

	Major comments:	Response:
Introduction	UK/DK: The part describing the connection between R1 and BREF should be moved to the annexes. It would be beneficial, though, to have the R1-formula described. For the sake of simplicity, we suggest that the discussion in the Introduction of how the R1-formula relates to the BREF is removed and included as an Annex.	Accepted; moved to annex
	List pertinent legislation as glossary	accepted
	UK: The document makes use of normal text, text in boxes and text in boxes which are shaded. Please clarify the status of each of these in the final guidance document	added
	NL: The readability of the Guidance document can be improved with a better distinction between the subjects, how these subjects are to be interpreted for the R1-formula and the background information.	Text and chapters modified
	DK: It is said that it is “not strictly speaking an expression of efficiency in physics”, but not what it is then. It could be described as “a factor for efficiency, including avoided primary fuels” or the like.	Sentence does not seem to be essential, deleted
	CEWEP: The internal use must not be restricted to “waste treatment”. Energy used in the offices or by other users on site is to be counted as well in Ep as this energy also replaces primary energy.	Accepted, sentence changed
	NL: Both MWI and MSWI are used in the Proposal. Please be consistent.	MSWI is used
Scope	SE: What happens in case an incineration plant has two separate lines (one for hazardous waste and one for MSW) ?	Explained in the document: In case an incineration plant has two separate lines (one for hazardous waste and one for MSW) only the line for MSW can apply for the R1 status.
	NL: Annex II of the WFD clearly restricts the scope of the formula to “Incineration facilities dedicated to the processing of Municipal Solid Waste (MSW)”. The scope should be restricted “mixed municipal waste”, as specified in WID in its article 3(3)	This is regarded as too strict interpretation; dedicated does not mean exclusively; nor does the WID specify that only mixed MSW according to article 3(3) may be incinerated in a MSWI plant.
	DK: Heading 20 of the European Waste Catalogue (EWC) should be taken as most relevant reference. By applying this heading the R1-formula will cover non-hazardous as well as certain hazardous waste fractions, provided these different waste types are combusted in municipal solid waste incinerators (MSWIs).	This appears logic and in line with the IPPC interpretation; it however needs to be taken into account, that there quite a number of waste codes included in EWC 20, for which incineration does not make sense or could lead to harm for the environment, or for which other treatment options (e.g. recycling) exist which are higher on the waste hierarchy and shall be preferred, if not LCA shows the opposite.
	UK: The guidance needs to clarify when an incinerator stops being a municipal solid	This is a very valuable argument.

	<p>waste incinerator (MSWI) as a result of the proportion of alternative wastes being burnt exceeding a certain threshold (e.g. solid recovered fuel (SRF); clinical and hazardous waste and sewage sludge). For example, industrial energy users offering good heat recovery potential (i.e. CHP outcomes) may choose SRF and waste wood feed stocks to reduce reliance on fossil fuels.</p> <p>If SRF is derived from both MSW and commercial and industrial (C&amp;I) waste streams and much C&amp;I waste now falls within the EU interpretation of MSW, one can argue that SRF is an eligible fuel for a MSWI and can be included within Ew. However, if there is a threshold limitation on the proportion of SRF or other wastes that can be accepted, then, this need to be stated explicitly as the consequence could be to remove altogether the plant from the ambit of the R1-formula on the grounds that it is no longer a MSWI.</p>	<p>Mixed MSW shall be the focus of the incineration permit, but other wastes cannot be excluded if listed in the permit.</p>
	<p>UK: the principle of self-sufficiency and proximity (Art 16(1) WFD) is applicable on <u>all</u> wastes destined to incinerators..” is not correct and needs to be amended</p>	<p>Information on Art 16 deleted</p>
	<p>HU: that according to C-116/01 all waste incinerated in a facility with R1 status has to be regarded as recovered</p>	<p>In Court ruling C-116/01 (SITA) the Court has denied to refer to the calorific value of the incinerated waste and confirmed the approach as outlined in ruling C-228/00 (Commission v Germany) that there are three criteria to assess whether thermal treatment might be considered as recovery. (see C-228/00)</p>
	<p>C18) NL: Not all waste-treatment in a R1-MSWI may be regarded as recovery. For other R1-installations this is already determined by the European Court of Justice, and specifically in judgment C-228/00. The key-aspect here is that incineration is only to be regarded as recovery when:</p> <p>more energy is generated and recovered in the combustion process than is consumed and that a part of the excess energy is actually used (C-228/00, paragraph 42), and when the majority of the waste is actually incinerated during the operation and most of the released energy will be recovered and used (C-228/00, paragraph 43). If these criteria are not satisfied, the incineration is to be regarded as disposal, even in cement-kilns or energy-plants (C-228/00, paragraph 52).</p> <p>The National Waste Management Plan in the Netherlands is explicitly based on this judgment and other judgements (f.i. judgment C-458/00). In the Dutch policy condition b. is translated to a requirement that the waste (As Received) for more than 50% should consist of organic substance that is burned in the combustion process.</p>	<p>Citation C-228/00: the greater part of the energy generated is recovered and used. the energy generated by, and recovered from, combustion of the waste is greater than the amount of energy consumed during the combustion process; and that part of the surplus energy generated during combustion should effectively be used, either immediately in the form of the heat produced by incineration or, after processing, in the form of electricity; that the greater part of the waste must be consumed during the operation and the greater part of the energy generated must be recovered and used.</p> <p>Citation C-458/00: all or part of the heat produced by the combustion is reclaimed</p> <p>This exactly what is requested by the R1 formula; the major part of what is generated at the boiler shall be used as either heat or electricity; within or outside the installation (see definition of recovery)</p>
	<p>UK: We agree that hazardous waste, incinerated in a MSWI should not benefit from the R1 status of the plant and should not be categorised as “recovered”.</p>	<p>The ruling of ECJ C-228/00 explicitly concluded that neither hazardousness nor calorific value as such may be used as an argument to exclude waste from a thermal treatment with energy recovery as long as the criteria: use as a fuel,</p>

