COST Action FP1004

Final Meeting

15 April – 17 April 2015 – Lisbon, Portugal

COST FP1303
Performance of bio-based building materials

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Performance of bio-based building materials

Reasons for the Action

•Increasing building performance

- Controlled air exchange
- Limited heat loss
- Greater thermal efficiency of building design
- Advancing issues related to indoor air quality

NHBC BREEAM LEED DGNB Deutsche Gesellschaft für Nachhaltiges Bauen e.V. German Sustainable Building Council Certified Passive House Passive House Institute UK GREEN BUILDING COUNCIL France GBC MILJÖ BYGGNAD CERTIFIERAD | SVERIGE

etc…

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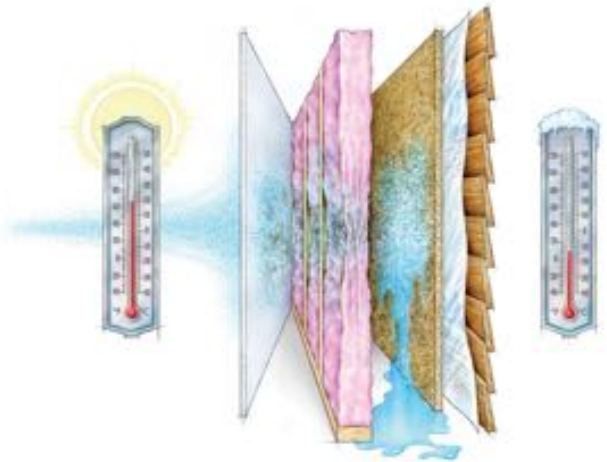
Performance of bio-based building materials

Reasons for the Action

•Increasing building performance



- ➢ Controlled air exchange
- ➢ Limited heat loss
- ➢ Greater thermal efficiency of building design
- ➢ Advancing issues related to indoor air quality

•First three can create issues with moisture, both internally and externally

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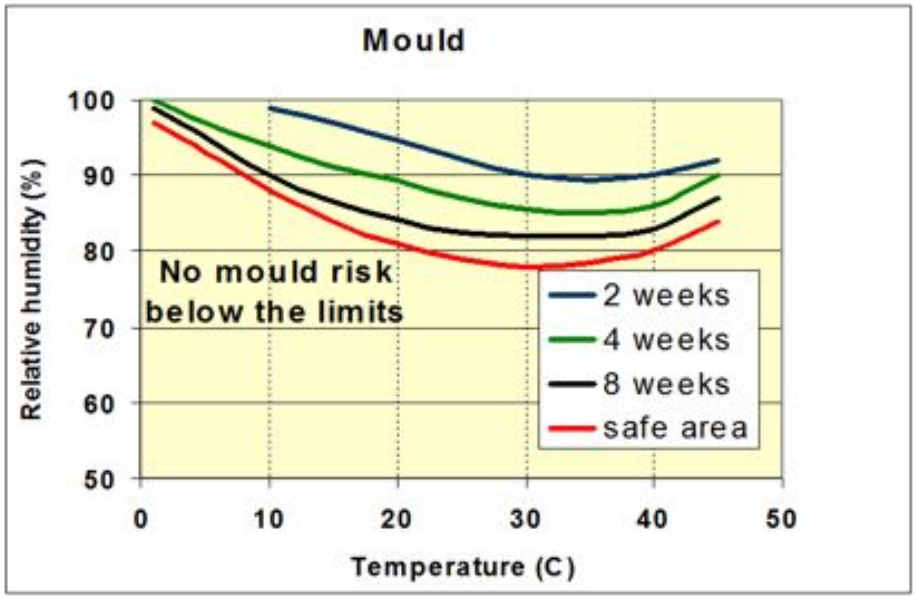
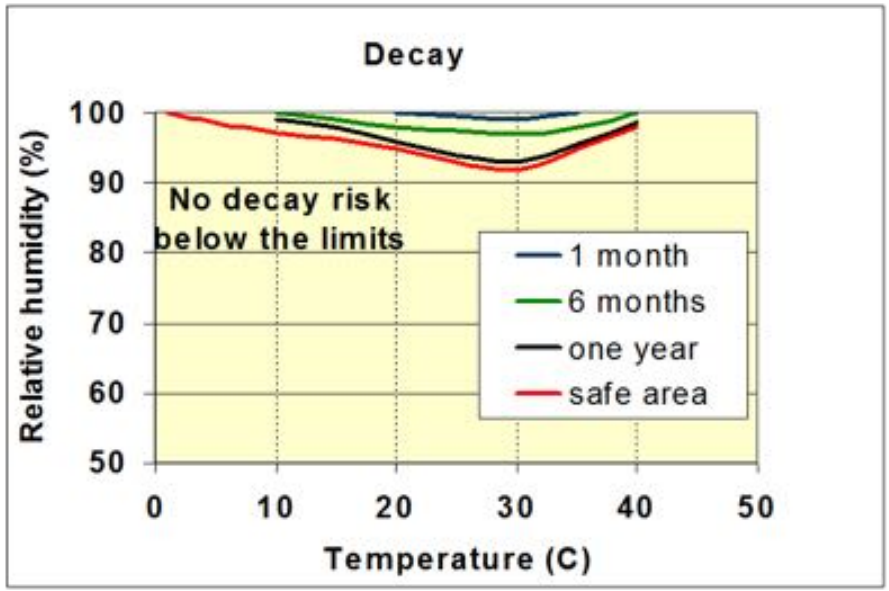
Performance of bio-based building materials

