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Promoting energy efficiency
and responsible refrigerant management

THE NEW F-GAS REGULATION



Introduction

EPEE is the European Partnership for Energy and the Environment representing the refrigeration, air-conditioning and heat pump industry in Europe. EPEE includes 27 member companies and 17 member associations producing a/c equipment, components, refrigeration systems, heat pumps and refrigerants. EPEE member companies have manufacturing sites and research and development facilities across the EU, which innovate for the global market.

EPEE's mission is to promote a better understanding of the HVACR sector in the EU and to contribute to the development of effective European policies in order to achieve a long-term sustainability agenda.

EPEE members are committed to making the EU F-gas rules work and have worked to develop this guidance document to increase industry's understanding of their new obligations and responsibilities.

If you have any questions that were not answered in this document, please contact EPEE at secretariat@epeeglobal.org

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01



THE NEW F-GAS REGULATION IN A NUTSHELL

1. What is the EU 2014 F-Gas Regulation?

The F-Gas Regulation, or “Regulation of the European Parliament and of the Council on fluorinated gases and repealing Regulation (EC) No 842/2006” is an EU legislative instrument which is directly applicable in all EU Member States. It aims to reduce emissions stemming from F-gases and is part of the European’s climate change agenda as set out in the EU Low Carbon Roadmap.

The F-gas Regulation (EU) N 517/2014 was published in the Official Journal on 20 May 2014. The 2014 Regulation fully replaces the 2006 F-Gas Regulation as of January 2015. There are still some Commission regulations linked to the 2006 F-Gas Regulation that remain valid for now, and these will be revised by the Commission at a later stage¹.

2. Is it the same as the 2006 EU F-Gas Regulation?

The new Regulation introduces additional requirements compared to the 2006 Regulation. Although the new rules maintain the principles of the 2006 Regulation, the new rules go much further as they introduce a completely new mechanism to ensure emission reductions. This mechanism is called the phase-down and will gradually reduce the consumption of HFCs. It will also massively change the way industry can use HFCs.

3. Which gases are covered by the F-gas Regulation?

The gases covered by the EU Regulation are the so-called fluorinated greenhouse gases: HFCs, PFCs and SF₆. Not all provisions of the new Regulation apply to all types of f-gases. For example the phase-down only applies to HFCs and not to PFCs or SF₆.

4. What are the main pillars of the EU F-gas Regulation?

The 2014 Regulation is based on the same principles of containment and competence as the 2006 Regulation, but introduces **substantial additional requirements** aiming at reducing the emissions of f-gases and/or their GWPvalue where possible and feasible:

Requirements to prevent emissions (mostly based on the 2006 Regulation):

- ▶ Emission prevention and leak checks (Art. 2 – 6)
- ▶ Control of by-production (Art. 7)
- ▶ End of life treatment of products and equipment (Art. 8-9)
- ▶ Training and qualification (Art. 10)
- ▶ Information for users (Art. 12)

Requirements to reduce the use of higher GWP f-gases where possible and feasible

- ▶ Training and qualification (Art 10)
- ▶ Restrictions on new applications (Art. 11)
- ▶ Restrictions on uses (Art. 13)
- ▶ Phase-down of HFC consumption (Art. 14 onwards)

¹ Examples are the Commission regulation on labelling 1494/2007, on leak checking requirements 1516/2007 and on certification 303/2008.

5. What is the most important change introduced by the new rules?

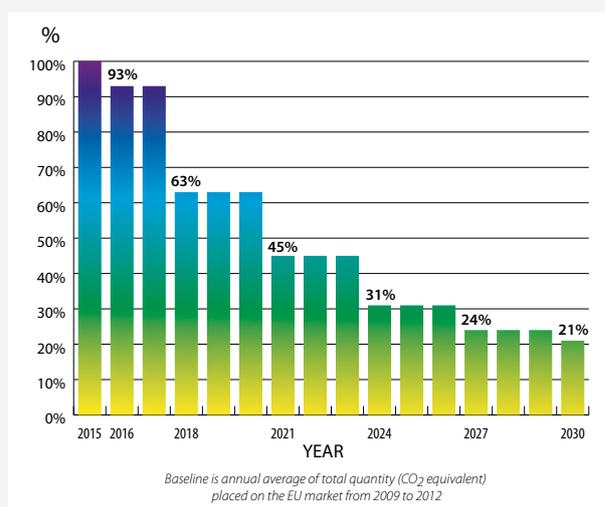
The most important new requirement is the introduction of the phase-down which will substantially change the way industry deals with f-gases.

