The European Commission's science and knowledge service

Joint Research Centre

EU Ecolabel revision for hard coverings criteria

1st Ad-Hoc Working Group meeting
Webinar on Concrete-based products

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European Commission

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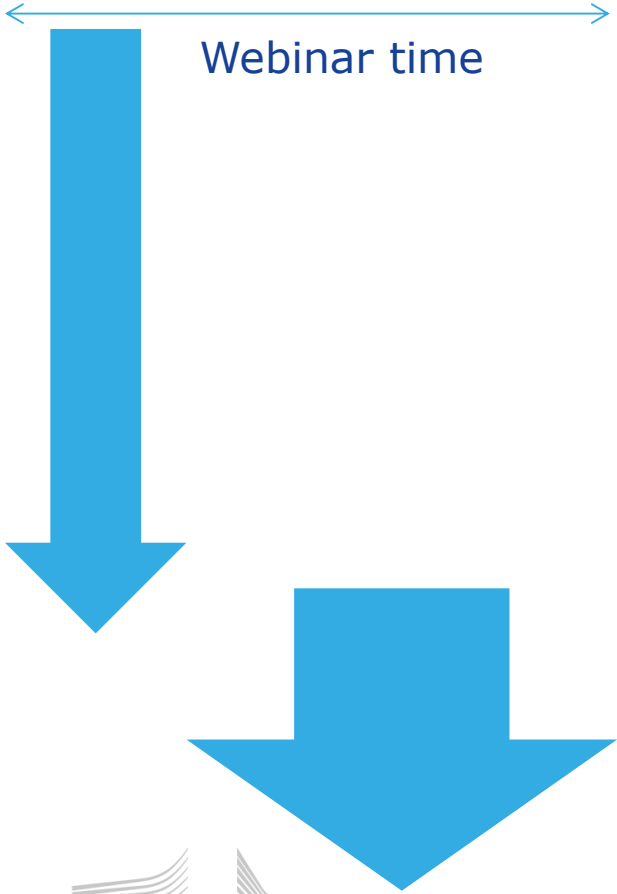

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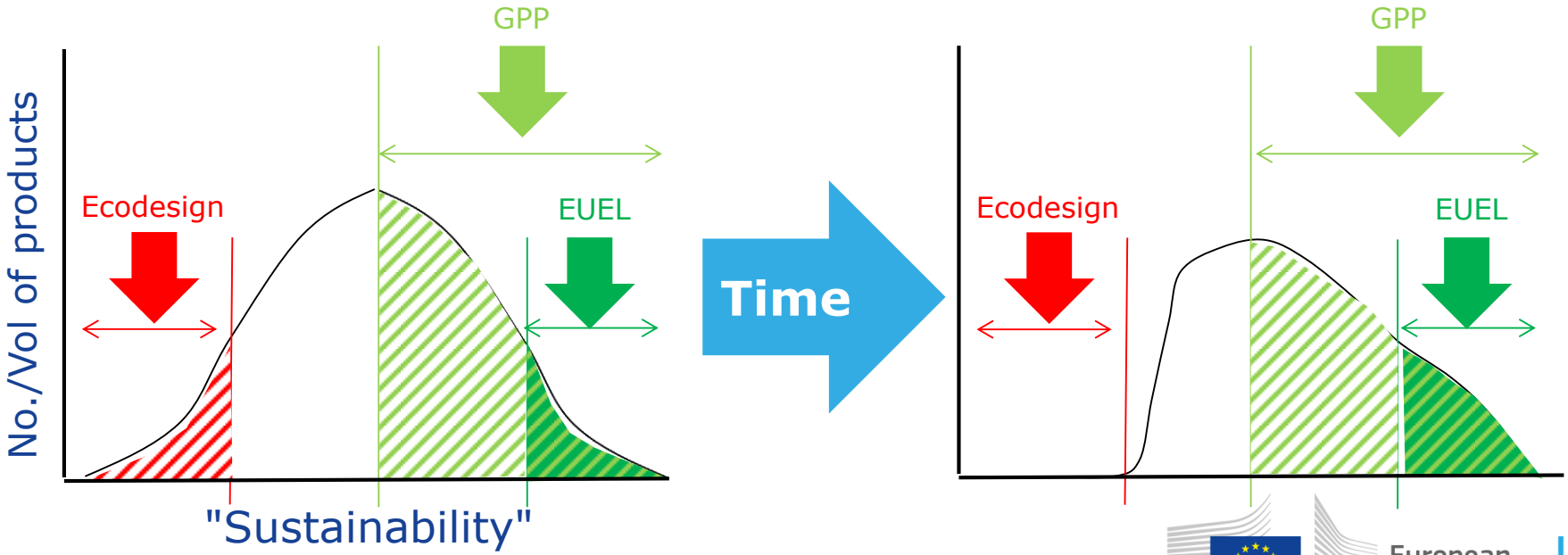
Policy background

- EU Ecolabel, part of the Sust. Consumption & Production policy.
- COM(2008) 397.
- 26 product groups, > 2100 licenses, >71000 products/services*



*http://ec.europa.eu/environment/ecolabel/facts-and-figures.html

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Project background

- Existing criteria published in Decision 2009/607/EC.
- Prolonged until June 2021.
- Criteria are already 9 years old.
- Criteria were published before current EU Ecolabel Regulation (EC) No 66/2010.

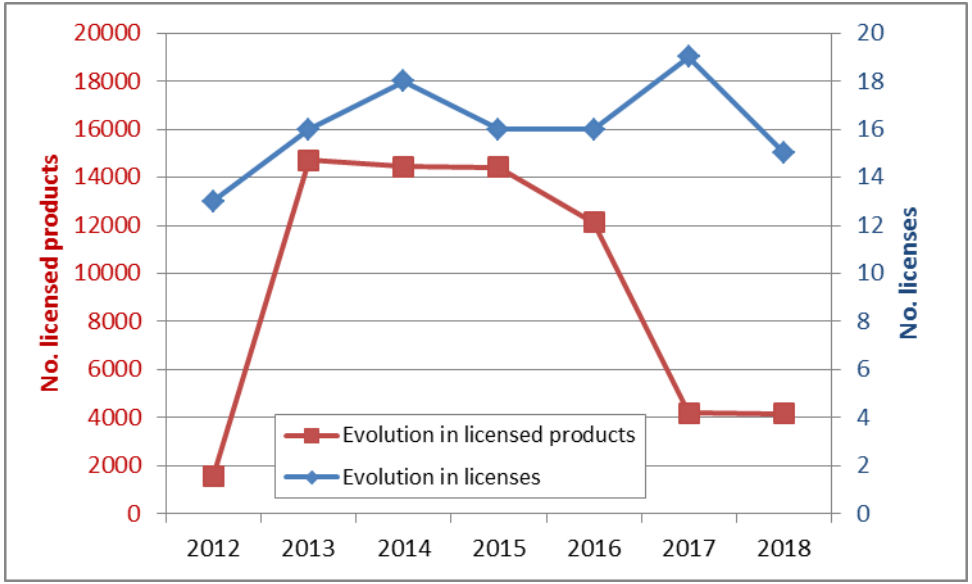
- A revision of EU Ecolabel criteria is much needed!

Uptake

- Moderate uptake achieved for ceramics (mainly IT).
- Small uptake for natural stone (ES). *Concrete + Aggl. Stone = 0*
- Declining trend in licensed products…..*why?*

	Evolution in licenses						
	2012	2013	2014	2015	2016	2017	2018
CZ	1	1	1	0	0	1	1
IE	1	1	1	1	1	1	0
UK	3	0	0	0	1	1	1
ES	1	2	2	1	2	5	4
IT	7	12	14	14	12	11	9
TOTAL	**13**	**16**	**18**	**16**	**16**	**19**	**15**

	Evolution in licensed products						
	2012	2013	2014	2015	2016	2017	2018
CZ	1	4	4	0	0	2	2
IE	1	35	35	35	35	35	0
UK	6	0	0	0	14	14	14
ES	10	6	44	40	44	575	571
IT	1520	14651	14352	14352	12024	3561	3235
TOTAL	**1538**	**14696**	**14435**	**14427**	**12117**	**4187**	**3822**



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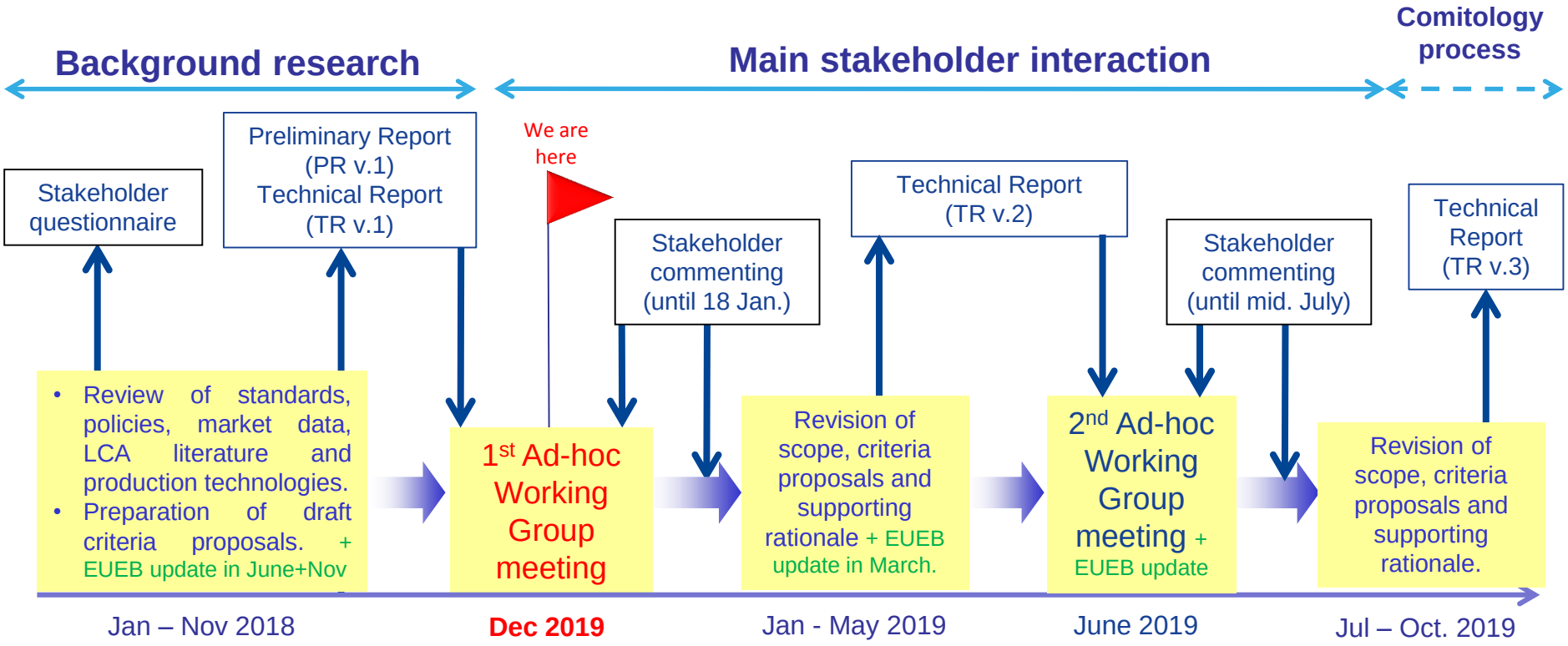
Timeline-1



