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Subject: **Comments on draft Task 1-6 Report of the Preparatory/review study for the Ecodesign & Labelling Review of Household Refrigeration Appliances**

Thank you for the opportunity to review and comment on the on draft Task 1-6 Report of the 'Ecodesign & labelling review household refrigeration – preparatory/review study'. We would also very much welcome an opportunity to provide comments on the last task of the study when the draft becomes available.

The following comments were prepared by CLASP Europe based on both the draft Task 1-6 Report posted on the review project website[1] in June 2015 and the discussions that took place during the second stakeholder meeting on 14 December 2015 in Brussels.

1. Comments on overall approach to MEPS and label thresholds

We note that there is significant scope for improvement with a further 30% to 50% of energy savings between LLCC measures and the current base case (Table 69 of the Task 1-6 report). To ensure that this scope is indeed exploited, the regulatory framework must encourage deployment of all of the noted technologies. The measures should also steer citizens towards smaller appliances as well as towards more efficient appliances.

However, the Tasks 1 to 6 report so far raises some concerns that we suggest should be either further explained, or addressed through additional analysis. It appears that the proposals made to date:

a) **Are not intrinsically able to encourage highest efficiency of the smallest internal volume appliances and the largest internal volume appliances** because they remain based upon a 'straight line' requirement of kW/annum against adjusted volume. This approach has for many years attracted criticism for being unable to apply pressure on both small and large appliances. The EU now has very efficient small appliances but its large appliances are far less efficient than

[1] http://www.ecodesign-fridges.eu/Pages/documents.aspx.

those of the USA[2]. This is why a curved line is advocated by IEA4E, CLASP and other stakeholders. Australia is now considering a practical and thoroughly researched proposal for this very issue[3]. There are precedents in Europe of such curved lines in ecodesign requirements or energy label thresholds, for example in the lighting regulations in place or in the Commission Working Documents presented to the Consultation Forum on 10 December 2014 for ecodesign and energy labelling regulations of electronic displays. If necessary, a different equation could be used for the smaller volume appliances as compared to the larger volume appliances, as used for directional lamps for above and below lumen output of 1,300 lumen. It is not clear to us from the Review Study report how this can be addressed by the EU proposal.

Requirements based upon surface area could be one way to tackle this: the vast majority of heat load is proportional to the surface area (i.e. heat gain through the insulation) and not to the internal volume of the appliance (on which the metric is based). The desirability of a metric based on surface area is accepted in several economies and whilst we are not aware of this yet being implemented anywhere, the EU could pioneer this and so directly address problems such as relative stringency for large and small appliances.

We would also advocate plotting the threshold development graphs as kWh/annum versus adjusted volume, which more transparently reflects the practical situation. The curves of kWh/litre versus volume give a potentially *false* impression that stringency is adequately increasing for larger appliances. Graphs in the IEA4E benchmarking study of May 2014 show clearly how much more efficient larger appliances are in the USA where thresholds are more stringent for larger appliances. The rationale for plotting kWh/litre/annum versus adjusted volume is not clear to us.

b) **Could encourage manufacturers to make appliances with an even larger internal volume**, rather than invest in the new technologies. Due to the 'straight line' requirements, suppliers could use the previous technologies in an appliance with a much larger internal volume and so improve the energy label or meet the MEPS – this will also mean larger consumption (even if *efficiency* is better).

c) **May not enable manufacturers to justify investment in variable speed drives and dual thermostats** because they use a 'static' energy test with no variability of the load during testing. Static testing suggests a risk that it will not adequately reveal the energy savings of variable speed drives (16% to 23%, Table 54 of the Review Study report) and dual thermostats, both of which make significant savings in real usage. Manufacturers may therefore not have the means to justify moving to those technologies, especially if increasing the internal volume is much cheaper. Testing and regulations in Japan have incorporated the load processing part of IEC 62552: 2015 (as also in the predecessor standard in Japan) and this has arguably helped to ensure recognition and therefore deployment of these technologies. The VHK report notes on p31 that "*it is perceived that the load processing test has little added value*" but it is not clear what alternative requirements of the regulation or test can be shown to encourage these technologies.

[2] See IEA4E Benchmarking report for Domestic Refrigerated Appliances, May 2014.

[3] See Household Refrigeration Appliances: New Star Rating Algorithm Proposal for the IEC Test Method, Development of a new star rating system for household refrigerators and freezers in Australia and New Zealand using test method IEC62552-3, Energy Efficient Strategies for the Australian government, EECA and E3, May 2015. Available from http://www.energyrating.gov.au/document/report-household-refrigeration-appliances-new-star-rating-algorithm-proposal-iec-test.

