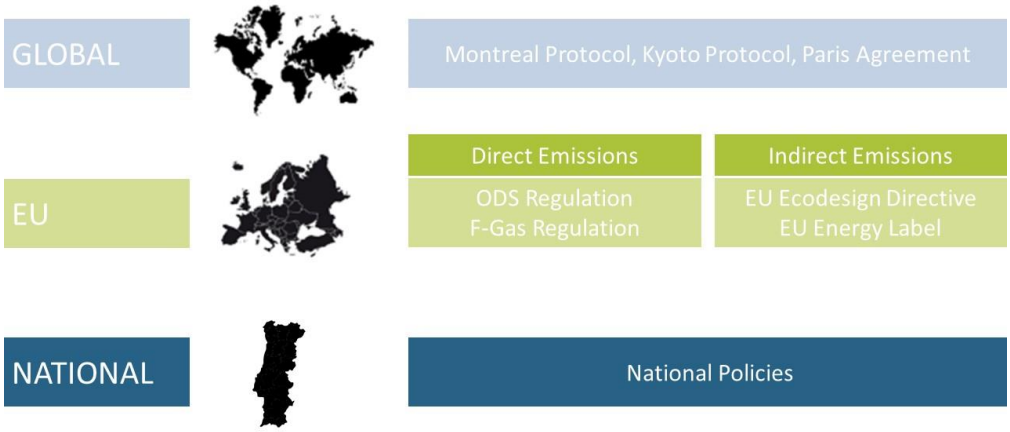
Refrigerants, Naturally! for LIFE

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.

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 CFCs[1] were used in many appliances until they were phased out under the Montreal Protocol. The refrigerants first used to replace CFCs, the so called HCFCs[2], are less harmful to the ozone layer but are still very damaging to the environment and were later replaced by HFCs[3] that are not harmful to the ozone layer but still cause climate change because of its global warming potential (GWP[4]). Under the Kigali Amendment those refrigerants are being phased down as well but still exist in many appliances today.