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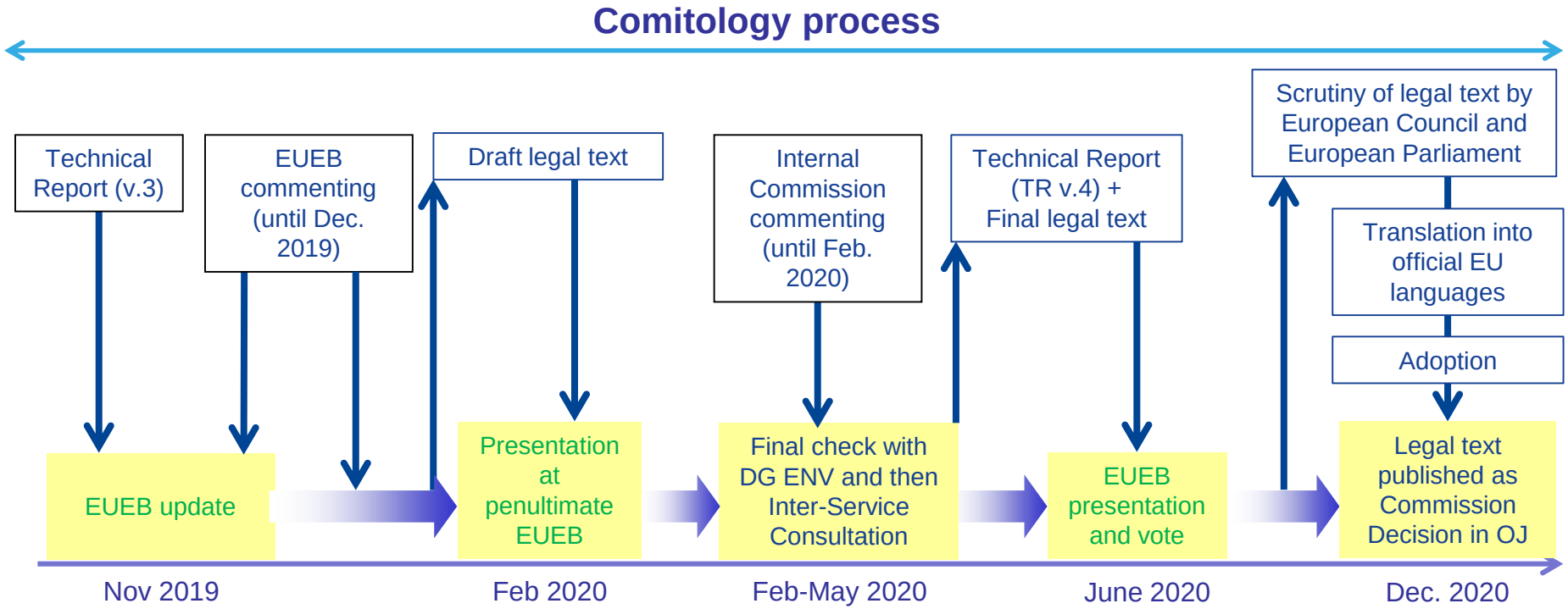
Timeline-2



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REFIT considerations

- Is the EU Ecolabel Regulation working? → REFIT exercise
- Result → *Yes, but could do better!* (see COM(2017) 355).
- Need to improve awareness and uptake.
- Better integration with EMAS and Green Public Procurement.
- Reduce Commission administration efforts (bundling of similar products into a single Commission Decision).
- Reduce criteria complexity (especially with Article 6(6) compliance). Base criteria on data that applicants can easily obtain AFAP.
- Reduce assessment and verification efforts/costs.
- Need to embrace circular economy opportunities and other related Commission policy goals.

Green Building Assessment (GBA) schemes

- Look at the environmental impact of buildings.
- A holistic approach but not an LCA as such.
- Specific aspects defined and assessed, e.g. materials.
- Well-known and successful in general.
- A plethora of schemes out there: BREEAM, LEED, HQE, VERDE, DGNB etc.
- Commission has launched Level(s) to try and set some common ways of reporting certain building indicators.
- Major boost for EU Ecolabel if hard coverings recognised by GBAs.
- EPDs are already recognised but EUEL not. *Why?*

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Environmental Product Declarations (EPDs)

- At global level: ISO 14025 (Type III).
- At EU level, for construction products: EN 15804 and CEN/TC 350.
- LCA approach.
- 3rd party certified.
- Quantitative data.
- Assumptions behind them.
- Useful for B2B sector.
- Rise of sectorial EPDs….
- But not understandable to end consumer.
- EPD is no guarantee of envi. excellence – benchmarks needed!

Impact	Unit	Value
Global warming potential	Kg CO2 eq.	10.7E-01
Acidification potential	Kg SO2 eq.	3.87E-03
Eutrophication potential	Kg PO4 eq.	1.1E-02
Ozone Depletion Potential	Kg CFC11 eq.	6.1E-07
Photochemical Oxidant Creation Potential	Kg C2H4 eq.	2.8E-04
Abiotic depletion potential	Kg Sb eq.	8.1E-09

Main aims of 1st AHWG meeting

- To present initial ideas about criteria revision and scope.
- To put a lot of criteria on the table.
- Obtain feedback (during and after the meeting) about:
  - The scope and definitions
  - Which criteria are most important (even if not originally proposed).
  - Which criteria could be dropped (REFIT → reduce complexity).

- Identify more specialised stakeholders for further discussion about the criteria revision up until and including 2nd AHWG meeting.
- *Bonus – to obtain feedback about ambition levels of criteria.*

Scope considerations

- REFIT says increase uptake:
- REFIT says increase awareness:
- REFIT says to bundle products:
- EPDs cover ALL construction products:
- GBAs look at ALL construction materials:

Expand scope for EUEL HC

Already decided to include:

- Kitchen countertops
- Table tops

(Relevant for natural stone, agglomerated stone and ceramics. Important future link to furniture PG)

Propose to include:

- Roofing tiles
- Masonry units

(Relevant for natural stone, concrete and ceramics)

Definitions-1

Decision 2009/607/EC

The product group 'hard coverings' shall comprise — for internal/external use, without any relevant structural function — natural stones, agglomerated stones, concrete paving units, terrazzo tiles, ceramic tiles and clay tiles. For hard coverings, the criteria can be applied both to floor and wall coverings, if the production process is identical and uses the same materials and manufacturing methods.

Current proposal

The product group 'hard coverings' shall comprise floor coverings and wall coverings, for internal or external use and without any relevant loadbearing function for building structures.

Hard coverings shall be made of either: natural stone, agglomerated stone, unreinforced concrete, terrazzo tiles, ceramic tiles or clay pavers.

- Red text, to clarify better what is meant by "*structural*".
- Still need to incorporate kitchen counters and table tops in green text (and potentially roofing tiles and masonry units). *Opinions?*
- "*Clay pavers*" should say "*fired clay*".

Definitions-2

Specific material standards:

- Agglomerated stone (EN 14618). But also known as "*manufactured stone*" and "*engineered stone*". Cement or resin bound…
- Terrazzo tile (EN 13748). Cement bound only.
- *Difference between cement-bound agglomerated stone and cement-bond terrazzo tile? Where would "epoxy-terrazzo" come in as well?*
- Ceramic tiles (EN 14411: extruded or dry-pressed).
- Concrete paving blocks, paving flags and kerb units (EN 1338-1340).
- Natural stone (EN 1467-1469, EN 12057-12059, EN 1341-1343).

Other potentially relevant standards:

- EN 771 masonry units → engage with CEN/TC 125.
- EN ??? Roofing tiles → engage with CNT/TC 128.
- EN ??? Kitchen countertops → *engage with who?*

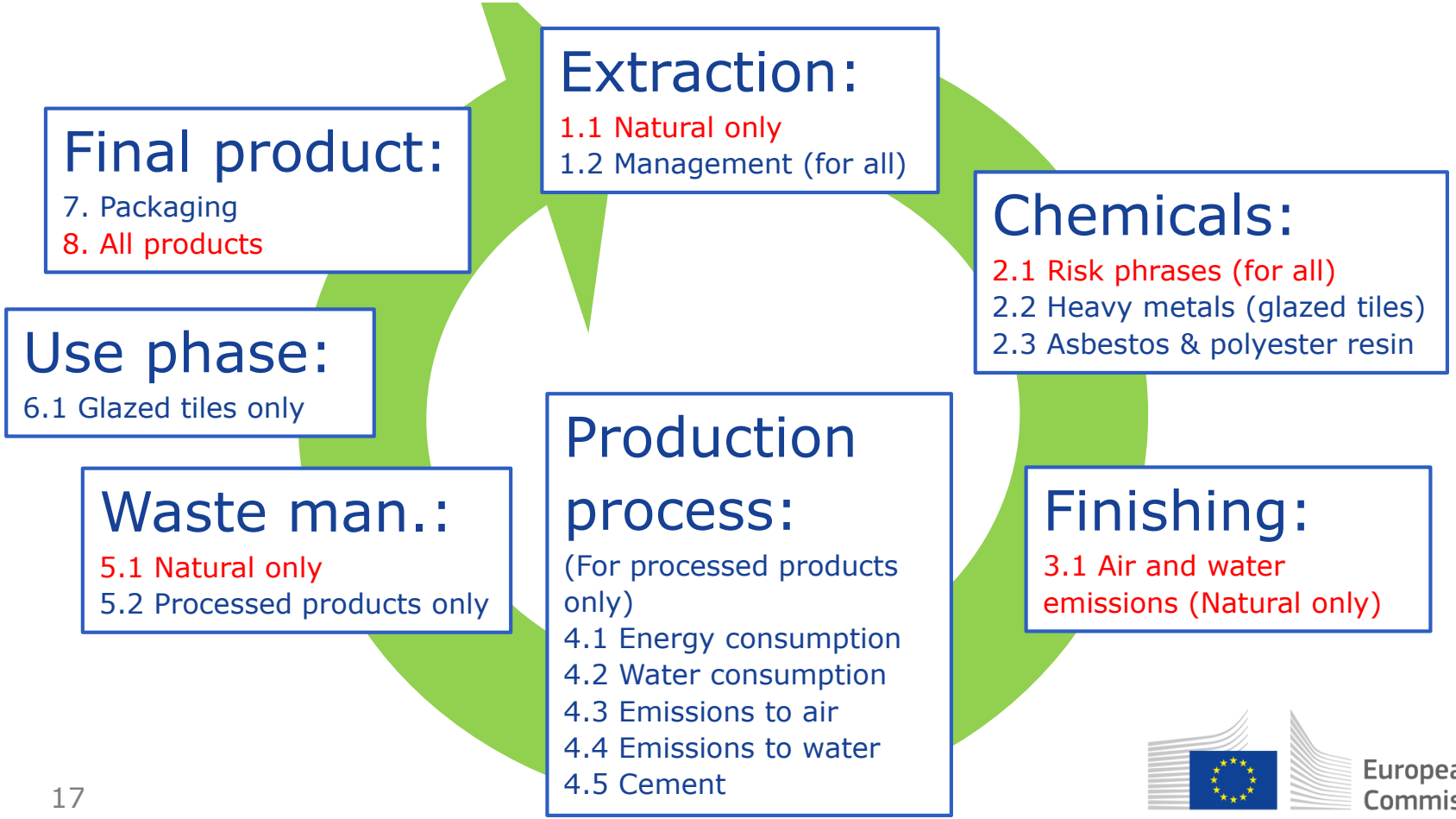
Questions on the high level introductory points?

