



Common Metrics for Key Issues

Bâtimat 2009
SB Alliance Annual Conference
Thursday 05th November 2009

A proposal for
The Sustainable Building
Alliance
Core set of indicators

A core set of indicators, why?

- To enable the assessment of main environmental impacts
- To develop a common international vocabulary for building environmental assessment
- To facilitate communication between stakeholders
- To support the development of future assessment schemes
- To facilitate inter building and inter countries comparisons

Key challenges to get the core set of indicators

1. Select first candidates among a large number of potential indicators
2. Define a methodology to assess them
3. Define a way to report on the indicators
4. Define subsidiarity between international and national approaches

Where are we today

- A working group of SB Alliance has produced
 - A selection of 6 indicators
 - A methodology to assess them
 - A method to report on the indicators
 - A proposal for links between SBA indicators and assessment schemes
 - This will be presented today
- The next steps are
 - To discuss this proposal with all SB Alliance members
 - To make a decision
 - To implement these indicators in assessment schemes

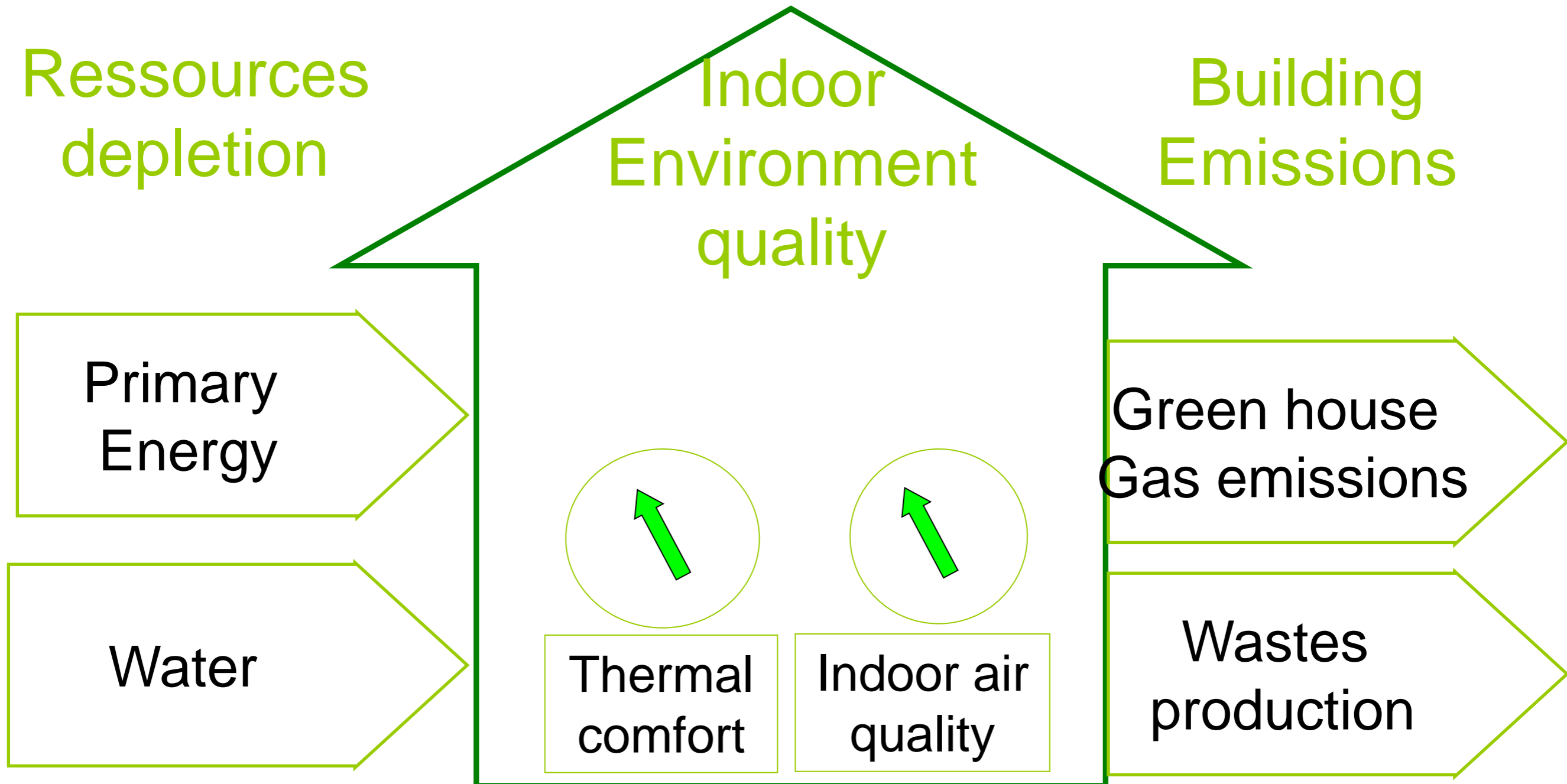
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Select first candidates among a large number of potential indicators

