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Stakeholder	Section No./ Subsection No./ Annex (e.g. 3.1)	Page and Paragraph/ Figure/Table/Note (e.g. p 6 para 5)	Type of comment	Comment (justification for change) by the Stakeholder	Proposed change by the Stakeholder	Comment study team on action
Daikin	7.1.3.1 b)	P7 Figure 1	Te	Home appliance will be used for 10-15 years, but major communication media changes every 3-5 years, even hard or software. To avoid that the communication part is outdated before the appliance is end of life, it can be beneficial to have the communication part as a separate module. To accelerate the spreading of smart appliances to the 100% scenario, both options should be supported: - Integrated control (connectivity) - External/optional connectivity.	-	The comment is general and does not relate to 7.1.3.1 b). It is correct that communication hard/software and also protocols change or will be updated frequently. However, this does not necessarily mean that older communication modules cannot handle the energy smart signals because these are quite simple signals with little information content. In order to get the Energy Smart logo, the functionality need to be built in at delivery and cannot be an add-on module. Also because the signal processing is closely linked to the internal logics and programming of the appliance. No change in text made.
Daikin	7.1.3.1 b)	P8 Figure 2	Te	We support a simple, single smart icon, on the Energy Label and/or on the product. This is a good to create market awareness. A non smart icon may create confusion because you may have products with a smart label, without and with a non smart label.	Keep the "energy smart icon" as the tool to create market awareness.	The basic suggestion in the report is to have an energy smart logo / icon on appliances complying with the energy smart requirements. The non-energy smart logo / icon has been proposed by stakeholders. All proposals should be considered and a consumer understanding study should be carried out before a decision on a specific logo / icon will be taken. No change in text made.
Daikin	7.3.1.2	P16 Last para P17 1 st para	-	The assumption that energy consumption increase is negligible @ the time of more required consumption is difficult to estimate and will depend on the application. The assumption that energy savings due to optimisation may compensate the energy loss and create actual energy savings in most cases, please consider that this is a separate service that is may not be free of charge. We agree that adding the functionalities as described opens additional business cases and may help to promote energy smart, but they will not necessarily need the same requirements as energy smart appliances.	-	Text is added to clarify that a pre-condition is that there is sufficient remuneration for the end-users
Daikin	7.3.1.2	P16 Last para P17 1 st para	Te	The power consumption may be considered negligible compared to the total consumption, but when a comparison will be made between 2 identical units, one with smart function and one without smart function. The one with the smart function will consume more energy. Should this be reflected in the Energy label or eco-design date, it may steer the market away from the smart function.	Add note: Consideration shall be given that the additional consumption of the smart functionalities does not give a negative influence on the eco-design or energy label data.	The consortium agrees that there might be a certain trade off between energy efficiency and energy smartness (flexibility). The consortium also agrees that special care should be taken so that these aspects are properly taken care of. This is expected to be solved by the combination of the technical requirements: one which states that energy smartness functionality can be disabled, and the other which states that this functionality is disabled by default. In this line, it is expected that the energy efficiency testing procedures will be executed with the energy smartness functionality off, and that the energy efficiency category shall not be affected. The text is changed to emphasize this issue more.
Daikin	7.3.2.2	21 2 nd para 2 nd dot.	Te	Financial impact: The products at which the value/appliance increases is limited. It is so in both the BAU or 100% scenario. Tertiary cooling - compressor and defrost has an increase in the BAU scenario, but considering upcoming legislation, the reality may be somewhere between the BAU and 100% scenario HVAC cooling, with thermal storage increase in the 100% scenario, but for these products the value/year/appliance is limited and the increase is marginal. 0.2€/appliance/year for a product with storage Electrical storage water heaters do not have an increase from 2020 to 2030, but in best case remain the same. The low increase does not necessarily indicate the fact that the saturation level is not attained, but can be attributed to the functionality of the product (timing and quantity of the flexibility) The value that can be gained is limited, if other sources offer the same characteristics, the value may be stable or reduced.	Modify the paragraph to : For a number of specific appliances the value per appliance is increasing, which indicates that even in a 100% scenario the saturation level is not yet attained for that type of flexibility. For these appliances (electric storage water heaters, night storage), tertiary cooling – compressor/defrost and HVAC cooling no storage/with thermal storage). To note that this also means that other sources of flexibility (e.g. industrial demand response) could also capture this value by offering flexibility with the same characteristic as these groups. This may finally reduce the final value of that flexibility.	The consortium agrees with the comment. The text is adapted in the spirit of the comment.
Daikin	7.3.2.2	p21 §4	Ge	Operational cost Quote in task 7. <i>the operational cost that can be attributed to the smart appliances is therefore case dependent, but is assumed to be very low or negligible compared to the investment costs.</i> Additional operational cost need to be considered, Cloud access or control can be a part of this. Compared to the investment cost, these are small	-	The text is adapted in the spirit of the comment.
Daikin	7.3.2.2	p22 §-3	Te	Product cost. The actual cost increase of the product depends on the technical requirements. At time of the study the items that were considered were connectivity and functionalities. Requirement on Measuring capabilities may have an additional increase if they have to be put in the individual smart appliance. Present text mentions: Products where the all is integrated may be covered by the indicated value. Of 5-10€ / 10-20 € depending on the product. This value may be conservative considering the additional requirements. The proposed cost of 1.7€ to 3.3€ may be reached on a long term (economy of scale), not considering the additional components needed for power input measuring or other requirements mentioned in the task 7 report. The paragraph mentions a study of CECED where the cost could be 0€	Please add the reference of the CECED study or delete the line.	Text is slightly revised. The cost estimates are quite broad which may allow for additions of components.
Daikin	7.3.2.2	p22 §4	-	It may be correct that <i>"There is then also the risk that smart appliance ownership for less fortunate people is hindered, and that they share less in the added value of demand response."</i>	Add the remark at the end "The low end products may have the highest increase in cost, making the individual benefit unclear or even doubtful.	The stakeholder's remark is correct. This reasoning is added to the paragraph in question.

				Generally these persons buy the low end products that will need the bigger modifications to the product compared with the high end products and are less likely to use the benefits of smart appliances.		