- Project background?
- Uptake?
- Timeline?
- REFIT considerations?
- Green Building Assessment schemes?
- EPDs (Environmental Product Declarations)?
- Aim of the 1st AHWG meeting?
- Scope considerations?
- Definitions?

Criteria

- General structure.
- Scoring approach.
- Horizontal criteria (not to be read out entirely in webinar).
- Specific criteria (not to be read out entirely in webinar).

Old Criteria Structure



New structure

Horizontal criteria common to all: 1.1 to 1.9

Natural stone specific criteria:

2.1 Quarry

2.1.1 Quarry impact ratio
2.1.2 Material efficiency
2.1.3 Water efficiency
2.1.4 Air emission management
2.1.5 Noise

2.2 Processing plant

2.2.1 Energy consumption
2.2.2 Emission to water
2.2.3 Emission to air

Agglomerated stone specific criteria:

3.1 Energy consumption
3.2 Emissions to air
3.3 Recycled/secondary material content
3.4 Binder content

Ceramic tile (and clay paver?) specific criteria

4.1 Specific kiln energy consumption
4.2 Specific freshwater consumption
4.3 Emissions to air
4.4 Wastewater management
4.5 Material efficiency in the production process
4.6 Glazes

Concrete paving and terrazzo tile specific criteria:

Cement production

5.1 Clinker factor of cement
5.2 Non-CO_2 emissions to air from the cement kin
5.3 CO_2 emissions from the cement kiln
5.4 Cement kiln thermal efficiency

Concrete production

5.5 Recycled/secondary materials at the concrete plant.
5.6 Concrete plant energy consumption
5.7 Photocatalytic surfaces
5.8 Permeable pavers

EU Ecolabel

Scoring approach

- Most criteria have a mandatory element. *Why? → safety net.*
- Some criteria have points. *Why? → encourage all improvement.*
- Some criteria are optional and have points. *Why? → niche/innovative.*
- To get EUEL, minimum number of points needed (e.g. 50 out of 100).
- No bronze, silver, gold though. *Opinions?*
- No mention of points inside EU Ecolabel logo. *Inconsistency with other EU Ecolabel product groups.*
- But could be mentioned elsewhere by license holder…
- And could be distinguished by GBAs or award criteria in GPP.
- General aim: *bigger environmental impact = more points* but also need to not place all points in supply chain.

Horizontal criteria: apply to all sub-products

1.1 Environmental Management System

1.2 Raw material extraction

1.3 Hazardous substances

1.4 Asbestos

1.5 VOC emissions

1.6 Business to consumer packaging

1.7 Fitness for use

1.8 Consumer information

1.9 Information appearing on the ecolabel

JRC considers essential

JRC considers as potentially interesting but needs discussion.

JRC considers as a potential criteria to be removed (little added value).

All criteria subject to stakeholder discussion and opinions.

Questions after 1.3, after 1.6 and after 1.9.

Criterion 1.1. Environmental Management System

The applicant shall have a documented Environmental Management System in place.

EU Ecolabel points

The applicant shall have a documented environmental management system according to **ISO 14001** in place and certified by an accredited organization (2 points).

or

The applicant shall have a documented environmental management system according to the **EU Eco-Management and Audit Scheme (EMAS)** in place and certified by an accredited organization (5 points).

Assessment and verification:

The applicant shall provide a declaration of compliance with the mandatory requirement of this criterion, supported by a copy of their own Environment Management System documentation.

Where points are claimed for ISO 14001 or EMAS certification, the applicant shall provide a copy of the ISO 14001 or EMAS certificate, as appropriate, and provide the Competent Body with the details of the organization which carried out the accreditation.

In cases where an applicant has both ISO 14001 and EMAS certification, only the points for the EMAS certification shall be awarded.

Criterion 1.1. Environmental Management System

Rationale

- Environmental Management System is needed to be able to systematically collect some or all of the data that would be asked for to demonstrate compliance with EU Ecolabel criteria.
- External certification of EMS not obliged, but encouraged.
- REFIT exercise: better integration with EMAS, most points for EMAS.
- EMAS is still more comprehensive than ISO 14001.

Criterion 1.2. Raw material extraction management activities

The extraction of industrial and construction minerals (for example limestone, clay, aggregates, ornamental or dimension stone etc.) to manufacture any EU Ecolabel hard covering product shall respect the following requirements, as appropriate.

Extraction activity carried out within the EU:

If they are extracted from Natura 2000 network areas, composed of Special Protection Areas under Directive 2009/147/EC on the conservation of wild birds, and Special Areas of Conservation under Directive 92/43/EEC on the conservation of natural habitats and wild fauna and flora, extraction activities **have been assessed and authorised in accordance with the provisions of Article 6 of Directive 92/43/EEC** and taking into account the EC Guidance document on non-energy mineral extraction and Natura 2000.

Extraction activity carried out outside the EU:

If they are extracted from areas officially nominated as candidates for or adopted as Areas of Special Conservation Interest, part of the Emerald network pursuant to Recommendation No. 16 (1989) and Resolution No. 3 (1996) of the Standing Committee of the Convention of the Conservation of the European Wildlife and Natural Habitats (Bern Convention), or protected areas designated as such under the national legislation of the sourcing / exporting countries, the extraction activities **have been assessed and authorised in accordance with provisions that provide assurances equivalent to Directives 2009/147/EC and 92/43/EEC.**

Assessment and verification:
In case industrial or construction mineral extraction activities have been carried out in Natura 2000 network areas (in the EU), the Emerald network or protected areas designated as such under the national legislation of the sourcing/exporting countries (outside the EU), the applicant shall provide a declaration of compliance with this requirement issued by the competent authorities or a copy of their authorisation issued by the competent authorities.

Criterion 1.2. Raw material extraction management activities

Rationale

- The requirement on Natura 2000 sites comes from previous discussions that led to this same text for EU Ecolabel Soil Improvers and Growing Media (see Decision (EU) 2015/2099).
- But unintentionally deleted the parts on non-Natural sites…*a mistake!*
- Propose to reintroduce the authorisation, envi. recovery plan/impact assessment and the map of the quarry(ies).
- *What can be considered as equivalent to assurances of Directives 2009/147/EC or 92/43/EEC in reality?*

Criterion 1.3. Hazardous substance restrictions

a) Restrictions on Substances of Very High Concern (SVHC)

The **product shall not contain** substances that have been identified according to the procedure described in Article 59(1) of Regulation (EC) No 1907/2006 and included in the Candidate List for **SVHCs in concentrations greater than 0.10% w/w. No derogation** from this requirement shall be granted.

***Assessment and verification**:*
The applicant shall provide a declaration that the product does not contain any SVHC in concentrations greater than 0.10 % (weight by weight). The declaration shall be supported by safety data sheets of process chemicals used or appropriate declarations from chemical or material suppliers. The list of substances identified as SVHC and included in the candidate list in accordance with Article 59(1) of Regulation (EC) No 1907/2006 can be found here:
http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp. Reference to the list shall be made on the date of application.

b) Classification, Labelling and Packaging (CLP) restrictions

Unless derogated, the **product shall not contain substances** or mixtures in concentrations greater than **0.10% (w/w)** that are classified with any of the following hazard statements in accordance with Regulation (EC) No 1272/2008:

- **Group 1 hazards**: Category 1A or 1B CMR: H340, H350, H350i, H360, H360F, H360D, H360FD, H360Fd, H360Df.
- **Group 2 hazards**: Category 2 CMR: H341, H351, H361, H361f, H361d, H361fd, H362; Category 1 aquatic toxicity: H400, H410; Category 1 and 2 acute toxicity: H300, H310, H330; Category 1 aspiration toxicity: H304; Category 1 specific target organ toxicity (STOT): H370, H372.
- **Group 3 hazards**: Category 2, 3 and 4 aquatic toxicity: H411, H412, H413; Category 3 acute toxicity: H301, H311, H331; Category 2 STOT: H371, H373.

The use of **substances or mixtures** that are **chemically modified** during the production process so that any relevant restricted CLP hazard no longer applies **shall be exempted** from the above requirement.

Assessment and verification:
The applicant shall provide a list of all relevant chemicals used in their production process together with the relevant safety data sheet or chemical supplier declaration. Any chemicals containing substances or mixtures with restricted CLP classifications shall be highlighted. The approximate dosing rate of the chemical, together with the concentration of the restricted substance or mixture in that chemical (as provided in the safety data sheet or supplier declaration) and an assumed retention factor of 100 %, shall be used to estimate the quantity of the restricted substance or mixture remaining in the final product. Justifications for any deviation from a retention factor of 100 % or for chemical modification of a restricted hazardous substance or mixture must be provided in writing to the competent body. For any restricted substances or mixtures that exceed 0.10 % (weight by weight) of the final hard covering product but are derogated, proof of compliance with the relevant derogation conditions must be provided.

