



Study for the development of European Ecolabel criteria for buildings

Second background report

III AHWG meeting
Roma, 26th March 2009
Ing. Laura Cutaia



Product group definition

Product group definition for “buildings” shall comprise: “buildings considered in their entirety, as well as small houses, new or existing, public or private, used for residential purpose and for use as offices”.

From the definition part of the building such as dwellings are excluded.

New buildings include also major refurbishments.

Existing buildings include also renovations.

Residential purpose is meant as for dwelling purpose.

Use as offices is meant to be the use of the building for administrative, bureaucratic and educational activities of a public or private nature.





Main environmental aspects

- Environmental issues
 - Environmental loadings (emission to atmosphere, soil, water, ...)
 - Resource use (energy, materials, water, ..)
 - Health and safety (indoor quality, health and well-being, ..)
- Fitness for use
 - Service quality (management, maintenance, ..)
 - Services (waste collection, transports, ...)



3



Towards a first range of criteria - Methodology

- Criteria from Environmental Certification Schemes for b. and criteria from other EU initiatives



4



Scheme	Criteria (n.)
Breeam	101
Breeam Ecohomes 2006	25
Casbee for Home 2007	75
Casbee NC 2008	106
CEN/TC 350	14
CPD	17
GPP - EnvCrit	32
iiSBE - SBT	137
ISPRA	26
LEED for Homes 2008	43
Swan-labelling of Small houses	57
Total	633

5



Methodology

- The criteria have been selected and characterised pointing out the following information:
- Field of application
 - New buildings (residential, offices, schools);
 - Existing buildings (residential, offices, schools);
- Type of criterion
 - Mandatory
 - Optional
- Kind of criterion
 - Threshold, on-off
 - Point-score system.



6



Methodology

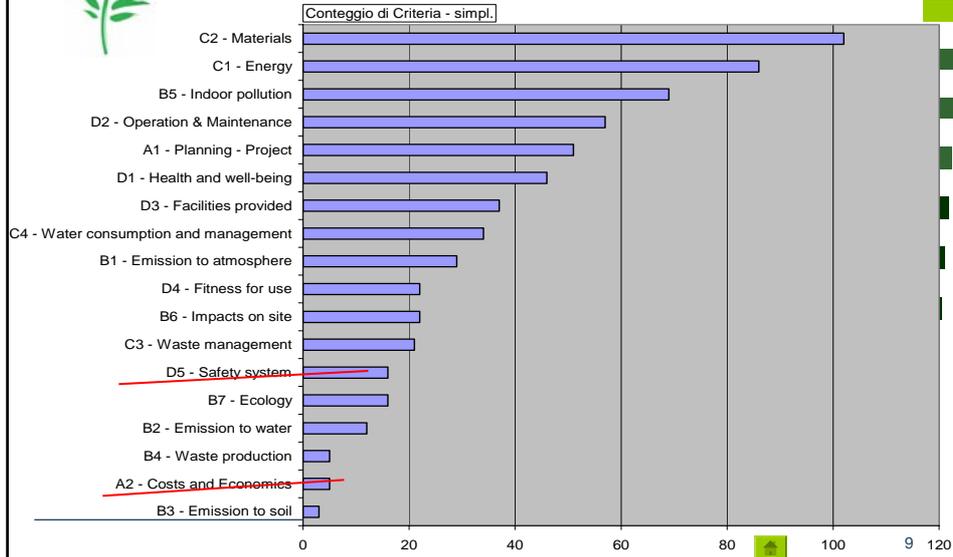
- In order to count the frequency of criteria in the different initiatives they have been grouped in classes related to main aspects identified such as:
 - **Class A:** general aspects related to planning, project, construction phase, economic aspects;
 - **Class B:** environmental impacts;
 - **Class C:** resource consumption;
 - **Class D:** fitness for use, comfort and safety aspects.
- Within these main classes specific sub-classes have been identified as well as the number of criteria belonging to these sub-classes

7

	CODE-ISSUES	Criteria (n)
	A1 - Planning - Project	51
	A2 - Costs and Economics	5
	B1 - Emission to atmosphere	29
	B2 - Emission to water	12
	B3 - Emission to soil	3
	B4 - Waste production	5
	B5 - Indoor pollution	69
633 –	B6 - Impacts on site	22
5 –	B7 - Ecology	16
16 =	C1 - Energy	86
	C2 - Materials	102
612	C3 - Waste management	21
	C4 - Water consumption and management	34
	D1 - Health and well-being	46
	D2 - Operation & Maintenance	57
	D3 - Facilities provided	37
	D4 - Fitness for use	22
	D5 - Safety system	16
	Tot	633



Total number of criteria per issues (n.)



