

Refrigerants, Naturally! for LIFE

SUSTAINABLE COOLING FOR EUROPE'S SMALL FOOD RETAIL STORES

POLICY GUIDE

GUIDANCE DOCUMENT



CONTENT

GLOBAL POLICIES

To set a political framework for the international community to fight climate change.

EUROPEAN POLICIES

To detail out the global political framework with concrete deadlines and limits defined for Europe.

NATIONAL POLICIES

To implement the European policies through national policies and voluntary programs.

GLOBAL



Montreal Protocol, Kyoto Protocol, Paris Agreement

EU



Direct Emissions

ODS Regulation
F-Gas Regulation

Indirect Emissions

EU Ecodesign Directive
EU Energy Label

NATIONAL



National Policies and Voluntary Approaches

REGULATIONS

FOR THE USE OF REFRIGERATION, AIR CONDITIONING AND HEAT PUMPS (RACHP)

The refrigeration, air conditioning, and heat pump (RACHP) sector is a large consumer of energy and emitter of greenhouse gases (GHG). Global, national, and regional policies have been put in place to reduce this impact on the environment.

As RACHP appliance user, it's not only a challenge to find out which policy is applicable to you and why, but also to understand the complex language in which policies are often written. This guiding document will give you a brief overview about the most relevant policies on RACHP appliances for the food retail sector and discuss each of them in a more simplified language explaining how they can relate to you. In the first section this guide gives you a global background, the following sections address regulations that impact you directly. Finally, this guide will provide you with links if you need further information and support.

MONTREAL PROTOCOL AND KIGALI AMENDMENT

OZONE LAYER PROTECTION BY PHASING OUT CFCs

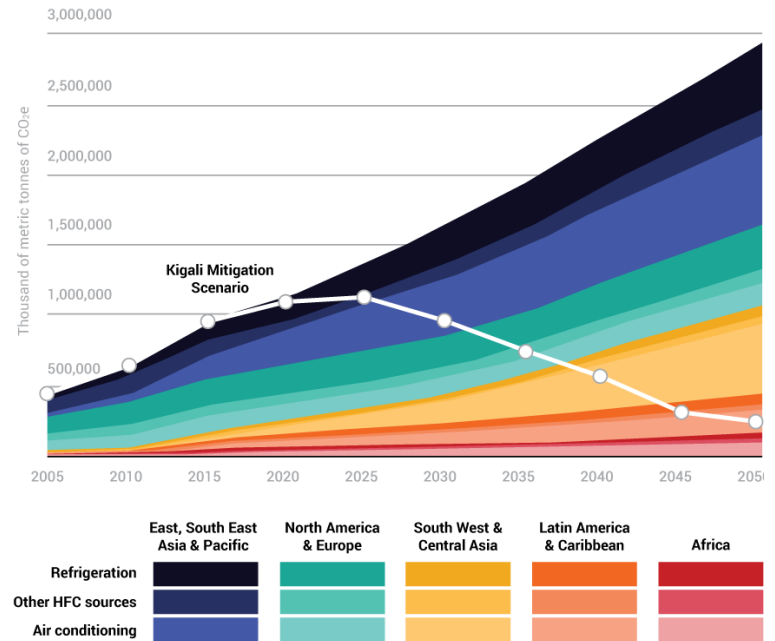
The Montreal Protocol entered into force in January 1989 and is an international treaty to protect the ozone layer by phasing out the production of numerous substances that are responsible for ozone depletion and climate change. The most significant revision of the Montreal Protocol was the Kigali Amendment in 2016. Due to its widespread adoption and implementation the Ozone layer is starting to heal, and a recovery is expected by around 2050.

WHY IS THIS RELEVANT FOR YOU?

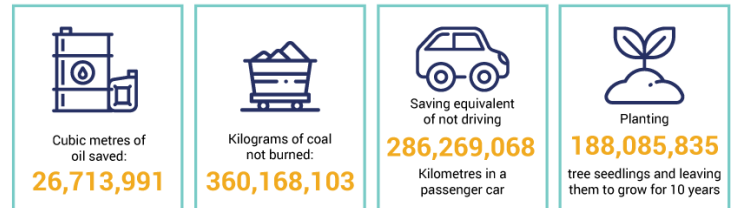
Ozone depleting substances (ODS) such as CFCs¹ were used in many appliances until they were phased out under the Montreal Protocol. The refrigerants first used to replace CFCs, the so called HCFCs², are less harmful to the ozone layer but are still very damaging to the environment and were later replaced by HFCs³ that are not harmful to the ozone layer but still cause climate change because of its global warming potential (GWP⁴). Under the Kigali Amendment those refrigerants are being phased down as well but still exist in many appliances today.