Daikin	7.3.2.2	P23 4 th and 5 th para	Ge	In Japan, we experienced that the availability of the adapter is not the main restriction to apply smart appliances. Dedicated high end product ranges have integrated connectivity, though customers need not additional interface and installation cost, only 10% of customers has installed the remote operation apps of smart phone. The main reason will be rollout of smart phone for elder people, lacking attractive apps and mistrust in data privacy.		We thank the stakeholder for clarification and sharing these insights. The comment is in line with the report, so no further changes in the text are done.
Daikin	7.4	p29 §5	Te	It is correct that for many heat pump or air-conditioning products the flexibility is depending on the installation, but some heat pumps may have a build in buffer. In those cases the flexibility can be a sum of both the product as the installation. The present text gives the impression that heat pumps never have internal flexibility	for heat pumps for residential heating: how long the heat pump can be switched off depends on appliance (e.g. if a storage tank is installed) and the properties of the building and not only on the properties of the heat pump itself. Further, the heat pump can have an external thermostat which is purchased separately. ...	Adapted as suggested.
Daikin	7.4.1	P30 §3		Control can be integrated, individual, central. The current application is very flexible and diverse.	Change text below to: (3)the control of the whole system is done by an integrated controller, external controller or building automation system à control.	Adapted as suggested.
Daikin	7.4.1	Table 7	Te	The HVAC items with thermal storage are indicated as: Flexibility in the appliance: NO The thermal storage is in principle part of the flexibility. (several lines)	Correct to yes.	Based on the stakeholder's feedback, a package based approach is proposed for component based appliances, which effectively also deals with this remark.
Daikin	7.5.1.3	p45 last §	Ed	...and who much	Change to "and how muc...	Adapted in the text
Daikin	7.6.4	P57 Line 2	Te	Generally there are two kind of measurement intervals used worldwide.a 15min or 30min. the majority used the 30 min measuring interval. A 15 minute interval may be short, When considering the operation of commercial air conditioner, its use. An air conditioner interval to restart the compressor and its operation, it can loose up to 6 minutes of the relevant . Therefore we recommend 30 minutes for air conditioner.	Change the text to: (30 minutes is the recommendation)	It is correct that worldwide different intervals are used as unit intervals by the grid operators throughout the world, e.g. 15 min, 30 min, or even 60min. Nevertheless, in majority of the countries in Europe (hence in scope), it is 15 minutes. Therefore, 15 minutes should be the recommendation for time interval for sharing the real time electricity consumption. A footnote with this additional explanation is added in the text
Daikin	7.6.4	P57 Line 29-30	Te	CEMS/HEMS functionality can be a physical controller, separate controller, included in some systems or even a cloud based service. The possibilities for the market need to remain open.	Change the text to: The CEM/HEM functionality can be implemented as physical controller in the house or an additional function of the appliance, or as an external service.	Adapted as suggested.
Daikin	7.8.4	P64	Te	The network could frequently fail its communication, as packet loss is common. To keep a stable operation re-connection function should be integrated,	Change the text to: "In case, the appliance must automatically try to reconnect, and finally fall back to standalone operation, i.e."	Adapted in line of the suggestion.
Daikin	7.8.7.2	P69 3 rd bullets	Te	The possibilities should not be limited for the market. The proposed options are all technically possible. Whether the power measuring functionality is integrated in the product or is external. example, for more complex products, existing out of several separate components, an external measurement device may be the most suitable, Please note that for a smart meter, NILM technology solves the problem. It can distinguish the power consumption of the appliances. It can implement to the smart meter by software modification only. But it is not our directly business. (ref.) https://www.informetis.com/en/	Change the text to: The smart meter can be distinguished the power consumption of the smart appliance in the future.	Adapted in line of the suggestion.
Daikin	7.9.2	P73	Te	We prefer Option 3 to enable to use any application protocol. The base data model should be described in standardisation, example by SAREF/SAREF4ENER or EEBUS as EN50631 standard. Any protocol may be mapped in EN50631-series. When option 1 is considered, deep care needs to be taken to avoid any lock in or blocking of technology. Close cooperation with the technical experts is needed.	Add following text to the current recommendation: The protocol is best to be controlled under standardisation. And to realize the Option 3 for further improvement of interoperability, other application protocols should be mapped to the specific standard protocol.	Adapted in line of suggestion.
Daikin	7.9.3	P74	Te	Some protocols do not have a lower layer such as transport or datalink layer to avoid the limitation to be able to follow the state of the art measures on cyber security. In such case, manufacturer can use the latest encryption or electrical certification method without the update of the protocol standard. No overlap in legislation for items such as cybersecurity and privacy should be included.	Add note to 7.9.3 Note: Some protocols intentionally exclude the cyber security specifications to avoid the delay for its improvement or updates of the protocol standard.	Adapted as suggested.
Daikin	7.10.3.2	P77 3 rd bullet	Te	The data can be a graph or a set of discrete power data. The exact requirement should be fixed in the vertical lot	Delete this bullet	In the final recommendations, this specific topic is indicated to be worked out in detail in a later (vertical) stage, as the stakeholder suggests. The referred point is input for that process. Text not adapted.
EHI	7.4.1.	34, table 7	Ge	EU-level Ecodesign policies have traditionally set technology-neutral minimum energy efficiency standards, which manufacturers need to meet if they want to keep placing their products on the market. For example, Lot 1 and 2 sets minimum energy efficiency levels for all space and water heaters, regardless of the technology. The proposal for Lot 33 departs from that tradition by restricting the scope of Lot 33 to only electric thermal appliances. For EHI, this is too limiting. Excluding any hot water storage linked to non-electric appliances (gas or oil boiler, hybrid heat pump) will severely limit the potential of the heating sector engaging in demand response. According to our calculation (see accompanying Excel file - Calculator DHW DR potential_EHI_FINAL), the total available power available for demand response from hot water storage tanks is 60 GW. This is almost double the amount of peak flexible power from all smart appliances that was estimated in Table 5 in the Task 6 Report of the Preparatory Study on Smart Appliances. The potential for demand response from hot water storage tanks would be increased considerably, if retrofitting old hot water storage tanks is taken into account. An important benefit for the consumer of using smart hot water storage / heating appliances is that there is no loss of comfort, compared to periodical appliances.		Energy source is often one of the parameters for defining the product scope of regulations and this is not considered as going against a technology-neutral principle. The scope of this study was the electricity system, because there are more potential and benefits of optimisation with smart grid. No changes made
RVO	7.1.3	p. 5	te	Please note that the energy label is not a market entry requirement; so the wording „need to comply with ... to be placed on the market“ is not correct; see also wording on p. 8	Distinguish between ecodesign (CE marking; entry requirement) and energy label requirements (mandatory but not an entry requirement).	Before placing a product in the market, the supplier is required to accompany the product with printed labels and with product information sheets in accordance with the regulation and the delegated acts. The dealer has the responsibility of displaying the label - received from the supplier - on the product. Therefore there is both an entry and non-entry requirement. The current text is not fully reflecting this. Text is slightly revised in order to be more precise here.