Criterion 1.3. Hazardous substance restrictions

Rationale

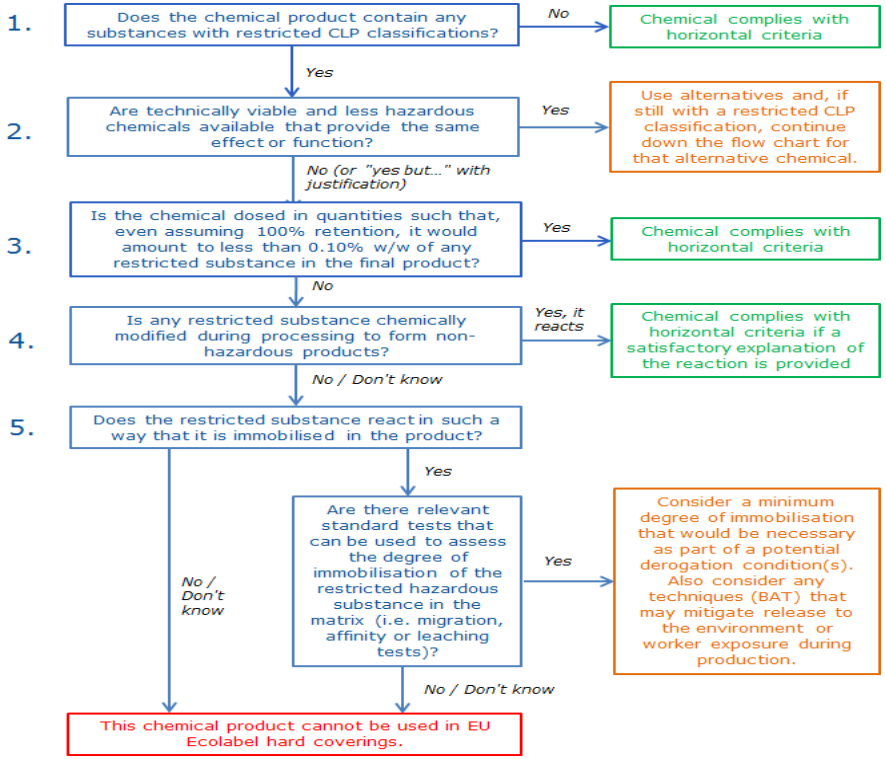
- Had to change to respect Article 6(6) of the 2010 EU Ecolabel Regulation.
- Follows the recommendations of the EU Ecolabel Chemicals Task Force.
- Wording is based predominantly on the most recently voted product group, which is an article (i.e. Graphic paper & Tissue paper).
- 0.10% threshold applies to weight of article or entire glazed article.
- Chemical modification → e.g. resin polymerisation, exemption by default.
- Physical immobilisation → e.g. pigment, no exemption but derogation conditions can be considered (e.g. maximum leachability under standard conditions).
- Any derogations need to be discussed and agreed before adoption, later amendments are problematic. TiO2 proposed even though not yet classified.
- *Input needed about the use of hazardous substances in the production process and their chemistries in general.*

Criterion 1.3. Hazardous substance restrictions

Step-wise process:

1. Know the chemicals going in (SDS).
2. Are there haz. substances?
3. Know the quantities involved.
4. Chemical modification?
5. If not, do they remain in the product?
6. If so, is there a derogation.

Please share any relevant SDSs and an relevant dosing rate ranges.



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Questions/comments

- Criteria structure
- General scoring approach
- 1.1 Environmental Management System.
- 1.2 Extraction Management.
- 1.3 Horizontal hazardous substance requirement.

Criterion 1.4. Asbestos

No asbestos shall be present in the raw materials used for the manufacture of hard coverings products, as laid down in entry 6 of Annex XVII to Regulation (EC) No 1907/2006.

Assessment and verification:

The applicant shall provide a declaration of compliance with the criterion. In cases where natural stone is used, the applicant shall additionally specify the type of stone used. If the natural stone is one of the types at risk of containing naturally occurring asbestos, the Competent Body may request the applicant to provide a representative chemical and mineralogical analysis of the natural stone.

Rationale

- Requirement already present in Decision 2009/607/EC.
- May be unintentionally present in certain natural stone.
- But of questionable added value as a criterion. General need to streamline criteria and focus on main areas (REFIT). *Opinions?*
- Already covered by horizontal criteria >0.10%....

Criterion 1.5. VOC emissions

NEW

The applicant shall declare if the final product surface has been treated with any waxes, adhesives, coatings, resins or similar surface treatment chemicals.

In cases where treatment has been carried out, safety data sheets or supplier declarations for the waxes, adhesives or resins used shall be provided together with the approximate dosing rate used and an estimate of the total quantity of the resin or wax remaining in the final product.

No formaldehyde-based resins are permitted.

In cases where the VOC content of the wax or resin used exceeds 5% and the total quantity of wax or resin on the final product accounts for more than 1% of the final product weight, VOC emissions of the final product shall also be tested.

EU Ecolabel points

Up to a maximum of 5 points shall be awarded for applicants that can demonstrate compliance with the following aspects:

Where the wax or resin used is less than 1% by weight of the final product (2 points).

Where the wax or resin used has a VOC content less than 5% by weight (3 points).

Where the results of a chamber test according to EN 16516 or ISO 16000 show that after 28 days the air concentration is: ≤ 0.01 mg/m3 formaldehyde; ≤ 0.3 mg/m3 TVOC, ≤ 0.1 mg/m3 TSVOC and ≤0.001 mg/m3 category 1A and 1B carcinogens (excluding formaldehyde); styrene 450 µg/m3 (5 points).

Where **no final surface treatment with VOCs** has been applied (5 points).

Assessment and verification:

The applicant shall provide a declaration of the use or non-use of surface treatment chemicals used during product finishing operations.

In cases where such chemicals have been used, the safety data sheet or supplier declarations shall be provided regarding the VOC content. Furthermore, the applicant shall provide an estimate of the quantity of surface treatment chemicals used in the finishing operations (in g or ml per m^2) and how much remains in the final product (% w/w).

In cases where a VOC emission test is required, or where the applicant voluntarily wishes to obtain the extra 5 points for compliance with this requirement, the applicant shall provide a declaration of compliance, supported by a test report carried out according to EN 16516 or the ISO 16000 series or standards. If compliance with the chamber concentration limits specified at 28 days can be met at any other time between 3 and 28 days, the chamber test may be stopped prematurely.

A maximum of 5 points can be awarded under this criterion.

Criterion 1.5. VOC emissions

Rationale

- Hard coverings can be coated with waxes and resins.
- But VOC emissions not normally an issue *except agglomerated stone*.
- Want to positively recognise this aspect in *all hard covering products*.
- Plug into recognition by Green Building Assessment schemes.
  - E.g. BREEAM and LEED.
- Testing only an option, not mandatory.
- No surface treatment = Surface treatment complying with limits.
- Limits set correspond to requirements defined in BREEAM (exemplary).
- Styrene limit also added (important when polyester resins used).
- *Request for information (SDSs) of surface treatment chemicals.*

Criterion 1.6. Business to consumer (B2C) packaging

Packaging must be made out of one of the following:

- materials made out or **recycled** materials
- materials intended to be **reusable**;
- easily recyclable materials;

Assessment and verification:

A sample of the product packaging shall be provided together with a corresponding declaration of compliance with all the requirements.

Tiles packed in cardboard boxes

Natural stone stacked in wooden crates

loose gaps tightened with filling material like wood, foamsheet

Criterion 1.6. Business to consumer packaging

Rationale

- Existing requirement in Decision 2009/607/EC (paperboard packaging design for reuse or 70% recycled content).
- Quite a narrow focus (only paperboard).
- Type and specific quantity of packaging can vary a lot.
- Wood, wood fibres, polystyrene and plastic film also important.
- Focus now expanded to all packaging materials, but

- *Is B2C packaging really important in terms of environmental impacts? (REFIT)*
- *Or is it an important aspect to maintain with regards to the circular economy? Which the EU Ecolabel should support (REFIT)*
  - ***In latter case, need to define "reusable" and "easily recyclable"?***

Questions/comments

- 1.4 Asbestos.
- 1.5 VOC emissions.
- 1.6 Business to Consumer (B2C) packaging.

Criterion 1.7 Fitness for use

The applicant shall have a quality control and quality assessment procedure in place to ensure that products are fit for use. Where relevant, evidence demonstrating fitness for use may be provided. Any such evidence provided should be based on test results according to appropriate ISO or EN standards or equivalent test methods. An indicative list of potentially relevant standards is included below.

Assessment and verification:

The applicant shall provide a declaration of compliance with the criterion, supported by a description of their in-house quality control and quality assessment procedures.

In cases where test data according to EN or ISO standards, or equivalent methods is considered necessary, an indicative list of potentially relevant standards is indicated below:

— Natural stone: EN1341, EN1342, EN1343, EN1467, EN1468, EN 1469, EN12057, EN12058 or EN12059;
— Cement-based terrazzo tiles: EN13748
— Agglomerated stone: EN15285, EN15286, EN 15388 or EN16954
— Clay pavers and ceramic tiles: EN1344, EN13006 or EN 14411
— Concrete paving blocks, flags and kerb units: EN1338, EN1339 or EN1340

Rationale

- Good quality products will tend to have longer life.
- Requirements applicable for construction material CE marking (not for counter-tops and table tops though).
- No limits set because too much nuancing needed.
- *If no specific requirements, do we need it? (REFIT)*

Criterion 1.8. Consumer information

The product shall be sold with **relevant user information**, which provides advice on the product's **proper and best general and technical use** as well as its **maintenance**. It shall bear the following information on the packaging and/or on documentation accompanying the product:

a) **Recommendations for correct use and storage** so as to maximise the product lifetime (e.g., whether the product needs coating or sealing, etc). As appropriate, reference should be made to the features of the product's use under difficult climatic or other conditions, for example, frost resistance/water absorption, stain resistance, resistance to chemicals, necessary preparation of the underlying surface, cleaning instructions and recommended types of cleaning agents and cleaning intervals. The information should also include any possible indication on the product's potential life expectancy in technical terms, either as an average or as a range value;

b) **Installation instructions including recommended techniques and materials**. These instructions must not specify nor require the use of any component that does not comply with the materials requirements of this criterion.

c) **Maintenance instructions,** if required. Maintenance instructions must not specify nor require the use of any chemical or coating limited by any part of this criterion.

d) Recycling or environmentally preferable disposal instructions for the product end-of-life.

Assessment and verification:

The applicant should provide a sample of the packaging and/or texts enclosed.

Rationale

- A general requirement for almost all EU Ecolabel product groups.
- Important to ensure optimum use/maintenance of product.
- Correct installation is a crucial factor in all applications (some even more so).
- *Other suggestions welcome.*

Criterion 1.9. Information appearing on the ecolabel

The applicant shall follow the instructions on how to properly use the EU Ecolabel logo provided in the EU Ecolabel Logo Guidelines:
http://ec.europa.eu/environment/ecolabel/documents/logo_guidelines.pdf
If the optional label with text box is used, it shall contain the following three statements, as appropriate

For natural stone products:
- From limited landscape impact quarries;
- Material efficient extraction and processing operations;
- Reduced emissions to water and air.