6. What is the phase-down?

The phase-down is a step-by-step approach where the quantities of HFCs expressed in CO₂ equivalent that are placed on the market are gradually reduced through the allocation of quotas by the European Commission to producers and importers of bulk HFCs. As a result of the phase-down, HFC consumption will be reduced by 79% by 2030. This is an unprecedented reduction and means that industry and users need to make the transition to refrigerants with a lower global warming potential.

The phase-down will only apply to HFCs and not to other fluorinated gases such as per fluorocarbons and sulphur hexafluoride or unsaturated HFCs (HFOs). Of course, other provisions of the 2014 Regulation may still apply to those substances.

From the producers of HFCs to manufacturers of equipment, users of HFCs, and the personnel handling HFCs, the whole industry will be impacted by the phase-down. In the next sections we will explain the consequences.



7. Is the legislation now set in stone or can it still be altered at a later stage?

The Regulation is not set in stone, as the European Commission still has the power to amend certain non-essential elements of this Regulation to ensure that it will be properly implemented.

In particular, the European Commission has the responsibility to continuously monitor the effects of the phase-down. To do so, in the years to come it will be required to produce different reports on the availability of HFCs.

The European Commission will also carry out, by the end of 2022, a comprehensive review to assess the effectiveness of the legislation in light of new developments and international commitments.

8. Can Member States introduce stricter rules at national level?

This Regulation does not prevent Member States from introducing more stringent measures at national level. However, several conditions need to be fulfilled. For example, these national measures need to be compatible with the Treaty on the Functioning of the European Union (TFEU) and have to be notified to the European Commission.

9. What happens in case of non-compliance with the Regulation?

If operators/companies do not comply with the provisions in the Regulation and subsequent standards, they will be subject to penalties. Whilst the level of these penalties has to be defined by each individual EU Member State, the Regulation stipulates that they must be “effective, proportionate and dissuasive”.

02



FOR THOSE WHO DEAL WITH BULK HFCs

10. What are bulk HFCs?

Bulk HFCs are the HFCs which have not been integrated into any equipment. Bulk HFCs are typically contained in bottles or containers.

HFCs that are integrated in pre-charged equipment cannot be considered as bulk HFCs.

11. What are the main provisions I should be aware of?

The major change for companies dealing with bulk HFCs (i.e. producers of HFCs, importers of HFCs) will be the introduction of the HFC phase-down in 2015 which will gradually reduce the availability of HFCs on the EU market.

To implement this gradual reduction, the European Commission will limit the total amount of HFCs that can be placed on the market. More precisely, the European Commission will determine the amount of HFCs that each company that produces or imports bulk HFCs is allowed to place on the market. These quantities – so called quotas – will be expressed in CO₂ equivalent and will not be refrigerant-specific. Companies receiving a quota need to make sure they do not exceed it.

By introducing the phase-down and subsequent quota allocation, the European Commission grants the market the flexibility to use different types of HFCs, whilst steering innovation towards the uptake of lower GWP HFCs and meeting the EU's environmental objectives.

The focus on GWP and their CO₂ equivalents (rather than weight, as in the 2006 Regulation) goes further than the phase-down and can be found in other relevant provisions of the new rules. For example, leak checks will now be based on CO₂ equivalents rather than kilograms. More information on this point can be found below.

Other relevant provisions relate to labelling, reporting, and feedstock. In addition, distributors of refrig-

erants will now also need to check that the buyers of refrigerants are certified².

12. How does the quota system work?

Quotas are expressed in CO₂ equivalent. This means that the higher the Global Warming Potential (GWP) of a refrigerant, the higher the amount of CO₂ equivalent for a given number of kilograms and the higher the quota required. For example, 10kg of the refrigerant R134a which has a Global Warming Potential (GWP) of 1430 will correspond to a quantity of 10kg x GWP1430 = 14,300kg of CO₂ equivalent, whilst 10kg of R404A (GWP3922) will correspond to 39,220 kg of CO₂ equivalent.