	<p>While certain MSWIs can burn certain hazardous waste streams where the permit allows, the UK believes that this should be classified as a D10 operation and the provisions relating to disposal under the Waste Shipments Regulation should apply when such hazardous waste is subject to a transboundary movement. The main reason for burning hazardous waste is to get rid of it, not to create energy, and if we classified this process as recovery, it could encourage transboundary movement of hazardous waste for recovery to MSWIs.</p>	<p>recovery of the major part of energy and consumption of major part of waste (mixture) are met.</p> <p>Limitation of hazardous waste combustion in MSWI has to be linked to their comparability to MSW and accordingly to WID and IPPC.</p>
	<p>FR: we agree that hazardous waste should not benefit from R1 and should not be regarded as recovered; including consequences for WSR and national reporting; suggest a threshold for on the proportion of hazardous waste burnt in a MSWI</p>	<p>Limitation of hazardous waste combustion in MSWI has to be linked to their comparability to MSW and accordingly to WID and IPPC. A threshold seems reasonable (see above other wastes). The question is on which basis a threshold could be fixed, as there is not limitation in the corresponding legislation.</p>
	<p>SI : waste other than MSW shall not be regarded as recovered</p>	<p>s. o.</p>
	<p>CZ: hazardous waste shall not be regarded as recovered</p>	<p>s. o.</p>
	<p>AT: the Guidance should provide more clarification:</p> <p>This could be done in a way that it states in general that the treatment of other than municipal solid waste in a R1-incinerator cannot be classified as recovery in any case. Reasons for a classification as disposal can be legal obligations (eg. the Animal By-Products-Regulation or the EU Waste Statistic Regulation) or technical matters (eg. wastes with low calorific value, which do not burn without energy input).</p> <p>In addition examples of waste (types) should be listed where disposal is assumed.</p> <p>Separate collected fractions and hazardous waste according to Art. 3.2 WID should be listed. The list should be not exclusive.</p>	<p>The guidance can only follow court rulings and provisions of pertinent legislation.</p> <p>Classification as either R or D related to a process not to specific wastes. The waste mix treated over a years' period has to meet the energy efficiency threshold.</p> <p>MS however are free to limit the types of waste authorised for a MSW in the permit, and should do so in compliance with WID, IPPC and waste hierarchy. The permit will be valid whether or not an installation is classified as R1 or D10.</p>
	<p>EEB:</p> <p>1) waste other than MSW shall be excluded from the calculation of the R1 efficiency;</p> <p>2) shipments for energy recovery purpose shall be submitted to stringent conditions and prohibited as far as possible</p>	<p>1) s.o.</p> <p>2) Shipments for recovery follow the provisions set in Article 16;</p> <p>The derogation from Regulation (EC) No 1013/2006, implies that the limitation of incoming shipments of waste destined to incinerators that are classified as recovery, based on waste management plans, and the possibility to limit outgoing shipments of waste on environmental grounds as set out in Regulation (EC) No 1013/2006, are expanded to cover waste streams which are subject to general information procedure according to Article 18.</p> <p>On the other hand Art. 18 explicitly does not foresee possibilities for objection by MS authorities.</p>