For agglomerated stone products:
- Energy efficient production process;
- Reduced emissions to air;
- Maximum binder content xx% / minimum recycled or secondary material content yy% (as appropriate).

For concrete products:
- Reduced CO2 footprint cement
- Reduced air emissions
- Minimum recycled or secondary material content xx% / energy efficient production / anti-NOx surface / permeable paving (as appropriate)

For ceramic products:
- Energy efficient production process;
- Reduced emissions to air;
- Material efficient product (in case of thin format tiles < 10mm thick or tiles with a high recycled content > 10%)/Material efficient production process (in all other cases).

Assessment and verification:
The applicant shall provide a declaration of compliance with this criterion, supported by an image of the product packaging that clearly shows the label, the registration/licence number and, where relevant, the statements that can be displayed together with the label.

Criterion 1.9. Information appearing on the ecolabel

Rationale

- Standard criterion required for all EU Ecolabel product groups.
- As per Article 8 (3b).
- A simple message that can be communicated to consumers.
- Must be related to the EU Ecolabel criteria.
- Premature to specify the messages now.
- First need to agree on criteria.
- Then on final messages to the consumer.
- Message may differ depending on sub-product involved.

- *Maybe look at it from the opposite angle – what is the message we want to give? → then make sure criteria support that message…*

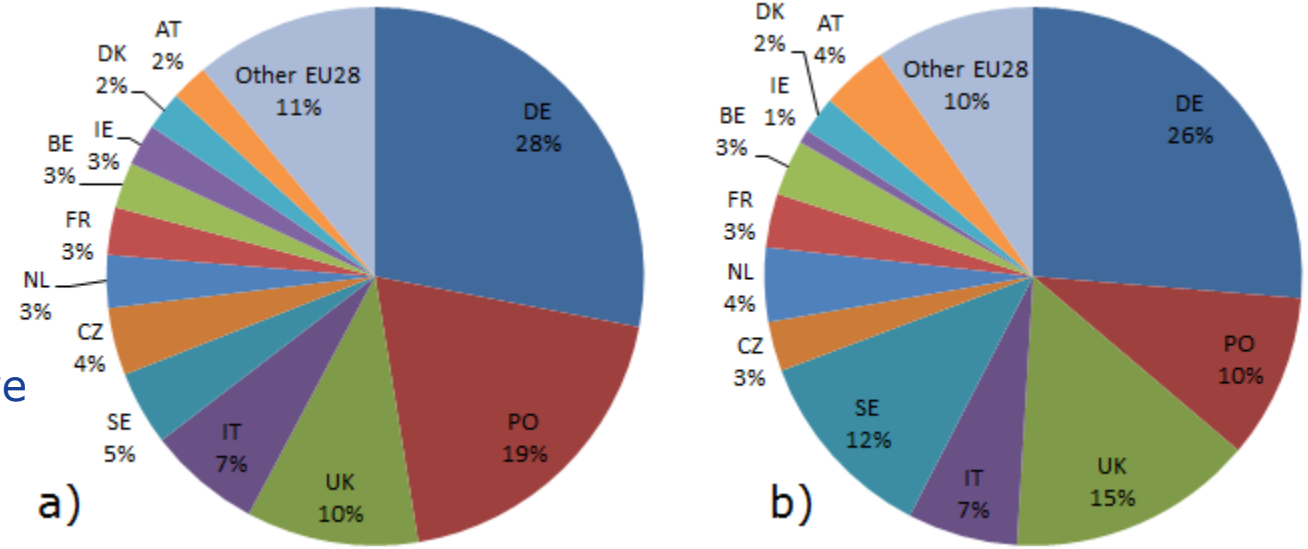
Questions/comments

- 1.7 Fitness for use.
- 1.8 Consumer information.
- 1.9 Information appearing on the EU Ecolabel.

Market analysis

- PRODCOM: 23.61.11.50 Tiles, flagstones and similar articles of cement, concrete or artificial stone (excluding building blocks and bricks).
- Figure 64 in PR

- 69 Mt
- 5500 M€
- PO, IE cheap
- SE, FI expensive



- DE, PO, UK are the top 3. *Are paving **blocks** "similar"? Or in 23.61.11.30?*
- *Is **artificial stone** referring to agglomerated stone?*

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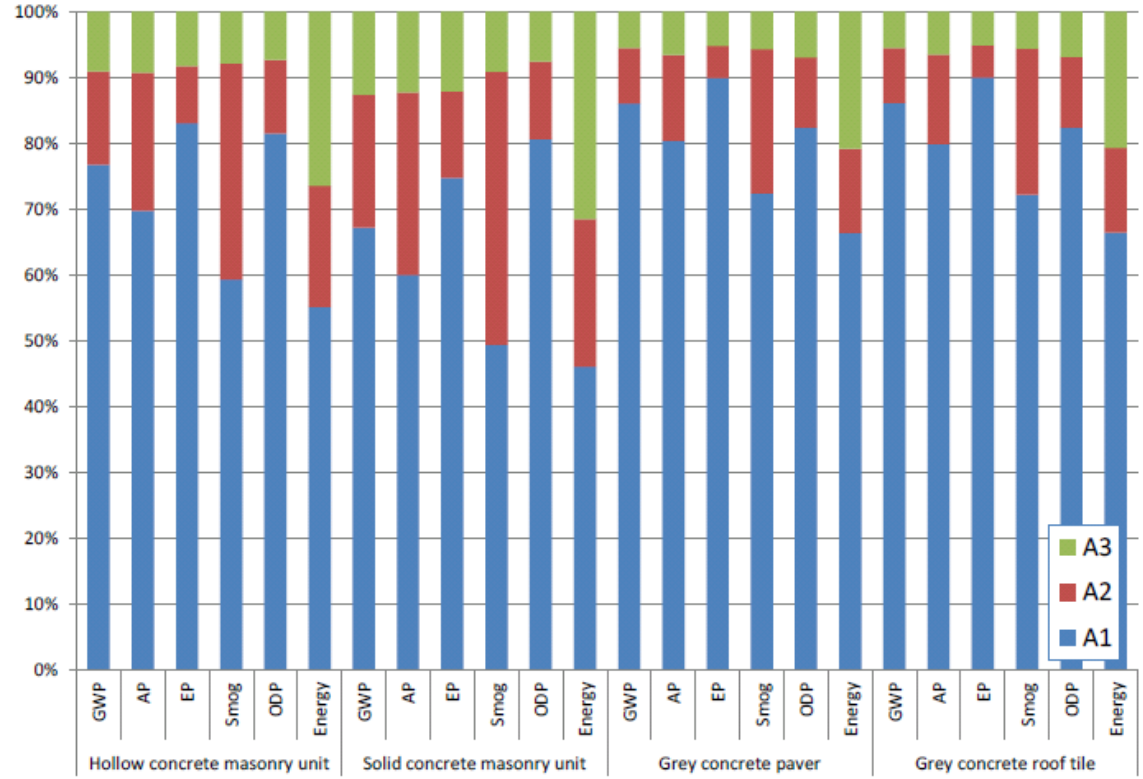
Technical analysis-LCA

- A1 is LCA hotspot.
- Raw materials/ingredients
- Concrete: 2700 kg/m3
- Of which
  - 150-450 kg is cement
  - 75-225 kg is water
  - Rest is aggregate
- **Cement is main impact**
- Even if only 6-18% mass



- Relevant production technology is: Pre-cast, mainly the dry-cast process

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Environmental Innovations and improvements

Cement side

- BAT Conclusions for kiln emissions (Regulation 2013/163/EU), (*Dust, NOx, SO2*).
- Alternative fuels (*trade-offs?*)
- Drier kiln processes (*higher thermal efficiencies*)
- Lower clinker factor cements (*supplementary cementitious materials*)
- Other types of low CO2 cement (*e.g. activated belite cements, alkali activated cements, geopolymers*)
- More efficient grinding technologies (*lower electricity consumption*)

Concrete side

- Use of secondary / recycled aggregates (*circular economy, WFD*)
- Photocatalytic surfaces (*air quality*)
- Permeable pavers (*sustainable urban drainage systems*)

New structure

Horizontal criteria common to all: 1.1 to 1.9

Natural stone specific criteria:

2.1 Quarry

2.1.1 Quarry impact ratio
2.1.2 Material efficiency
2.1.3 Water efficiency
2.1.4 Air emission management
2.1.5 Noise

2.2 Processing plant

2.2.1 Energy consumption
2.2.2 Emission to water
2.2.3 Emission to air

Agglomerated stone specific criteria:

3.1 Energy consumption
3.2 Emissions to air
3.3 Recycled/secondary material content
3.4 Binder content

Ceramic tile (and clay paver?) specific criteria

4.1 Specific kiln energy consumption
4.2 Specific freshwater consumption
4.3 Emissions to air
4.4 Wastewater management
4.5 Material efficiency in the production process
4.6 Glazes

Concrete paving and terrazzo tile specific criteria:

Cement production

5.1 Clinker factor of cement
5.2 Non-CO_2 emissions to air from the cement kin
5.3 CO_2 emissions from the cement kiln
5.4 Cement kiln thermal efficiency

Concrete production

5.5 Recycled/secondary materials at the concrete plant.
5.6 Concrete plant energy consumption
5.7 Photocatalytic surfaces
5.8 Permeable pavers

EU Ecolabel

Criterion 5. Concrete criteria and scoring

Table 8. Cement- and concrete-specific criteria structure and scoring system

Proposed criteria	Decision 2009/607/EC	Proposed criteria details	
		Mandatory?	Points?
1.1. Environmental Management System	No	Yes	5
1.5. VOC emissions	No	Yes	5
Cement production plant			
5.1. Clinker factor of cement	No	Yes	25
5.2. Non-CO2 emissions to air from cement production	Yes	Yes*	-
5.3. CO2 emissions from clinker/white cement production	No	Yes	25
5.4. Cement kiln thermal efficiency	Yes	Yes*	-
Concrete production plant			
5.5. Recycled and secondary materials at the concrete plant	No	Yes	25
5.6. Concrete plant process energy consumption	Yes? (for terrazzo)	Yes	25
5.7. Photocatalytic surfaces	No	No	10
5.8. Permeable paving	No	No	10
TOTAL points available in proposed criteria			**100 + 30**
MINIMUM points needed in proposed criteria			**60**

** JRC consider that it could be justifiable to remove requirement in proposals, either due to doubts about availability of information from suppliers or if impacts are indirectly covered by other criteria already.*

Questions/comments

- Market data for concrete.
- LCA hotspot identification.
- Innovation and environmental improvements (cement and concrete).
- Criteria structure for concrete products
- Scoring for concrete products

Criterion 5.1. Clinker factor of cement

A clinker factor for the cement or cements used shall be provided by the cement supplier.
In cases where more than one cement is used in the concrete product(s) that are to be EU Ecolabelled (e.g. in dual layered products) a weighted average clinker factor shall be calculated based on the average masses of each cement used in the concrete.

