“Barriers to the Enhanced Use of Wood”

By: Vahik Enjily & Julie Bregulla

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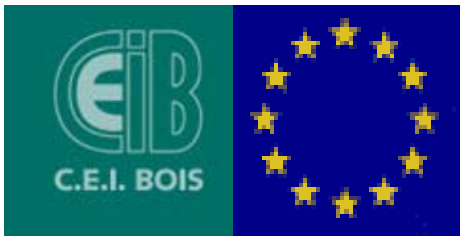

Executive Summary

This work was devised and designed by the EU **E**nhanced **U**se of **W**ood **W**orking **G**roup (EUW WG) and carried out by the Building Research Establishment (BRE) as a part of the "Roadmap 2010" programme of the European Confederation of Woodworking Industries, CEI-Bois. The overall aim of Roadmap 2010 is to produce an up-dated analysis on key factors and challenges affecting the wood industry, to identify the opportunities available and ideal market positions, and to produce an action programme for the European woodworking industries as we move towards 2010.

Following development of the terms of reference of this project by the EUW WG during the first half of this year, BRE was invited by CEI-Bois to submit a proposal concerned with 'Barriers to the enhanced use of wood in Europe: particular attention to the regulatory barriers to building with wood'. The "Enhanced Use of Wood Working Group (EUW WG)" is an ad hoc body, established in 2001 under the auspices of the Advisory Committee on Forestry and the Forest-based Industries. The Committee, the EUW WG and other working groups are managed by DG Enterprise of the European Commission. The EUW WG has also acted as steering group for this work and provided technical and administrative input to the project.

This work, as part of the global project 'Roadmap 2010', aims to facilitate the increased use of wood and wood-based products in general, but particularly in construction. It identifies barriers to the use of wood in Europe, not only for generic wood-framed building types, but also for innovative wood-based construction products that may form the future of the wood construction industry. In the scope of this work a "barrier" was defined as being a regulation or requirement which prohibits the use of wood and wood-based products in a certain application. In contrast to this "limitations" were defined to being regulations or other requirements which allowed wood to be used but imposed certain conditions to its use.

A survey template was designed to identify the regulatory barriers to building with wood throughout Europe. This questionnaire was sent to national correspondents in 24 European countries and mainly concentrated on the use of wood and wood-based products in residential construction (i.e. single-family housing but also multi-occupancy dwellings). It covered walls, floors, roofs and general questions about the external use of wood, thermal and sound insulation, wood treatments, disproportionate collapse, certified wood requirements and novel engineered wood products. It also briefly covered other barriers to the enhanced use of wood, categorised into institutional, technical, economic and perceptional issues.

The project has concluded that at the moment there are no regulatory barriers to the use of wood or wood-based products in the construction of residential buildings. This is mainly due to that fact that governments, through their regulations, cannot be prejudiced towards any particular material. Despite this there are many limitations to the use of wood and wood-based products, which could act as barriers if not addressed in the future. Therefore the industry must not be complacent about this issue and should take active steps in the development and inception of regulations and requirements. Especially the European harmonisation process sets new

challenges and here the industry should monitor and also actively participate and influence on the decision making process.

As regulatory requirements are functional and not prescriptive, in almost all European countries, any material can be employed as long as the functional requirements can be met. However, there are many limitations to the use of wood and wood-based products, which need to be addressed and ultimately eliminated. Many of these barriers have been identified and reported in Section 4. One of the main regulatory limitations to the enhanced use of wood-based products in residential construction relate to the fire resistance and sound insulation specifications, specifically when materials / building elements are used in multi-storey and/or multi-occupancy residential construction. For single-family dwelling construction there are no substantial limitations to the use of wood and wood-based products. Other barriers, categorised into institutional, technical and economic barriers, are also ranked according to their importance and listed in section 4 of this report. Perceptional barriers are being dealt with by other consultants of the Roadmap 2010 and are not discussed in this report.

From the findings, conclusions are drawn and recommendations made (Section 4.0) to expedite the process of the main objectives of Roadmap 2010. The outcome of the study is condensed to an action plan, along with a recommendation to develop a much larger research proposal for submission under the 6th European Research Framework Programme. If executed, such a project would help to eliminate the barriers and limitations to the use of wood and wood-based products in construction.

