



policy trends for natural refrigerants

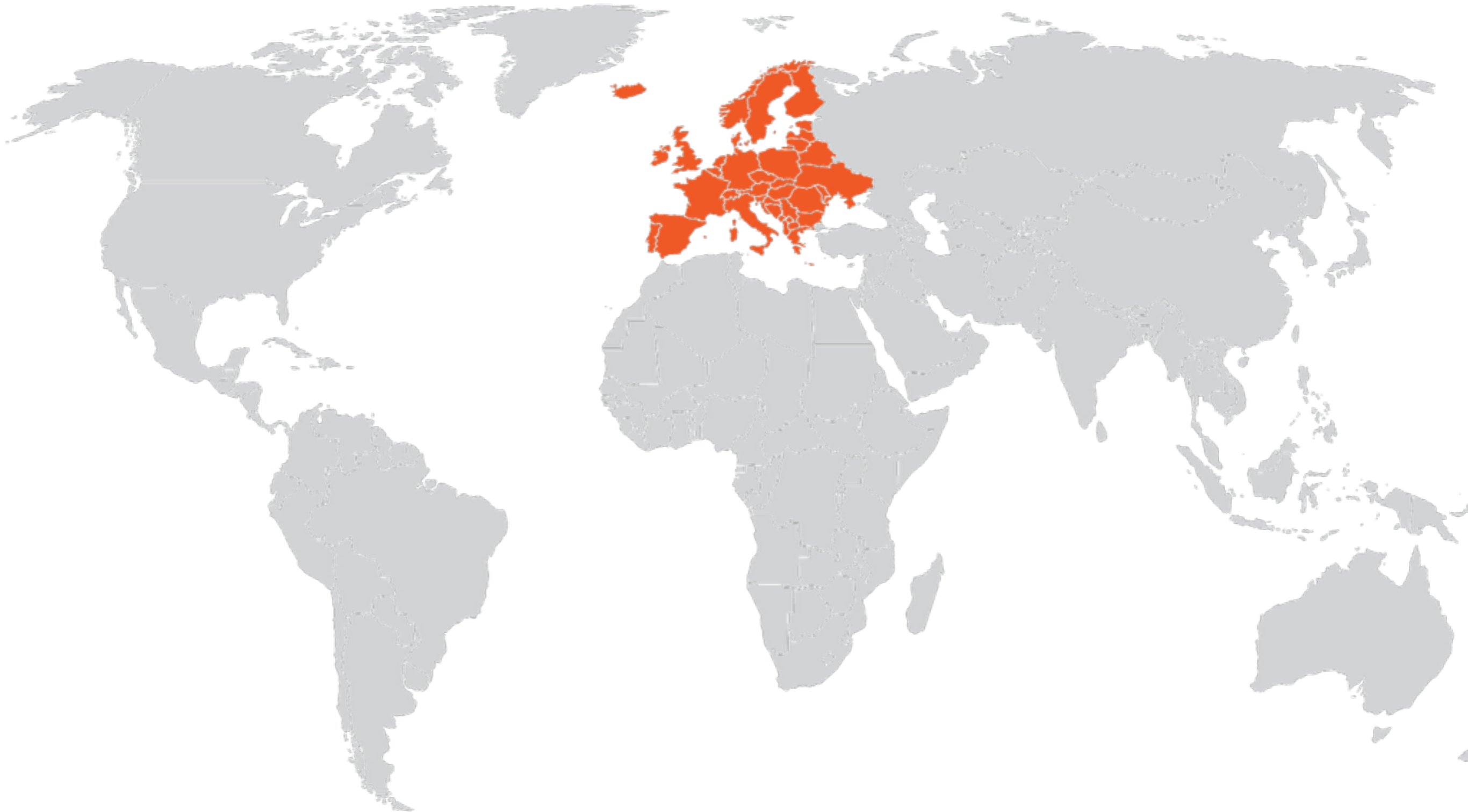
an overview in Europe, Japan and China



Klára Skačánová, Deputy Manager

Market Development, shecco

europa: ambitious legislation drives natural refrigerants