Reasons for the Action

- Develop a better understanding between material properties, design specification, risk of biological degradation, building physics, and generating a healthy environment for modern living.





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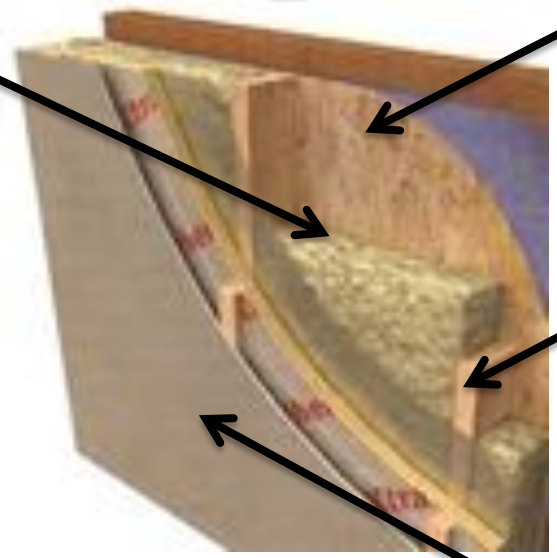
Performance of bio-based building materials

What are bio-based building materials?

Natural fibre insulations



Exterior timber cladding, decking (incl. WPCs)

Board material, e.g. OSB

Solid wood, re-egineered wood, e.g. I-beam, massivholz, straw bale

Interior boards (e.g. MDF fibre-gypsum boards), decoration

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What are bio-based building materials?

- Focus on:
  - ➢ Wood
  - ➢ Non traditional building materials (e.g. straw bale)
  - ➢ Natural fibre insulation
  - ➢ Natural fibre based composites
- *Other materials considered during meetings / Action duration*

- Most work to date on wood
- *Use this as basis for developing understanding*
- *Create task groups for other materials*