The quotas are calculated annually, and the European Commission has set aside a special reserve for new comers, which is called the new entrants reserve, to ensure that they can also enter the HFC market. The European Commission will decide how many quota each company receives, based on a pro-rata calculation set out in the Regulation³.

The deadline for quota application for 2015 quota was on 1st July 2014. The EU Commission's notice to that effect can be found here.

13. Can I apply for quota?

Yes. Companies dealing with bulk HFCs (in contrast to HFCs contained in pre-charged equipment) can apply for a quota, regardless of whether they are based inside or outside the EU. If they are based outside the EU, they will need to mandate an "Only Representative" in the EU to be able to apply for a quota.

² For more detailed information about these requirements, please contact the EPEE Secretariat: secretariat@epeeglobal.org

³ See Annex VI for the calculation methods.

14. Can anyone else apply for quota?



No. Only companies producing or importing bulk HFCs can apply for a quota. Manufacturers or importers of equipment cannot directly apply for a quota (unless they establish a company that imports bulk HFCs).

15. Are quotas free of charge?

The quotas are allocated free of charge and are based on so-called “grand-fathering”. The question as to whether a price should be set for the quota, i.e. whether an allocation fee should be introduced, may be discussed in 2017.



03



FOR THOSE MANUFACTURING EQUIPMENT AND PRE-CHARGED PRODUCTS

16. What is meant by pre-charged equipment?

Pre-charged equipment can be defined as refrigeration, air conditioning, and heat pump equipment that has been pre-charged with HFCs in the factory.

17. What are the new obligations for manufacturers of pre-charged equipment?

Although manufacturers of pre-charged equipment cannot directly apply for a quota, they will need to ensure that the HFCs contained in the equipment are accounted for within the phase-down, i.e. are covered by the quota. Proof will be required in the form of a “traceability system” based on reporting and a declaration of conformity. The traceability system applies both to manufacturers based inside and outside the EU (via their importers).

18. How does the traceability system work exactly?

LOCATION OF MANUFACTURING THE EQUIPMENT	POSSIBILITIES
<p>IN EU : Equipment is pre-charged in an EU-based factory & placed on the EU market</p>	<p>The equipment manufacturer purchased the HFCs from an HFC supplier in the EU, which is “automatically” covered by the phase down. The options are as follows:</p> <ul style="list-style-type: none"> ▶ An HFC producer in EU: HFC producer needs quota. ▶ An HFC importer in EU: HFC importer needs quota. ▶ An HFC downstream “distributor” in EU : This distributor does not require a quota, but the entity that placed the HFC on EU market for the first time needs a quota (the original producer or importer of HFC).
<p>OUTSIDE EU : Equipment is pre-charged in a non-EU based factory and placed on the EU market via an EU-based importing company</p>	<p>A. The equipment manufacturer purchased the HFCs from an HFC producer or importer that has a quota. The options are as follows:</p> <ul style="list-style-type: none"> ▶ An EU-based HFC producer or importer holding a quota and first placing the HFC on the EU market, and then shipping it outside the EU. ▶ A non-EU based HFC producer that holds a quota via an ‘Only Representative’ in the EU. <p>B. The equipment manufacturer purchased the HFCs from an HFC producer or trader that has no quota.</p> <ul style="list-style-type: none"> ▶ Any “incumbent” HFC quota holder can still grant the equipment importer the authorization to use a quota.

19. Do manufacturers inside the EU have different obligations from manufacturers outside the EU?

In both cases, manufacturers need to prove that the HFCs pre-charged in the equipment are accounted for under the EU phase-down by establishing a Declaration of Conformity as of 2017.

Manufacturers outside the EU and/or their importers in the EU have the following additional obligations:

- ▶ As of 2015, importers of pre-charged equipment that placed 500 tonnes of CO₂ equivalent or more on the market during the preceding year have to report their imports to the European Commission through the online register.
- ▶ As of 2018, the declaration of conformity needs to be verified by an independent auditor.

20. What other obligations are relevant for manufacturers?

There are two sets of provisions that are particularly relevant for equipment manufacturers: the extended bans and the new labelling provisions. Both will be explained below.

21. What new bans have been introduced?

The new bans particularly target refrigeration and air-conditioning applications. Below you will find the overview of the different bans and their dates of entry into force. These bans complement the bans that are already in force since the 2006 Regulation.