- 1st step : bottom up approach
 - Analyse all potential indicators coming from
 - Existing approaches
 - Standards under development
 - Get a long list of potential indicators
- 2nd Step: Top down approach
 - A vote among sba members enabled to select first priority indicators

The 6 indicators chosen for the first 2009 version



Indicators under discussion

- Economic performance
- Visual Comfort
- Acoustic Comfort

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A pragmatic life cycle approach

- The goal is to take into account the whole life cycle

before use stage	product stage
	construction stage
use stage	operation of building incorporated services
	operation of non building incorporated services
	maintenance repair and refurbishment
	transport
end of life stage	deconstruction
	disposal stage

A pragmatic life cycle approach

- The goal is to take into account the whole life cycle
- But Assessment methods have different levels of maturity
 - Some elements can be assessed with well known methods
 - e.g. Methods used for Energy performance regulations
 - Some elements can be assessed with recently developed methods
 - e.g: Cradle to gate Environment Product Declarations
 - Some elements can be assessed with methods which are not available in all countries
 - e.g. Cradle to grave Environment Product Declarations

Main sources of data

		CO2 eq	Energy	Water	Wastes
before use stage	product stage				
	construction stage				
use stage	operation of building incorporated services				
	operation of non building incorporated services				
	maintenance repair and refurbishment				
	transport				
end of life stage	deconstruction				
	disposal stage				

EPD/ LCA : cradle to gate
 EPD/LCA : cradle to grave or or cradle to gate+ scenarios
 Standardised Energy calculation
 Estimations based on scenarios
 No common method



A pragmatic life cycle approach

- The goal is to take into account the whole life cycle
- But Assessment methods have different levels of maturity
- Our proposal is to set up the method step by step
 - The assessment of each stage could be

Required in 2009 version	
Optional in 2009 version	
Not included in 2009 version	

- The proposal is based on
 - Maturity of the assessment method
 - Importance of the Impacts

Elements to consider in 2009 version

		CO2 eq	Energy	Water	Wastes
before use stage	product stage				
	construction stage				
use stage	operation of building incorporated services				
	operation of non building incorporated services				
	maintenance repair and refurbishment				
	transport				
end of life stage	deconstruction				
	disposal stage				

Required in 2009 version	
Optional in 2009 version	
Not included in 2009 version	

Apply a 20/80 rule

To enable a progressive development only some buildings components or services shall be assessed in 1st version

Example for the product stage

- Requested

- Roof
- Load bearing structure
- Exterior and basement walls including windows
- Internal Walls
- Floor Slabs
- Foundation
- Floor Finishes/Coverings

- Optional

- decorative wall finishes/coatings
- Doors
- Heating/Cooling/lighting Equipment and any power generating equipment (e.g. wind turbines/PV/solar heating)
- Internal Transport (Elevators, Escalators)
- Water and Sewerage systems
- Electrical distribution systems

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Units for reporting data

- Green house gas emission
 - CO2 eq (kg)
- Energy
 - Primary energy (kWh)
- Water
 - m³
- Wastes
 - 4 type of wastes differentiated
 - Hazardous (Tonnes)
 - Non Hazardous (Tonnes)
 - Inert (Tonnes)
 - Nuclear (kg)
- Data are reported for the different stages