europa: 2015 important regulatory changes



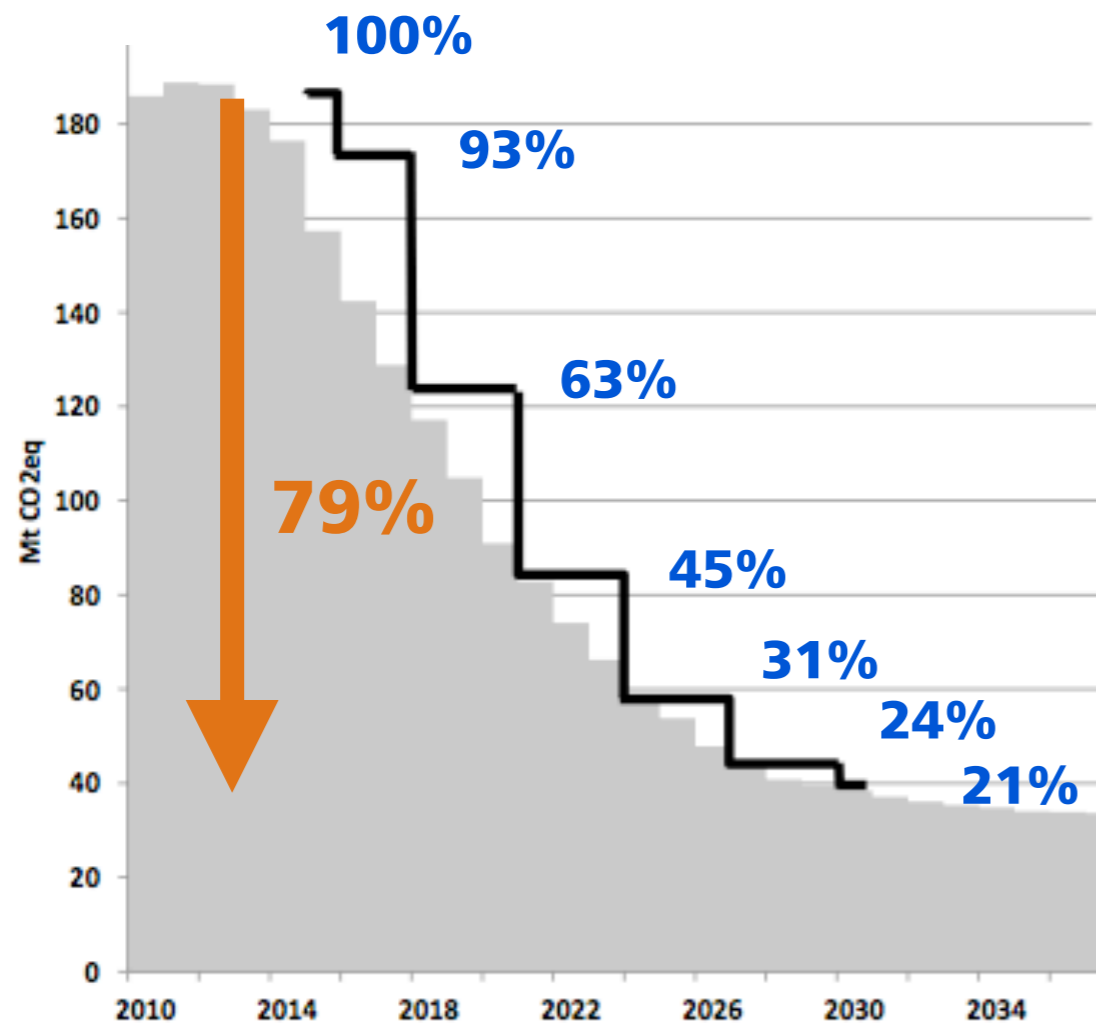
HCFC phase out

- ▶ It is **no longer legal** to use recycled or reclaimed R22 to service equipment in the EU