EU Ecolabel points

Up to 25 points can be awarded in proportion to how low the clinker factor is between a reference point of 1.00 for no points and 0.50 for maximum points.

Assessment and verification:

The applicant shall provide a declaration of compliance which states the relevant clinker factor. The cement supplier shall provide a declaration of the clinker factor in writing to the applicant and/or Competent Body. The clinker factor shall be calculated by estimating the kg of Portland cement clinker present in 1t of the cement product and dividing the kg of clinker by 1000kg.

In cases where packaged cement is delivered and no specific declaration is provided by the cement supplier, the following assumptions can be made for the cement clinker factor:

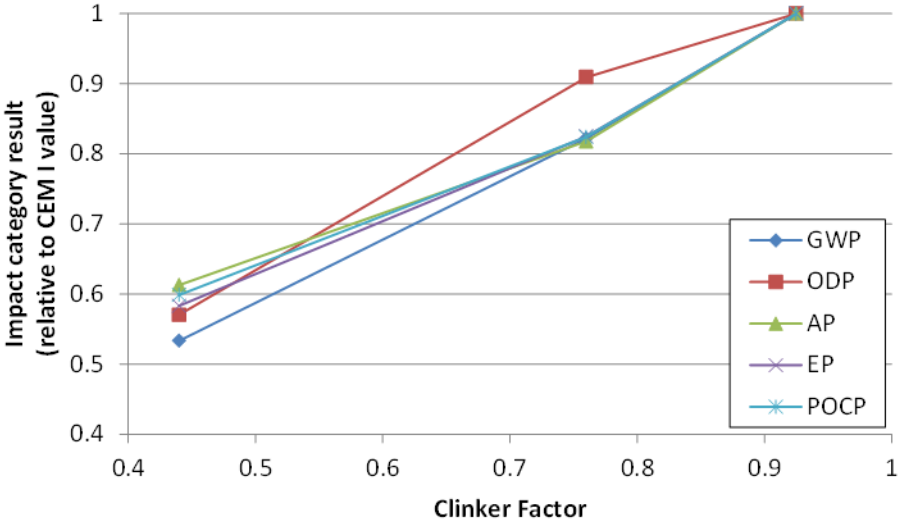
EN 197-1 Code	Factor assumed	EN 197-1 Code	Factor assumed
CEM I	0.97	CEM II/A-L	0.87
CEM II/A-S	0.87	CEM II/B-L	0.72
CEM II/B-S	0.72	CEM II/A-LL	0.87
CEM II/A-D	0.92	CEM II/B-LL	0.72
CEM II/A-P	0.87	CEM II/A-M	0.84
CEM II/B-P	0.72	CEM II/B-M	0.72
CEM II/A-Q	0.87	CEM III/A	0.50
CEM II/B-Q	0.72	CEM III/B	0.28
CEM II/A-V	0.87	CEM III/C	0.12
CEM II/B-V	0.72	CEM IV/A	0.77
CEM II/A-W	0.87	CEM IV/B	0.55
CEM II/B-W	0.72	CEM V/A	0.76
CEM II/A-T	0.87	CEM V/B	0.60
CEM II/B-T	0.72		

Criterion 5.1. Clinker factor of cement

Rationale

- Clinker factor is proportional to the environmental impact of cement.
- Is well known by the cement supplier.
- *But is supplier willing to share exact clinker factor?*
- Or simply state which EN 197-1 class it belongs too?

- Even just knowing class is useful.
- Some simplification involved…
- But a good proxy indicator.



Criterion 5.2. Non-CO2 emissions to air from the cement kiln

The following non-CO2 emissions to air from the cement kiln shall be continuously monitored and comply with relevant limits for the parameters defined below:

Parameter	Specific emission (g/t clinker*)	*Decision 2009/607/EC (g/t)*
Dust	≤ 37	*< 65*
SO_x (as SO_2)	≤ 736	*< 350*
NO_x	≤ 943 or 1656**	*< 900*

* g/t clinker limits were translated from mg/Nm3 data by multiplying by a factor of 2.3 Nm3/t clinker
** higher limit applies to Lepol kilns, long rotary kilns or white cement production

Assessment and verification:
The applicant shall provide a declaration of compliance with the mandatory requirements of this criterion, supported by site data in mg/Nm3 and expressed as an annual average value calculated from daily average values. The data shall have been generated via continuous monitoring according to EN 13284-1 for dust, EN 14792 for NOx and EN 14791 for SO2.
To convert exhaust gas monitoring results from mg/Nm3 into g/t of clinker, it is necessary to multiply by the specific gas flow volume (Nm3/t clinker). One Nm3 refers to one m3 of dry gas under standard conditions of 273K, 101.3 kPa and 10% O2 content.
For continuously operating kilns, the production period should be 12 months. In cases where production is non-continuous, the production period shall be mentioned and should not be less than 30 days.

Criterion 5.2. Non-CO2 emissions to air from the cement kiln

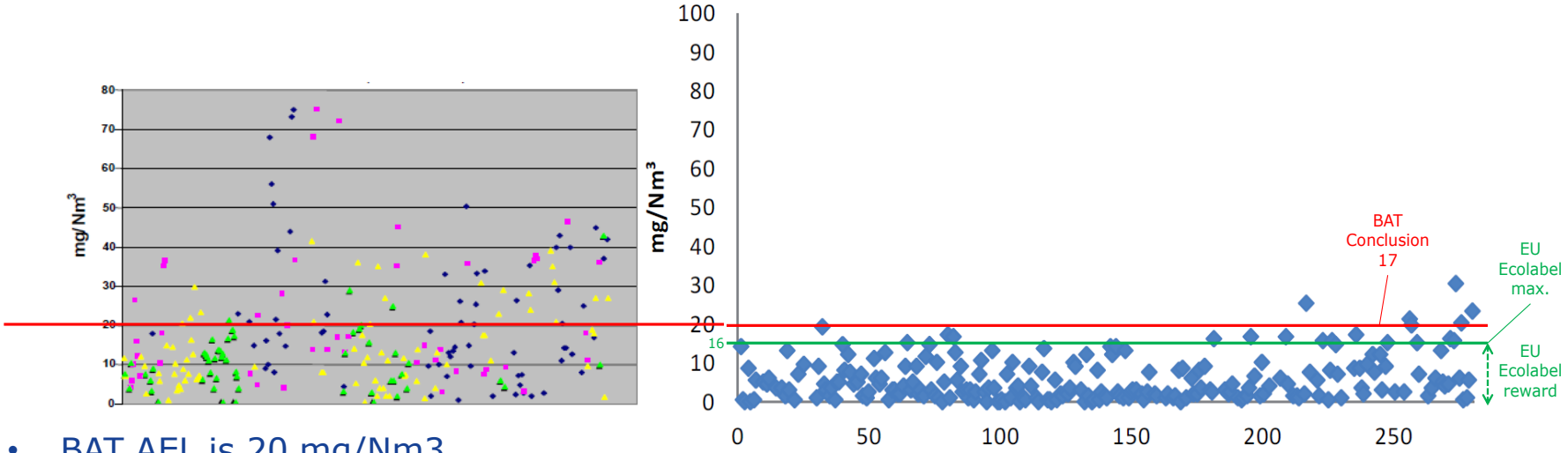
Rationale

- CO2 is the highest profile environmental issue with cement.
- But non-CO2 emissions also important.
- *Analogy: diesel and petrol cars.*
- BREF looks at PM, NOx and SO2 via continuous monitoring.
- Also others emissions intermittently.
- CEMBUREAU data published (2017 Activity Report).
- Very useful to see this data.
- Can give an idea of what is an appropriate ambition level.
- Initial approach, set EUEL minimum requirement at 80% of BREF AEL.
- Reward for going lower → max. points for first quartile.

Criterion 5.2. Non-CO2 emissions to air from the cement kiln

Dust emissions

- Big improvement between 2004 (left) and 2015 (right).



- BAT AEL is 20 mg/Nm3
- EUEL is 16 mg/Nm3 → convert to specific emission.
- 16 mg/Nm3 x2.3 Nm3/t → **36.8 g/t clinker**.
- Decision 2009/607/EC: **65 g/t** (*clinker?*).

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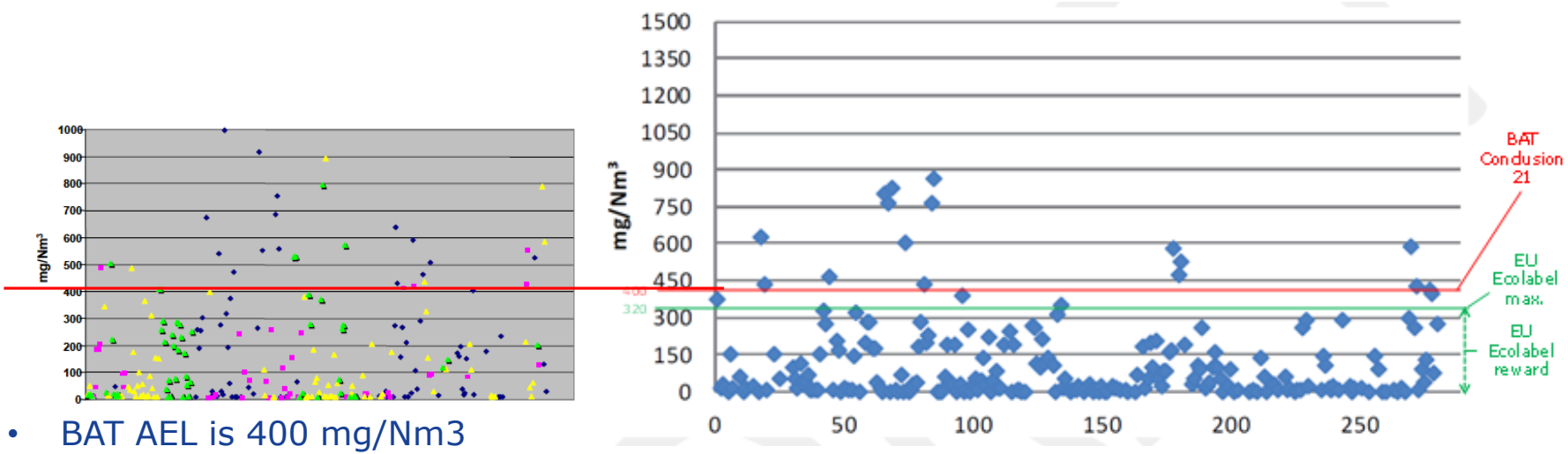
Criterion 5.2. Non-CO2 emissions to air from the cement kiln

SO2 emissions

- Notable improvement between 2004 (left) and 2015 (right).

