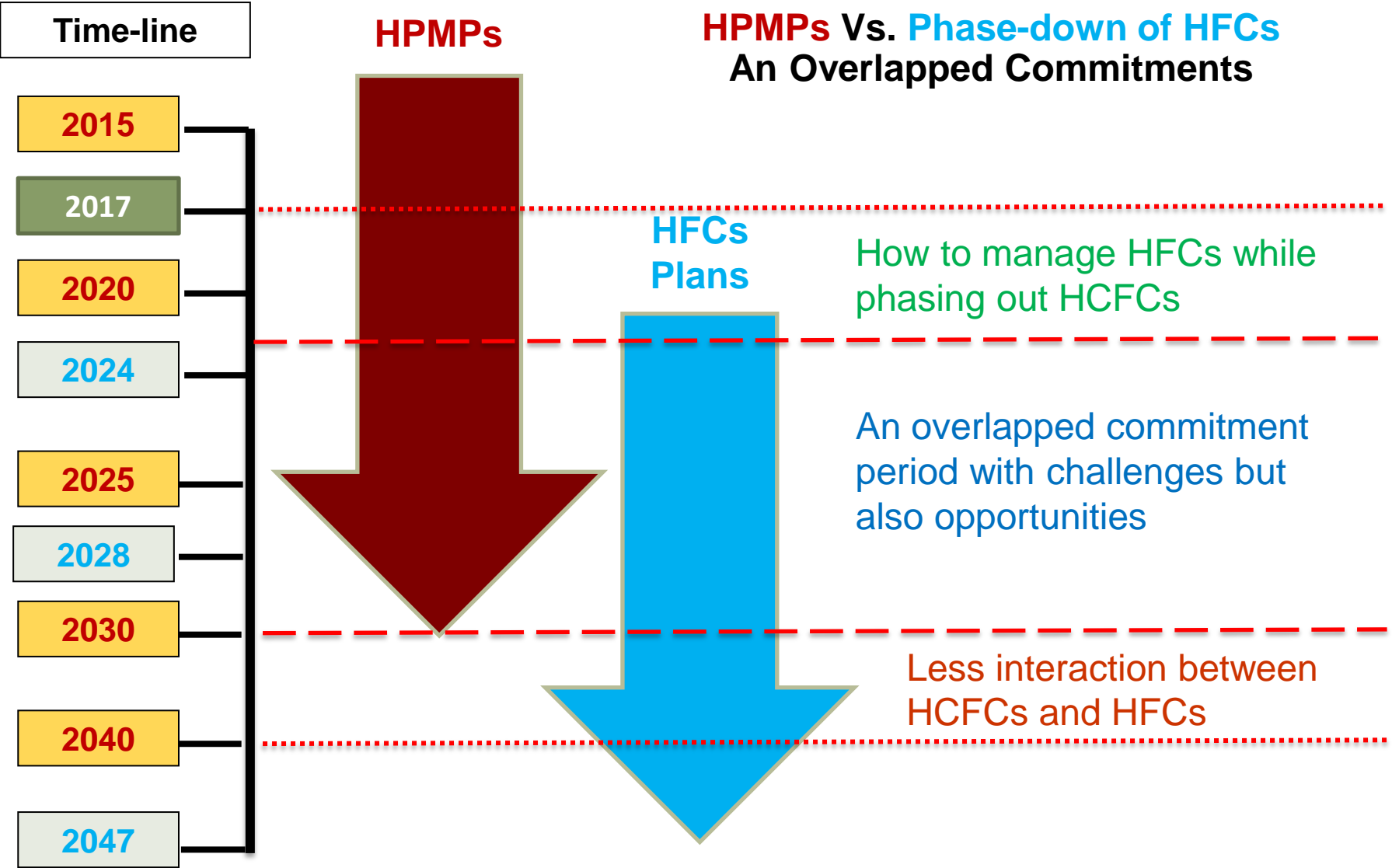




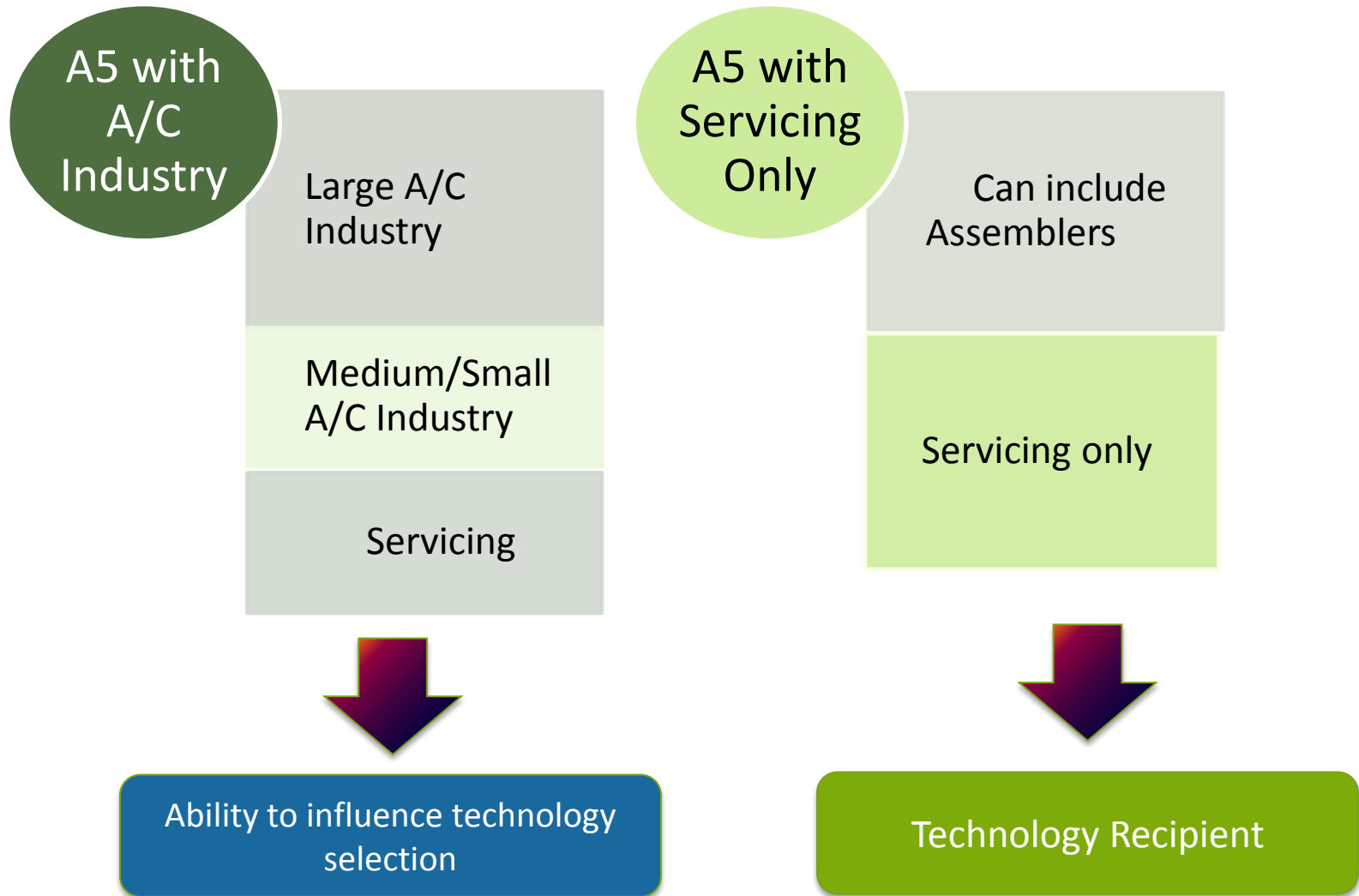
Message # 1

**Complexity;
Need to change mindset**