RVO	7.1.3	p. 6, second paragraph	Ge	You provide an opinion about how market surveillance is carried out. However I assume this was not part of this study; so you would need a reference to support your statement. Furthermore, market surveillance of ecodesign and energy label differs also includes checking of labels (energy labelling) and product information requirements (energy labelling and ecodesign).	Suggest to reword to make it more neutral.	The idea has not been to provide an opinion, neither results of a study. This is purely information picked up during dialogue with MSAs. Text slightly revised
				Energy labelling can be based on the life cycle cost curve but is not based on least life cycle costs; this is only for ecodesign.		

RVO	7.1.3.1 a)	Second par.	Te	Also note that the comparison with smart appliances is not as black and white as it is presented. Also the savings that can be derived from the energy label class are only valid if the end-user uses the product under (more or less) the same conditions as the testing for the label is done. Also note that not for all energy smart functions a contract is needed, e.g. when using these functions to optimize own PV use.	Please correct and nuance.	Text slightly revised
RVO	7.1.3.1 a)	Third par.	Te	The two sentences of this paragraph do not seem to be compatible. Please note further the difference between (manufacturing) costs – which could increase by an ecodesign requirement but can be minimal because of the large volume – and purchase price which is also determined by marketing aspects.	Clarify.	The relation between the 2 sentences is the time aspect. The reduction in price may not be immediate, but after some time. The mentioning of price is (as always) based on manufacturing costs. The real market price will naturally be based on very many other factors, which are not taking into account in these kind of studies. Text is slightly revised.
RVO	7.1.3.3	p. 9, 4th par.	ge	„Smart“ is not only used for energy and it will be difficult/impossible to remove all notions of smart, apart from „energy smart“		We only write "It needs to be investigated if the existing regulation may need to be amended in order to avoid confusion of the end consumer", which may result in a conclusion that it is impossible to remove other use of "smart" in the regulations.
RVO	7.1.3.3.	p.10 first par.	Ge	Note that the internet labelling annexes and verification annexes were more or less identical for all products.		Correct, but the principle in having 1 regulation amending many regulations is still valid, also when there are more differences. The amending regulation include amendments for each regulation in separate articles and the content can be adapted to each vertical regulation. No text modifications.
RVO	7.1.4	p. 10	Ge	I don't agree with the conclusion not to have any mandatory option. The policy option should be dependent on the saving potential. The argument of limiting consumer choice is weak, because all proposals include the option of the consumer overriding the smart energy function	Change text to include possibility of mandatory ecodesign measure on availability and enabling of the smart energy function, depending on the savings, both energy and general cost savings. See also attached document.	This has been considered by the study team with the conclusion that it is not proposed as a policy option at this moment, but at a possible review of a regulation after some years. This is detailed in the report. Correct, 3rd party verification would probably not be needed. Also because possible non-compliance would typically be discovered by the aggregator. Text is deleted.
RVO	7.1.4	p.11	Ge	Why is it recommended that the requirements are verified by a third party? This can only be done if there is a substantial risk of missing substantial savings. While I am not in principle against third party certification, mandating this should be justified since it adds costs for industry.	Relate this to the potential savings.	
RVO	7.2	p. 12, 4th par	Ge	The paragraph about the higher purchase cost is very speculative. As indicated before, in case energy smart becomes mandatory, purchase price will probably not be affected (or very little). If it is only a product feature, then it will come only with premium products (certainly at the beginning) at a premium price. But this premium price reflects more than only the costs for the energy smart feature. This is also the reason why manufacturers are not (yet) interested in making energy smart mandatory: in that case they can not ask a premium for it.		There would be a cost increase for adding connectivity and energy smartness to appliances in the short run, but we agree that these are marginal and often covered by the premium price of high end products. The cost would come down in a market situation with increased demand. No change in text made.
RVO	7.3.2.1	p. 18	GE	Note that the decrease of the marginal electricity price with 18 % will make investments in energy efficiency less economical. Also because of the price decrease it is not correct that end-users that do not use energy smart do not profit.		This is further elaborated in additions to the text, in section 7.3.2.2
RVO	7.3.2.2	p. 21	GE	The observations indicate that there is a „public good“ component in applying energy smart. This is also an argument for mandating energy smart for applications with high total savings, because for a voluntary take up the financial incentive will be less per appliance when numbers increase.	Please correct.	
RVO	7.3.2.2	p. 22, 4th par.	TE	As indicated above, the statement that owners that do not use demand response flexibility would not benefit, is not true because they benefit from lower electricity prices.	Please correct.	Text is slightly adapted.
RVO	7.3.2.2	p. 23, second par	GE	When stated as it is here, demand side flexibility will never take off. Demand side flexibility should be automated and thereby fit into the routines of people		The consortium agrees with the comment. This is further explained in additions to the text, in section 7.3.2.2
RVO	7.3.2.3	p. 27	TE	The relation between cost and price is more complex than indicated here; see also earlier remarks.		Text is slightly adapted.
RVO	7.4	p. 30	TE	I don't understand the remark about the thermal mass of a building involved in the demand response of a thermal appliance making the definition and requirements more complicated. What is not more complicated but unknown is the amount of demand that is flexible (because that will depend on the thermal mass). However, the definition and requirements are about that and how the appliance can be controlled.	Please clarify.	The report is adapted according to the previous comments of the stakeholder
RVO	7.4	p. 31	TE	The same remark as for p. 30: why is it not possible to define requirements for the product?		Clarified with the adoption of the package labelling for component based appliances
RVO	7.4	p. 32	GE	„The main goal of a battery in an electric vehicle ... which heavily constrains the use ...“. Heavily seems too strong and should be quantified.	Delete „heavily“.	Clarified with the adoption of the package labelling for component based appliances
RVO	7.5.1.1	p. 40 and further	GE	Can any conclusions be drawn from the practical examples?		Text is slightly adapted.