EU F-Gas Regulation

- ▶ **Phase-down of bulk HFCs** (measured in tonnes of CO₂eq) by 79% by 2030 compared to average levels in 2009-2012
- ▶ **Bans on high GWP HFCs** in new equipment for some sectors
- ▶ **Servicing ban on HFCs** with GWP > 2500 (by 2022 for virgin refrigerants, by 2030 for recycled & reclaimed)
- ▶ **Training & certification** needs to include information on alternatives to HFCs







EU F-Gas Regulation: HFC phase down



average GWP of refrigerants to fall from 2000 today to 400 in 2030

NO negative impact on manufacturers & buyers of natural refrigerant-based equipment

EU F-Gas Regulation: HFC bans

	Sector	GWP limit	Year
	Domestic refrigeration	150	2015
	Stationary refrigeration (except < -50°C)	2500	2020
	Hermetically sealed commercial refrigeration	150	2022
	Centralized commercial refrigeration ($\geq 40\text{kW}$), except in the primary refrigerant circuit of cascade systems where f-gases with a $\text{GWP} < 1500$ may be	150	2022
	Movable room AC	150	2020
	Single split AC (< 3kg of f-gases)	750	2025

opportunities in EU F-gas review clause



Reports due in mid-2017:

- ▶ **national codes, standards and legislation** in EU Member States that are impeding the introduction of f-gas alternatives
- ▶ available **training on HFC alternatives** (possible legislative proposal)
- ▶ quota allocation assessment and possible introduction of a **fee on quotas**

Consultation Forum

to discuss draft report & collect input from industry on 10 September 2015



participating
as a Member

japan: f-gas restrictions & incentives for NR








japan: revised F-Gas Law

- ▶ effective as of April 2015
- ▶ targets the entire life cycle of f-gases, from production to destruction
- ▶ **reduced f-gas leakage** from commercial equipment: periodical checks, maintenance, reporting etc.; proper refill and recovery; obligation of destruction
- ▶ **promotion of low-GWP / non f-gases alternatives for designated products**



japan: GWP targets per sector



	Designated products	Present refrigerant (GWP)	Target value (GWP)	Target year
	room air conditioning	R410a (2090) R32 (675)	750	2018
	commercial air conditioning (offices & stores)	R410a (2090)	750	2020
	condensing units and refrigeration unit > 1.5kW	R404a (3920) R410a (2090) R407c (1774) CO ₂ (1)	1500	2025
	cold storage warehouse (above 50,000 m ³)	R404a (3920) NH ₃ (0)	100	2019
	mobile air conditioning	R134a (1430)	150	2023

japan policy trends: label & awareness



- ▶ **label** by Ministry of Economy, Trade and Industry (METI) to be introduced on the product catalogue / packaging of designated products
- ▶ rating based on GWP value - if below the target value = A; **S = Natural Refrigerants**
- ▶ Awareness raising project by Ministry of Environment (MOE) to **encourage the wider public and enterprises to recognise energy-saving equipment with natural refrigerants** (web, seminar, brochures, movies etc.) especially **for commercial applications**



japan: financial support for NR



Accelerating R&D

Funding scheme to support R&D of f-gas free equipment:

- ▶ Budget of 280 mil JPY (\$2.3 mil) in 2015
- ▶ Focus on small AC, freezing and refrigeration systems as well as high efficient large AC systems

Accelerating testing & demonstration

Financial support for **demonstrating energy-efficient products** using natural refrigerants

- ▶ Budget of 570 mil JPY (\$4.6 mil) in 2015
- ▶ Field tests of f-gas free products for reliability, durability, energy efficiency, safety = introducing new products to the market with confidence

japan: financial support for NR



Accelerating market uptake

Subsidy scheme to encourage end-user to purchase **natural refrigerant-based equipment** in:



Cold storage (1/2 of initial costs)