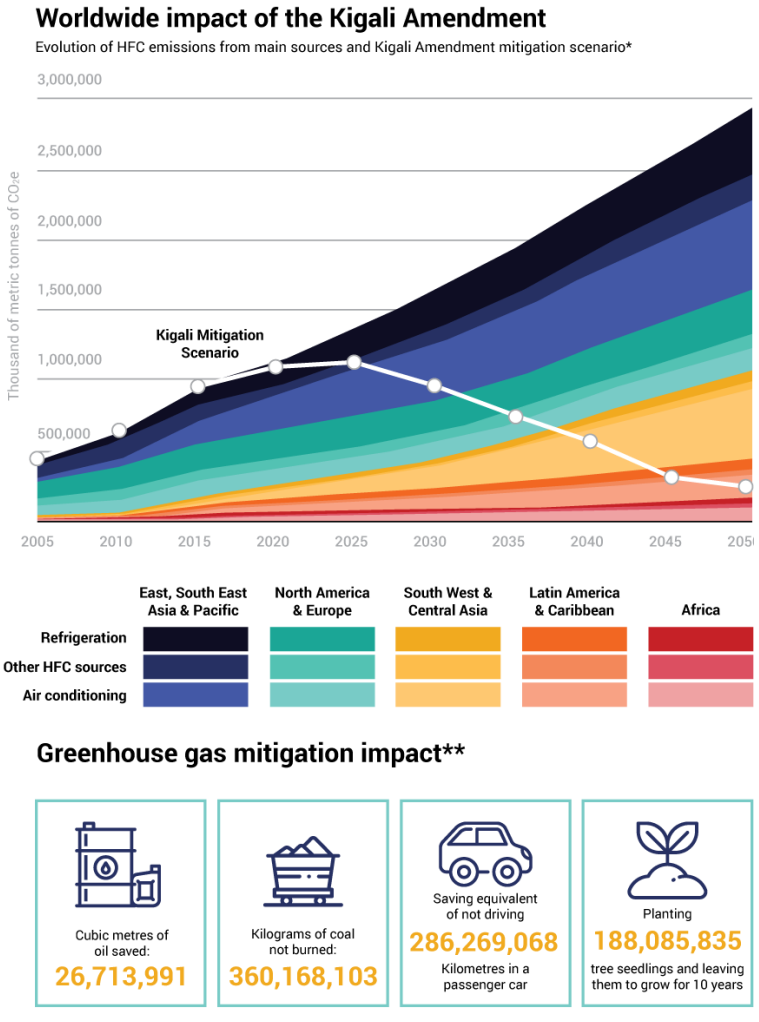
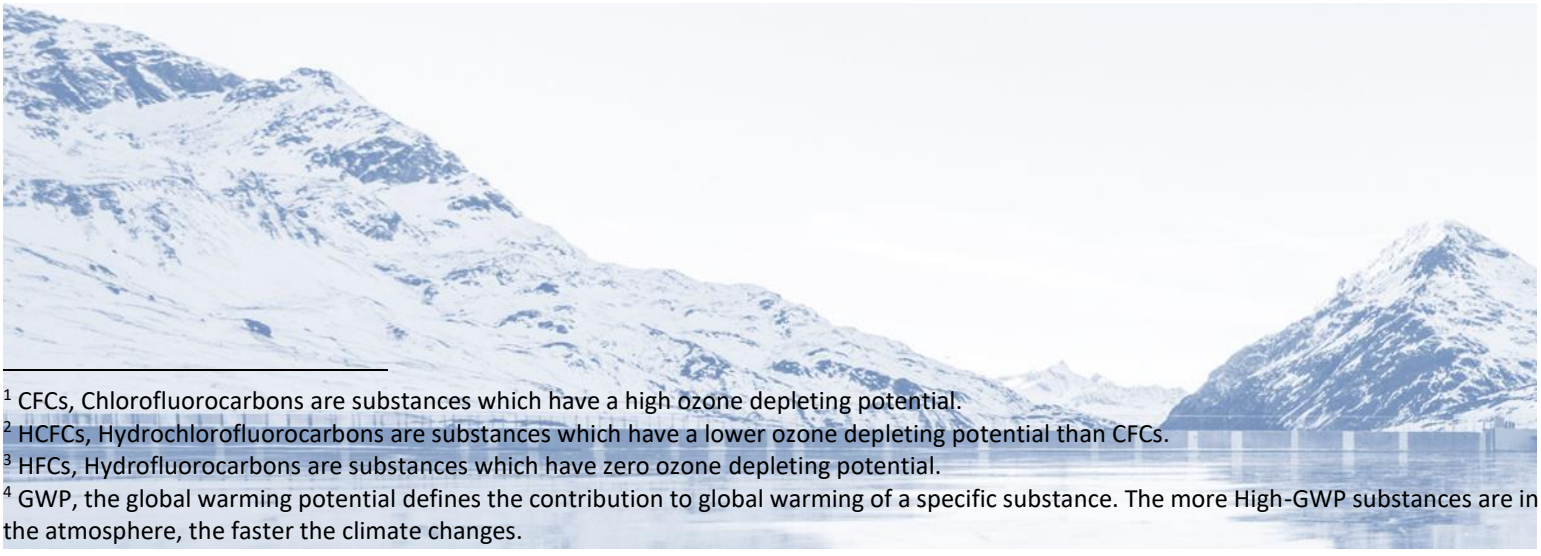


FIGURE 1 WORLDWIDE IMPACT OF THE KIGALI AMENDMENT, SOURCE: SHECCOBASE



[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.