TC205 Schneider Electric/C ECAP/Jue rgen Kuhnert	7.6.		3 T	Data models are not enough for interoperability, message sequence, discovery, are also important topics	Please clarify your definition of communication protocol. TC205 WG 18 is already working on all aspects of interoperability. Please refer to the attached documents (CEC-API and CLC TC205 WG 18 comments..., TC205_63376_enq1e...)	Text is adapted with the purpose of adding these practical examples. The application protocol is mentioned as part of the requirements for interoperability. Also discovery (resource discovery 7.10.1) is mentioned. Reference is added.
TC205	7.6		4 T	The CEM/HEM functionality can be implemented as physical controller in the house or as an external service.		Adapted in line of suggestion.
TC205	7.6		4 T	The CEM/HEM is a function, not in every case a box it is defined as an endpoint of interface. "...the lack of (existing) standardization for mainly CEMs/HEMs and BACS..." TC205 WG18 is already in the process of writing a set of standards in this area.	Add a reference to TC205 WG 18 prEN50491-12 work and rephrase the sentences	Added as a note. This is work in progress, so not yet available.
TC205	7.1	P6, par3+4	te	So far, the concepts only consider such appliances being "energy smart" if they permit adjustment of their energy usage. Though this is clearly a most desirable behaviour of an appliance it expels such kinds of appliances that cannot ADJUST their energy usage (maybe because they have to guarantee certain parameters under every circumstance; or they have to protect themselves) but at least could REPORT their expected power usage. Finally, demand side flexibility works better the more information you have – even if there are portions that cannot be controlled/adjusted. This will become most relevant when contracts between two actors are based on a total good – and not just on the flexible part of a good. With the current definition the only "workaround" for manufactures of "reporting only" appliances to catch the "energy smart" title for their appliances would be to provide a "0.000001%" energy savings or shift mechanism – which certainly helps no one. Of course a label may well indicate the amount a flexibility an appliance may offer.	Add that appliances that only report their expected power consumption/generation (but do not offer adjustment of their energy usage) are also "energy smart appliances". Note to proposal: This proposal requires also adjustment of 7.8.1. It probably also requires adjustment of section 7.8.5.	The scope of this study is appliances which are "...capable of automatically changing and optimising their consumption patterns in response to external stimuli..." and not appliances which can only report their expected power consumption/generation. No change in text made.
				The document rather suggests that devices have EITHER a "direct flexibility interface" OR "indirect flexibility interface" OR "internal measurement interface". This may be true in many case but should not be required or suggested. We agree to not consider such combinations explicitly. It is sufficient to consider the interfaces as "building blocks" or "responsibilities" that can be combined (rather) independent from each other.	Add a sentence that an appliance may well offer combinations of these interfaces	A footnote has been added to 7.5.4.3

TC205	7.5		te	Permitting such combinations together with the consideration of our previous proposal would permit the following example: A device may have an "indirect flexibility interface" to receive price information (or any other incentive). It will derive a proper schedule. With the current concept there is no information back to an external controller/CEM to get information on this schedule. But together with the "direct flexibility interface" the schedule can be reported – even if there is no direct control command accepted (as if the flexibility option is turned off) this permits consideration of the overall energy requirements.	in parallel.	
ANEC/BEUC	7.1. overview of policy options	p.2-10	ge	We agree that the following policy options should not be put forward - "No EU action" (no further legislative actions at European level on energy smart appliances will be implemented) → AS smart appliances will have consequences on consumers daily life, including on aspects such as data protection, interoperability, affordability, convenience, willingness and capability to adapt, it is important that the European Commission looks into the issue. - "Non-mandatory options" (voluntary labelling schemes or voluntary agreement proposed by the industry for energy smart appliances) → Voluntary measures have in past proven to be less effective than regulation.	/	The stakeholder agrees in our proposal. No change in text made.
ANEC/BEUC	7.1. overview of policy options	p.2-10	ge	It should be ensured that interoperability requirements and possibly minimum requirements that enable the protection of consumer data and the sovereignty of consumers over their data are among the technical requirements (for which harmonized standards will have to be developed)	Include technical interoperability requirements ensuring consumer's data protection	This is covered in section 7.9.3. No change in text made.
ANEC/BEUC	7.2. scenario analysis	p.12-15	ge	Note: as the scenario is fully hypothetical, it does not give relevant information on the possible benefits of the policy options. Moreover, potential disadvantages for consumers such as unnecessary costs and loss of privacy have not been taken into account fully.	Further investigate advantages and disadvantages that can result from policy options.	The consortium agrees that the 100% scenario is hypothetical. Nevertheless, it is an important scenario that illustrates the upper bound. An extreme scenario, in which all the appliances are acting in an energy smart way. It frames the impact of the policy option between this and the base case scenario. This is the relevance of the 100% scenario. No changes in the text are made. Issues related to privacy are treated further and adapted in the report, also on basis of different comments of the stakeholders.
ANEC/BEUC	7.3.1 impact analysis	p.16-20	ge	Potential features that enable demand side for consumers should be given more consideration.	Consider features that enable demand side for consumers under an Ecodesign information requirement. They would also have to fulfil technical requirements based on harmonized standards in order to qualify for the icon (e.g. in terms of usability, user interface). In addition, consumer policy would have to focus on remuneration schemes.	The energy smart features are on the demand side, so the comment is not clear. If the comment regards DSM, Demand Side Management, then it is correct that it is only briefly mentioned because this has not been part of the scope. However, enabling access to data collected by the appliance including measurement of power consumption will surely attract companies to develop solutions for energy efficiency at demand side.
ANEC/BEUC	7.3.2. impact analysis, financial impact	p.21-22		We reiterate that Ecodesign should not set mandatory requirements for all appliances to become smart as it would lead to a ban of non-smart appliances , and would therefore restrict consumers' choice. End-users should not be obliged to purchase the additional functionality - and pay a higher upfront price for it – especially if they do not make use of the smartness of the appliances. In a study of our German member Verbraucherzentrale Bundesverband, consumers were asked about smart home. Very often people say that they have no needs for such technology. Furthermore, in a study from our British member, Which?, 76% of Brits are scared of smart homes primarily because of risks to their privacy. Furthermore, consumers should not be forced to purchase appliances for which at the moment there is no extensive experience on the financial benefits as we are lacking experience of demand response schemes.	A mandatory approach should not be put forward.	The possibility of a mandatory approach has been considered but not recommended. The text has been modified and extended.