Worldwide impact of the Kigali Amendment

Evolution of HFC emissions from main sources and Kigali Amendment mitigation scenario*



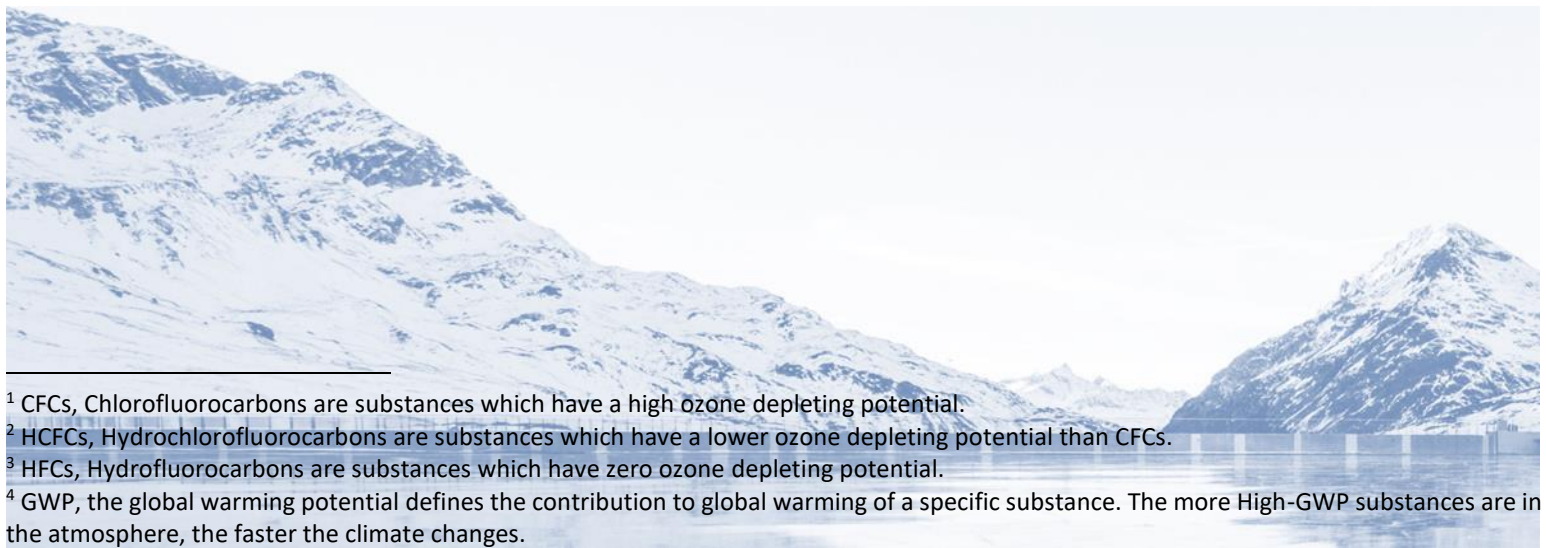
Greenhouse gas mitigation impact**



sheccoBase

FIGURE 1 WORLDWIDE IMPACT OF THE KIGALI AMENDMENT, SOURCE: SHECCOBASE

*International Institute for Applied Systems Analysis (IIASA) / Climate and Clean Air Coalition (2016-2017 Annual Report)
 **According to the European Commission, 80 billion metric tonnes of direct GHG and CO₂e emissions will be saved from Kigali between 2020 and 2050, which translates (using the U.S. Environmental Protection Agency's greenhouse gas equivalencies calculator) to the above.



¹ CFCs, Chlorofluorocarbons are substances which have a high ozone depleting potential.

² HCFCs, Hydrochlorofluorocarbons are substances which have a lower ozone depleting potential than CFCs.

³ HFCs, Hydrofluorocarbons are substances which have zero ozone depleting potential.

⁴ GWP, the global warming potential defines the contribution to global warming of a specific substance. The more High-GWP substances are in the atmosphere, the faster the climate changes.

KYOTO PROTOCOL

REDUCTION OF GREEN HOUSE GAS EMISSIONS

The Kyoto Protocol is an international legally binding treaty that entered into force in February **2005** and aims to reduce greenhouse gases (GHG) in the atmosphere, addressing global warming. In Europe, the Kyoto Protocol became the basis for the Energy Policy encouraging efforts and investment in energy efficiency technologies research and implementation as well as renewable energy deployment to meet the agreed targets.