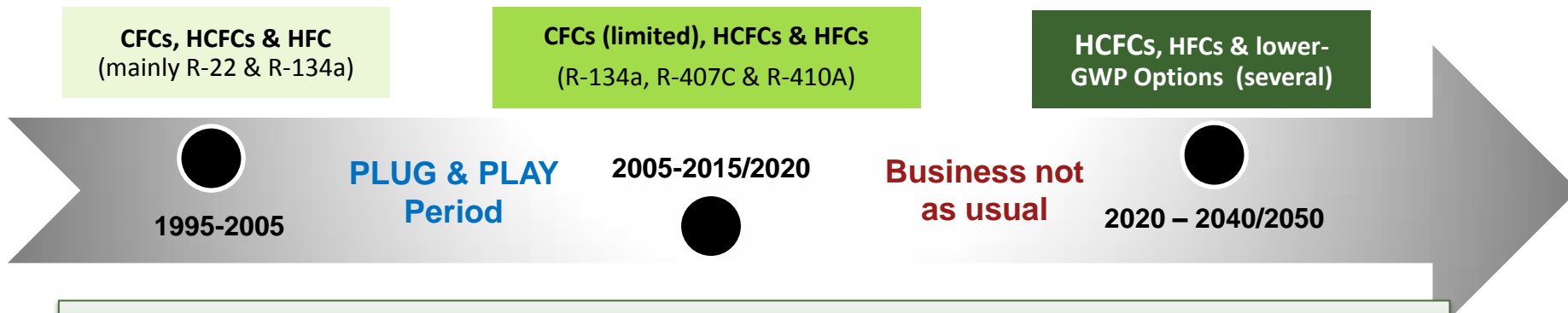
Phase-out & Timeline Considerations



The difference amongst Article 5 countries