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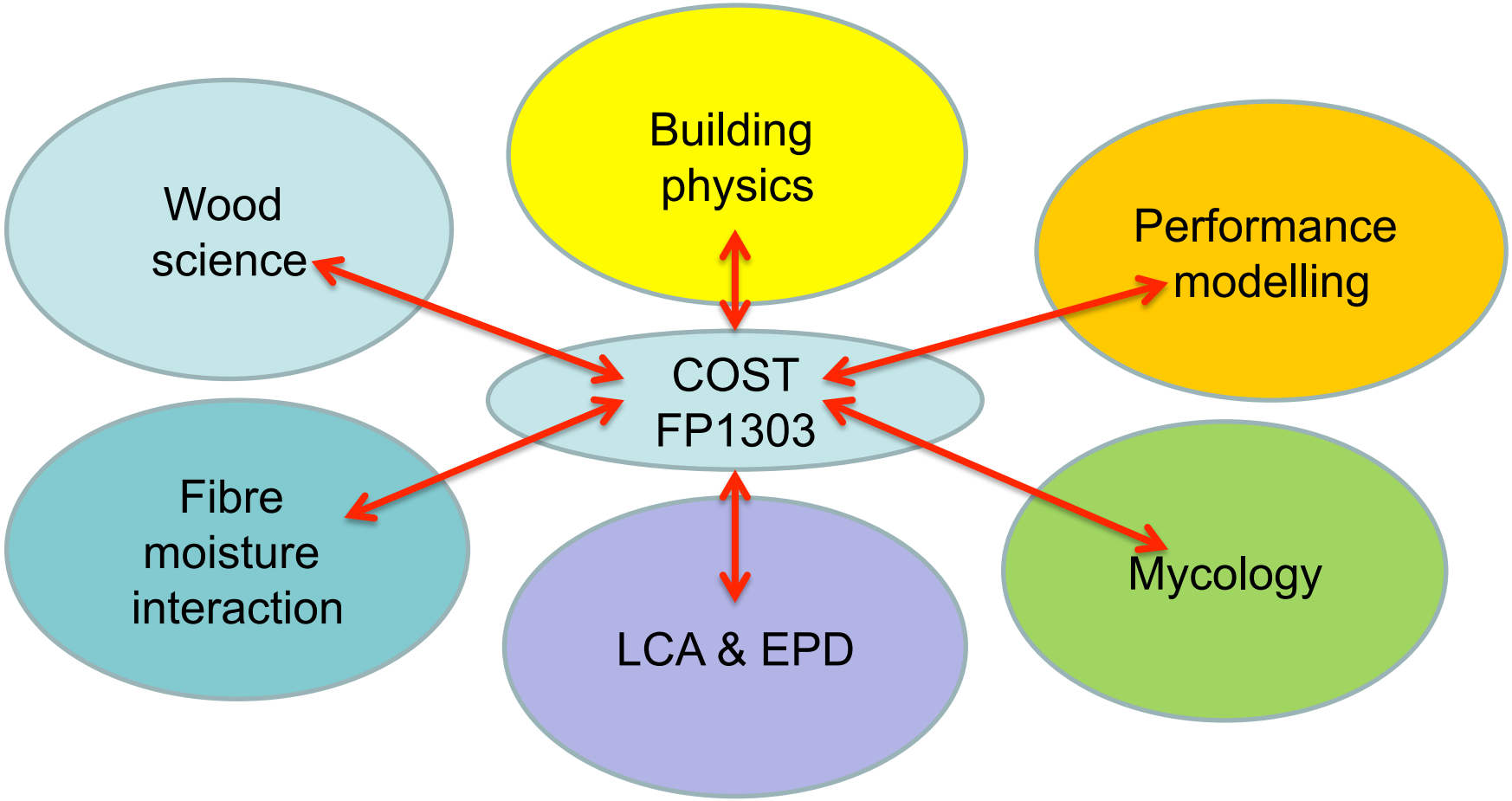
National/international interest – where we want to be