(Note: We accept that the ambient temperature of test is slightly elevated (25°C is "*3℃ to 4℃ higher than the actual EU average ambient*"[4]) and so will ensure that the annual consumption seen on the label is inflated to compensate for absence of door openings and no loading of ambient temperature foodstuff during test.
Note: we also recognise that the load processing test also has disadvantages that must be weighed up: it could cancel out the substantial reduction in cost of testing that would otherwise result from EN 62552: 2016; however, the cost of testing refrigerators remains substantially less than that of testing dishwashers and washing machines, despite the refrigerator accounting for a much higher proportion of EU consumption which could justify more exacting and effective tests. The load processing test also introduces risk of reduced repeatability due to necessary intervention of test technicians during the test).

d) **Do not attempt to address energy consumption of auxiliary functionalities.** Information requirements are likely to be appropriate for some functionalities, but this is not possible in the short or medium term because EN 62552: 2016 is not planned to include transposition of the energy testing of auxiliary functions which is provided in IEC 62552: 2015. This gap would have to be corrected before policy-makers could even consider tackling this growing part of the market.

CLASP recommends that the study team reviews the proposed new algorithm for Australian MEPS and labels (report from May 2015 as noted above) as this provides insight into several issues raised in these notes. The specific equation proposal for Australia is tailored to that market and is not appropriate for the EU, but valuable lessons and insights can be gained from that research.

2. Label class design

The consultation forum was invited to submit comments on how the energy label classes should be set. We offer some pointers on this from our experience:

a) The declared annual consumption and label class should accurately reflect the annual consumption that the typical citizen should expect from the appliance; similarly, the label class achieved by two appliances should accurately reflect their actual relative consumption. This is emphasised because use of adjustment factors (for glass door, built-in etc.) can distort this principle. Concessions or factors can be applied for MEPS in order to avoid removing necessary functionality from the market, but these concessions should not be applied to energy labels.

b) The classes must leave substantial scope for the potential cost-effective improvement of 30% to 50% identified in the study, which could imply leaving the top three classes empty: it seems reasonable to assume continuation of the long term trend for improvement of energy consumption of around 3% per annum (observed trend over the last 25 years). Another 10 years at this rate would only reach the lower estimate of available potential.

c) Classes should become slightly narrower in range towards the higher classes, to ensure sustained incentive to improve, rather than risk stalling the market due to too high a jump to the next highest level.

[4] VHK report on Tasks 1-6, page 31.

d) Width of classes must be substantially larger than the measurement tolerances to avoid encouraging exploitation of tolerances.
e) The upper class(es) should be set well above current BAT.

3. Comments on specific technical issues:

3.1. Scope

3.1.1. Inclusion of non-household

The interdependency of the regulations for household refrigerators and professional refrigerators has been discussed at the consultation forum. It was a pragmatic choice to exclude professional chest freezers from regulations 2015/1094 (energy labels) and 2015/1095 (eco-design) as these appliances are technically indistinguishable from household chest freezers and the testing and efficiency requirements would and should be identical. If non-household appliances were to be excluded from the household refrigerator regulations, then this would open up a loophole and the professional refrigeration regulations would have to be updated to replicate the household requirements for chest freezers (a substantial addition to the documents).

3.1.2. Wine storage appliances

We strongly support the introduction of MEPS for wine storage appliances with continuation of the current definition for wine storage appliances. We have no strong objection to the interim use of an adjustment factor to set less stringent MEPS for wine storage appliances with a glass door in order to allow suppliers additional time to adapt their designs, since wine storage appliances represent a minor part of the market and engineering effort is more usefully focused on the better-selling products during the initial period of the new regulation. Stringency should be increased for wine storage appliances with a glass door at Tier 2, then matching the Tier 1 requirement for solid doors. However, as noted above regarding label class design, we oppose the use of such adjustment factors for energy labels, which should from the outset reflect the actual relative consumption of the appliances.

3.1.3. Absorption and other cooling cycle appliances

The Task 1 to 6 report does not yet mention what is intended in the new regulation for absorption type and other cycle appliances, representing perhaps 1% to 2% of sales. CLASP supports their continued inclusion and an increase in stringency in proportion with the technology options that are relevant to those appliances. The energy label earned should accurately reflect the relative consumption of these appliances compared with conventional appliances. In addition, clarification will be necessary on how these appliances are to be tested since it will not be possible for them to achieve the required storage temperatures in the high ambient temperature test (at 32°C). Our understanding is that they can be tested in a single test at 25°C, but the implications of this to relative efficiency should be clarified.

3.1.4. Camping/mobile-home multi-fuel refrigerators

The VHK report notes that the typical camping/mobile-home multi-fuel refrigerators that can run on AC or DC electricity or on butane are not mentioned in the current regulation (page 17). CLASP supports their exclusion from MEPS at least until regulatory review. Since a proportion of these products are likely to be in permanent usage for mobile homes (that sub-type could perhaps be defined and become a focus of policy), information requirements could be justified from a suitable date before review so that data can be gathered.