Methodology

□ Simplified criteria = translation of criteria in a common wording

S.C. - Noise reduction
(representing 16 criteria)

Scheme	CRITERIA
Casbee NC 2008	Background noise level
Casbee NC 2008	Sound insulation of openings
Casbee NC 2008	Sound insulation of partition walls
Casbee NC 2008	Sound insulation performance of floor slabs (light-weight impact source)
Casbee NC 2008	Sound insulation performance of floor slabs (heavy-weight impact source)
Casbee NC 2008	Sound absorption
Casbee NC 2008	Noise
Casbee for Home 2007	Reduction of noise, vibration, exhaust and exhaust heat
iiSBE - SBT	Noise attenuation through the exterior envelope.
iiSBE - SBT	Noise attenuation between primary occupancy areas.
iiSBE - SBT	Acoustic performance within primary occupancy areas.
Breeam	Sound Insulation
Breeam	Noise Attenuation
Breeam Ecohomes 2006	Sound insulation - noise
CPD	Protection against noise
GPP - EnvCrit	Internal noise reduction

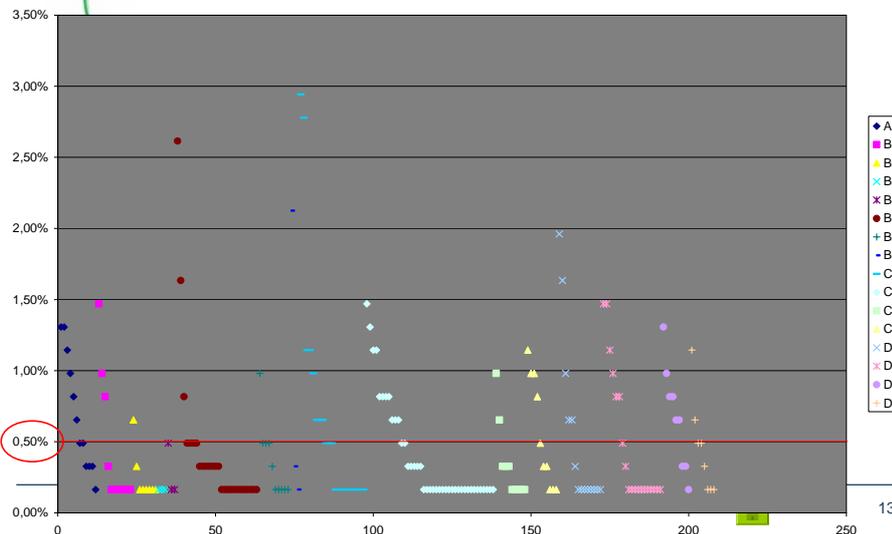
 Total number of Simplified criteria	CODE-ISSUES	S.C. (n)	S.C. counts for
	A1 - Planning - Project	12	51
B1 - Emission to atmosphere	11	29	
B2 - Emission to water	8	12	
B3 - Emission to soil	3	3	
B4 - Waste production	3	5	
B5 - Indoor pollution	26	69	
B6 - Impacts on site	10	22	
B7 - Ecology	3	16	
C1 - Energy	21	86	
C2 - Materials	41	102	
C3 - Waste management	10	21	
C4 - Water consumption and management	10	34	
D1 - Health and well-being	14	46	
D2 - Operation & Maintenance	19	57	
D3 - Facilities provided	9	37	
D4 - Fitness for use	8	22	
Tot.	208	612	

CODE-ISSUES	sub-code	Criteria - simpl.	n	%
D2 - Operation & Maintenance	D2.1	Maintenance system - plan	9	1,47%
D2 - Operation & Maintenance	D2.2	User's guide - operation and management system	9	1,47%
D2 - Operation & Maintenance	D2.3	Frequency of refurbishment and renewal (plants, interior, exterior, services)	7	1,14%
D2 - Operation & Maintenance	D2.4	Flexibility and adaptability (space, plants)	6	0,98%
D2 - Operation & Maintenance	D2.5	Ease of equipments and plants renewal	5	0,82%
D2 - Operation & Maintenance	D2.6	Reliability of equipments and plants	5	0,82%
D2 - Operation & Maintenance	D2.7	Building's information	3	0,49%
D2 - Operation & Maintenance	D2.8	Training - knowledge of maintenance operating staff	2	0,33%
D2 - Operation & Maintenance	D2.9	Capability for partial operation of facility technical systems.	1	0,16%
D2 - Operation & Maintenance	D2.10	Commissioning of facility systems	1	0,16%
D2 - Operation & Maintenance	D2.11	Design for maintenance	1	0,16%
D2 - Operation & Maintenance	D2.12	Durability of the construction works	1	0,16%
D2 - Operation & Maintenance	D2.13	Ease of bulding's maintenance (without plants)	1	0,16%
D2 - Operation & Maintenance	D2.14	Ease of Maintenance	1	0,16%
D2 - Operation & Maintenance	D2.15	Local control of lighting systems	1	0,16%
D2 - Operation & Maintenance	D2.16	Monitoring & Control of building's functions	1	0,16%