ANEC/BEUC	7.3.2 impact analysis, consumers' willingness and capability to engage in the use of smart appliances	p.23,25		The focus of this section is too strongly on "pushing" the devices into the market. The barriers for consumers to engage with smart appliances are not covered in depth and solved too easily. The only aspects dealt with in depth are comfort aspects and (in the following section) data privacy and protection. On safety, only two sentences can be found: "...attention is often drawn to the fact that absolute safety can never be guaranteed (...) it is important to consider that for some appliances, unattended operation may increase the risk of fatal fires and to inform consumers adequately about this risk." Unauthorised operation through hacking is not addressed. Also, relevant aspects such as error-proneness, durability and reparability remain completely unaddressed.	Better develop and analyse barriers for consumers to engage with smart appliances. Specifically, address aspects related to error-proneness, durability, reparability. Technical requirements need to be defined in order to ensure minimum levels of safety, handling/accessibility (including aspects of design for all), durability and reparability. Harmonization work would be necessary to define and measure such requirements, and they should be included as essential requirements for an appliance to carry the "energy smart" icon. Do not assume that consumers are per se interested in smart appliances. Add reference to the study mentioned and add under barriers: 'No consumer needs for this technology'	The technical modifications are minor, both compared to a currently connected and non-connected appliance. Therefore, there should be no changes error-proneness, durability and reparability for the appliances. A reference has been included. The consumer interest is dependent on the remuneration and other benefits. Text added.
ANEC/BEUC	7.3.2. impact analysis, Data privacy	p.25-27	ge	We welcome that privacy and security by design and by default is developed in the impact analysis. We reiterate our position on the issue: Product design that integrates privacy protection in all stages of the design process and ensures that privacy enhancing settings are applied by default once the consumer starts using the product (privacy by design and by default) must be ensured both for the smart appliance as well as the connection / communication channel between the smart appliance and other connected devices. Product design should be in compliance with the data protection legislation. The EU has just reviewed its legislation for the protection of personal data. New rules will apply as of 25 May 2018. The objective of this new set of rules is to give citizens back control over of their personal data, Under EU law, and personal data can only be processed legally under strict conditions, for a legitimate purpose. Furthermore, persons or organisations which collect and manage your personal information must protect it from misuse and must respect certain rights of the individuals which are guaranteed by EU law. Even though out of the scope of Ecodesign, we regret that the study has not been done a more in-depth analysis of the privacy issues that can arise for consumers when they use smart appliances. Our member organisations have carried out several tests of consumer products which connect to the internet and which have demonstrated that many products have not been designed with due diligence which means that security and privacy of people is endangered. For example, our Belgian member, Test Achats, tested smart washing machines and for certain brands, the associated smartphone App did not require a password which means that a hacker could possibly have access to all other private data from the phone (Ref: Magazine October 2017) As the number of smart appliances is likely to exponentially increase in the coming years, it is a high responsibility for policy makers and the study team to look into this issue to make sure that consumers' expectations are met and ensure their fundamental rights to privacy and data protection are safeguarded.	Privacy and security by design and by default must be ensured and be a requirement for manufacturers The study should work out better the requirements under the EU data protection Regulation and elaborate on the principles it contains. Add a provision on the fact that not only the appliance, but also the app that goes with it must ensure consumer interests are respected.	References have been added regarding cyber security. Security and privacy are part of the technical requirements, where the specific standards are to be developed under a standardisation mandate.
ANEC/BEUC	7.4. Appliances in focus and appliance categories	p.29-37	ge	The categorization according to functionality seems appropriate and forms a good basis to differentiate requirements in sections 7.8 – 7.11. The different policy "tracks" (energy label or ecodesign) remain subject to the general question presented above whether two different "tracks" are in fact necessary.	/	They are because of the different coverage by energy labeling and or ecodesign requirements. No changes applied to the document.
ANEC/BEUC	7.4. Appliances in focus and appliance categories	p.29-37	ed	Inconsistencies found in this section	Correct inconsistencies between text and table 7. From there, clarify proposed policy action	Checked for and solved all inconsistencies
ANEC/BEUC	7.6. Interoperability in	p. 53-56	te	The report refers to the Commission Communication "Delivering a New Deal for Energy Customers". However, since the release of this Communication, developments have happened (see Clean energy for all Europeans package).	Update this section based on the last developments at EU level/update information.	Text is modified and new reference added.

ANEC/BEUC	7.8. functional requirements	7.8.1.	te	We agree that „at all times, the user of the smart appliance should have the possibility to enable and disable the energy smart functionality in the user settings.“ The user should indeed be always in a condition to have the final decision on this. However possible changes in energy efficiency of the appliances need to be clearly identified.	Further to comment above under 7.3.1 difference in energy efficiency with or without smart energy functionality should be clearly measurable and verifiable for the consumer to be aware.	This is covered by following vertical requirements: (d) The energy smart functionality causes a maximal surplus energy consumption ; (e) The user can configure the maximum surplus energy consumption; (f) The energy smart appliance is shipped with a predefined conservative default value for the user configurable maximum surplus energy consumption limit; No change in text made
ANEC/BEUC	7.8. functional requirements	p. 63-71	ge	Regarding requirements 7.8.3., we agree that the user should always have the possibility to overrule an external energy smart command but it should be without any disadvantages for consumers Please consult the BEUC brochure regarding demand side response and implications for consumers. http://www.beuc.eu/publications/beuc-x-2017-036_making_electricity_use_smart_and_flexible.pdf	Add provision as proposed beside and include recommendations as found in the brochure on "making electricity use smart and flexible".	An energy smart appliance must support user overrules, but whether and how they are installed in the contractual agreement between consumer and the flexibility procurer are not in the scope of this project. No change in text made
ANEC/BEUC	7.8. functional requirements			There is a need to add a requirement that would allow consumer to take 'his'/her' data with him/her to a new provider. For example if one has a bundled offer which consists of the energy delivery contract and the provision of smart appliances and the consumer would like to switch to a new provider, he/ she should be able to take the data which is linked to the smart appliance to the new provider.	Add requirement as proposed beside.	This is out of scope of this study (focus on the appliance itself and it's data exchange with the outside world). No changes in the text made.