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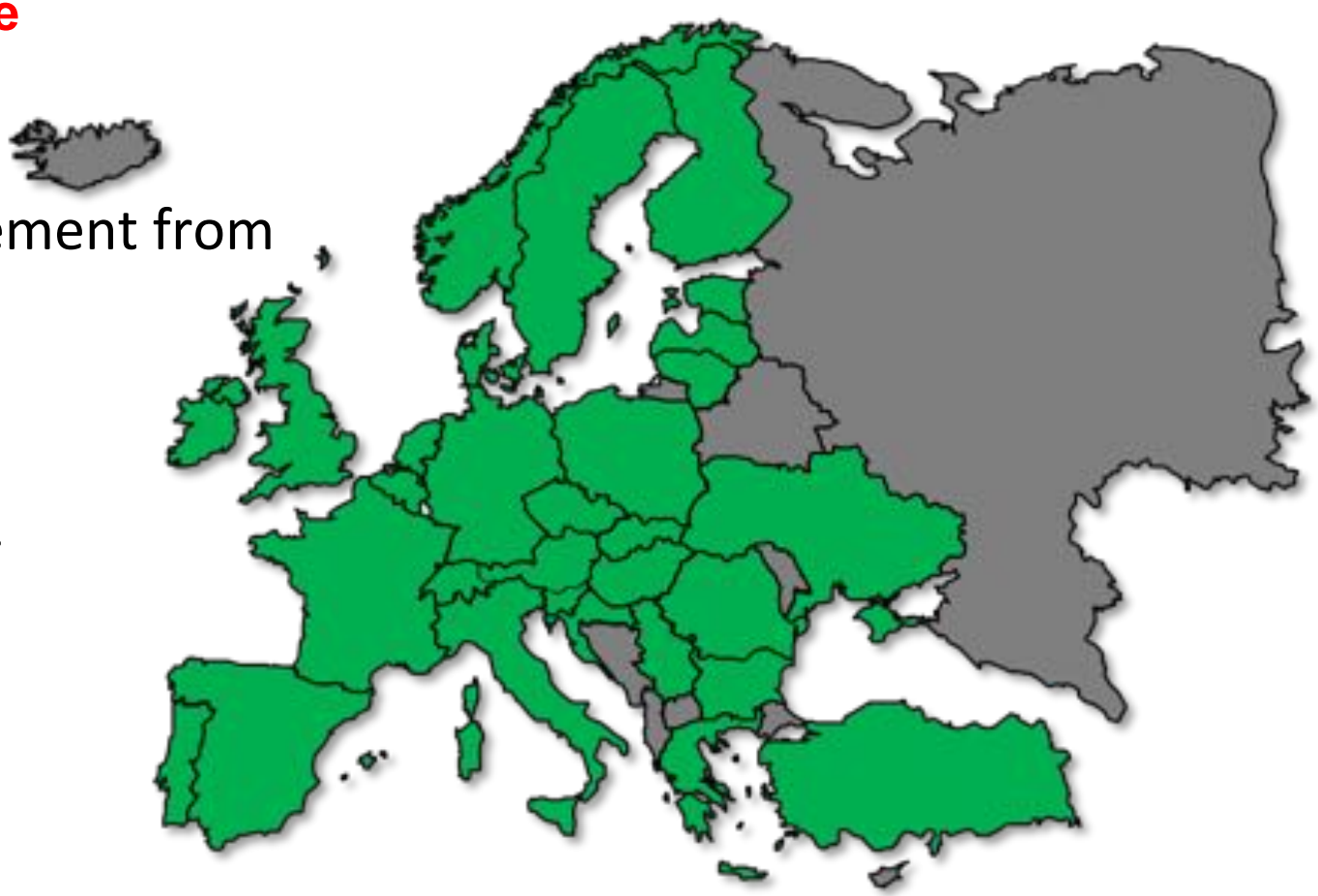
29 Countries to date



Want more involvement from

- US/Canada
- S America
- Asia
- Australia/NZ
- N Africa
- Mid-east

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How is FP1303 different from other Actions?

Previous Actions

- Focus on decay prevention
- Material focus
- Wood only

This Action

- Wider material range
- Materials in use
- Stakeholder driven
- Material acceptance
- Consumer preference

As well as INCREASING KNOWLEDGE this Action will raise the awareness across a wider scientific community and associated industries of the potential of using wood and plant fibre products where performance and service life are critical parameters.