10. Domestic refrigerators and freezers that contain HFCs with GWP of 150 or more		1 January 2015
11. Refrigerators and freezers [...] for commercial use (hermetically sealed systems)	that contain HFCs with GWP of 2500 or more	1 January 2020
	that contain HFCs with GWP of 150 or more	1 January 2022
12. Stationary refrigeration equipment, that contains, or that relies upon for its functioning HFCs with GWP of 2500 or more except equipment intended for application designed to cool products to temperatures below -50°C		1 January 2020
13. Multipack centralised refrigeration systems for commercial use with a capacity of 40kW or more that contain, or that rely upon for their functioning, fluorinated greenhouse gases with GWP of 150 or more, except in the primary refrigerant circuit of cascade systems where fluorinated greenhouse gases with a GWP of less than 1500 may be used		1 January 2022
14. Movable room air-conditioning appliances (hermetically sealed equipment which is movable between rooms by the end user) that contain HFCs with GWP of 150 or more		1 January 2020
15. Single split air-conditioning systems containing less than 3kg of fluorinated greenhouse gases, that contain, or that rely upon for their functioning, fluorinated greenhouse gases with GWP of 750 or more		1 January 2025
16. Foams that contain HFCs with GWP of 150 or more except when required to meet national safety standards	Extruded polystyrene (XPS)	1 January 2023
	Other foams	1 January 2018
17. Technical aerosols that contain HFCs with GWP of 150 or more, except when required to meet national safety standards or when used for medical applications		1 January 2018

22. Can manufacturers and/or products be exempted from the bans?

Yes. The Regulation provides for two options:

- ▶ Where alternatives are not available or cannot be used for technical or safety reasons, or where the use of such alternatives would entail disproportionate costs, it is possible to get an exemption for a period of four years. To get such an exemption, the respective Member State needs to request the exemption on behalf of the manufacturer, and this request would then need to be approved by all other Member States and the European Commission.
- ▶ If, during its lifecycle, equipment would achieve lower overall greenhouse gas emissions with HFCs (taking into account leakage and recovery rates) than the same equipment without HFCs. This would need to be set out in the relevant implementing measures that are adopted under the Ecodesign Directive.

23. Is it necessary to change the labels?

Until the end of 2016 the existing equipment labels (such as AC and heat pump equipment⁴) can be used. From 2017, labels for new equipment placed on the market will need to be changed as the new legislation requires slight adaptations compared to the 2006 regulation.

The existing labelling obligations (readability, ineditibility, the indication of GWP quantities, translation and location) will be maintained, but as of 2017 refrigerant quantities will need to be indicated in CO₂ equivalents.

It will also be necessary to include information on GWP (for gases with a GWP above 150) in descriptions used for advertising. The Commission has not yet specified further details about such advertising requirements.

If recycled or reclaimed refrigerants are used, the batch number and name and address of the reclamation or recycling facility must be indicated.

⁴ Article 12.1 gives an exhaustive overview of the equipment that will need to bear a label: refrigeration equipment; air-conditioning equipment; heat pumps; fire protection equipment; electrical switchgear; aerosol dispenser that contain fluorinated greenhouse gases, with the exception of metered dose inhalers for the delivery of pharmaceutical ingredients; all fluorinated greenhouse gas containers; fluorinated greenhouse gas-based solvents; organic rankine cycles.

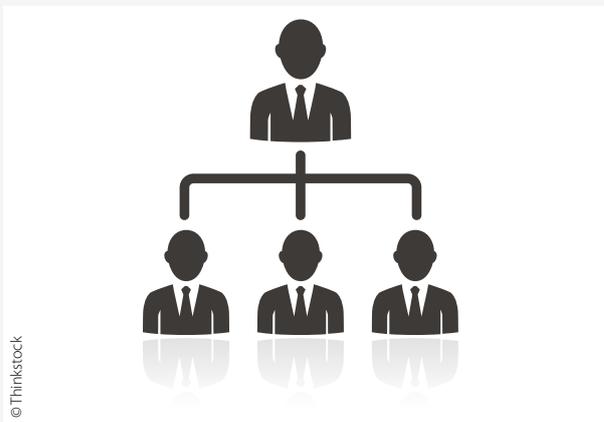
04



FOR OPERATORS AND USERS OF F-GASES

24. What are operators?

The operator is the natural or legal person exercising actual power over the technical functioning of products and equipment. A Member State may in specific situations designate the owner as being responsible for the operator's obligations.