ANEC/BEUC	7.9.3 "The communication interface should support cybersecurity and privacy requirements for connected"	p. 72-75	ge	The requirements on cybersecurity and privacy are too generic and weak. It mostly relies on complying with existing legislation which is not sufficient to protect consumers from cyberattacks and there is little enforcement. There is a need for security by design and by default as nowadays, every manufacturer can reasonably assume that a device might be hacked, hence the need to install upfront counter measures. It is a necessity that a thorough risks assessment takes place, and that manufacturers provide at the bare minimum protection against all known vulnerabilities using state of the art technology where possible. For example, ensuring that connections are protected by passwords and that data sent is encrypted should be basic requirements. Manufacturers have the responsibility to make the products safe by design. It is in line with the precautionary principle and EU law (which requires products for consumers to be safe).	Rework the cyber security and privacy requirements under this section and most importantly include a close on safety and privacy by design and by default.	References have been added regarding cyber security. Security and privacy are part of the technical requirements, where the specific standards are to be developed under a standardisation mandate.
ANEC/BEUC	7.9. interoperability requirements	p. 72-75	te	The problem of the multiple (hardware defined) network technologies (WiFi, Bluetooth, Bluetooth ULP, DECT, Zigbee, Zwave, KNX-RF Ant+, ...) is not addressed. Smart appliances will never be able to communicate between each other, especially not, if they are owned by single companies or are restricted by licenses. If the manufacturers cannot agree for one common standard the only way is to translate between several network technologies.	Add a requirement on the fact that smart appliances should communicate through an open standard (or at least provide one open standard additionally to the proprietary standard). This open standard must be usable without restrictions. This enables e.g. manufacturers of building control systems to include several potential network technologies into their systems.	The communication technology layer is not included in the requirements, as multiple stakeholders indicated that limiting the technical options for this layer would hamper future innovation. Therefore the focus of the interoperability requirements is on the data model and information layer. No changes made to the text.
ANEC/BEUC	7.11. Information requirements	p.79-80	ge	The explanation on the energy smart function should necessarily be provided in the user manual.	The energy smart functionality should be explained in the technical documentation and in the user manual.	The suggestion is adopted in the text.
DE	7.1.4	Policy options	ge	We have some concerns that the proposed measures could be scheduled too early for the following reason: The EU countries are still very different concerning the grid and the national laws. If ecodesign or energy labelling measures define "energy smart" which is then perhaps not recognized by all grid operators this would not promote the market share of smart appliances.		If there are national legislations impeding use of energy smart appliances, this would not be a technical issue, but only legislative outside of the study scope. Implementation in EU even without all Member States can support the removal of barriers in the remaining Member States. No change in text made.
DE	7.1.2.2	Self-regulation	ge	In the report, it is stated that for a broader product area, such as smart appliances, it would be challenging to establish self-regulation, especially for a horizontal regulation. However, it is still not clear if not rather vertical regulations are more appropriate. We would appreciate if you could provide some more arguments that self-regulation is not the preferred option. We however agree with you that industry actors would have to take such an initiative.		Even with vertical regulations, it is still the proposal to cover several product groups and thereby many different types of manufacturers and industry associations would need to be involved which complicates the process. Furthermore, it is a requirement that the industry should propose it, which has not been the case so far. No change made.
NVE	7.3.2.2	P 23, para 6	TE	NVE would like to reiterate the view "While creating tariff models, it is important to consider that for some appliances, unattended operation may increase the risk of fatale fires and to inform consumers adequately about this risk (Mook et al., 201618)." We recommend that you consider to implement a demand to detect excess heat and fire for some appliances.	Appliances with a higher fire risk should contain detectors monitoring for example excess heat, fire and smoke, to be considered as smart.	The consortium does not agree that connectivity and energy smartness should increase the risk of fires etc. and make it necessary to require smoke detectors. Many appliances are already connected.
NVE	7.4.2		TE	NVE would like to underline the potential for flexibility and energy storage represented by electric resistance storage water heaters, in particular approximately 300 liters and above. A ban on large (XXL-4XL) electric resistance storage water heaters, as will be the consequence of ecodesign regulation No 814/2013, can undermine the potential of large electric resistance storage water heaters as energy smart appliances and the flexibility they represent for the energy system and security of energy supply. It is much easier to obtain load shifting by switching on/off electric water storage heater, than by controlling for example heat pumps with thermal storage. For an example of a pilot with use of distributed electric resistance storage water heaters as an energy smart appliance to contribute to consumption flexibility for balancing the electrical system, please see the final report by Svenska Kraftnät on Flexibla hushåll (Flexible households). The report can be accessed here: http://www.svk.se/siteassets/om-oss/rapporter/2017/slutrapport-pilotprojekt-flexibla-hushall.pdf . The pilot was done with Fortum. Fortum and Finngrid have performed a similar pilot in 2016.	Reconsider criteria in Ecodesign regulation No 814/2013 that bans larger electric resistance storage water heaters. Consider making separate minimum criteria for each technology type as originally intended in regulation no. 814/2013 Article 7 (b) last sentence, (i.e. electric resistance storage water heaters vs electric heat pump water storage heaters).	Changing existing legislation is out of scope of the study.
NVE	7.1.3.3		TE	We agree that possible conflicting use of the term "smart" must be investigated. We emphasize that "smart"-functionality for energy saving must not conflict with "smart"-functionality for load shifting. Larger electric resistance storage water heaters with „smart control“ according to regulation No 814/2013 may only achieve minimum required performance criteria when using "smart control" that adapts to the individual use of these heaters and lowers the temperature and thus the heat loss from these electric storage water heaters. The "smart control" ensures energy saving overall for that individual electric resistance water heater, but may come in direct conflict with "smart appliances" control that wants to do "load shaving", "load shifting" or "valley filling" as part of a "smart grid".	Reconsider use of "Smart control" on individual electric water heaters to fulfill minimum requirements in ecodesign regulation 814/2013. Make clear and transparent strategy on "who rules", individual "smart control" or smart appliance /smart grid. Lowered temperature in electrical water heaters may lead to exceptional peak load conditions when combined with smart appliances, smart grid functionality.	We believe that other "smart" functionalities for energy savings should not be limited due to energy smart functionality. Text added.
NVE	7.3.2.2		GE	NVE underlines the importance of ensuring privacy protection when handling personal data.		References have been added regarding cyber security. Security and privacy are part of the technical requirements, where the specific standards are to be developed under a standardisation mandate.