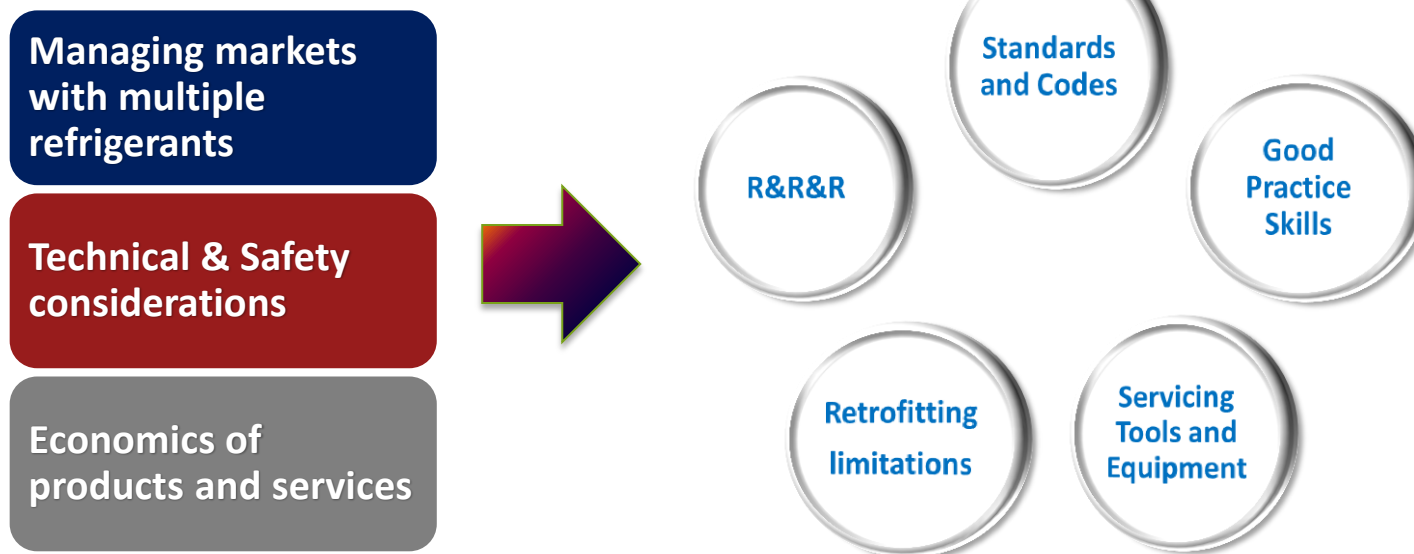


Considerations for A/C Servicing Sectors



What do we mean by Business not as usual ?