	EURITS: "Hazardous wastes would not count for formula calculations (input and output) and hazardous wastes would be D10 if used in a MWI."	s.o. (C-228/00); the operation based on the acceptable waste mixture is either R1 or D10 not the waste delivered.
	NL: Where in the EU Waste Statistics Regulation is the calorific value of < 6,000 kJ/kg mentioned? Can the exact reference be given?  ITAD: A NCV of 6.000 kJ/kg will hamper the thermal treatment (recovery) of sewage sludge and will advance the recovery of sewage sludge as fertilizer (which is in many cases not preferable from an environmental point of view)	Court ruling C-228/00 suggest to not use the NCV as an exclusion criterion for the classification of a treatment operation. NCV of 6.000 kJ/kg deleted
	NL: Can the complete article from WID be stated here so that the fractions that are excluded from mixed municipal waste are also mentioned? "mixed municipal waste" means waste from households as well as commercial, industrial and institutional waste, which because of its nature and composition is similar to waste from households, but excluding fractions indicated in the Annex to Decision 94/3/EC (4) under heading 20 01 that are collected separately at source and excluding the other wastes indicated under heading 20 02 of that Annex;	Complete article is mentioned
	CEWEP: C&D (Construction and Demolition) waste does not appear to be relevant. We are strongly against such exclusions which would apply to minor waste flows (among the incinerated waste flow) but will open the door to endless discussions with the authorities about these flows, really difficult to identify. And the reference to this directive should be deleted for the same reasons.	Permit is the decisive factor; similarity to MSW should be an acceptance criterion for the permit
	ITAD: In addition to the CEWEP-ESWET-FEAD-comments we want to emphasize the following points: 1) <u>Recovery of hazardous waste under R1-status in a Municipal Solid Waste Incinerator (MSWI)</u> In Germany and in other countries there is long experience of the possibility that hazardous waste can be incinerated in an installation for municipal waste, if the waste fulfills certain criteria (comparable with municipal/commercial waste). If in a MSWI's permit the treatment of <b>certain</b> specified hazardous wastes is allowed, it is obvious that in this case the (hazardous) waste can be treated in an environmentally sound and sustainable way according to the technical parameters of the MSW installation and according to the EU standards (BATs) for incineration plants. Therefore we propose, that this waste may not be exempted from R1. Possible waste categories (list not final) are:  <b>European Waste Catalogue</b>	part of the comment accepted and included in the text.  List not added as annex. The individual permits based on WID and BREF WI cannot be summarised and discussed in this document.  <b>The project team is of the opinion, that the guidance cannot solve the problem that a clear distinction between MSWI and other types of incineration facilities is not made in the pertinent legislation. And the definition and wording in the relevant legislation is not consistent at all.</b>  <b>It would be important to clarify these aspects in an amendment of the legislation as soon as possible.</b>

	<p><b>code</b> <b>name</b></p> <p>15 01 10* packaging containing residues of or contaminated by dangerous substances</p> <p>15 02 02* absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances</p> <p>16 01 07* oil filters</p> <p>17 02 04* glass, plastic and wood containing or contaminated with dangerous substances oil</p> <p>17 03 03* coal tar and tarred products</p> <p>17 09 03* other construction and demolition wastes (including mixed wastes) containing dangerous substances</p> <p>19 10 03* fluff-light fraction and dust containing dangerous substances</p> <p>19 12 06* wood containing dangerous substances</p> <p>20 01 37* wood containing dangerous substances</p> <p>Additional explanation: Today in Germany about 140.000 t/a of hazardous waste comparable to MSW is recovered in MSWIs. Therefore regarding the recovery of certain hazardous waste there is also a question of ensuring a level playing field with regard to the co-incineration of hazardous waste, which is “automatically” considered to be energy recovery whereas MSWI would be classified as ‘disposal’.</p>	
System boundary	DK: “District cooling” could be added as an alternative utilization method for waste heat. This could encourage an alternative use of heat in regions where the need for room heating is low.	Yes absolutely; the question is where to put it, as not any use options are explicitly mentioned.
	BE: The inclusion of the flue gas cleaning system gives the incentive to use also lower temperature heat, which otherwise would be wasted. Under which „E“-part of the formula will this be implemented?	The recovered heat will be calculated in Ep
	The inclusion of the turbine into the R1 system boundaries is underpinned by the WID requesting combined heat and power recovery from waste to the extent possible. (For more details see BREF Document). PT: can be deleted	Can be deleted if wished
	Pre-treatment might in exceptional cases be included into the R1 system boundaries ... and if the “incineration facility” does not generate the electricity it uses. If the “incineration facility” generates electricity, it is not necessary to identify this amount of energy, since it will be as well counted in Ep.	<p>It does not make sense to include pre-treatment in exceptional cases. Pre-treatment shall be excluded in any case. The important is that Ew will be measured at the entry to the boiler; The alternative would only be to include pre-treatment in general if included in the permit; hence using the permit as system boundary</p> <p>Sentence has been deleted</p>