Indoor environment indicator

- Thermal comfort
 - % of occupied period where temperature exceeds a given value
 - Eg: 2% of time temperature above 26°C
- Indoor air quality
 - CO2 in ppm
 - Formaldehyde in $\mu\text{g}/\text{m}^3$

The indicators could be assessed at two stages:

- before use
- in use

Building characteristics


- Key parameters to enable comparison between buildings

Type of Building	<Office, house , school etc.>
Occupancy (Pattern of Use)	<number of occupants, hours of use>
Required Service Life	<for the building in years>
Regulations and Standards	<Country/Region for the building regulations or standards for the construction or use of the building>
Climate Type	<e.g. Mediterranean.>

Results presentation

- We are now working on the layout

Functional Equivalent														
Type of Building		<Office, house, school etc.>												
Occupancy (Pattern of Use)		<number of occupants, hours of use>												
Required Service Life		<for the building in years>												
Regulations and Standards		<Country/Region for the building regulations or standards for the construction or use of the building>												
Climate Type		<e.g. Mediterranean>												
Indicator	Annualised Unit	Before use stage			Use Stage					End of Life Stage				
		Product Stage		Construction Stage				Disposal Stage						
		Raw Material Process	Transport	Manufacturing	Transport	Construction Installation Process	Operation of building-incorporated services	Operation of non building-incorporated appliances	Maintenance, repair and refurbishment	Transport (of people)	Deconstruction	Transport	Recycling, reuse and energy recovery	Waste Disposal
GWP	CO ₂ eq													
Energy	kWh													
Water	m ³													
Waste	Tonnes Hazardous													
	Tonnes Non-hazardous													
	Tonnes Inert													
	kg - Nuclear													
					Design	In-use								
IEQ	Thermal Comfort %TOR													
	Thermal Comfort Dev													
	IAQ [CO ₂] ppm													
	IAQ [Formaldehyde] µg/m ³													

Stages included for each indicator		Required in 2009 version		Optional in 2009 version
		Not included in 2009 version		Not relevant

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Subsidiarity between SBA and national approaches

- **Assessment procedure**
 - Allow the use of national procedures and processes (e.g. energy calculation procedures etc.)
 - Provides default scenarios which can be use when no national data is available

Presentation of results

- SBA international approach

- Define a common detailed reporting format

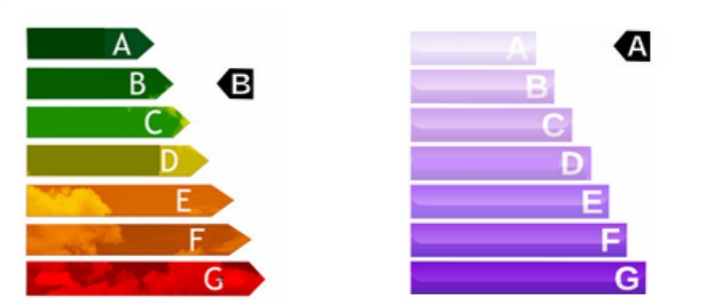

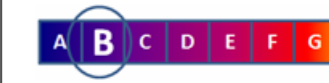



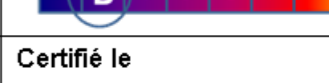
- National approaches

- Define benchmarks and layout for presentation

Functional Equivalent																	
Type of Building		<Office, house, school etc.>															
Occupancy (Pattern of Use)		<number of occupants, hours of use>															
Required Service Life		<for the building in years>															
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Performance énergétique et environnementale		
★★★★★		
Exploitation		
		
Préoccupations	valeur	Performance
Consommation d'eau	... l/m ² .an	
Construction		
Consommation d'Énergie	... kW h/m ² .an	
Emission de CO ₂		
...	-	
Qualité des ambiances		
Confort d'été		
Qualité air intérieur		
Confort acoustique		
Coordonnées du bâtiment		Certifié le par

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Questions ?