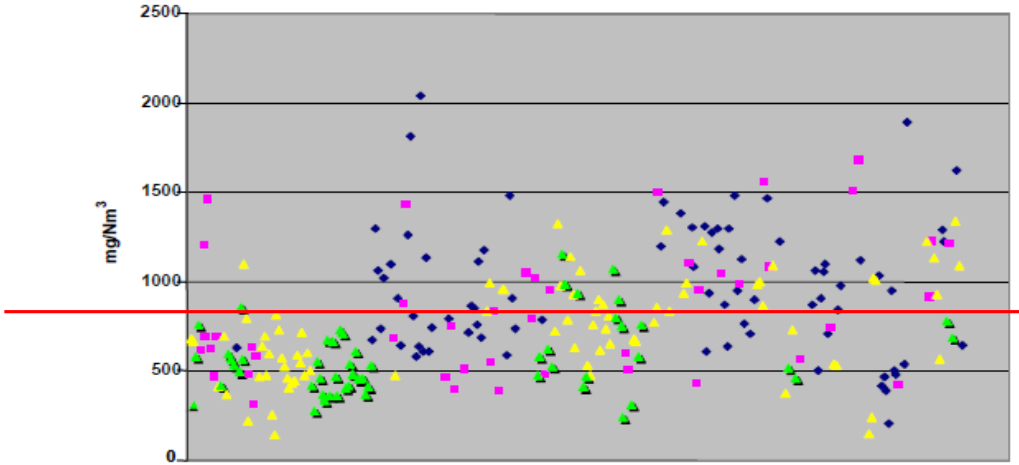


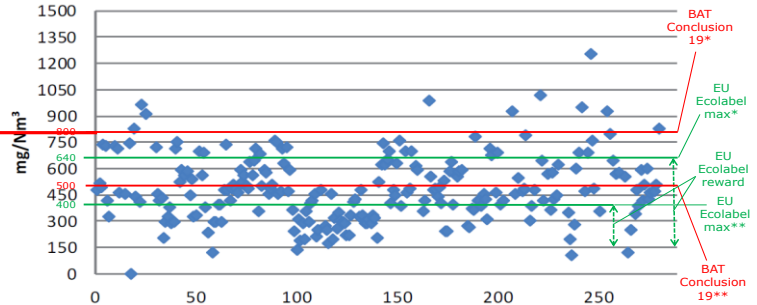
- BAT AEL is 400 mg/Nm3
- EUEL is 320 mg/Nm3 → convert to specific emission.
- 320 mg/Nm3 x2.3 Nm3/t → **736 g/t clinker**.
- Decision 2009/607/EC → 350 g/t (*clinker?*)

Criterion 5.2. Non-CO2 emissions to air from the cement kiln

NOx emissions

- Big improvement between 2004 (left) and 2015 (right).





- BAT AEL is 450 **or** 800 mg/Nm3…
- EUEL is 400 **or** 640 mg/Nm3 → convert to specific emission.
- 400 **or** 640 mg/Nm3 x2.3 Nm3/t → **920 or 1472 g/t clinker**.
- Decision 2009/607/EC is 900 g/t (*clinker?*).

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Criterion 5.3. CO2 emissions from grey clinker/white cement production

In accordance with the methodology defined by the Getting the Numbers Right (GNR) initiative, the gross CO_2 emissions shall comply with the relevant limits defined below:

- Grey cement: **900 kg CO2/t grey cement clinker**.
- White cement: **1100 kg CO2/t white cement**.

EU Ecolabel points

Points shall be awarded for applicants that can demonstrate the following aspects:

- Reduction of CO2 emissions from a grey cement kiln towards a **best practice limit of 600 kg CO2/t grey cement clinker.**
- Reduction of CO2 emissions from a white cement kiln towards a **best practice limit of 600 kg CO2/t white cement.**

Assessment and verification:

The applicant shall provide a declaration of compliance from their cement supplier(s) with the mandatory requirement of this criterion supported by a statement of the calculated gross CO2 emission in accordance with the latest GNR reporting methodology.

Errata: Equal or better than 600 kgCO2/t should be 25 points.

Criterion 5.3. CO2 emissions from grey clinker/white cement production

Rationale

- Based on EU weighted average data from GNR.
- EUEL must be <900 for grey clinker (above average)
- EUEL must be <1100 for white cement.
- But points for going beyond.

YEAR	kgCO2/t grey cement clinker*	kgCO2/t white cement**
1990	**911**	**997**
2000	**881**	**993**
2005	**865**	**997**
2006	**863**	**947**
2007	**868**	**992**
2008	**863**	**938**
2009	**854**	**967**
2010	**856**	**1,001**
2011	**847**	**1,031**
2012	**841**	**1,103**
2013	**829**	**1,042**
2014	**829**	**1,061**
2015	**825**	**1,075**
2016	**821**	**1,071**

- *No such criteria in Decision 2009/607/EC, if to introduce, a more detailed analysis of GNR data would be requested (e.g. 1st and 3rd quartiles).*

Alternative proposal to criterion 5.3:

Set CO2 requirements on the concrete and its performance level

- i.e. instead of kgCO2/t cement → kgCO2/m2/MPa (or defined strength class)
- Along the lines of a study by the European Climate Foundation study (although this seemed to be on structural concrete).

Rationale

- CO2 footprint of final product is a better reflection of life-cycle thinking.
- If a cement has 25% less CO2 footprint, but needs to be used in 30% higher quantities to achieve the same performance, what is the benefit?
- *But need a good level of information on concrete mix compositions for different product classes in order to make reasonable proposals.*
- *If not, risk that only lowest grade products meet EUEL.*

Criterion 5.3. CO2 emissions from grey clinker/white cement production

Points for discussion about CO2 emissions from grey clinker/white cement production

Q. Opinions about aligning with the GNR approach for "Gross emissions" which excludes onsite power generation?

Q. Opinions about the distinction between grey cement clinker and white cement?

Q. Opinions about numbers proposed and/or general approach towards ambition level setting (for both grey clinker and white cement)?

Q. Why now GNR data for "white clinker"?

Q. Additional information about white cement production in the EU (e.g. number of plants, production volumes etc.).

Q: Opinions about an **alternative approach to CO2 emissions of the final product instead of just the cement** (which is the dominant source of CO2 emissions in concrete)?

Criterion 5.4. Cement kiln thermal efficiency

Specific thermal energy consumption of the cement kiln (excluding fuel drying) shall be:

- **≤ 3800 MJ/t** grey cement clinker or
- **≤ 6000 MJ/t** white cement

Assessment and verification:
The applicant shall provide a declaration of compliance with the mandatory requirement for specific kiln thermal efficiency and shall calculate all inputs of fuel to the kiln system (including the main kiln burner and any auxiliary burners, for example in the precalciner). The total thermal energy of the fuel input (in MJ) shall be calculated by multiplying the mass of fuel consumed in a defined production period (in kg, t, L or Nm3) by a specific or generic calorific value for the same fuel (in MJ/kg, t, L or Nm3).

The specific thermal energy consumption (MJ/t) shall be determined by dividing the total fuel input (MJ) by the total clinker output (in kg or t) during the same production period.

For continuously operating kilns, the production period should be 12 months. In cases where production is non-continuous, the production period shall be mentioned and should not be less than 30 days.

Criterion 5.4. Cement kiln thermal efficiency

Rationale

- Like gross CO2 emissions, data is based on GNR data.

- *Same ambition as Decision 2009/607/EC.*
- *But overlaps with CO2 criteria.*
- *If to go ahead with this, a closer look at the GNR data would be useful.*
- *Already nuanced for white cement.*
- *Maybe points too?*

Region	Specific thermal energy consumption excl. fuel drying (MJ/t grey clinker, GNR code 25aAG)				
	1990	2000	2010	2015	2016
Africa	4,612	4,056	3,740	3,776	3,743
Asia (n.e.c.) + Oceania	3,811	3,415	3,349	3,380	3,395
Brazil	4,214	3,413	3,675	3,553	3,560
Central America	3,933	3,700	3,588	3,646	3,627
China + Korea + Japan	3,476	3,444	3,397	3,310	3,206
CIS	6,470	6,223	5,799	4,362	4,079
Europe	4,056	3,726	3,700	3,678	3,677
India	3,907	3,145	3,130	3,058	3,086
Middle East	3,973	3,453	3,366	3,384	3,382
North America	4,944	4,591	3,888	3,817	3,894
South America ex. Brazil	4,308	3,933	3,893	3,701	3,599
Region	**Specific thermal energy consumption excl. fuel drying (MJ/t white cement, GNR code 25AaWK)**				
	1990	**2000**	**2010**	**2015**	**2016**
Europe	6,163	6,160	6,084	6,326	6,352

Criterion 5.4. Cement kiln thermal efficiency

Points for discussion about Cement kiln thermal efficiency

Q: Opinions about correcting the approach to kiln thermal efficiency per clinker output?

Q: How relevant is this criterion to the cement producer? Are the main GWP impacts already addressed by CO2 emissions and the clinker factor?

Q: Opinions on ambition level and justification, based on GNR data about a separate approach for white cement?

Q. Is the accounting method for estimating specific thermal energy consumption appropriate?

Q. Is non-continuous clinker production a common occurrence in Europe today?

Questions/comments

- 5.1 Clinker factor.
- 5.2 Non-CO2 emissions (dust, SO2 and NOx).
- 5.3 CO2 emissions
- 5.4 Thermal efficiency of the kiln

Criterion 5.5. Recycled and secondary materials at the concrete plant

The applicant shall assess and document the **regional availability of recycled or secondary aggregates**, including fillers.

The applicant shall have **procedures** in place **for the recovery** of aggregates from batches of returned or rejected concrete batches.

EU Ecolabel points

Points shall be awarded for applicants that can demonstrate the **incorporation of recycled/secondary** materials into the concrete product **up to 50% w/w content (Up to 25 points).**

The incorporation of returned or rejected concrete into new concrete shall not be considered as recycled content if it is going back into the same process that generated it.

Assessment and verification:

The applicant shall provide a declaration of compliance with the mandatory requirements of the criteria, supported by a copy of their company policy for the identification of potential sources of secondary or recycled materials for use as aggregates, fillers or supplementary cementitious materials.

An inventory of all sold or stored concrete production, existing raw materials in stock and raw material deliveries to the concrete plant shall be provided, supported by production reports and delivery invoices for a defined production period.

In cases of concrete plants that only produce one type of concrete product and to only one specification, the results should be averaged across the entire production. Where the EU Ecolabel concrete products are produced in specific batches, any secondary or recycled materials should be allocated according to batch mix compositions used.