1,47% = 9/612 %



Recurrence distribution of Simplified Criteria (%)



Selection of simplified criteria

- Selected simplified criteria - according to a limit value of $\% \geq 0.5$.
- The hurdle of 0.5% has been chosen by cutting the distance between the extreme of the percentage values (which vary from 0.16% to 2.94%) at a value higher of $\frac{3}{4}$, in precautionary way. In such way we catch more than 60% of the whole criteria presented (396/633).



	CODE-ISSUES	Selected Simplified Criteria (n)	
	A1 - Planning - Project	6	
B1 - Emission to atmosphere	3		
B2 - Emission to water	1		
B5 - Indoor pollution	3		
B6 - Impacts on site	1		
B7 - Ecology	1		
C1 - Energy	8		
C2 - Materials	11		
C3 - Waste management	2		
C4 - Water consumption and management	4		
D1 - Health and well-being	5		
D2 - Operation & Maintenance	6		
D3 - Facilities provided	6		
D4 - Fitness for use	2		
Tot	59		

15

CODE-ISSUES	Selected Simplified Criteria	%
A1 - Planning - Project	Constructor's requirements	1,14%
	Innovative or regional design	0,65%
	Local inter-actions	1,31%
	Project's and Construction's OMS - Quality Management System	0,82%
	Site pre-assessment	0,98%
	Sustainable project	1,31%
B1 - Emission to atmosphere	CO2 emissions	1,47%
	NOx / VOC emissions	0,82%
	ODS (Ozone depleting substances)	0,98%
B2 - Emission to water	Rainwater loads	0,65%
B5 - Indoor pollution	Noise reduction	2,61%
	Pollutants from products, facilities, operations	0,82%
	Ventilation - natural ventilation	1,63%
B6 - Impacts on site	Heat island	0,98%
B7 - Ecology	Protection of ecological features	2,12%
C1 - Energy	Building's Insulation	0,65%
	Heat - Power Loss	0,65%
	Heating and cooling systems	2,78%
	Insulation of H&C distribution system	0,65%
	Labelled domestic appliances (Energy - Eco)	0,98%
	Labelled Lighting system (energy - eco)	1,14%
	Monitoring & Control of energy consumption	1,14%
	Renewable and low emission energy source	2,94%
C2 - Materials	Labelled construction products (Eco, Energy, responsible sources)	1,31%
	Labelled materials (Energy - Eco)	0,82%
	List of products/materials	1,14%
	Long life service materials	0,82%
	Plastic's products - Halogen free/Additives	0,65%
	Reducing usage of materials	0,65%

	Responsible Sourcing of Materials	0,65%
	Re-use of materials or building's parts (in or off site)	0,82%
	Thermal insulation materials	0,82%
	Timber from sustainable forestry	1,47%
	Use of recycled materials	1,14%
C3 - Waste management	Recycling facilities	0,65%
	Sustainable Waste management	0,98%
C4 - Water consumption and management	Gray-water reuse system	0,82%
	Low-flush systems (toilets, showers, ...)	0,98%
	Minimise water use	0,98%
	Rainwater use	1,14%
D1 - Health and well-being	Aesthetic concerns	0,65%
	Day-lighting	1,96%
	Glare Control	0,65%
	Lighting system and control	0,98%
	Temperature and humidity control	1,63%
D2 - Operation & Maintenance	Ease of equipments and plants renewal	0,82%
	Flexibility and adaptability (space, plants)	0,98%
	Frequency of refurbishment and renewal (plants, interior, exterior, services)	1,14%
	Maintenance system - plan	1,47%
	Reliability of equipments and plants	0,82%
	User's guide - operation and management system	1,47%
D3 - Facilities provided	Car facilities - regulations	0,82%
	Common ITC services - home office	0,98%
	Cycle Facilities	0,82%
	Open spaces, green areas, common areas	1,31%
	Proximity to commercial, cultural and recreation facilities	0,65%
	Public transport	0,65%
D4 - Fitness for use	Building's air-tightness	0,65%
	Functionality (layouts, space, allowances, adaptability)	1,14%



TOWARDS A FIRST RANGE OF CRITERIA

- Exclusion (- 2):
 - Proximity to commercial, cultural and recreation facilities
 - Public transport
- Addition (+ 33):
 - Suggested criteria