Between 2020 – 2040 most of markets in A5 countries will have units that operate with HCFC-22, HFC-410A, HFC-32, HC-290 and other HFOs

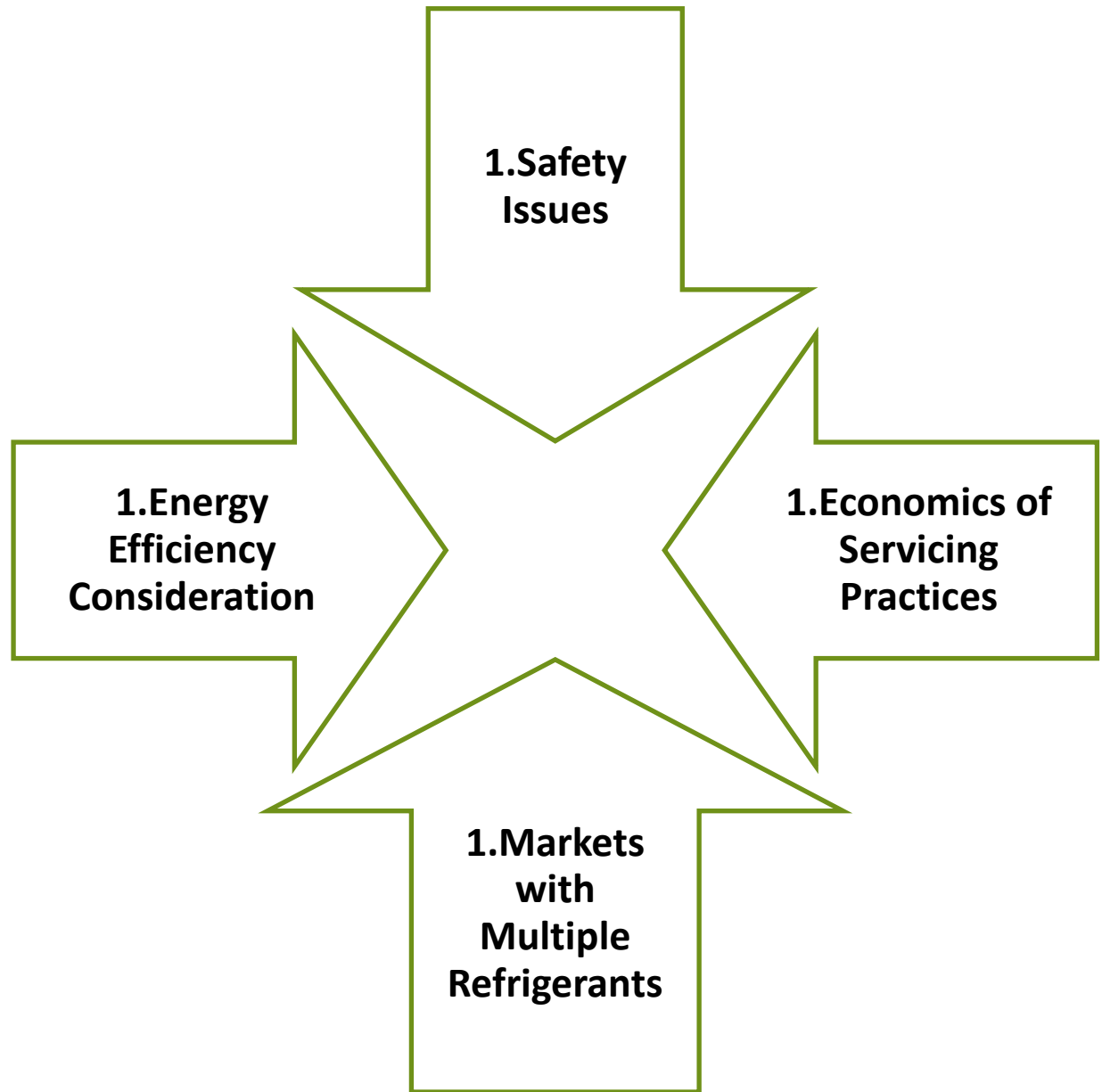


Population of key types of refrigeration and air-conditioning equipment

Applications	Sectors	Equipment	Number of units in operation
Refrigeration and food	Domestic refrigeration	Refrigerators and freezers	1.5 billion
	Commercial refrigeration	Commercial refrigeration equipment (including condensing units, stand-alone equipment and centralized systems)	90 million
	Refrigerated transport	Refrigerated vehicles (vans, trucks, semi-trailers or trailers)	4 million
		Refrigerated containers (« reefers »)	1.2 million
Air conditioning	Air conditioners	Air-cooled systems	600 million
		Water chillers	2.8 million
	Mobile air-conditioning	Air-conditioned vehicles (passenger cars, commercial vehicles and	700 million
Refrigeration and health	Medicine	Magnetic Resonance Imaging (MRI) machines	25,000