Points shall be awarded in proportion to how closely the data reaches the maximum benchmark set (e.g. recycled/secondary material content of 0% = 0 points and 50% = 25 points).

Criterion 5.5. Recycled and secondary materials at the concrete plant

Rationale

- Important issue but not a typical LCA hotspot.
- Maybe could be if abiotic depletion was at local or regional level…
- Mainly based on relevant policy objectives.
  - **For example, Waste Framework Directive (70% CDW recycling).**
  - **For example, circular economy action plan.**
- Non-structural concrete is a good opportunity for recycled aggregate.
- Typical secondary materials: BFS, FA, silica fume.
- Typical recycled materials: RCA, ceramic waste, crushed brick etc.
- *Need to get the definitions right (by-products too).*
- No distinction between filler, cement replacement, fine aggregate or coarse aggregate, all about weight → *biggest opportunities in coarse aggregate*.

Alternative proposal to criterion 5.5:

Recognise responsibly sourced aggregates as well

- Promoted by the Concrete Sustainability Council
- Recognised by some Green Building Assessment schemes.

Further information needed

- *How to define responsible sourcing?*
- *What is the availability of responsibly sourced aggregates?*
- *If to promote, how should it compare to secondary and recycled aggregates?*
- *Further discussion most welcome.*

Criterion 5.6. Concrete plant process energy consumption

The applicant shall **assess and document the electricity consumption** (kWh) **and fuel consumption** (L diesel, m3 natural gas etc.) of the concrete process plant equipment (including forklifts and trucks used for onsite transport) for the full calendar year or rolling 12 period.

The total concrete production during the same 12 month period shall be expressed in terms of m3.

Both the specific electricity consumption (MJ/m3 concrete) and specific fuel consumption (MJ/m3 concrete) shall be reported. Conversion of kWh to MJ shall be carried out by multiplying the kWh value by 3.6 MJ/kWh.

EU Ecolabel points

Points shall be awarded to applicants that have installed **onsite CHP units** that can meet up to a maximum of 50% of the process electricity (up to 10 points).

Points shall be awarded to applicants that can demonstrate that the **electricity** used in the concrete plant is **from renewable sources up to a maximum of 90%** (up to 15 points).

Assessment and verification:

The applicant shall provide a declaration of compliance with the mandatory requirements of the criterion, supported by calculations of electricity and fuel consumption, as well as production capacity during the same 12 month period.
Points shall be awarded in proportion to how closely the data reaches the maximum benchmark set (e.g. CHP electricity 0% of process electricity = 0 points; CHP electricity 50% of process electricity = 10 points; renewable energy share of 0% = 0 points; renewable energy share of 90% = 15 points).

Criterion 5.6. Concrete plant process energy consumption

Rationale

- Energy balance of concrete plant is potentially attractive for CHP.
- Electricity (for plant, lights etc.) and heat (for curing, for onsite hot water and possible space heating) needed.
- Typical CHP balance is:
  - **1 unit primary energy → 0.4 units electrical energy + 0.4 units of useful heat**
- Typical grid electricity balance is:
  - **1 unit primary energy → 0.35 to 0.4 units of electrical energy**
- Much better than buying grid electricity and having an onsite boiler for heat.
- Potential alternative revenue stream as well during periods of low production.
- Easy to adapt to renewable requirement with onsite CHP – i.e. choose biomass or high calorific value wastes as the fuel.
- *More information about concrete plant energy balances needed..*

Criterion 5.7. Photocatalytic surfaces

EU Ecolabel points

Points shall be awarded for concrete tiles and flags, including terrazzo tiles, with a **NOx reduction of up to 40% during active periods** (up to 10 points).

Assessment and verification:
The applicant shall provide a declaration stating whether or not this criterion is relevant to their product(s) that will apply for the EU Ecolabel.
In cases where this criterion is relevant, the applicant shall provide test reports according to ISO 22197-1 or equivalent methods.
Points shall be awarded in proportion to how closely the data reaches the maximum benchmark set (i.e. NOx reduction of 0% = 0 points and NOx reduction of 40% = 10 points).

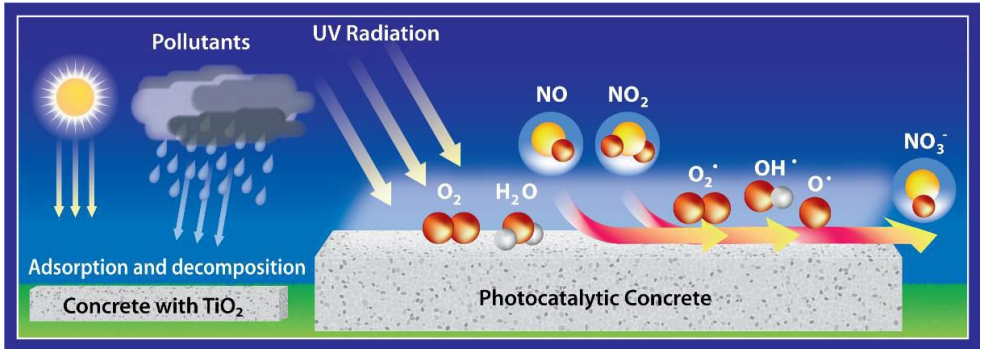
Rationale

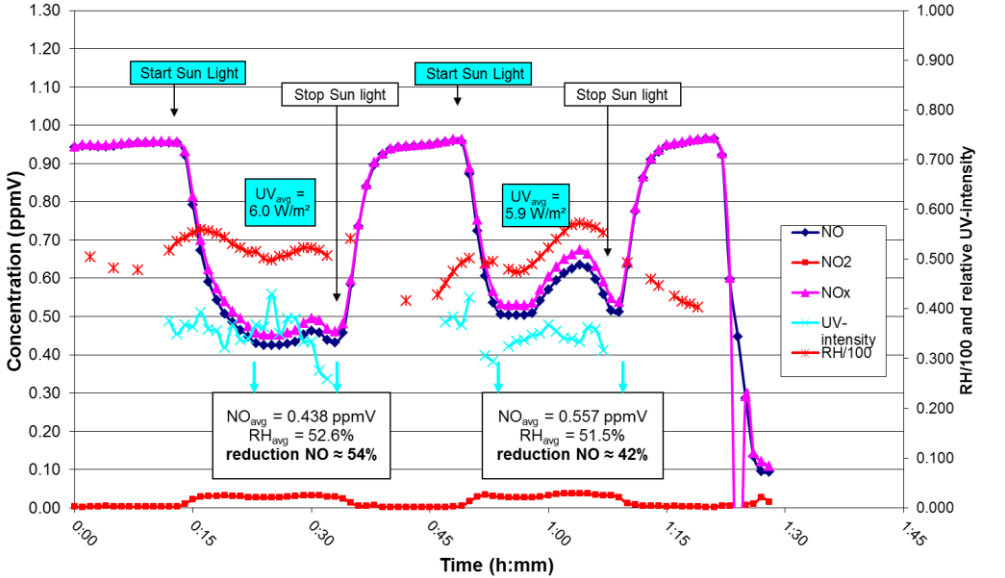
- No mandatory requirement because this is a niche and innovative product with clear environmental benefits.
- So recognised by EUEL as a way of achieving extra points. Any experience with these types of product?
- *Maybe strong opinions about TiO2…*

Criterion 5.8. Permeable pavements

Rationale

- Benefits:
  - **NOx removal**
  - **Links to less ozone**
  - **Links to less smog**
- Air Quality Directive.
- 2008/50/EC.
- Main NOx source is traffic.
- Priority in pavings/walls near roads.
- Are test methods mature?
  - **i.e. ISO 22197-1**





Criterion 5.8. Permeable pavements

EU Ecolabel points

Points shall be awarded for concrete tiles and flags which are designed to have:

- a **void area of more than 5%** (up to 10 points)

or

- where installation guides are provided using different types of joint filling aggregates, at least one of which demonstrate **standard infiltration rates of at ≥ 400 mm/hour**. (up to 10 points)

Assessment and verification:

The applicant shall provide a declaration stating whether or not this criterion is relevant to their product(s) that will apply for the EU Ecolabel.

In cases where this criterion is relevant, the applicant shall provide test reports according to BS 7533-13, BS DD 229:1996 or similar standards.

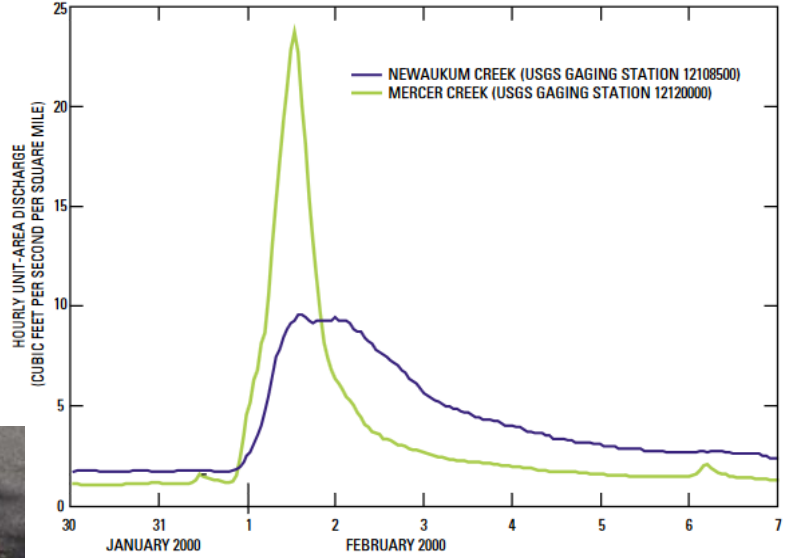
A maximum (single or combined) total of 10 points shall be awarded in proportion to how closely the data reaches the maximum benchmarks set:

- *i.e. void area 0% = 0 points and a void area of 5% = 10 points or,*
- *i..e 400 mm/hr = 0 points and 2000 mm/h =10 points.*

Criterion 5.8. Permeable pavements

Rationale

- Generally the same idea as photocatalytic surfaces.
- i.e. a niche/innovative product.
- Benefits:
  - **flood risk management**
  - **pollutant removal**
  - ***material efficiency?***
- How to assess? Standard methods?



Increasing void contents / Decreasing kg concrete per m2

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Questions/comments

- 5.5 Recycled and secondary materials at the concrete plant.
- 5.6 Concrete plant process energy consumption.
- 5.7 Photocatalytic surfaces.
- 5.8 Permeable paving.

Thanks

Any questions?

Email: JRC-B5-HARDCOVERINGS@ec.europa.eu

Keep up to date with the project:

JRC website: http://susproc.jrc.ec.europa.eu/Hard_coverings/index.html (for everyone)
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