- ▶ **36 projects** (34 companies) supported in 2014



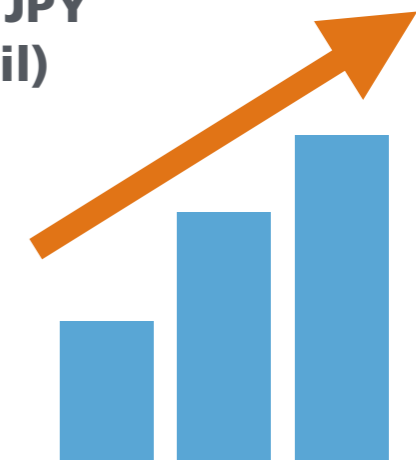
Food retail (1/3 of initial costs)

- ▶ **417 projects** (21 companies) supported in 2014



Food manufacturing (new in 2015)

FY2014:
5 billion JPY
(\$40.5 mil)



24% increase
in budget

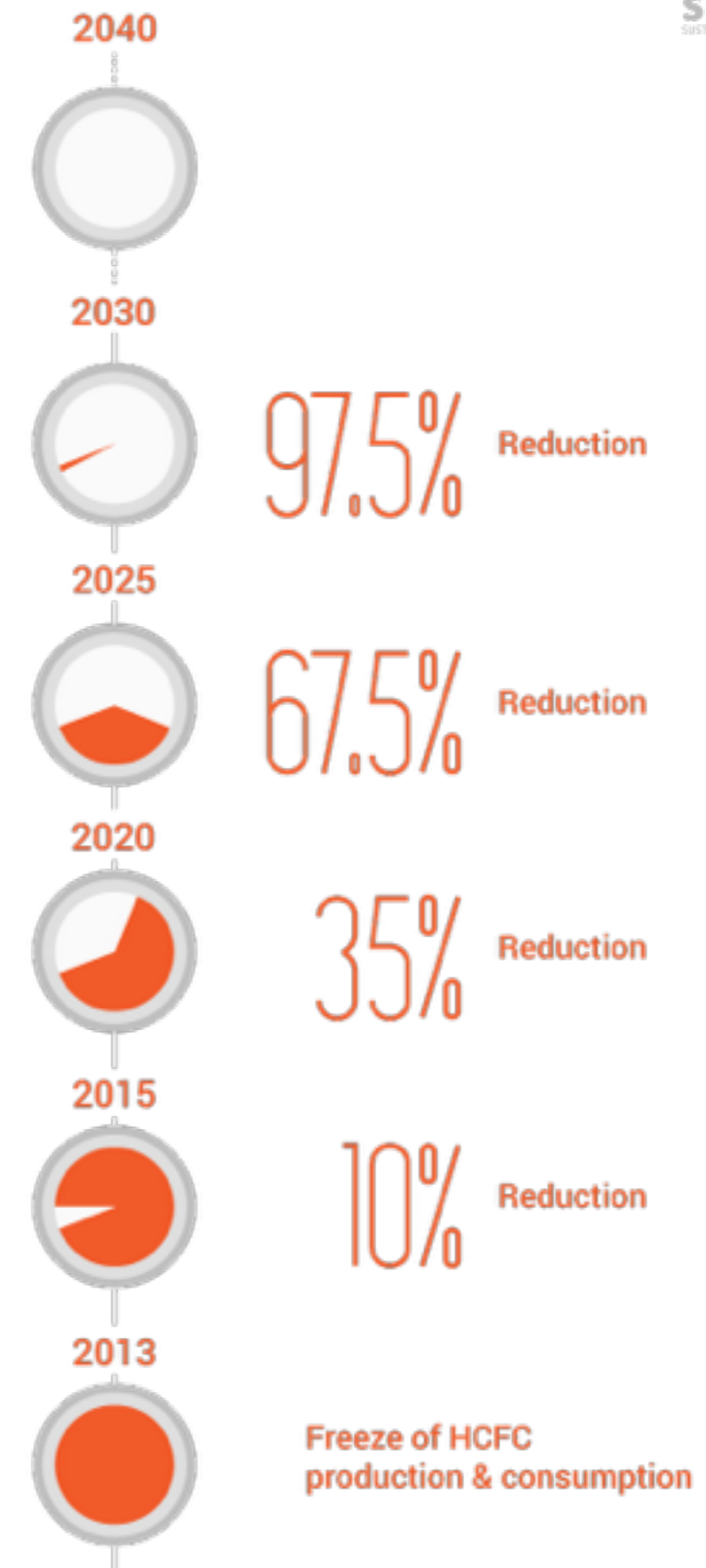
FY2015:
6.2 billion JPY
(\$50.2 mil)