25. How will the phase-down and bans affect me?

Although an operator may not be the company producing HFCs or making equipment, the phase-down will still have an impact, given that there will gradually be less HFCs available, and they are likely to become more expensive. This is important to keep in mind when planning for future service and maintenance. It is expected that alternative refrigerants will be increasingly used, especially in those applications where bans will enter into force. As most alternatives are flammable, it is very important to be aware of these alternatives and their specificities in order to ensure that they are handled in a safe, compliant and efficient manner.

For an explanation of the main principle of the phase-down and the bans, please see the previous sections.

26. Can equipment still be serviced and maintained with HFCs?

Yes, but certain restrictions apply.

As of 2020, refrigeration equipment with a charge size of 40 tonnes of CO₂ equivalent or more will no longer be able to be serviced or maintained with virgin HFCs with a GWP above 2500. Note that this ban does not apply to military equipment or equipment intended for applications designed to cool products to temperatures below – 50 °C.

Until 2030, recycled or reclaimed HFCs with a GWP above 2500 can still be used for service or maintenance purposes.

There are no restrictions for the service and maintenance with HFCs with a GWP below 2500.

27. Are operators still required to prevent emissions of f-gases?

Yes. Operators will still be required to use all available measures to prevent emissions of F-gases, for example:

- ▶ Regular leak inspection on equipment installed in the market and repair any leaks from refrigeration, air-conditioning and heat pump equipment without undue delay.
- ▶ After the reparation, the operator will need to ensure that the equipment is checked by a certified person within one month after the repair to ensure that the repair has been effective.
- ▶ Recovery during service works and at end of life of the equipment (no release to the atmosphere).

28. Which equipment will need leakage testing?

Just like the 2006 Regulation the regularity of checking depends on the refrigerant content of the equipment (per refrigerant circuit). However, instead of basing the content on the amount in kilograms (as was the case in the 2006 legislation), the leak checks will now depend on the amount of tonnes of CO₂ equivalent contained in the refrigerant circuit:

- ▶ For equipment that contains fluorinated greenhouse gases of between 5 and 50 tonnes of CO₂ equivalent per circuit, checks will need to be done every 12 months (or 24 months with a leakage detection system). Equipment with less than 3kg charge which was previously exempted may now need to be leak checked. Example: systems with 1.2kg of 404A.
- ▶ For equipment between 50 and 500 tonnes of CO₂ equivalent per circuit, the checks will need to take place every 6 months (or 12 months if you have a leakage detection system).
- ▶ For equipment with over 500 tonnes of CO₂ equivalent per circuit, the checks will need to take place every 3 months (or 6 months if you have a leakage detection system).

Amount of tonnes of CO ₂ equivalent / circuit	Frequency of leakage checks	
	Without a leakage detection system	With a leakage detection system
From 5 to 50 tonnes	Every 12 months	Every 24 months
From 50 to 500 tonnes	Every 6 months	Every 12 months
Over 500 tonnes	Every 3 months	Every 6 months

If equipment is hermetically sealed, it is not subject to leak checks if the quantity in the circuit is less than 10 tonnes of CO₂ equivalent, provided that the equipment is labelled as such.

29. Are there any minimum requirements for a leakage detection system?

Yes. The following requirements will apply:

- ▶ Operators of stationary refrigeration equipment, stationary air-conditioning equipment, stationary heat pumps, and stationary fire protection equipment containing HFC in quantities of 500 tonnes of CO₂ equivalent or more, shall ensure that the equipment is provided with a leakage detection system which alerts the operator or a service company of any leakage.
- ▶ Operators of electrical switchgear and organic Rankine cycles, containing HFCs in quantities of 500 tonnes of CO₂ equivalent or more and installed from 1 January 2017, shall ensure that this equipment is provided with a leakage detection system which alerts the operator or a service company of any leakage.
- ▶ Operators of stationary refrigeration equipment, stationary air-conditioning equipment, stationary heat pumps, stationary fire protection equipment, and organic Rankine cycles shall ensure that leakage detection systems are checked at least once every 12 months to ensure their proper functioning.
- ▶ Operators of electrical switchgear shall ensure that leakage detection systems are checked at least once every 6 years to ensure their proper functioning.