NVE	7.3.2.2		TE	If many energy consuming appliances follow a simultaneous on/off-pattern, this could cause disturbances in the grid such as voltage and/or frequency drop. NVE believes some mechanisms to cope with this potential problem should be considered when preparing a regulation on ESAs.		The consortium acknowledges that the raised issue of coordinated control of flexibility sources (which is even broader than coordinated control of smart appliances) is a relevant topic, and that the control should be properly coordinated. There are a number of initiatives that are looking into these challenges, for instance (USEF, german traffic light system). Nevertheless, although relevant, it is part of the external control (coordination between market parties about the use of flexibility), and in principle not energy smart appliance functionality. Therefore, it is considered to be out of scope of this study.
EFTA	7.6.	P 53, para 1, sentence 2	ge	The EEA includes the 28 EU Member States + the 3 EEA EFTA States	"in the whole European Economic Area", with a footnote explaining "The EEA includes the EU and the EEA EFTA States (Iceland, Liechtenstein, Norway)"	The text is adapted accordingly.

ECOS	7.1.3.1	p.8	ge	In the 7.1.3.1 paragraph on Ecodesign policy options, a point c) is missing on Ecodesign functionality requirements on smart appliances. Ecodesign can and should be the place to enforce the relevant technical requirements that are described at the end of the chapter from page 58 onwards. Some of these technical requirements deserve to be enforced on all smart appliances and not only those that will decide to show the 'smart' icon. A horizontal Ecodesign measure can be used for this, that would specify the requirements that DSF functionalities should meet in all smart appliances	In the 7.1.3.1 paragraph on Ecodesign policy options, add a point c) on Ecodesign functionality requirements on smart appliances.	Under Ecodesign regulation, if a manufacturer wants to advertise the products as "energy smart", it is obliged to use the energy smart icon/logo. This is covered by the current version of the report. Additionally, it is possible that a manufacturer produces a smart, but not "energy smart" appliance. The consortium acknowledges that this might occur. Defining requirements and policy options for "smart", but not "energy smart" appliances is out of scope of this study and hence no statements are made that "smart" should comply with any of the proposed requirements. Therefore, no changes in the text are made.
ECOS	7.1.4	p.10	ge	Similarly, paragraph 7.1.4 should have an additional point 4 at the end, stating for instance: "4. A horizontal Ecodesign Regulation can ensure that all appliances with smart functionalities (be they bearing the smart icon or not) meet a set of basic functionality requirements including XXX."	Add an additional point 4 in paragraph 7.1. as described.	The mandatory option has been further described, but still not recommended.
ECOS	7.2	p.13, Table 1	ed	Table 1 does not list the "home batteries" under the "Residential energy storage systems" category	Add the "home batteries" to Table 1	Additional table that summarizes the relevant market numbers for home batteries is added below the Table 1.
ECOS	7.3.1.2	p.16	te	The assumption that: "If the appliance is equipped with extra energy smart specific electronics, then the operation of these may cause a small to negligible surplus electricity consumption" is in our view too optimistic and too vague (as said in our previous comments). This clearly does not apply to: Electric vehicle supply equipment (EVSE) and Electric Vehicles (EV) which can have considerable standby consumption. However, not much research has been done so far. One publication (DGS e.v.: Sonnenenergie 2013-03, "e-Mobiles Ladeverhalten", http://www.sonnenenergie.de/sonnenenergie-redaktion/SE-2013-03/Layout-fertig/PDF/Einzelartikel/SE-2013-03-s044-Mobilitaet-E_mobiles_Ladeverhalten.pdf) shows that some EVs, if always connected to the EVSE, might consume more energy while standing than during daily driving	An estimation of the increase in standby consumption due to DSF should be included in all scenario analysis. As an example, a 2W extra standby consumption for DSF translates into 17.5 kWh/year which for some appliances is as much as 5 to 10% of their yearly consumption. This is not negligible, and should be compared against the expected benefits of DSF functionalities. In addition, the report says very little about the additional material resources that will be associated with DSF development (more electronics in products) and the end-of-life challenges (on dismantability, reparability, recyclability, etc.). The report also says little about the potential impact of additional electromagnetic fields due to DSF functionalities (only one mention is made on p. 63 "Upgrading an appliance with energy smart functionality can increase the electromagnetic emissions, especially in the case when wireless communication technologies are used"). We regret that despite our previous comments, the health aspects related to this have not been investigated or even mentioned at all in the study.	Most of the appliances will in any case be connected due to consumer demand. The standby and networked standby consumption are covered by existing regulation. The health impact of electromagnetic emissions have not been in scope of this study, however there are many studies available showing that this is not an issue. Therefore, no changes in the text are done.
ECOS		p.18	te	In the analysis of the impacts on the energy system, not much is said about the impact of the network infrastructures that will be needed to operate DSF functionalities.	Mention that the latter require not only additional electronics in appliances themselves, but also a whole chain of network communications from energy providers/aggregators to households. This chain also entails some electricity and resource consumption (servers, commutars, etc.).	This topic is out of scope of this study, as the focus is on the appliance itself, and not on the other infrastructure required to enable demand side flexibility. No changes to the text made.
ECOS	7.5.1.4	p.46	te	The following sentence is not a proper description of the use case: "The washing machine switches off the heating and motor and waits till the grid frequency recovers in order to proceed its program." "Switching off" would not be a desired response, as those hard changes actually are more likely to cause the biggest problems to the grid (especially if they happen at hard limits, see 50.2 Hz problem). The goal is to "adjust the power level", as the introduction to section 7.5.1.4 correctly explained.	Change the sentence to: "The washing machine adapts its power demand, by adjusting the heating or motor control, by a small percentage in order to match the level of drift in the grid frequency. The washing program continues without interruption and without any loss of comfort for the customer, even when the duration of the washing cycle might be slightly longer or shorter than normal."	Text adapted
ECOS	7.5.1.4	p.47	ed, te	The examples section misses reference to some relevant European projects in that area. They should be added as the US example should be replaced with European projects.	Add the following European projects: PiVo ("Tanken im Smart Grid") - netzoptimierte on-board Ladetechnik (DE, 2016) http://piv-o.de GridSense (CH) - On-board Energy Management for the HEMS and smart appliances http://www.gridsense.ch	References added
ECOS	7.5.3	p.48	ed	The figure contains the FRRA, FRm, RR abbreviations are not defined in the documents "LIST OF ACRONYMS" section	Add the FRRA, FRm and RR abbreviations to the "LIST OF ACRONYMS" section	Added in the text
ECOS		p.52	te	Because of the essential role which the "internal measurement" plays in order to implement cybersecurity-by-design and grid stability via the GSO technique (see our other comment on section 7.5.5) we would not agree with the sentence: "Due to its very specific nature, the different interaction with the consumer and mandatory character, standalone demand response use cases with internal measurement interface are not further assessed." While it is correct, that the "internal measurement" interface cannot be used to achieve all targeted use cases and business models, should be evaluated with a more holistic approach.	"Due to its very specific nature, the different interaction with the consumer and mandatory character, standalone demand response use cases with internal measurement interface are not further assessed. However, the internal measurement technique (GSO) shall be considered as a policy requirement for the purpose of cybersecurity-by-design and the energy smart demand response in the power grids "red phase" scenarios (see section 7.9.3)."	The cybersecurity-by-design advantage has been added to the text.