	<p>Flanders: It is obvious that pre-treatment on another location is excluded of the boundary limits, but does it mean that pre-shredding in front of the bunker of the incineration facility on site is also excluded of the system boundaries? How will the energy needed for mixing the waste in the bunker be included in the system?</p>	<p>It was agreed that pre-treatment of any kind is not included in the system boundary. S.o. It will be added in the chapter on Ew that it has to be calculated at the entry to the boiler.</p>
	<p>In this case however it would be necessary to determine the Ew prior to the pre-treatment, which in practice is difficult to achieve. CEWEP: This is nearly impossible to achieve. It will therefore be much better to delete this sentence.</p> <p>BE: Might“ : this means that it is to be „advisable“, but the member states can judge it themselves ?</p>	<p>Sentence related to the comment above; with the above deleted, it is not necessary and was deleted</p>
	<p>CEWEP: Special cases must be discussed with the competent authority (e. g. when an incinerator uses fuel for other purposes than waste treatment, such as to face heat peaks demand in winter).</p>	<p>The project team cannot see the logic behind inclusion into the system boundary/exclusion from the system boundary of fuel used for other purposes than waste treatment. Fuel will be calculated in Ef only if inside the R1 system boundary. Sentence not included.</p>
	<p>CEWEP: This (deleted) paragraph seems to refer to the WID but the corresponding article 3-4 which defines an incineration plant does not mention the turbine neither directly nor indirectly. It cannot therefore be decisive factor as regards inclusion or exclusion of scope of a turbine.</p>	<p>Sentence has been amended: The stationary technical unit used in the definition of the “incineration plant” (according to article 3(4) Reg. EC (No) 2000/76) dedicated to the thermal treatment of wastes with recovery of the combustion heat generated, as specified in the corresponding WID permit, shall be the decisive factor as regards inclusion or exclusion of scope of a turbine for generation of electricity and their consideration in the calculation of the R1 efficiency.</p>
	<p>BE: Existing plant permits may not be changed to include/exclude electricity production in order to reach R1 classification without corresponding plant modification. this is advisable; but how will this be implemented: during permitting of new plants or amendment of existing plants it is well possible that this will be done</p>	<p>It is not a matter of the formula but a matter of permitting that fake changes are not authorised. In case a real change is done or a new installation is permitted operators are free to choose the most efficient solution.</p>
	<p>BE: How will more „exotic approaches“ will be looked at : e.g. waste incineration plant produces steam; steam (40 bar , 400°C) goes to (internal) turbine 1; at the outside steam (15 bar, 180 °C); this steam goes to (external) turbine 2: this means two times production of electricity based on initial steam. Will the produced energy than be counted e.g. : (2.6 *electricity produced by turbine 1 + steam delivered for turbine 2) ?</p>	<p>Yes, the suggested counting is correct.</p>
The single parameter	<p>NL: All energy flows including Ep must be measured at the system boundary.</p>	<p>The expert team of the contractor cannot agree to this position of the Netherlands. From our point of view it is clearly in contradiction to the BREF chapter 3.5.6. to measure Ep at the system boundary, as then always Ep would</p>

		equal Eexp. see also comment C4.
	NL: This means also that when an energy flow is measured, it leaves or enters the system. Thus also Ep should be measured at the system boundary.	The conclusion does not seem to be correct. Also Energy flows can be measured that do not leave or enter the system. The causality to Ep is not given, produced energy can be measured inside the system, not at the boundary.
Ep	CEWEP: It is better not to refer to an energy balance here. The energy balance is made on the boiler used as a calorimeter during the initial acceptance test. See annex 3 (to be added).	Agreed, the text has been modified.
Ep	DK: The section describing Ep is not clear, and at some points self-contradictory. It says that Ep is defined as the annual energy produced and this means “energy generated from waste”. It also says that Ep includes only recovered energy which is exported as well as energy used inside the facility – this is not in line with the first definition. Finally, it says that exported energy can only be counted as Ep if the operator can prove consumption by means of valid contracts – again this means that Ep is not to be understood as the annual energy produced. An alternative definition of Ep could be “produced and utilized”	The project team is of the opinion that Ep is “produced and utilized”; the chapter is amended to make this well clear.
Ep	NL: Here in the text it is said that circulated energy (internal heat) equals (directly replaces) imported energy. Then Ecirc should be part of Ei.	A better wording has now been suggested. However, the causality of the conclusion is not clear: What is said is the following: Circulated energy can replace imported energy. According to ECJ ruling C-228/00 this is a major criterion for recovery and inclusion in Ep. A conclusion that Ecirc should be part of Ei cannot be drawn from these considerations. Important for the consideration in the R1 formula is the fact that a commercial use is given for circulated heat. This is the case due to opportunity cost principle. “If I do not use circulated heat, I would have to purchase energy from outside. So, circulated heat has a commercial value.  Counting Ecirc in Ei would be the same as defining Ep as Eexp; this however is not the case.
Ep	AT: the system boundaries are laid down in a way that self-consumption is only calculated in Ep and thus enables incinerators to reach a higher decimal number (0,6 and 0,65 are the benchmarks). The difference to the BREF-calculation is about a tenth which we consider significant.	The BREF calculation is focussing only on Eexp not taking into consideration the possibility to recover energy also within the installation. This is the major difference the two formulas.
Ep	IE: apply formula in a strict manner; efficiency factors applied in the calculation shall be governed by the actual use of the energy	The guidance can only interpret the formula from a technical and logical point of view and there Ep and Ei are clearly defined.  This is the case if the formula is applied as proposed

