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Introduction to High Quality Environment Buildings

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Introduction

— Aliaxis 2006

- Worldwide Leader in **manufacturing and/or marketing plastic plumbing products for construction, industrial and public utilities applications.**
- 88 companies operating in 37 countries (of which 65 companies are manufacturing operations)
- 11,600 employees
- Turnover of EUR 1.834 bn
- More than 250,000 reference products.

— Chairman and/or Board member

- AIMCC, French association of construction products manufacturers (Environmental Commission)
- AIMCC is the French CEPMC member
- French delegation to international standardization works regarding Sustainability in Construction (ISO and CEN)
- French “green building” Association (Association HQE)

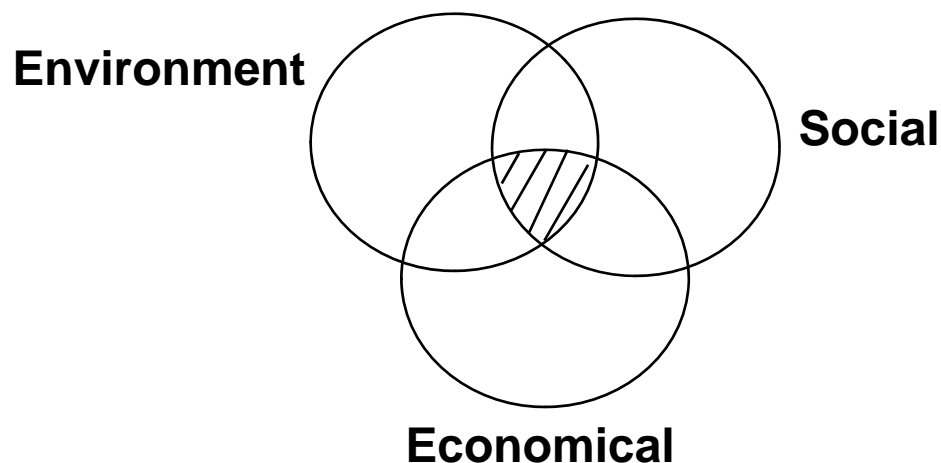
Plan

- **Introduction**
- **Sustainability in construction sector**
- **Sustainability in actions**
- **Role of Construction Products Manufacturers**

Sustainability (1/3)

— In general

- **UN (1987): Report “Our common future” (Mrs Brundlandt)**
Rio Conference (1998): Sustainable Development aims to meet the needs of the present without compromising the ability of future generation to meet their own needs ...
- **Three pillars of Sustainable Development:**



Sustainability (2/3)

— In construction sector

- **No international definition**
- **Expectations of people**
 - + Developing countries: « a roof for every people »
 - + Rich countries:
Healthy and comfortable building of which
 - impacts on the environment assessed on its full life cycle
 - and life cycle costare controlled as much as possible.

— Fashion or heavy trend?

Sustainability (3/3)

— Expectations shared by “all” interested parties:

- **Huge impacts on the environment:**
 - + Consumption of non renewable resources including energy.
 - France : 43 % of the total energy (1 T petrol equivalent per inhabitant)
 - + Emission of CO₂.
 - France : 23 % of CO₂ emission (nuclear electricity)
 - + Construction and demolition waste > Household / municipal waste quantity.

- **“Potential” impacts on health:**
 - + 90% of life inside building,
 - + Sick Building Syndrome, Asthma, ... associated with emissions of COV, formaldehyde, dangerous substances, ... from Construction Products... in spite of other potential sources !

Sustainability in actions (1/3)

— Standardization works in progress:

- **ISO TC59 SC17 “Building Construction / Sustainability in building construction**

Main topics: Environmental Product Declaration (EPD based on LCA), Environmental Assessment of Building

- **CEN TC350 “Sustainability of construction works”**

Main topics: the same!

- **CEN TC351 (Construction Product Directive / Essential Requirement n°3: HSE)**

Main topics: emissions into indoor air, ground water and soil from construction products

- **National standards regarding EPDs: France (the oldest), Netherlands.**

- **CEPMC, AIMCC are directly involved**

- **Liaison status : “Material” European Associations**

Sustainability in actions (2/3)

— Increasing interest from Construction actors

- **Various entities offer “green” / “sustainable” labels for building**
 - + US (now in Europe): LEED, Green Globes
 - + Australia: Green Star
 - + UK, Canada: BREAM / BREAM Canada
 - + Japan: CASBEE
 - + France: HQE approach
(HQE = Haute Qualité Environnementale)
- **Voluntary basis**
- **No mandatory request from National Authorities but ...**
- **Some requirements from local authorities (municipalities, ...) for the buildings they finance**

Sustainability in actions (3/3)

— Increasing interest from Construction actors (cont.)