Together with the woodworking industries and national authorities, the European Commission should act as a catalyst for change in the conditions affecting the use of wood by contributing to:

- raising the awareness of national authorities to the unnecessary differences between their various regulations,
- the encouragement of equality in the requirements underlying legislation and hence adopting better harmonised regulations.

Furthermore, the woodworking industry, supported by national and EU institutions, should inform the “value chain”, i.e. users, manufacturers etc.:

- about wood as a construction material,
- provide and distribute solutions to technical problems presently perceived to be associated with the use of wood in certain applications. Special attention should be given to facilitating the exchange and dissemination of information between different European countries. (In some countries wood-based products are used more extensively and information about the optimised use of wood is well established, this know-how must be communicated to countries with less experience).

General Conclusions

- Overall, there are NO direct regulatory barriers to the use of wood and wood-based products in residential construction throughout Europe. However, there are many limitations which could act as barriers if not addressed in the future.
- Regulatory requirements are functional and may be considered equal for all materials. However, in practice the severity (nature, concept) of the requirements for wood might work as a barrier to free competition between materials if the requirements are set unrealistically high for wood and wood-based solutions. This may cause limitations to wood and wood-based products being used in certain applications for residential construction.
- The main regulatory limitations are perceived to be fire and acoustic performance, particularly in multi-storey/ occupancy dwellings.
- Regulatory authorities and others, including industry may not always be fully aware of the influences their regulations have on the use of different materials.
- Responses show that there are regional differences in building regulations (e.g. in Belgium: Walloon and Flemish part, others)
- There is also uncertainty and a lack of in-depth knowledge of building regulations relevant to the use of wood in construction.
- The differences between sets of regulations act as barriers to common practice across Europe. For instance technical solutions developed for one country cannot be utilised in another country. These differences also weaken the competitiveness of wood products. Due to these national variations in regulations, wood products cannot be produced in the most efficient way. Cooperation is needed to overcome these differences.
- Europe is becoming familiar with Eurocodes but their use in every day design is still very limited.
- Generally there is not enough guidance on wooden structures (design guidance for wood-frame housing was commented to be adequate, whilst non-housing design advice was very limited).
- Professionals rely on the available explanatory documents to guide them on regulatory issues. However, these documents do not always give a full understanding of the underlying general requirements. For example, if a regulation stipulates “Fire should not spread at a rate higher than x”, professionals’ perception could be that “Timber surfaces are prohibited because they spread fire”.
- Wood and wood-based products have not been the traditional material for some applications and this can affect the perception of their suitability.

Specific conclusions

- At present, in the majority of European countries wood from sustainably managed sources is not required when building for private clients. However, there is a tendency in some countries for public projects to specify such material [see section 3.12].
- Wood and wood-based products are used throughout Europe for joinery and outdoor structures without substantial regulatory limitations.
- External use of wood and wood-based products is mainly limited by the height of the building and the distance between adjacent buildings related to the requirements of external spread of fire.

- In the majority of European countries disproportionate [progressive] collapse is considered in design in relation to the number of storeys. In this context the maximum number of storeys permitted varies between countries.
- There are no regulatory barriers to the use of engineered wood products, such as LVL, Parallam, metal-web beams, I beams and Glulam. However, costly and time-consuming certification procedures for technical performance are seen as a barrier to the use of such products due to a general lack of codes and standards for these products.

Other barriers

- **Institutional**
  The institutional barriers are listed below in decreasing order of importance:
  - Education, training and skills
  - Safety
  - Networking within and between the woodworking and construction industries
  - Voluntary industrial standards
  - Planning
  - LCA (Life cycle assessment) issues
  - Sustainability issues

- **Technical**
  The technical barriers are listed below in decreasing order of importance:
  - Durability
  - Shortage of professionals and their knowledge
  - Technical back-up
  - Approvals
  - Lack of interaction with other materials
  - Construction process
  - Availability

- **Economic**
  The economic barriers are listed below in decreasing order of importance:
  - Costing and pricing
  - Risks
  - Investment by all sectors
  - Insurance policies
  - Lack of common methodology (e.g. in manufacturing)
  - Taxes
  - Supply chain

- **Perception**
  The perceptional barriers are not covered by this project and are dealt with by other consultants of the Roadmap 2010 programme.