Ep	NL: Energy generated from waste” is not a citation of ECJ C-458/00.	<p>Citation C-228/00: the greater part of the energy generated is recovered and used. the energy generated by, and recovered from, combustion of the waste is greater than the amount of energy consumed during the combustion process; and that part of the surplus energy generated during combustion should effectively be used, either immediately in the form of the heat produced by incineration or, after processing, in the form of electricity; that the greater part of the waste must be consumed during the operation and the greater part of the energy generated must be recovered and used.</p> <p>Citation C-458/00: all or part of the heat produced by the combustion is reclaimed</p> <p>This exactly what is requested by the R1 formula; the major part of what is generated at the boiler shall be used as either heat or electricity; within or outside the installation (see definition of recovery)</p>
Ei	<p>Most efficient internal use of energy and external use of heat shall be requested by the permit in accordance with the limits for heat and electricity set by the best available techniques (BAT 62b, 63, 66b and 68) as specified in the BREF document.</p> <p>CEWEP: In fact, this paragraph does not directly contribute to the application of the R1-formula and should better be deleted in view of simplification.</p>	Can be deleted in this place but is important to be mentioned under Ei in order to assure that internal energy use is limited to the minimum.
Ei	CEWEP, NL: This paragraph is essential for these plants since, without stating that, they would be at a disadvantage compared to the other ones as all the electricity they use would be counted in Ep and in Ei whereas it would be counted in Ep only for plants which do not have this kind of contract.	The guidance should be clear and applicable. If energy is imported, this has to be counted as Ei. Economically motivated contracts of single plants cannot be reflected with special conditions in the guidance.
Ei	NL: Circulated energy should not be part of Ei. As stated in comment A1 this is not in accordance with the BREF document. And is also not the view of the Netherlands. The R1 energy efficiency formula is about the efficiency of a MSWI. This includes the flue gas cleaning which is within the system boundary. By excluding circulating energy from Ei the total energy efficiency of the MSWI is not calculated. Then only the efficiency of the kettle and boiler is calculated.	<p>See comments above.</p> <p>In addition it would not make sense to first include this energy in Ep and to deduct it afterwards. Then the formula would read Energy efficiency is <math>E_{exp} - (E_f + E_i)/0.97 * (E_w + E_f)</math>.</p>
	DK: In line with this recommendation the equivalence factors for electricity and heat should also be explained (but not in this chapter).	Explanation has been added
Ei	DK: We find the interpretation of Ei (“annual energy imported” – excluding circulated energy) problematic due to the fact that the R1 formula then expresses the efficiency of the boiler(s) and not of the entire plant which we believe it should. It does not give the facilities any incentive to reduce their energy consumption when the energy	The team of the contractor cannot follow this comment completely, because the presented understanding of the formula does not calculate the boiler efficiency. If the boiler efficiency was looked at all unused exhaust heat would be included (major parameter for good or less good recovery) and turbine efficiency would



	produced and circulated internally is not included in Ei (but in Ep). We suggest that the R1 formula should express the net efficiency of the plant (energy exported minus energy imported) as this would be in accordance with the BREF document and be much more straightforward to manage.	not be taken into account.
	NL: The R1-formula is about energy efficiency and should be limited to this aspect. The emission levels are part of the permit and must be regulated there. This part of the sentence should be deleted from the document.	Also other aspects discussed in this document are a matter of permits Wet flue gas treatment systems have the highest potential to minimise air emissions with the disadvantage to consume more energy.
Ei	NL: When a plant produces either heat or electricity it has to import electricity or fuel, which then is part of Ei. When a plant produces both there is no need to import electricity or fuel so the Ei is lower. This leads to dissimilar assessment of different types of MSWI.	Yes, and this is a strong incentive to use the energy of the waste (namely heat, which otherwise might be wasted) to treat them, which is better than to import it.
Ei	NL: It is unclear why there should be an incentive for incineration facilities to make use of own energy produced. The goal should be to optimize the total energy efficiency of a MSWI. It might be that it is better in total to export heat at a high temperature and high pressure directly to adjacent industry and import electricity for own use than to divert a part of the steam to a turbine to produce electricity.	The goal should be to optimize the total energy efficiency of a MSWI is usually related to increased use of own energy (heat). In such an extreme case it might be better to export 100% of the steam and to buy electricity. But in such case there is no incentive effect of the R1-formula because the R1 value will be so high (above 0.8)
Ei	DK: The main aim of the R1-formula should be to relocate waste from inefficient incinerators to more efficient ones, and to facilitate construction of waste incinerators with a high energy efficiency to utilize as much as possible of the energy embedded in the waste.	(see comment NL)
Ef	CEWEP: 1) If additional fuels added in view of increasing the energy input in order to satisfy heat peak demand were to be counted as Ef, it would kill this useful possibility to avoid using an auxiliary boiler. 2) Fuel used for flue-gas reheating, if any, is not 'contributing to the production of steam' and therefore is not to be counted as Ef but as Ei.	As already stated guidance needs to be clear and applicable. Fuel imported for steam generation should be counted as Ef, the exemption requested is based on specific economic interests but does not seem to be justified as general guidance. So the suggested modification is not included.  The second point is clear, the text is modified accordingly.
Ef	CEWEP: The (deleted) sentence "until the legal minimum flue gas temperature (required by the legislation and or the permit) is reached when the burner(s) is (are) shut down" means in fact that all the fuel used until the burner is shut down would be counted as Ef. This is not correct since Ef includes only the fuel contributing to steam production.	The text is modified accordingly: In start-up the period where fuel contributes to the production of steam (counting as Ef), starts when the steam generator is connected to the steam grid and lasts until the legal minimum flue gas temperature (required by the legislation and or the permit) is reached. In and shut down it lasts until the steam generator is disconnected from the grid.
Ew	EEB: exclude RDF/SRF from Ew	As long as RDF/SRF is classified as waste it is to be counted in Ew; it would not be logic to count it in Ef