- **Private owners more and more interested in official recognition, third party audit**
 - + Less expensive loan
 - + Higher selling prices
 - + Proved reduced exploitation costs
 - + Better patrimonial value
- **Users interested in “green labelled” buildings**
 - + More comfortable
 - + Less maintenance charges (heating or cooling cost...)

Product issues (1/2)

- **All these “green” or “sustainable” labels require environmental and sanitary information from Construction Products (CP):**
 - Life cycle
 - Consumption of resources, emission, waste, ..., treatment at the end of life, ...
- **Every CP has its own environmental and sanitary performances as it has its own technical, aesthetical and economical performances.**
- **Choice of CP has to be made by owners, designers ... as usual: environmental and sanitary performances constitute an additional choice criterion.**

Product issues (2/2)

— LCA studies

- Existing buildings : **CP environmental impacts (full life cycle) < 20%** building
- Future buildings : Minergie (CH); Passivhaus (D) ; BBC Effinergie (F) : **20 → 90 % !**

— In these building label schemes there is no conceptual justification for:

- List of preferred CP
- “black list” of CP

— Theoretically... but in fact because of the strong involvement of “green” actors, statements such as :

- “Natural” products are preferred...
- Plastics, made of “chemicals”, are excluded...
- Recyclable products and products containing recycled materials are accepted...

... are found in the operation briefs

Role of CP manufacturers (1/4)

- **To provide the market (B to B) with environmental and sanitary information useful for Building Assessment**
 - **OUR RESPONSIBILITY**
 - **In order to avoid unfair competition, unjustified claims, we need a common and consensual reference acknowledged by the market**
 - **The best solution: an “EPD standard based on LCA”**
Consensus, public enquiry, common communication format (multicriteria)...
 - **The worst solution: Ecolabel, single notation**
 - + Not fully transparent systems of communication: selection of criteria and their weighting are done by third party,
 - + Not usable for the assessment of building.

Role of CP manufacturers (2/4)

Example of the French EPD format which conforms to ISO 14025, ISO 21930 (not published yet) and NF P 01-010 (December 2004)

French EPD synthesis

-10 environmental impacts shall be considered as mandatory elements in relation with the functional unit

<i>N°</i>	<i>Environmental impact</i>	<i>Unit</i>	<i>Product indicator value - Life cycle total per 1 year period</i>
1	Consumption of energy resources total primary energy renewable energy non renewable energy	MU/FU	
2	Resource depletion (ADP)	kg antimony equivalent / FU	
3	Total water consumption	litre/FU	
4	Solid waste Total recovered waste Eliminated waste : dangerous waste safe waste inert waste radioactive waste	kg/FU	
5	Climate change	kg CO ₂ equivalent/FU	
6	Atmospheric acidification	kg SO ₂ equivalent/fu	
7	Air pollution	m ³ /FU	
8	Water pollution	m ³ /FU	
9	Destruction of the stratospheric ozone layer	kg CFC-R11 equivalent/FU	
10	Formation of photochemical ozone	kg ethylene equivalent/FU	

Role of CP manufacturers (3/4)

Example of the French EPD format which conforms to ISO 14025, ISO 21930 (not published yet) and NF P 01-010 (December 2004)

- 4 types of data related to the contribution of the building product to the evaluation of health-related risks and quality of life inside a building

<i>Product Contribution</i>	
To health risk assessment	Health-related quality of interior areas
	Health-related quality of water
To health risk assessment	Hygrothermal comfort
	Acoustic comfort
	Visual comfort
	Olfactory comfort

Role of CP manufacturers (4/4)

- **To improve the environmental and sanitary performances of our CP**
 - **Implementation of Ecodesign principles**
 - + Every improvement of the environmental performances of a site improves the environmental performances of our products.
 - + Phase out of the most questionable substances / additives we use.
 - + Increase of recycling and recycled content (if positive for the environment)

- **To implement a transparent communication regarding the Environmental and Sanitary performances of their products based on standardised EPD.**