3.2. Correction factors

3.2.1. Frost free factor

Section 8.2.3 of the Review Study report concludes that a correction factor of around 1.2 is appropriate when applied only to the freezer volume. However, the Australian data presented in section 9.3.7 of the Review Study report, *Compensation for no-frost*, is in line with the data and conclusion presented in the 2012 Defra report[5], supporting a reduced correction factor. Moreover, the Defra report indicates that "market data has shown that it is possible to make frost-free appliances that are as efficient as static appliances when comparing energy consumption claims". If there is no risk that ecodesign requirements based on static appliances would compromise the availability of this feature, a correction factor could only be justified if proportional savings are demonstrated in real-life conditions. We could however not find sufficient data to defend this option.

The conclusion of the Defra report on the question of the frost free correction factor is still valid:

> *There is a need for robust information on the performance of frosted up static appliances before the possible scenario of a move back to static appliances is considered. It is generally expected that the market will find a way of continuing to make frost-free appliances competitive and attractive to consumers with or without the correction factor.*

As for other correction factors, we in any case recommend not to include it in the label in order to guarantee transparency and comparability. This could be re-considered should the real life efficiency benefits of frost free be demonstrated and quantified.

We recommend that an information requirement should be defined that would enable to European Commission to collect information on the extra energy consumption due to the frost free function, and that the consumption of the frost free function should be a specific focus of the review

3.2.2. Built-in appliances and associated factors

CLASP supports adoption of the CECED improved definition and removal of the width restriction. We emphasise the expectation that the energy label should reflect the actual relative consumption of the

[5] "Assessment of the applicability of current EC correction factors and tolerance levels for domestic refrigerating appliances, Final Report Version 1.0", Intertek, A research report completed for the Department for Environment, Food and Rural Affairs, London, UK. August 2012

appliance in its intended location of use. As the report indicates that "built-in appliances are showing a steady growth" we find it all the more important to make sure that consumers understand that these appliances consume more than their stand-alone counterparts. The Review Study report suggests that a factor must be applied to compensate for design constraints (side-wall thickness limitation) and to reverse the effect of differences between the test for built-in units and the test for free-standing units that are inherent in IEC 62552: 2015. Our understanding is however that these differences in test methods are meant to reflect the real use conditions (placed in an enclosed space). In this case, CLASP does not support the use of that factor for the label and would only support it for MEPS if needed to avoid availability issues.

3.2.3. Glass doors

CLASP accepts the interim use of an adjustment factor to set less stringent MEPS for wine storage appliances with a glass door, but CLASP does not support concessions for glass doors on conventional refrigerators for MEPS or for labels due to glass doors having less effective insulation.

3.2.4. Chill compartment

(Our understanding is that this section of the Review Study report requires updating – comment on the current content appears inappropriate for this complex area and we would appreciate an opportunity to comment on the updated version).

3.3. Testing

3.3.1. Circumvention devices

This issue is a growing concern that appliances could be put on the market that includes a device that modifies or affects its consumption pattern during testing making the efficiency test results look more advantageous than they should. This issue does not only concern refrigerators and should be addressed in a horizontal policy piece, potentially at Member State level. However, in order to prevent any loophole, we recommend that the regulations should specify that if circumvention is detected the product is non-compliant.

4. Life cycle impacts and costs

4.1. Impact of an improved durability

Concerning product durability, the recent Ricardo-AEA study The Durability of Products – like many others – "uses the best available literature data, Preparatory Study for Eco-design Lot 13" as input to their model. This demonstrates the importance of what will be stated in the report as it may be used as a reference for the many years to come. For this reason, we would recommend to clearly indicate the limitations on the analysis presented in the report of the Review Study.

For example, the Ricardo-AEA study is quoted in the Review study to confirm that extending the durability of refrigerators does not lead to significant environmental benefits. However, the Ricardo-AEA study is based on the 2007 Preparatory Study for Refrigerators which describes models from 2005. This constitutes an outdated reference that should at least be flagged in the report, and one of the consequences is that the conclusions are based on outdated product information. In particular, the yearly energy consumption of the initial product is as high as 324.4 kWh/year, which corresponds to the 2005 base-case whereas the analysis for the Review study should rather be based on the characteristics of the products that will be affected by the regulations, i.e. put on the market around 2018.

Besides energy efficiency in use, another feature that could have a significant impact on the benefits of extending the durability of refrigerator, at least in terms of their CO_2-eq impact, is the Global Warming Potential (GWP) and management of their refrigerant gases. We suggest that the Review Study report should at least discuss the impact of the F-gas regulation when referring to the life cycle assessment of 1999 or 2005 products. This particular addition would tend to support the conclusion presented in the Review Study that there is no benefit to lifetime extension, however we find it important to highlight for stakeholders all aspects that should be considered to estimate the impact of a lifetime extension for a 2018 refrigerators.

In terms of potential requirements concerning the durability of products, the JRC report *Integration of resource efficiency and waste management criteria in European product policies – Second phase – Report n° 2 Application of the project's methods to three product groups*[6] provides some examples of requirements in Ecolabel criteria for energy related products.

[6] http://publications.jrc.ec.europa.eu/repository/handle/JRC77186