Calculation of NCV	CEWEP: The method of using the boiler as a calorimeter is not “to be used” when the R1 value is calculated. It is used during the (single) acceptance test and the result of this test is used every time the R1 value is calculated.	accepted
	<p><b>NL:</b> How are energy losses due to bottom ash and radiation to be taken into account in the calculation of <math>E_w + E_f</math>? These losses are already taken into account in the R1 formula (as 0.97 in the denominator). Should these be neglected in the use of the suggested standard?</p> <ul style="list-style-type: none"> <li>- The R1 formula boundary limits include the whole incineration facility and calculate a kind of energy ratio between on one hand the energy produced and used and on the other one the energy input.</li> <li>- The method to determine the NCV by using the boiler as a calorimeter is an energy balance made only on the furnace and boiler (without piping, FGC, Turbine, heat exchangers etc.)</li> </ul>	These are two different calculations. The losses are taken into account on one hand in the formula (factor 0.97) and also in the determination of the NCV.
	<p>CEWEP: The principle of the methods is to use an energy balance on the furnace and the boiler considered together as a calorimeter<sup>1</sup>.</p> <p>The flue gas flow and energy is to be measured during the acceptance test at the beginning of the life of the incineration facility. But with the proposed method, it is not necessary to measure it all along to calculate the R1 value. This measurement being usually impossible to do directly, it simplifies a lot to do it like that.</p>	Amended text accepted
	BE: How do you determine so many unknown factors?	The flue gas flow and energy is to be determined thoroughly in the planning and during the acceptance test at the beginning of the life of the incineration facility including all potential return flows, risk for double counts. Once determined the parameter can be used for the rest of the lifetime of a facility.
	<p>The energy coming from the waste (<math>E_w</math>) is then obtained by deducting from the total energy input, the energy of the fuels contributing to the production of steam/hot water (<math>E_f</math>)</p> <p>BE: In this approach you will use a certain theoretical efficiency given by the producers of the turbine ? A variation of the theoretical efficiency has got a bigger impact on the formula than some other parameters in the formula</p>	The main energy outputs are measured during the acceptance test at the beginning of the life of the incineration facility (e.g. steam flow). It is not necessary and reasonable to take into consideration the turbine in this energy balance: the measured steam output in relation to the energy inputs is the decisive factor in this context. What happens with the steam afterwards is not important for determination of the energy input in terms of $E_f + E_i$ and $E_w + E_f$
Monitoring	It is important to note that the European Commission is not in the position to request harmonization of the procedures for the qualification procedure to apply for R1 classification, nor of the procedures for the monitoring of compliance with the	<p>Introduction amended:</p> <p>Nevertheless a common definition for the terms that are used in the description of the R1-formula in Annex II (see below) and a clarification on how the factors</p>

<sup>1</sup> The boundary limits of the system here (furnace and boiler) are different (narrower) than the R1 boundary limits considered in the other parts of the R1 guideline document