WHY IS THIS RELEVANT FOR YOU?

Many commonly used refrigerants are GHG with a high global warming potential and you might have units with such refrigerants in your store. So, when you need to replace your next unit, look into the refrigerant and the energy efficiency of the unit. The more efficient your equipment is, the better for the environment and your energy costs. This will also future proof your equipment and help you to stay compliant.

PARIS AGREEMENT

GLOBAL WARMING BELOW 1,5°C/ 2°C

The Paris Agreement is an international treaty in force since November **2016** and signed by **197 countries**. This agreement aims to limit the global warming temperature increase to well below 1.5°C/ 2°C compared to pre-industrial levels. It is generally agreed that immediate action on GHG emissions reduction is needed to achieve the goals.

WHY IS THIS RELEVANT FOR YOU?

When you need to invest into new appliances, choose appliances with natural refrigerants and those that are highly energy efficient. This will minimize your contributions to global warming, reduce your costs, and is part of the needed action to keep the temperature increase below 1.5°C/ 2°C.



ODS REGULATION

IMPLEMENTATION OF THE MONTREAL PROTOCOL

Governments in the EU implemented regulations phasing down and then banning the use of ozone depleting substances (ODSs). The regulation includes measures with requirements to reduce the use of ODSs for applications with no alternatives and a complete ban in other cases such as in cooling and refrigeration where CFC refrigerants were replaced by substances that had a lower ozone depletion potential such as HCFCs, and ultimately by substances such as HFCs whose ozone depleting potential is zero.

TABLE 1 REFRIGERANTS WITH THEIR GWP AND ODP

Chemical Formula	Name	Code	Global Warming Potential (GWP)	Ozone Depletion Potential (ODP)
SYNTHETIC REFRIGERANTS				
CFCs	Chlorofluorocarbons		Very high	High
HCFCs ¹⁾	Hydrochlorofluorocarbons		Very high	Very low
HFCs ¹⁾	Hydrofluorocarbons		Mostly high	Zero
HFOs ^{1,2)}	Hydrofluoroolefins		Low	Zero
NATURAL REFRIGERANTS				
HCs ¹⁾	Propane, Propene, Isobutane	R290, R1270, R600a	Negligible (3,2,3)	Zero
CO ₂	Carbon dioxide	R744	Negligible (1)	Zero
NH ₃	Ammonia	R717	Zero	Zero
H ₂ O	Water	R718	Zero	Zero
O ₂	Air		Zero	Zero

1) refrigerant groups, no specific GWP or ODP mentioned due to variations within the group

2) have an environmental impact and therefore have to be reported acc. to the F-Gas Regulation

WHY IS THIS RELEVANT FOR YOU?

While a phase-out of HCFCs has been largely achieved, these regulations remain relevant for the EU to prevent markets from returning to employ them. It's therefore crucial for you to consult with a professional service provider who is well familiar with the market and its developments.