Heat pumps		Heat pumps (residential, commercial and industrial equipment, including reversible air-to-air air conditioners)	160 million

Source: IIR 29th Informatory Note on Refrigeration Technologies / November 2015 “The Role of Refrigeration in the Global Economy”

Additional Emerging Issues





Message # 2

**With challenges come
opportunities**

Interventions and Opportunities

Training Programs

Skills of identifying and handling different types of refrigerants

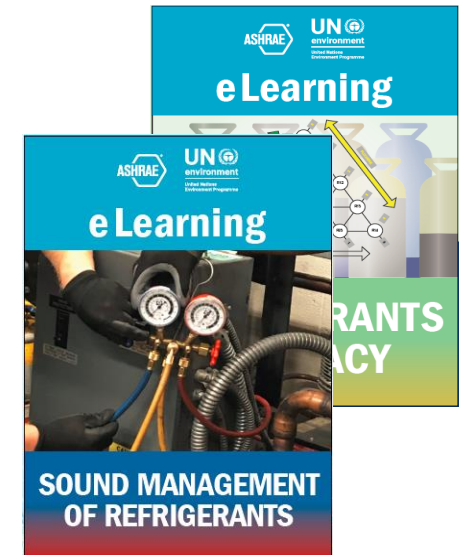
Challenges:

- New knowledge and skills needed
- Need to be offered in different formats and languages
- Continuous update



Opportunities:

- UN Environment OzonAction tools and products in different formats including mobile apps and online training (UNEP-ASHRAE Literacy courses, UNEP-AREA Global Training Kit, Videos, etc.)
- Several international free and updated training resources are offered and under development (e.g. REAL Alternatives Program)