	<p>classification.</p> <p>NL: This does not mean that no further clarification is needed. The Netherlands is in the opinion that there should be a common definition for the next terms that are used in Annex II that describes the R1-formula (as indicated below</p> <p>DE: ask for uniform provisions elaborated by COM Suggest using proposals from DE draft guidance</p>	<p>can be calculated seems to be beneficiary and shall be addressed in this document.</p>
	<p>C16) NL: Installations permitted after 31 December 2008 (Regularly there is a modification in an existing MSWI. In most cases the permit is then also modified. This is then a new permit. When such a change in permit is done after 31 December 2008, then the threshold for this installation should be 0.65.</p>	<p>Normally the permit is not changed to a new permit in such a case but modified. The threshold must not change. If it was the case, it would be an incentive not to do anything (e.g. the operator would not try to improve its FGC or even its boiler if the result would be to jump from 0.6 to 0.65 !)</p>
The calculation procedure	<p>C13) NL: As already stated in comment C2 the R1 calculation is based on the annual performance. Thus on a whole continuous year the calculation is based. In the WID it is not stated that periods can be discarded.</p>	<p>Text has been deleted. Rewording was done to make the annual performance more clear.</p>
	<p>For existing plants “Installations in operation” the R1 factor shall be determined on the basis of annual performances</p> <p>BE: Does it mean that the determination has to be done annually?</p> <p>PT: This should clarify whether a performance test has to be made in the first calculation of R1. The sentence is too vague.</p>	<p>In the first calculation a thorough performance test shall be made, afterwards the compliance with the R1 factor shall be documented on the basis of annual operational data monitored with standard equipment</p>
	<p>EEB: make clearer; exclude only periods without waste treatment not periods with reduced activity</p>	<p>Outage periods deleted</p>
	<p>Proposal DE: The calculation is based on regular operation (including revisions) of the whole facility. The regular operation includes the imperfect supply of electricity and heat because of lower demand. A turbine stop due to low demand for energy may not be declared as a turbine breakdown. Excluded are time periods with un-planned reconstruction works (e.g. breakdown of turbine during running operation) or planned reconstruction works.</p>	<p>Largely accepted</p>
	<p>NL: In Annex II of the WFD all E's are based on annual energy. No exceptions are mentioned. Annual, this is for a period of 12 consecutive months without exceptions. Thus on a whole continuous year the R1-calculation is based.</p> <p>The excluding of certain periods in the R1-calculation will also further complicate the calculation of the R1 value.</p>	<p>Outage periods deleted</p>
	<p>NL: In Annex II of the WFD it is clearly stated that only the calculated value based on the formula should be used to determine the status of an MSWI. There is no</p>	<p>A measured value is always measured with an uncertainty. Uncertainty calculation is then to be achieved for calculated values. The R1 value being a</p>

	reference that uncertainty should be applied. The sentence after comment 4 should be deleted.	calculated value based on measured values, it is necessary to tell the operators to do it in accordance with an existing standard. The calculated value minus the uncertainty has to meet the threshold
	DE: use 3 year balance instead of smoothing factor German proposal: the calculation has to be made on the basis of the planning or construction specifications, considering the energy supply contracts and by determination of the general efficiency of the facility from an energetic view. A facility operating less than three years or having undergone constructive or contractual amendments concerning the energy efficiency, has to be considered like a new facility	Proposal accepted as safety factor in first application for R1 classification
	NL: No correction on the measured data and calculated R1 value should be applied. In Annex II for the energy is referred to annual data. There is no mentioning of taking into account of a long term average. It is the standpoint of the Netherlands that the R1 value must be calculated on annual data without further correction. This also keeps the application of the formula simple.	Calculation is to be done on annual performance data
	Affald Denmark: If climatic conditions do play a role, there are other factors that are much more determining for the overall energy efficiency of an incineration plant. We have therefore the view that neither heat nor electricity smoothing, as suggested page 18-19, should be applied.	Calculation is to be done on annual performance data
	BE: How will the correction factors be determined? The demand for heating is lower in the southern regions, but the need cooling systems: it is possible to use heat for cooling; there are technical solutions for the use of heat in those regions.	The smoothing factor is not a climate correction factor but just a factor to balance short time climatic variations in the first application for the R1 classification;
	Short time decrease of energy production or energy consumption will not be taken into consideration. PT: How will short time variations be taken out of annual data? What is "short time". This aspect may be relevant, but the sentence is too vague. EEB: make more precise; set a maximum number of days in a row and of days per year NL: As already stated in comment C2 the R1 calculation is based on the annual performance. Thus on a whole continuous year the calculation is based. In the WID it is not stated that periods can be discarded. This passage should be deleted.	Accepted; will be included in argumentation of annual performance
	Calculation: SE: We regret that there will be no possibility to compare as several	The calculation shall be performed according to a harmonized approach; text

	methods could be used	modified accordingly
	<p>CEWEP: When applicable, a geographical climate factor, according to Article 38 of the WFD is also to be applied. (This issue is discussed and addressed in a separate document).</p> <p>DE, DK do not apply climate correction factor</p> <p>FR: we support a climate factor, but understand that it goes beyond the scope of a guidance and therefore should be dealt in a specification or amendment to Annex II</p>	This aspect is not discussed in the guidance
	C17) NL: multiple incineration lines shall be seen as multiple facilities when the line(s) can operate independently?	Yes but full independence must not be required; only the possibility to identify clearly the flows of each part of the plant.
	<p>CEWEP:</p> <p>1) Multiple incineration lines can be seen as multiple facilities, and can apply separately for the R1 status when the line(s) operate independently.</p> <p>2) If the operator opts to calculate separately the R1 value for different lines of the plant, e.g. in the case of a new line added to an existing Waste-to-Energy plant, an agreement is to be found with the competent authority on how to share the common flows.</p>	<p>1) see above</p> <p>2) it needs to be clearly determinable which the flows of are each part of the plant. The proposed sentence cannot be accepted as such.</p>
Verification of R1 status	<p>German proposal: The R1-factor is determined or verified by an independent third person and has to be presented to the competent authority of the EU-member state by the operator of the respective facility. The calculation of the R1-factor for the preceding year and the statement of keeping the energy efficiency have to be presented at the beginning (during the first three months) of each calendar year on the basis of data of the preceding year.</p> <p>The R1 classification of a municipal waste incinerator will be confirmed by the competent authority to the operator for the running year; this confirmation is no permit.</p> <p>For application of R1 classification plant operators provide to the competent authority the data required to calculate the R1 value and the R1 value calculated. The competent authority verifies and approves the calculation sheet and requests further information or independent control measurements if needed.</p> <p>Proposal FR: The competent authority shall receive the calculation sheet and can carry on controls to make sure the R1 formula is properly used. The competent</p>	accepted