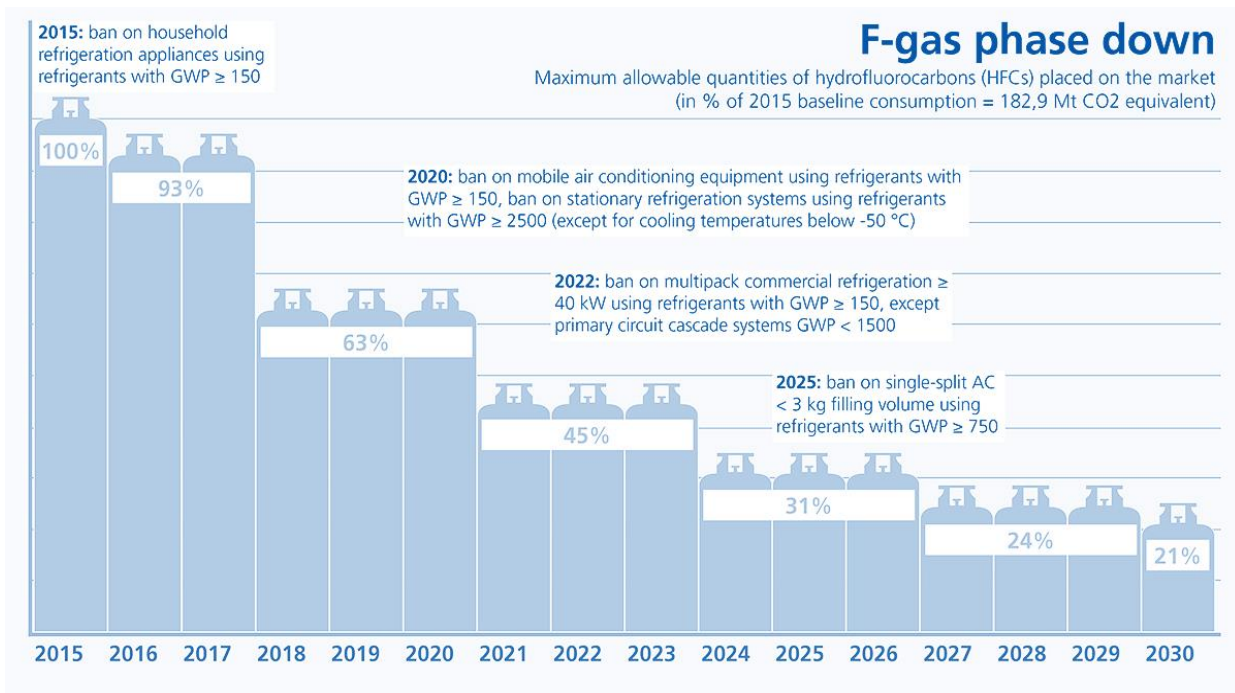


F-GAS⁵ REGULATION

PHASING DOWN HFCs

The F-gas regulation is the main legislative driver to phase down direct greenhouse gas emissions from RACHP equipment in the EU. For new **refrigeration (R)** appliances, refrigerants with a GWP > 2500 in centralized equipment such as in retail stores won't be allowed from 2020 onwards, appliances >40kW with refrigerants with a GWP > 150 are being banned in commercial refrigeration from 2022 onwards. For **air conditioning (AC)**, refrigerants such as HFCs in moveable air conditioning units with a GWP >150 will be banned from 2020 onwards, whereas split units that contain up to 3kg of refrigerant with a GWP > 750 will only be banned from 2025 onwards. For **heat pumps (HP)**, there is no clear target yet defined under the F-Gas regulation. However, to achieve the climate targets which are defined under the Paris Agreement, the industry needs to develop the application of low GWP refrigerants for heat pumps.

FIGURE 2 F-GAS PHASE DOWN ACCORDING TO THE F-GAS REGULATION, SOURCE: GEA GROUP (WWW.GEA.COM)



WHY IS THIS RELEVANT FOR YOU?

To comply to the EU regulations, you must ensure only refrigerants below the defined GWP value are used in your store equipment. The list below shows different refrigerants and their ODP as well as GWP value. It's recommended to use natural refrigerants as they have no environmental impact. If you would like to know which refrigerant is in your current equipment, have a look at the type label of your appliance or reach out to your local technical service.

⁵ F-gases are fluorinated gases which have higher global warming potentials than natural refrigerants

EU ECODESIGN DIRECTIVE

MINIMUM ENERGY EFFICIENCY STANDARDS (MEPS)

The objective of the EU Ecodesign Directive is to minimise greenhouse gas emissions in the whole life cycle of a product, from the development phase to the recycling / disposal phase. However, most of the indirect emissions are caused in the phase in which consumers use the product. Therefore, energy consumption is a key parameter to be looked at during product development. As low efficiency products are banned gradually from the EU market, producers must follow Minimum Energy Efficiency Standards (MEPS) in which minimum values for efficiencies are defined for different product groups. **Fehler! Verweisquelle konnte nicht gefunden werden.** shows MEPS for Split and Room AC globally.

WHY IS THIS RELEVANT FOR YOU?

By choosing energy efficient appliances you do not only decrease your electricity bill but also decrease your carbon emissions.

EU ENERGY LABEL

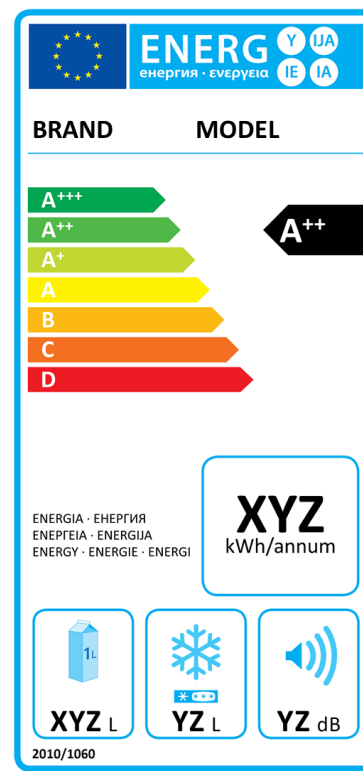
ENVIRONMENTAL INFORMATION OF YOUR APPLIANCES

This is a mandatory regulation that requires that all units in many appliance classes have the EU Energy Label. This provides information on energy consumption, noise levels, and other features of the appliance. It provides a level of comparison within the market for you to make an informed choice. The greener the rank, the lower the running costs and the more your carbon emissions go down.