ECOS	7.6.3	p.55	te	The sentence says: "This reasoning will be used to focus in the policy recommendations on a common data model and not on a common or a list of common communication protocol." The word "common communication protocol" is not clearly specified in this context. Furthermore, customers expect "plug-n-play" for energy smart products. A common data model is not sufficient to guarantee such functionality. Any real-world implementation will require at least a well-defined application protocols with well-defined standards which map the protocol to low level communication protocol. Section 7.9.2 does mention the need for an application protocol. Interoperability has been formally defined by the EC expert group on the smart grid in the document "Interoperability, Standards and Functionalities applied in the large scale roll out of smart metering" (2015). The findings should also be applied to energy smart appliances and the goal should therefore be a well-defined (set of) interoperability profile(s). Such profiles are defined as references to standards where all potential options have been clearly defined with mandatory values. This is necessary to enable conformity testing.	Extend the sentence as follows: "This reasoning will be used to focus in the policy recommendations on a technical standard, which defines a data model, application protocol and mappings to common communication protocols (HTTPS XML REST APIs, CoAP bJSON APIs, etc.). The standard should allow to meet the requirements of an interoperability profile, as it has been defined by the ECs expert group on interoperability (see: ... reference)" This should be aligned with section 7.9.2	Adapted in line of suggestion. Also in 7.14.3.1.
ECOS	Part II	p.58	ed	The sentence says: "... and a final recommendation can be found in 0."	Replace "0" with a proper reference.	Corrected in the text
ECOS	7.8.7.4	p.69	te	The list of advantages should mention the benefits to privacy concerns. If a "settlement information" is documented inside the device and "communicated afterwards and in larger blocks" it allows for merging information and thereby a reduction of invasive activity tracking ... which could raise the acceptance on the customers side.	Add another bullet to the advantages section: "- Local recording of historical power consumption could allow the reduction of the data that needs to be communicated to periodic sum values or proof-of-work signatures. This would help to reduce the privacy concerns and thereby increase the adoption rate."	The stakeholder suggests to aggregate the consumption data and use such data for the settlement purposes. Nevertheless, aggregation of the measurement data is not compatible the technical settlement requirements of some of the most promising (ancillary services) demand response use cases. Therefore, no changes to the text made.
ECOS	7.9.2	p.72	te	Add a sentence to the list of recommendations which provides a link to the concept of "interoperability profiles". see our comment on section 7.6.3 for more details	Add the following sentence: "The standards which define the data model and application protocol shall be complete enough to allow to meet the requirements and the definition of an interoperability profile, as it has been defined by the European Smart Grids Task Force Expert Group 1 on interoperability (see: ... reference). Such an interoperability profile will be needed to test the energy smart interface." https://ec.europa.eu/energy/en/topics/markets-and-consumers/smart-grids-and-meters/smart-grids-task-force	Adapted in line of suggestion. Also in 7.14.3.1.

ECOS	7.9.3	p.74	te	<p>The current paragraph does not mention the very high risk which energy smart appliances pose to the electrical grid. 10 Mio. tumble dryers, with 1kW each represent a 10 GW thread. If they get activated at exactly the same time (e.g. if an attacker breaches into the cloud backend control system or successfully penetrates the firmware upgrade process) the 10 GW can very likely bring down the European power grid. This is a very likely, serious scenario.</p>	<p>Add the following sentences after: "... used for large-scale network attacks": "Due to the very high number of the connected appliances they especially pose a very high risk to the European power grid, as coordinated activation can easily exceed the 10 GW power level which would result in major cross-border blackouts." Add the following sentences after: "... objects, more cyber-secure": "It is recommended that techniques which have been collected for cyber security of smart meters within the JRC-BAT report (2016) get adopted for connected energy smart appliances. Especially the Grid Sensitive Operation (GSO) technique shall be considered, as it can be implemented in appliances with internal power consumption measurement (see recommendation 7.8.7.5) without additional cost and GSO provides a robust protection of the European power grid against all potential cyber-attack scenarios."</p>	<p>Text has been adapted to include the synchronous activation risk.</p> <p>Regarding GSO: When the overrule functionality is provided by the smart meter, then this can be realized via the energy smart interfaces described in the requirement proposals. Overrule functionality embedded in the energy smart appliance has been extensively discussed in the various tasks, but by the name 'system frequency control' (Task 1), and later on as 'internal measurement interface'. (7.6.4)</p>
ECOS	7.9.4	p.74	te	<p>The importance of this section is very high and should be stressed even more. We would especially support a general call for a horizontal requirement, which would make Open Source strategies mandatory under certain circumstances.</p>	<p>Modify the first sentence to: "Appliances have a typical lifetime length of around 20 years, which surpasses that of software manifold. Especially in the context of cybersecurity software requires a fundamental upgrade at least every 5 years, and frequent vulnerability hot fixes with a very short lead time of sometimes a few weeks or month." Add the following paragraph: "Especially due to the desired long lifetime length for appliances the generic requirements for cybersecurity should cover the aspects of liability in the case of unresolved known vulnerability. It should be evaluated, in accordance with other EU activities in the context of "planned obsolescence", if manufactures could reduce their level of liability if they release all exposed software interfaces via an Open Source strategy, so that vulnerabilities can be fixed and new Demand Side Flexibility interfaces could be supported even after the official support period from the manufacturer has ended."</p>	<p>The text has been adapted in line with the first suggestion. As for the planned obsolescence/open source strategies: this is out of scope of this study as, although impacted, this is not strictly related to and much broader than energy smartness.</p>