	authority can also request further information or independent control measurements if needed.	
	<p>Waste incinerated, electricity generated, heat used outside the incinerator facility. For the additional energy flows lump sum data based on the previous R1-formula calculation of the plant might be used, in the context of reporting under Art 12(2) of the WI Directive.</p> <p>SE: we are positive on this possibility to report within existing obligations</p> <p>The R1/D10 status should be confirmed by the waste competent authority every year. This validation shall be based on routine operator's monitoring results (annual report to authorities) and a check whether any structural changes occurred during the past year (e.g. technical modification, change of customers, etc.). If not, the installation can keep its R1/D10 status without any recalculations.</p> <p>FR: The R1/D10 calculation should be sent to the waste authority every year. This calculation shall be based on routine operator's monitoring results</p> <p>CEWEP: The operator's report including annual monitoring results completed by an information on any structural changes occurred in the plant during the past year (e.g. technical modification, change of customers, etc.) allows the competent authority to achieve a routine validation and to check if a new calculation test is necessary. If not, the installation can keep its R1/D10 status without any recalculation.</p> <p>PT: I understand the idea of issuing a official statement, on the R1/D10 state of every plant, annually, namely for transboundary movements. However, this is contradictory with the fact that there is no need to calculate R1 every year. There is the possibility that the Competent Authority will raise the questing of not being in the position of issuing the statement in a given year, because the calculation of R1 has not been made in that year. Wouldn't it be more reasonable to say that a plant will keep its R1/D10 status as long as a new calculation of R1 has been made, due to major change in the system or in its operation procedures?</p>	<p>Some aspects are redundant;</p> <p>It is important that sophisticated testing does not need to be performed annually but only in intervals;</p> <p>The status however has to be monitored and confirmed regularly on the basis of annual data</p>
	Checking and recalculation is to be repeated after maximum 10 years or in case of a substantial change of the basic conditions on which the first verification was based (in such a way that the R1 value may be reduced: modification on boiler, turbine generator, heat supply contract, possibly the flue gas cleaning system.	Wording changed in order to make clearer what is meant

	EEB: 3 years; CZ: shorter; DE shorter; DK shorter	
	<p>Ten years interval: NL: Can “reduced” be replaced with “changed”. A change in the basic conditions can result in a higher or lower R1 value.</p> <p>DE: A facility operating less than three years or having undergone constructive or contractual amendments concerning the energy efficiency, has to be considered like a new facility</p>	German/NL proposal accepted; if fundamental changes in any case a sophisticated new calculation
Communication	<p>should make the R1 status data available to the public. Involved authorities shall take into account the R1 classification of receiving plants in its decision..</p> <p>CEWEP: What is the purpose of this sentence ?</p>	Can be deleted
	<p><b>ANNEX 2: System Boundaries of R1-formula</b></p> <p>Missing are the waste flows and energy flows entering the installation and not feeding the incineration facility but other possible waste treatments.</p> <p>This drawing is the 1<sup>st</sup> one provided by CEWEP-ESWET-FEAD out of a set of 3. Please use at least the 2<sup>nd</sup> one which shows these other waste and energy consumers.</p> <p>We send it attached again.</p> <p>NL: This figure is not clear on the energy flows. Better is it to use figure 10.14 from the BREF document.</p>	All figures introduced;
	<p>We would like to have also in this annex the examples for Ef and Ei given by Germany last year and reused by Cewep-Eswet-Fead in their draft proposal.</p> <p>The Ep list was also more complete in these lists.</p> <p>We send again these annexes attached</p>	Table included
	<p>ANNEX 4: Long term statistical data smoothing</p> <p>NL: should be removed from the Guidance; DE: use three years instead.</p> <p>UK: The use of smoothing may be valuable but we request that within the guidance document there is clarity on where or when such smoothing can be used.</p>	Annex 4 was deleted.
	Affald Denmark: Article 38 of the WFD stipulates that “If necessary, the application of the formula for incineration facilities referred to in Annex II, R1, shall be specified.	Climate correction factor not discussed in this document
	Affald Denmark: The elaboration of the guidance should be placed in the context of the relevant preamble of the WFD, which qualifies the distinction between recovery and disposal: (19)	the substitution of natural resources in the economy and recognising the potential benefits to the environment and human health of using waste as a resource. Is reflected in the interpretation of Ep and Ei

	Annex 5: FR: It could be useful to give examples of the application based on examples of installationso f teh BREF	Yes, this would be welcome, would need to be provided by authorities or operators
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