china: changing policy landscape

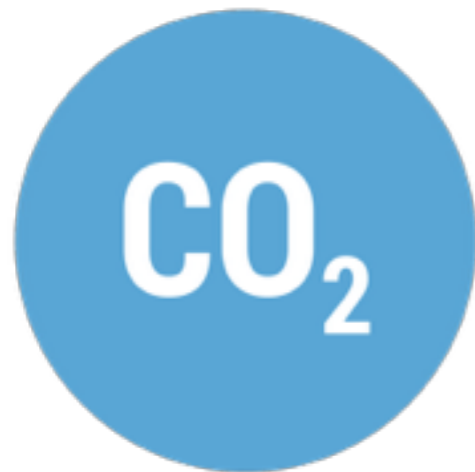


china: policy trends

- ▶ phase-out of **production and consumption of HCFCs** by 2030
= global impact
- ▶ revised **Environmental Protection Law** in 2015, after 25 years = increasing accountability of polluters and government for environmental issues
- ▶ increasing government support for **natural refrigerants** in several sectors, especially room AC, heat pumps, commercial & industrial refrigeration



china: recommended substitutes for HCFCs (June 2015)



residential heat pump water heaters
commercial & industrial heat pump water heaters
mobile air conditioning
commercial and industrial refrigeration



industrial refrigeration
transport refrigeration
condensing units



residential air conditioning (R290)
plug-in commercial refrigeration (R290, R600a)

china: national & global support for R290 in RAC



With **three** R290 RAC production lines completed today, annual production capacity accounts for **400,000** units



china: R290 RAC government support



Reducing cost

MLF funding for conversion to R290

incremental operating cost subsidy offered to 9 manufacturers



Increasing awareness

low-GWP label

Ensuring safety

national safety standards for flammable refrigerants

safety evaluation of R290 RAC by Tianjin Research Institute - **extremely low ignition frequency** of one event per 100 million RACs in 10 years (1/100th of residential refrigerator)

training of engineers on installation & maintenance

china: raising awareness among consumers

Low GWP label (March 2015)

- ▶ promotes natural refrigerants in **room AC** and **heat pump water heaters**
- ▶ **refrigerants with GWP < 150**



Top Runner label (January 2015)

- ▶ supports high energy efficient **residential equipment**, high energy consumption industries and public facilities



closing remarks



- ▶ governments in different regions are **taking action on HFCs**
- ▶ **market opportunities** for natural refrigerants are growing globally across different sectors
- ▶ ambitious policy action **drives innovation**, leads to increased availability, gradually reducing cost of equipment using natural refrigerants

shecco - useful links

Industry Platforms:

<http://www.hydrocarbons21.com>

<http://www.R744.com>

<http://www.ammonia21.com>

<http://www.R718.com>

ATMOsphere conferences, side-events & network meetings:

<http://www.ATMO.org>

shecco Publications, incl. GUIDEs

<http://publications.shecco.com>

Accelerate Magazine

<http://accelerate.shecco.com>

shecco Market Development:

- ▶ Market Research
- ▶ Market Development & Consulting
- ▶ Publications
- ▶ Regulatory Affairs
- ▶ Special Projects

contact details:

Klára Skačanová
klara.skacanova@shecco.com
office: +32 2 230 3700