WHY IS THIS RELEVANT FOR YOU?

Information on the energy efficiency of your appliance enable you, the consumer, to distinguish between efficient and less efficient products and help you in your decision-making process when investing in new equipment. Keep in mind, the more energy efficient your appliances are, the less you will have to pay for energy consumption over the equipment lifetime.

FIGURE 3 SAMPLE FRIDGE ENERGY EFFICIENCY LABEL



DISPOSAL AT THE END OF LIFE

FOR APPLIANCES AND FOR RECYCLING OF F-GASES

Spain enforces to the EU F-Gas regulation and EU Waste Electrical & Electronic Equipment Directive levying fines in the case of breaches. In addition, recycling and disposal of refrigerants is incentivized through the HFC tax scheme. Lower tax levels apply for recycled refrigerants than virgin on HFCs (see below).

WHY IS THIS RELEVANT FOR YOU?

When you are ready to dispose of an appliance you need to comply with the requirements to ensure that no polluting or toxic waste is released. This may include fines.

CARBON REDUCTION POLICIES

NATIONAL TAX ON FLUORINATED GREENHOUSE GASES

In 2014, Spain implemented a tax on fluorinated GHG with a GWP above 150. The tax rate is determined according to the GWP of the refrigerant with a 50% tax reduction for recycled refrigerants. This tax is levied at the time it is made available for consumption usually through services companies at the initial sale or delivery for their consumption. In principle, the tax applies only to leaks of HFCs, F-gases contained in new equipment are not taxable.

WHY IS THIS RELEVANT FOR YOU?

The tax is quite flexible and can be paid at different points of the supply chain such as producers, importers, or distributors. Usually, however, the tax is paid by installers because they are responsible for the recharge of the gases, which is reflected in the final cost of the gas, paid by you as the end user.

FINES RELATED TO HFCs

The Regulation on the Safety of Refrigeration Installations establishes conditions of compliance to ensure that equipment is safe to use and environmentally friendly. It adapts the safety regulations to the new classification of refrigerants applied in Europe, creating an A2L group that allows the use of low GWP refrigerants with a low flammability risk (such as HFC-R32 and HFOs) in air-conditioning units.

WHY IS THIS RELEVANT FOR YOU?

When buying new appliances or requesting a new installation for your store, ask your technician about this regulation and whether they comply with the relevant regulations.



PROYECTOS CLIMA

FINANCIAL INCENTIVE SCHEME

Financial support is also provided through the Proyectos Clima initiative to refrigeration facilities in both industrial and commercial sectors adopting low GWP alternative refrigerants. However, application to this program is incompatible with PIMA Frío's subsidies. This means one company cannot benefit from both Proyectos Clima and Pima Frío subsidies.

WHY IS THIS RELEVANT FOR YOU?

As the end user, you're not entitled to subsidies from both Proyectos Clima and Pima Frío. For this reason, you have to be careful when choosing which subsidy is right for you.