30. Will all equipment need to be tested for leakage?

No. The below equipment will be exempted from the leakage checking requirements:

- ▶ Equipment with less than 5 tonnes of CO₂ equivalent;
- ▶ Equipment labelled as hermetically sealed that contains less than 10 tonnes of CO₂ equivalent;
- ▶ Some electrical switchgear;
- ▶ Until 31 December 2016, equipment that contains less than 3kg of fluorinated greenhouse gases or hermetically sealed equipment, which is labelled accordingly and contains less than 6kg of fluorinated greenhouse gases.

31. Is it mandatory to have a leakage detection system?

It depends on the type of equipment:

- ▶ It is not mandatory for equipment with a charge size below 500 tonnes of CO₂ equivalent to have a leakage detection system. However if a leakage detection system is in place, the frequency of leakage checks will be reduced.
- ▶ From 2015, it is mandatory for stationary refrigeration, air conditioning, heat pumps and fire protection equipment containing f-gases of 500 tonnes of CO₂ equivalent or more (it was already mandatory under the 2006 Fgas regulation for charges of 300kg or more).
- ▶ From 2017 it is also mandatory for electrical switchgear and organic rankine cycles.

32. On what criteria do leakage checks need to be based?

As in the 2006 Regulation, the regularity of checking depends on the refrigerant content of the equipment (per refrigerant circuit). However, according to the new rules the leak checks will depend on the amount of tonnes of CO₂ equivalent contained in the refrigerant circuit (instead of basing the thresholds on the amount in kilograms as was the case in the 2006 legislation). In practical terms, this means that leak checking obligations may now apply to equipment where this was not the case before. This happens typically when the global warming potential of the refrigerant is high, as in such cases the threshold expressed in CO₂ equivalent may be reached before the charge size threshold expressed in kg which was applied previously.

Leak checking requirements only apply to HFCs, PFCs, and SF₆ mentioned in Annex I, or to blends containing any of those substances. Leak checking requirements do not apply for equipment listed in Annex II, for example it does not apply to unsaturated HFCs (HFOs).

The new regulation uses the 4th IPCC assessment values (as opposed to the 3rd IPCC assessment values which were used in the 2006 Regulation) and different Annexes refer to the values:

- ▶ **Annex 1** lists the GWP value for single component F-Gases;
- ▶ **Annex 2** covers other fluorinated greenhouse gases for which leakage checking is not mandatory);
- ▶ **Annex 4** outlines the method to calculate the total GWP of a mixture or a blend. This Annex also lists the GWP value to be used for non-fluorinated substances that are used in mixtures or blends.

33. Who will need to take care of recovery and reclaim of refrigerants?

Both the operators of stationary equipment and of refrigerated trucks and trailers will need to ensure that the recovery, reclaim or destruction of f-gases (not contained in foams) is carried out by certified people. Trains, trams or buses are not subject to this provision.

34. When do f-gases need to be recovered?

Recovery, for the purpose of recycling, reclamation, or destruction of the fluorinated greenhouse gases, should take place before the final disposal of equipment and, when required, during its servicing and maintenance.



05



FOR INSTALLERS OF EQUIPMENT

35. Who requires certification?

As with the 2006 Regulation, both natural persons dealing with f-gases as well as undertakings that carry out installation, service or maintenance need to be certified.

36. Will training and certification requirements now be harmonised at EU level?

No. There is no single training or certification system for all EU Member States. The responsibility for establishing and evaluating certification programmes will still lie with Member States. They will need to make sure that training is available for persons and companies that deal with f-gases (i.e. install, service /maintain, decommission, check for leakage, or recover).

The Regulation still maintains the principle of mutual recognition, which means that a certificate or training attestation in one Member States must be recognized in another Member State.

37. Do “old” certificates or training attestations need to be renewed?

No. The existing certificates and training attestations will remain valid.

38. With the uptake of alternative refrigerants, will training also be required for these?

The certification and training programmes will indeed now need to include information on relevant technologies to replace or reduce the use of fluorinated greenhouse gases and their safe handling.

For detailed information on training and certification requirements, please get in touch with EPEE member AREA through www.area-eur.be.





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ANY OTHER QUESTIONS?

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