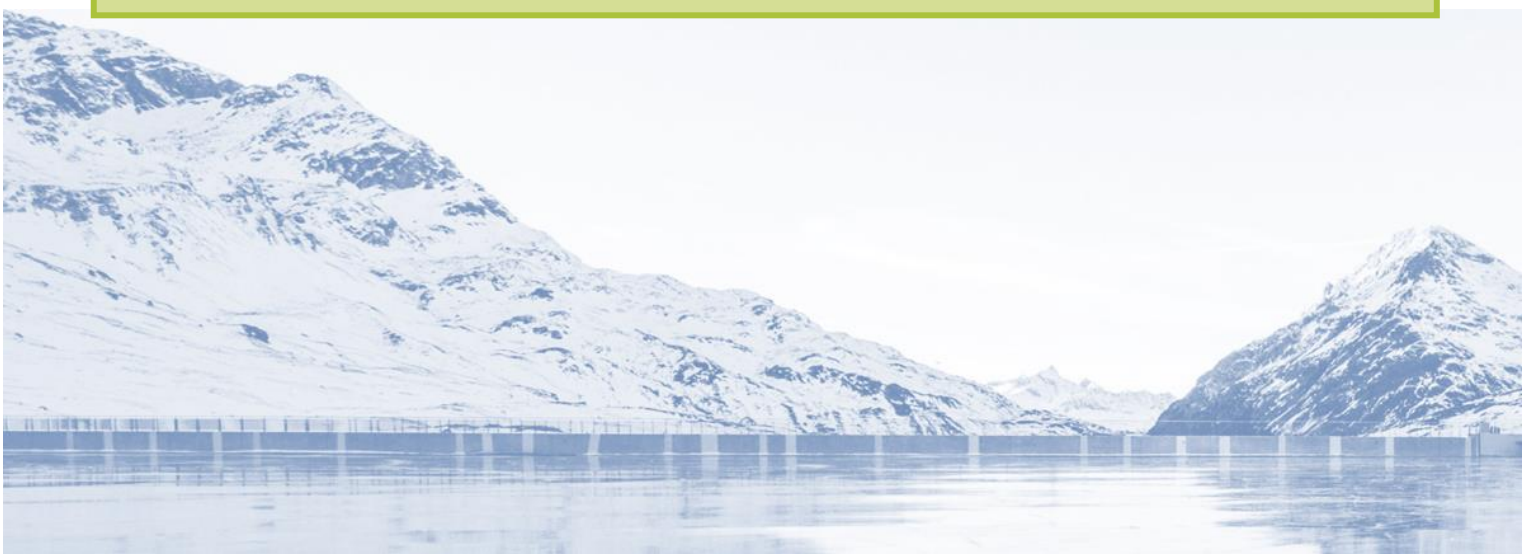
TABLE 1 REFRIGERANTS WITH THEIR GWP AND ODP

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_2O	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.

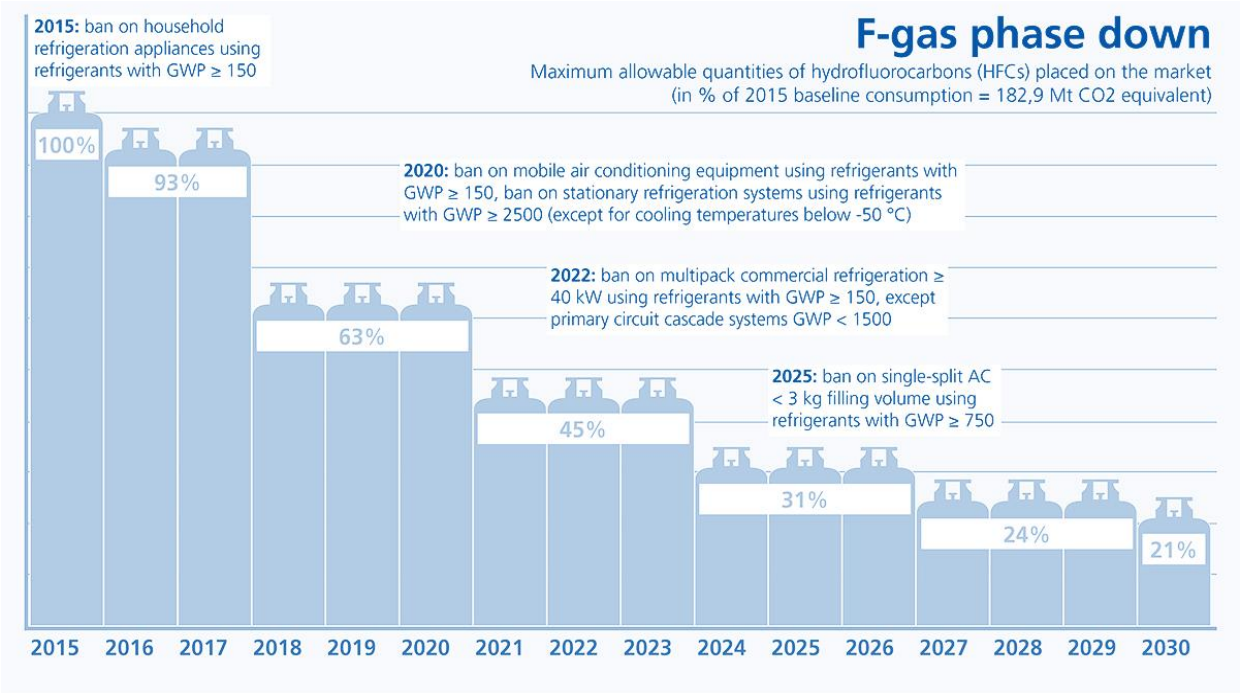


F-GAS[5] REGULATION

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?