Interventions and Opportunities

Certification Schemes

Skills of identifying and handling different types of refrigerants

- Mandatory certification schemes

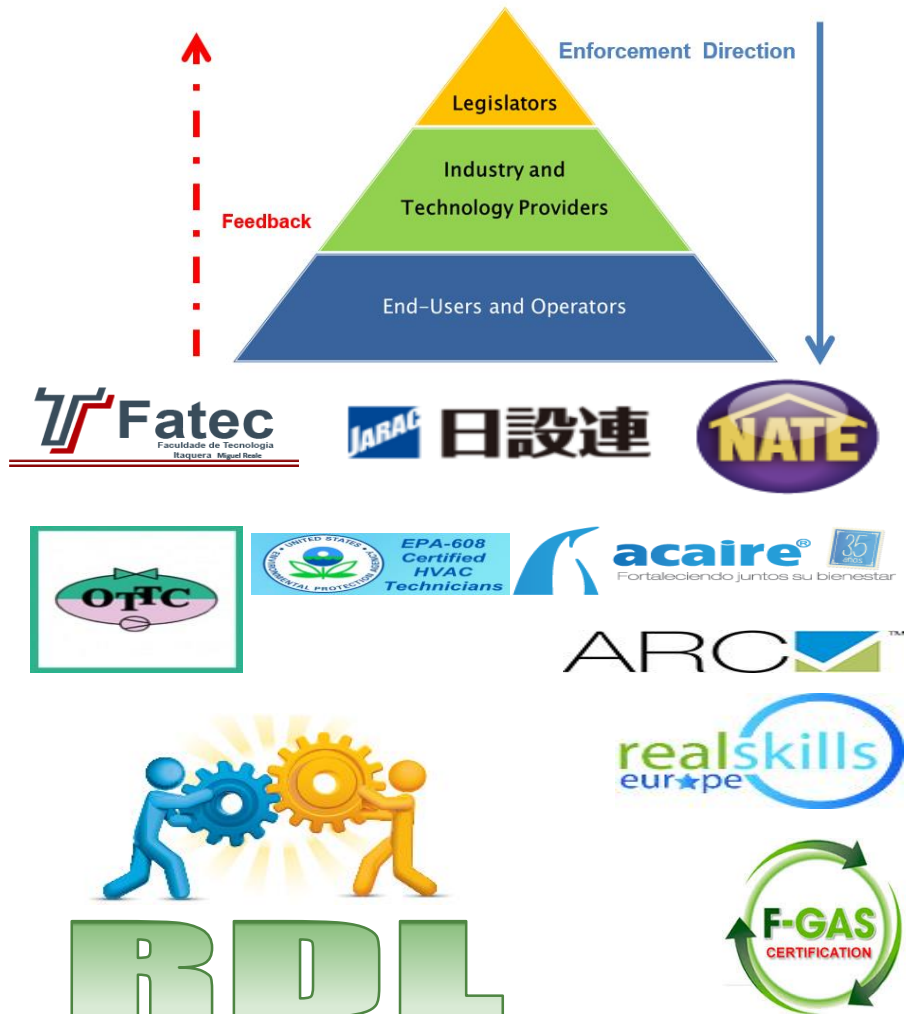
- Development
- Enforcement

Challenges:

- Apparently, typical certification programs for RAC professions are not as effective as designed, or intended, in most of A5 countries.
- Enforcement is also complex issue for all, modalities and technical capacities to enforce and monitor is a big question mark

Opportunities:

- International standard (ISO) is being considered at the moment for setting competencies and skills required benefiting of EN13313
- Building special refrigerant certification program for example to F-gas certificate
- Industry initiatives i.e. RDL



Interventions and Opportunities

Examples of MLF possible Interventions

Training and Certification

- Develop Code of Practice - Establish Certification Program
- Training programs on good practice - Update local technical curricula
- **Regulatory framework for certification including enforcement and monitoring tools**

Standards Update

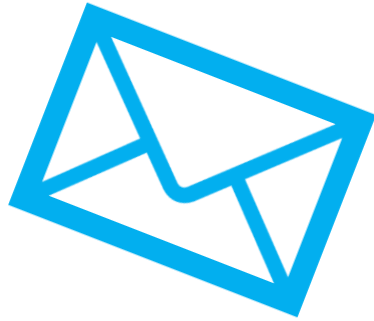
- Refrigerants, Equipment, Containers
- **Refrigeration and Air-conditioning Codes**
- **Buildings Codes**
- **Relation to MEPS and EE programs**

Reclamation Scheme

- Establish Reclamation Centers - Supply R&R sets and service tools
- **Registering refrigerants traders and distributors**
- **Ban use of non-refillable cylinders**
- **Testing facilities**