General Recommendations

Eliminate the "limitations" to the enhanced use of wood and wood-based products!

- Define the clear objective for regulatory work. It is recommended here that the regulatory objective of the European woodworking industry for the year 2010 be that the competitiveness of wood in construction should be supported by harmonised standards and regulations in Europe:
  - to achieve this the key challenges are
    - to ensure the harmonisation process proceed well on EU level and that the competitiveness of wood be well considered in the process (i.e. safeguard that harmonisation does not adversely affect the use of timber);
    - the results of the harmonisation process are adopted.
    - national requirements be harmonised as much as it is reasonably possible;
    - that information and design tools be provided effectively to facilitate using the new codes;
    - provide information on how to adapt and modify wood and wood-based products to meet the requirements.
- The woodworking industry is relatively fragmented in comparison to competing industries. To enhance use of wood, the woodworking industry must co-ordinate its efforts and must collaborate and be more unified in order to achieve similar success to that of its wood competitors.
- Collaboration is needed on and between all sectors and levels, especially between industry, authorities, research institutes, construction experts and their networks. These networks are required nationally as well as at European level to maximise the interchange of experience and knowledge. This would create the critical mass and continuity to effectively influence regulatory development and improve the competitiveness of the sector.
- Taking into account the environmental, social and economic policy drivers, industry should be "active" in stimulating, influencing and generating policies rather than merely being "reactive" to policy drivers and imposed solutions.
- Industry should be receptive and responsive to the demand for wood from sustainably managed sources.
- Industry should identify financial, human and institutional resources to achieve the above objectives by implementing the action plan below.

Action Plan

1. Analyse the state-of-the-art of regulatory processes, including an evaluation of whether wood is considered to be on a level footing in comparison with other materials. Specifically, study Eurocodes in more detail to establish how easily wood is able to meet the design requirements. Communicate this information to industry.
2. Establish and nurture industry networks in conjunction with the European Commission and national authorities (see table 2) for:
   - Co-ordination of authorities and construction experts at national level,

- Co-ordination of authorities and construction experts at European level,
- Co-ordination of authorities and construction experts between both national and European levels,
- Adopting harmonised regulations,
- Co-ordination of R&D, such as fire, acoustics, environment, durability and so on.

3. As a precursor to this work (generating policies…) authorities and other relevant parties and target groups should be informed about the possibilities to enhance the use of wood. The different authorities at all levels should be invited to discuss the enhanced use of wood.
4. Provide relevant industrial and non-industrial codes and standards if not already available.
5. Promote a change in perceptions and attitudes of all relevant groups, through campaigns and proof of suitability of wood and wood-based products and their performance in defined applications.
6. Educate and train professionals and other groups.
7. Provide technical back-up, guidance documents, proofs and robust guidance on how wood structures and wood-based products can comply with functional requirements throughout Europe.
8. Create harmonised standards for engineered wood products. These standards need to be finalised and put to use quickly to ensure the smooth introduction of innovative wood products into the construction chain.
9. Promote and use the "deemed-to-satisfy" approach whenever in doubt (i.e. "technical approval" route), until adequate codes and standards are produced.
10. Provide information about how fire and sound insulation requirements can be met when using wood-based products.
11. Non-housing applications of wood and wood-based products need a lot of further research, guidance, back-up documents, etc.
12. Suggest and develop proposals for submission under the European Research Framework Programme to eliminate the barriers and limitations to the use of wood and wood-based products in construction. The participation should be across the wood and construction industries and together with other sectors (see also table 2).

The stakeholder groups responsible for these actions to be implemented have been listed in the "Action Plan" in table 2 on the following page.

	Competence, knowledge and training	R&D	Lobbying	Promotion
Industry, Research and Development bodies	***1, 2, 3, 6 and 7***	***5, 6, 7, 8, 9, 10, 11 and 12***	***5, 7, 8, 9, 10 and 11***	***5 and 7***
National and European associations	***1, 2, 3, 6 and 7***	***4, 6, 7, 8, 9, 10, 11 and 12***	***5, 7, 8, 9, 10 and 11***	***5 and 7***
National & Local EU authorities	***1 and 2***	***8, 9, and 11***	***8, 9 and 11***	

Table 2: Action plan