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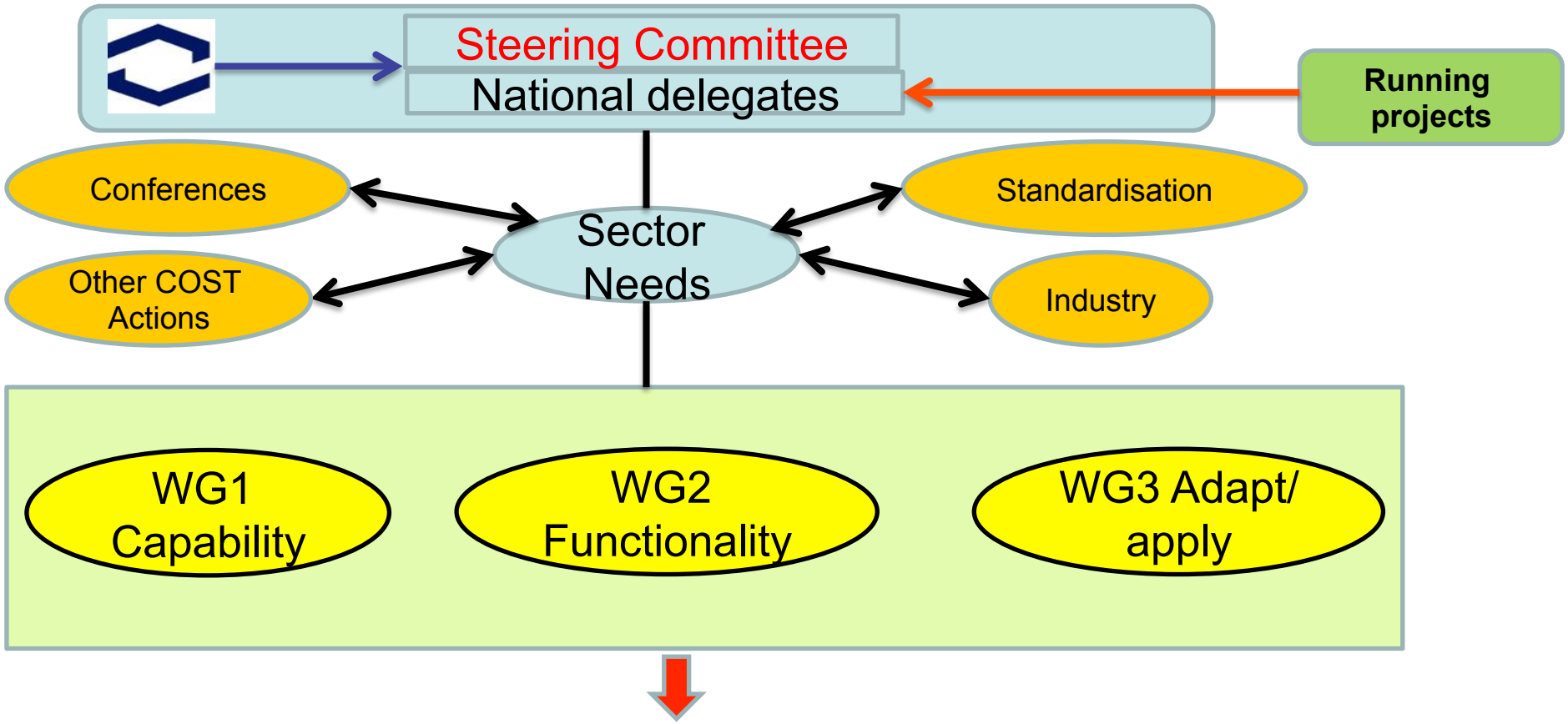
Structure of FP1303



BETTER PRODUCTS and BETTER BUILDINGS

cost
EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

COST FP1004 – Enhance mechanical properties of timber, engineered wood products and timber structures

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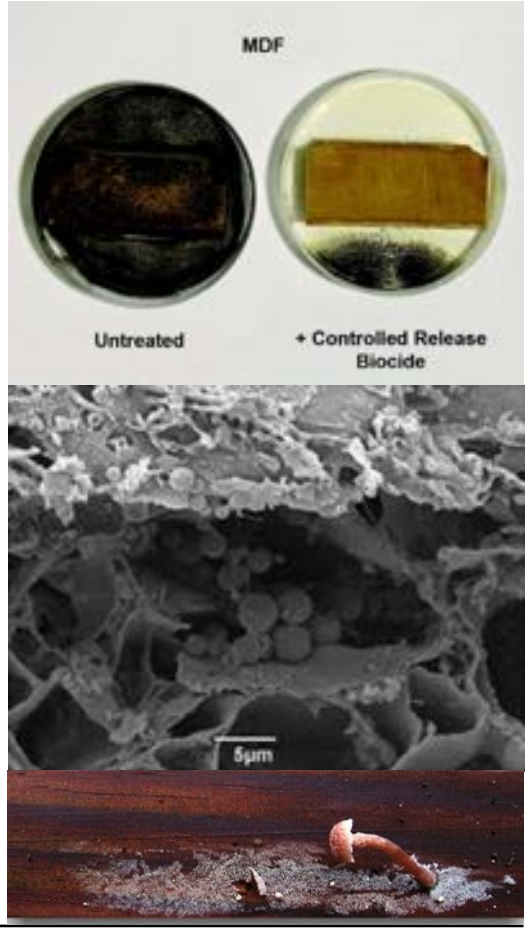
Performance of bio-based building materials

Working Group 1 - Material capability and enhancement

- WG Leader Lina Nunes (PT)
- Dep Leader Stig Bardage (SE)

- Main topic: achieving a better fundamental understanding of substrate decay organism interactions.
- Methods: Aspects of rot, staining and fungi; Factors related to degradation; Understanding role of gene expression; Protection and remediation programmes
- Deliverables: Better understanding of onset of decay, its prevention/remediation. Differences in materials, climatic conditions.