Technical Assistance

- Demo projects
- Technical Awareness
- Global tools; (clearinghouse)
- **Support to and empowering local associations**
- **Programs for Cold Chain sectors**



Message # 3

Engagement and Doing it Differently

Engaging all stakeholders

Institutional (Public Sectors)	Technical (Private, Non-Governmental)
<ol style="list-style-type: none">1. NOUs (Environmental Authorities)2. Standardization Authorities3. Industry Authorities4. Technical Education & Vocation Training5. Energy Authorities6. Housing and Buildings Authorities7. Procurement Boards and Committees8. Marine/Fisheries/Agriculture Auth.9. Chambers of Trade and Industry	<ol style="list-style-type: none">1. Servicing workshops and technicians2. Refrigerants' importers and distributors3. Training Institutes and Centers4. Operators (facility managers and end-users)5. Consultants and consulting firms6. Buildings and Plants Owners/Investors7. Research Institutes & Universities8. Engineering groups9. Informal servicing sector

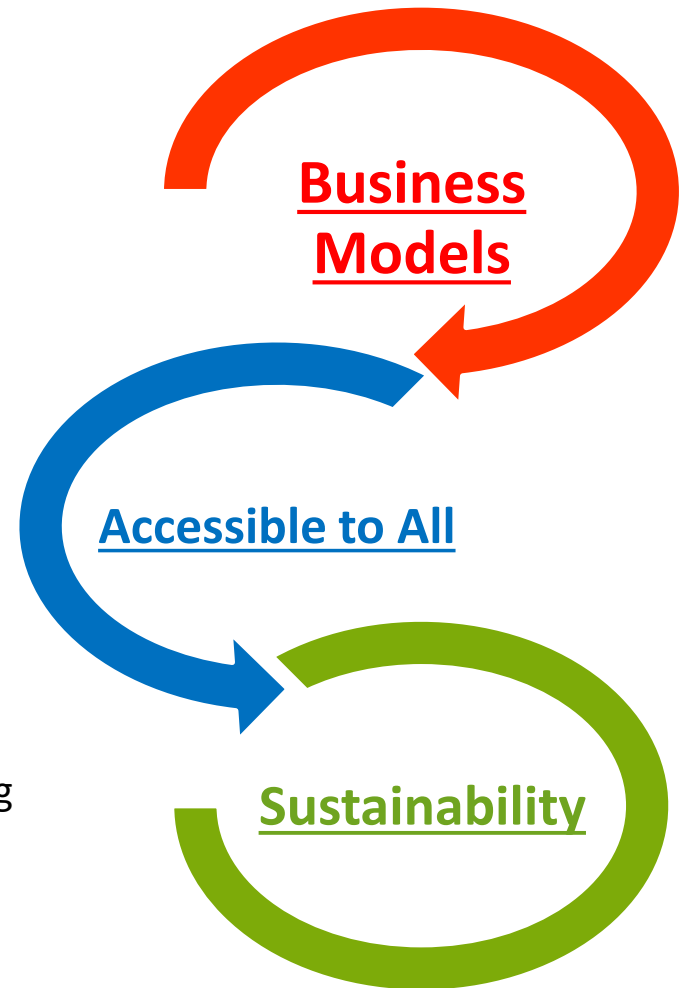
Doing it differently

Three Key Words

- **Business Models**
- **Accessible to All**
- **Sustainability**

Example: Training Programs

- **Business Models**
 - To be built and linked to national mandatory certification programs
 - Allow private sector to engage and offer accreditation and monitoring arrangements
- **Accessible to All**
 - Training tools to different groups; tailored to servicing sub-sectors
 - Different languages sometimes within same country
- **Sustainability**
 - Regulatory framework and enforcement mechanisms
 - Public awareness programs and linkage to trade/procurement practices



Ayman Eltalouny

Coordinator International Partnerships

OzonAction Programme

UN Environment

Email: ayman.eltalouny@un.org



Thank you