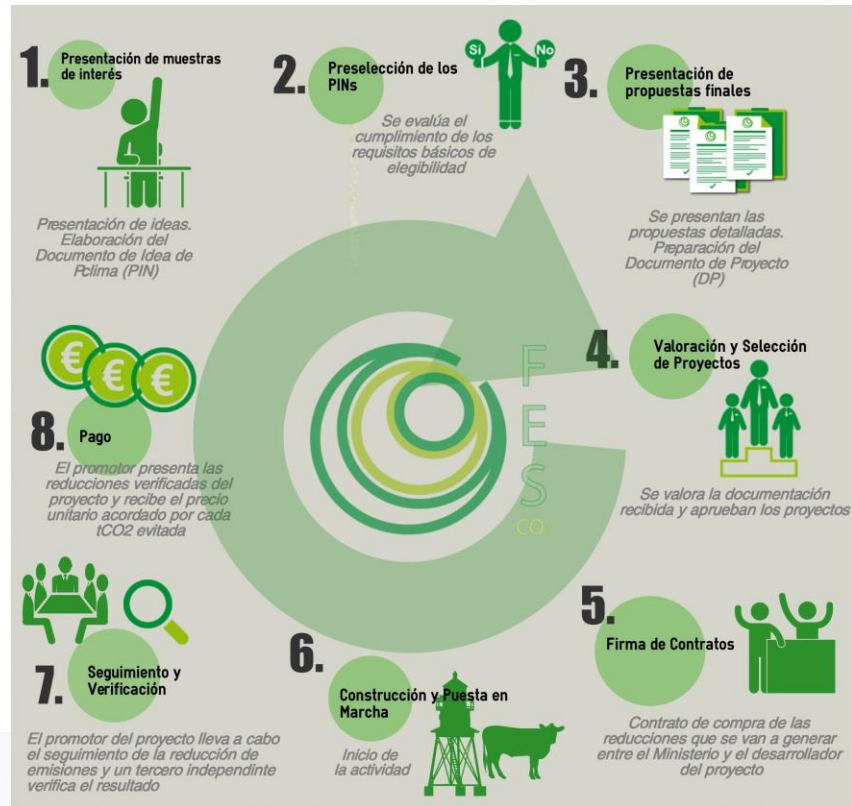


FIGURE 4 THE CYCLE OF "PROYECTOS CLIMA", SOURCE: WWW.MITECO.GOB.ES



PIMA FRÍO PLAN

FINANCIAL INCENTIVE SCHEME

The main purpose of the Pima Frío Plan is to grant subsidies for the implementation of refrigeration facilities using alternatives to high GWP fluorinated gases in commercial refrigeration facilities. Supermarket and hypermarket chains are supported with their reconversion plan to comply with the prohibition established in the EU F-Gas regulation.

WHY IS THIS RELEVANT FOR YOU?

The amount of the established subsidy is based on the installed cooling capacity according to a ratio of EUR650 per kW for refrigeration equipment. Eligible projects can receive a maximum of EUR100,000 per facility and EUR200,000 per organization.

REGISTER ON CERTIFICATES AND TRAINING CENTERS

NON-FINANCIAL INCENTIVE SCHEME FOR FLUORINATED GASES

Published on 25 May 2019, this register regulates the marketing and handling of fluorinated gases and equipment as well as the certification of professionals who use them. It is periodically updated with the registers of autonomous communities. The register includes two sections:

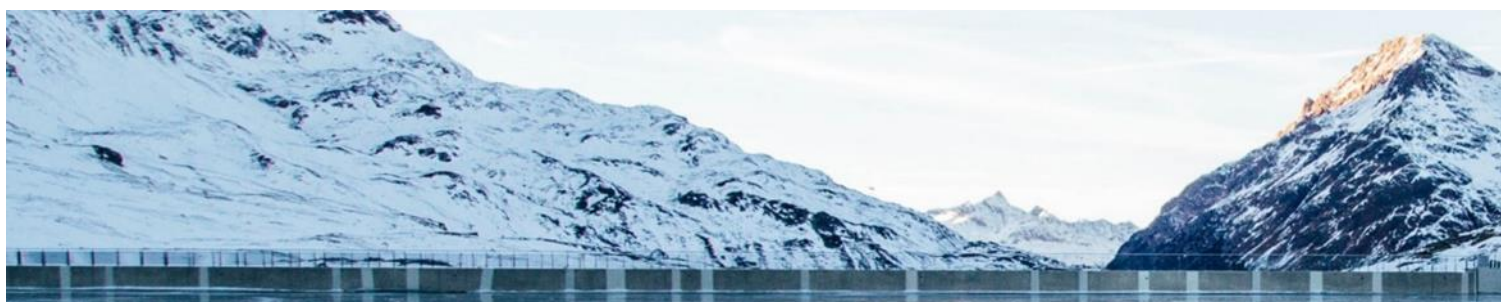
- A. Issued certificates, including all the certificates issued by the Autonomous Communities for the handling of fluorinated gases in the different applications that use these gases. It has two sub-sections: 'Certified Professionals' 'and Certified Companies'.
- B. Training and assessment centres for fluorinated gases, including the training and assessment centres authorized by the Autonomous Communities to provide training programs.



LINKS TO PREVIOUS SECTIONS

Reference to	Link
Carbon Reduction Policies	Refrigeration installation regulation information
Carbon Reduction Policies	Law 16/2013 for implementation of F-gas tax
Pima Frío Plan	Pima Frío program
Register on certificates and training centers	Law for implementation of F-gas register and training centres

All links can be found on our website: www.refnat4life.eu



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