CODE-ISSUES	Suggested Criteria	CODE-ISSUES	Suggested Criteria
A1 - Planning - Project	Integrated project planning	B7 - Ecology	Use of trees, ...
A1 - Planning - Project	Site selection	C1 - Energy	BAT energy (LZC)
A1 - Planning - Project	Design for disassembly, re-use or recycling.	C1 - Energy	Energy efficiency certification
B1 - Emission to atmosphere	SO2 emissions	C2 - Materials	Avoidance of CFCs and Halons
B1 - Emission to atmosphere	CO2 embodied in construction products	C2 - Materials	Chemical products (safety data, active substances)
B3 - Emission to soil	Release of dangerous/toxic substances into soil	C2 - Materials	Use of materials that are locally produced.
B4 - Waste production	Design for waste production reduction	C2 - Materials	Energy embodied in materials
B5 - Indoor pollution	Chemicals	C3 - Waste management	Sustainable management of Construction and demolition Waste
B5 - Indoor pollution	Exhaust gases	C4 - Water consumption and management	Availability of a split grey / potable water system.
B5 - Indoor pollution	Microbes, mites, mold	D1 - Health and well-being	Air conditioning system
B5 - Indoor pollution	Vibrations	D2 - Operation & Maintenance	Building's information
B5 - Indoor pollution	Cooling	D2 - Operation & Maintenance	Training - knowledge of maintenance operating staff
B5 - Indoor pollution	Heating	D2 - Operation & Maintenance	Ease of Maintenance
B5 - Indoor pollution	Radon	D3 - Facilities provided	Shared Facilities
B6 - Impacts on site	Impact of construction process on ecology	D4 - Fitness for use	Quality control (construction phase)
B6 - Impacts on site	Impacts on site		
B6 - Impacts on site	Site management		
B6 - Impacts on site	Light pollution		

Most of them % = 0.49



TOWARDS A FIRST RANGE OF CRITERIA

- The proposed range of criteria is 90, of which 17 are specifically addressed to New buildings (or buildings with major renovations) while all the others are addressed to both New and Existing buildings.
- considering the specific field of application:
 - N: New buildings;
 - E+N: New and Existing buildings
- considering the related Life Cycle Phase of application:
 - A: Planning, Project, Construction phase;
 - B: Use/Operating phase;
 - C: End of Life phase.



Applicability	CODE-ISSUES	(n)
N	A1 - Planning - Project	9
	B1 - Emission to atmosphere	1
	B6 - Impacts on site	3
	B7 - Ecology	1
	C2 - Materials	1
	C3 - Waste management	1
	D4 - Fitness for use	1
N. of criteria for new buildings		17
E+N	B1 - Emission to atmosphere	4
	B2 - Emission to water	1
	B3 - Emission to soil	1
	B4 - Waste production	1
	B5 - Indoor pollution	10
	B6 - Impacts on site	2
	B7 - Ecology	1
	C1 - Energy	10
	C2 - Materials	13
	C3 - Waste management	2
	C4 - Water consumption and management	5
	D1 - Health and well-being	6
	D2 - Operation & Maintenance	9
	D3 - Facilities provided	5
D4 - Fitness for use	3	
N. of criteria for New+Existing buildings		73
Total proposed criteria		90

Life Cycle phase	CODE-ISSUES	(n)
A - Planning, Project, Construction	A1 - Planning - Project	8
	B1 - Emission to atmosphere	1
	B6 - Impacts on site	2
	B7 - Ecology	1
Total A		12
A, B, C	B3 - Emission to soil	1
	B4 - Waste production	1
Total A, B, C		2
A, C	C2 - Materials	1
	C3 - Waste management	1
Total A, C		2
B - Use / Operating	B1 - Emission to atmosphere	4
	B2 - Emission to water	1
	B5 - Indoor pollution	10
	B6 - Impacts on site	3
	B7 - Ecology	1
	C1 - Energy	10
	C2 - Materials	13
	C3 - Waste management	2
	C4 - Water consumption and management	5
	D1 - Health and well-being	6
	D2 - Operation & Maintenance	9
	D3 - Facilities provided	5
	D4 - Fitness for use	4
Total B		73
C - End of Life	A1 - Planning - Project	1
Total C		1
Total		90

CODE-ISSUES	(n)
A1 - Planning - Project	9
B1 - Emission to atmosphere	5
B2 - Emission to water	1
B3 - Emission to soil	1
B4 - Waste production	1
B5 - Indoor pollution	10
B6 - Impacts on site	5
B7 - Ecology	2
C1 - Energy	10
C2 - Materials	15
C3 - Waste management	3
C4 - Water consumption and management	5
D1 - Health and well-being	6
D2 - Operation & Maintenance	9
D3 - Facilities provided	5
D4 - Fitness for use	3
Proposed criteria	90



Grazie!