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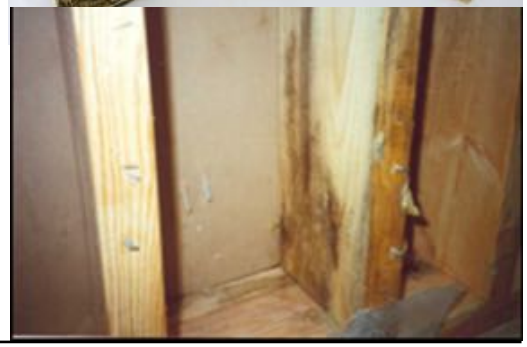
Working Group 2 - Functionality and performance

- WG Leader Sabrina Palanti (IT)
- Dep Leader Miha Humar (SI)

- Topics: whether a material is fit for purpose, service life performance, specific effects
- Methods: Identifying aspects of building physics; Increasing understanding of fibres and moisture; Assessing and developing service life models; Modelling performance; Considering link between models and building performance.
- Deliverables: Better understanding of how materials perform; Analysis methods; Linking chemistry, biology and physics



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Working Group 3 - Adaptation and application

- WG Leader Andreja Kutnar (SI)
- Dep Leader Ed Suttie (UK)

- Topics: Linking preferences of end users with those of manufacturers (stake-holders), issues related to volatile releases
- Methods: Life cycle methods; EPD and CE certification; Environmental effects; Converting results into literature; Marketing
- Deliverables: How to promote the benefits of bio-based materials; Greater environmental awareness; Common agreement on performance for stake-holders; Better advice for supplier and end-users

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Performance of bio-based building materials

Specific outcomes

- Establish and maintain a data-base of performances of natural building materials
- Provide guidance on material use and maintenance
- Generate and make available online reports and documents for advancing education and codes/standards
- Bring together knowledge of previous and ongoing COST Actions
- Focussed outputs aimed towards codes and standards
- Create focus groups for material combinations / performance in service
- Develop a pan-European approach to how natural building materials are used

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Performance of bio-based building materials

FP1303 Scientific Committee

- Chair: Dennis Jones (SE)
- Vice Chair: Christian Brischke (DE)
- Grant Holder: SP (SE)
- WG1 leader: Lina Nunes (PT)
- WG1 deputy leader: Stig Bardage (SE)
- WG2 leader: Sabrina Palatini (IT)
- WG2 deputy leader: Miha Humar (SI)
- WG3 leader: Andreja Kutnar (SI)
- WG3 deputy leader: Ed Suttie (UK)
- STSM officer: Carmen-Mihaela Popescu (RO)

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Performance of bio-based building materials

Action Brochure

- Available through the web site
- http://www.costfp1303.com

Information from meetings available on web site

- Presentations
- Training Schools
- STSMs
- Upcoming events


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www.cost.eu/fps

COST Action no. FP1303

Performance of bio-based building materials

22 October 2013 | 21 October 2017

Background

The development of building materials incorporating bio-based materials is also an area of rapid development. As well as solid timber, wood fibres and other materials, such as bamboo, miscanthus, phragmites, and other gramineae are now being used for structural purposes as well as for roofing and cladding. However, whenever and wherever organic material is exposed to favourable moisture and temperature conditions as well as to degrading organisms its functional and aesthetic service life might get negatively affected.

There is a need to establish better links between research and industry in understanding the issues affecting the performance of bio-based materials in construction, and what factors can help address avoiding issues around moisture entrapment in modern buildings. This COST action will provide the platform demanded by industry, academia and end-users for scientific exchange and collaboration and help identify where key activities need to be undertaken in future collaborative programmes between participants.

Working Group 1: Material capability and enhancement

- Achieving a better fundamental understanding of substrate decay organism interactions
- Aspects of rot, staining and fungi
- Factors related to degradation
- Understanding role of gene expression
- Protection and remediation programmes

Working Group 2: Functionality and performance

- Identifying aspects of building physics
- Increasing understanding of solid materials / fibres and moisture
- Assessing and developing service life models
- Modelling performance of materials
- Coexistence link between models and building performance

Working Group 3: Adaptation and application

- Linking preferences of end users with those of manufacturers
- Life cycle methods, EPD and CE certification
- How to promote the benefits of bio-based materials
- Greater environmental awareness
- Common agreement on performance for stake-holders
- Better advice for supplier and end-users

Forests, their Products and Services (FPS)

Participating countries to date

BE, BU, CH, DE, DK, EE, ES, FI, FR, GR, IE, LV, NL, NO, PL, PT, RO, SI, SE, TR, UK

Contact details

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