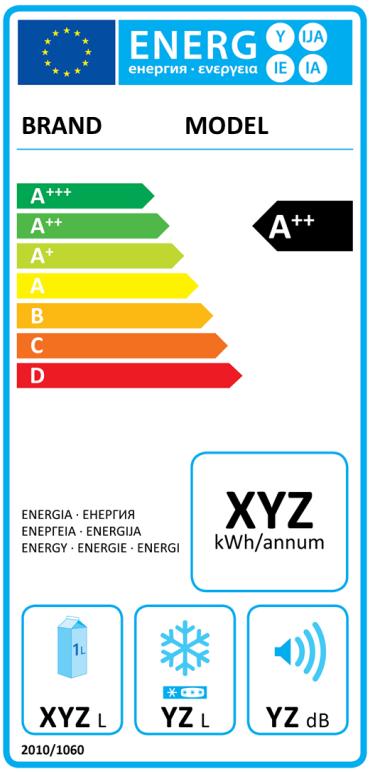
By choosing energy efficient appliances you do not only decrease your electricity bill but also decrease your carbon emissions.

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.

FIGURE 3 SAMPLE FRIDGE ENERGY EFFICIENCY LABEL



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.

DISPOSAL AT THE END OF LIFE

FOR APPLIANCES AND FOR RECYCLING OF F-GASES

Whenever refrigeration, air conditioning or heat pump equipment that incorporates fluorinated greenhouse gases reaches the end of its life, the operator of the equipment must use a certified technician to ensure the recovery and recycling of any waste gases present in the equipment.

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

FINES RELATED TO HFCs

- **APA (Agência Portuguesa do Ambiente – Portuguese Environmental Agency):** Their mission is to integrate and manage environmental policies, together with other sectoral policies and with a wide range of partners to achieve a high level of environmental protection and enhancement. APA is therefore the main environmental regulator in Portugal.
- **Roteiro Nacional de Baixo Carbono (RNBC)** aims to study the technical and economic feasibility of greenhouse gas emissions reduction development pathways in Portugal. This is part of the overall goal to reach a low carbon economy by 2050.
- Decreto Lei 85/2014, 27th of May – This decree ensures the enforcement of the rules imposed by Regulation 1005/2009, 16th of September, relating to the production, import, export, market-placement, use, recovery, recycling and destruction of ozone depleting substances. An additional goal is to communicate information about these substances as well as about the import, export, market-placement, and use of products and equipment that contain or depend on such substances.

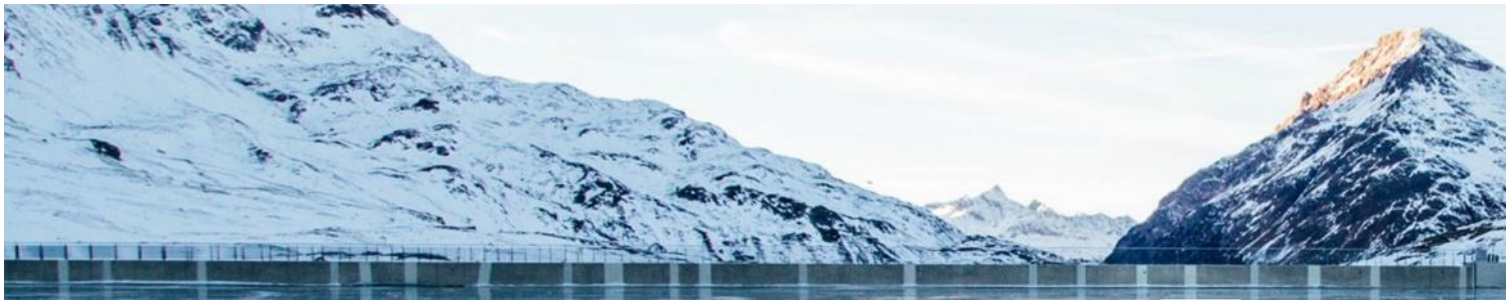
WHY IS THIS RELEVANT FOR YOU?

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.

LINKS TO PREVIOUS SECTIONS

Reference to	*Link*
Agência Portuguesa do Ambiente (APA)	Environmental protection and enhancement policy
Roteiro Nacional de Baixo Carbono (RNBC)	Low carbon development pathways for Portugal
Decreto Lei 145/2017, 30 of November 2017	End of life disposal and recycling

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



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