

APPG for EBE Inquiry into Sustainable Construction and the Green Deal – Call for Evidence.

Submission from (Professor) Tom Woolley & the Alliance for Sustainable Building Products

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This evidence focuses on the importance of low impact building methods and low impact building materials and products.

Summary

Progress on sustainable construction has been obstructed and distorted by too greater focus on energy generation and building services. While renewable energy and efficient building services are important, this has distracted attention from the importance of “Fabric First” and embodied energy. Insufficient attention has been paid to the importance of embodied energy and the potential contribution from environmentally friendly low impact natural, renewable and recycled materials. These materials include timber, wood fibre, hemp, straw, sheep’s wool and many more.

Embodied Energy

Embodied Energy is important because considerable energy and fossil fuel resources are consumed to create building materials and products. Significant CO2 emissions result from this. So great are the emissions in the production of synthetic, petrochemical and cement based building materials and the energy used to construct buildings, that this embodied energy can be as much or even more than the energy used in the life of a building (operational energy). This is known as the Carbon Spike problem.

Narrow focus on building services and operational energy

A narrow focus on operational energy has led to approaches to the building regulations, the Code for Sustainable Homes, BREEAM and so on, which place far too much emphasis on building services and not enough on fabric. Forms of construction that are increasingly air tight, using synthetic and petrochemical materials may lead to health problems, poor indoor air quality, interstitial condensation and overheating. Anecdotal evidence is already emerging about these problems but also these new high tech forms of construction have been show to be ineffective from an energy efficiency point of view.

An alternative Approach

An alternative approach involves a completely different approach to building construction using natural, low impact, low embodied energy materials and building methods, can lead to healthier indoor environments and better energy performance, with lower embodied energy. Members of the committee may be sceptical about this claim; such is the power of propaganda from the current mainstream approach. but it is vital that the committee at least gives some consideration to the alternative.

Renewable Materials

The Strategy for Sustainable Construction published by Government in June 2008, included references to developing the use of renewable materials and this led to the DECC/HCA funded Renewable House Programme. This programme was set up in a rather unsatisfactory manner but despite that has led to 11 extremely interesting demonstration social housing projects throughout the UK that have successfully used renewable materials. This programme has been documented in the book Low Impact Building. (See below)

Supply Chain for Natural and Renewable Materials

There is considerable prejudice against natural and renewable materials such as sheep's wool, hemp and wood fibre insulation, hempcrete and various innovative forms of timber construction. There are also a number of ecological recycled materials available. These materials and products represent only a tiny sector of the market and yet there is growing uptake and acceptance, despite the recession.

Despite the success and supply chain availability of such materials, there remains a great deal of prejudice against natural materials in mainstream construction. It is assumed that such materials are more costly and not as durable or available. However renewable materials are now widely available, price competitive and widely used. Mainstream organisations such as Marks and Spencer's have adopted materials like hempcrete in their Plan 'A.' UK based companies are now producing natural low embodied energy materials using local resources and creating jobs. Such materials are also being exported. The Alliance for Sustainable Building Products (ASBP) was launched in Parliament in November 2011 and has become an important body helping to convince specifiers of the merits of sustainable and low impact materials and products.

The market is still dominated by imported materials from Germany, Austria, Switzerland and France, however, whereas such products could easily be made in the UK if there was more support from UK Government for this sector. This would have significant economic benefits and create jobs, using local resources and assisting the farming industry through the use of crop based materials.

We would like an opportunity to make a presentation to the committee on the benefits of such materials and to explain the work of the ASBP and how it relates to changing EU rules (Construction product regulations and Natureplus certification). The benefits can be seen in terms of:

- Performance
- Durability
- Breathability
- Hygroscopicity
- Thermal Mass
- Life cycle and recycling

- Health and Indoor Air Quality
- Low embodied energy
- Energy Efficiency
- Use in renovation and retrofitting

Natural and Renewable Materials have a big part to play in the retrofitting of buildings under the **Green Deal** and other schemes. Often these materials can perform better and fit more sympathetically with older building fabric. Many synthetic and petrochemical based products do not work well in these situations.

The case for natural and renewable materials is set out in Tom Woolley's book *Low Impact Building* that will be available from February 2013. (See contents in box below) The book also contains strong criticisms of past Government policies on energy efficiency and problems associated with building physics and science and standards. Copies of the book can be made available to the committee.

 LOW IMPACT BUILDING: HOUSING USING RENEWABLE MATERIALS TO BE PUBLISHED BY WILEY BLACKWELL IN FEBRUARY 2013, by Tom Woolley. Details of the contents of this book set out below.

Acknowledgements x
 Figure credits xi
 Introduction xii
 The Renewable House Programme xiv
 The expansion of natural building xiv
 The wider environmental agenda xv
 Chapter overview xvii

1 Renewable and non-renewable materials 1

Synthetic, manmade materials 2
 Limitations of synthetic materials 3
 Questioning claims about recycling 4
 Resource consumption problem with synthetic materials 7
 Renewable materials – insulation 9
 Carbon sequestration and embodied energy 10
 Performance and Durability of natural materials 11
 Natural renewable materials commercially available 11
 Low impact materials 22

2 Case Studies: twelve projects in the Renewable House Programme 26

Abertridwr Y Llaethdy South Wales 29
 Drumalla House, Carnlough, County Antrim 35
 Blackditch, Stanton Harcourt, Oxfordshire 40
 Callowlands, Watford 44
 Domary Court, York 49
 Inverness 55
 Long Meadow, Denmark Lane, Diss 59
 LILAC, Leeds 64
 Tomorrow ' s Garden City, Letchworth 68
 Reed Street, South Shields 76
 The Triangle, Swindon 80
 Pittenweem 88

3 The Renewable House Programme: a strange procurement! 94

Monitoring and evaluation 103

4 Analysis of issues arising from the case studies 107

Success in using natural renewable materials 107

Adapting conventional timber frame construction for using natural materials 109

The importance of getting details right and using details appropriate for eco materials 110

Problems with designs and the need to get warranty approvals for changes of details 111

Weather issues and hempcrete 112

Decision of Lime Technology to go for prefabrication in future and whether this is the best option 114

Using wood fibre products and issues related to construction and components 115

5 Attitudes to renewable materials, energy issues and the policy context 118

Why attitudes and policies affect the use of renewable materials 118

Climate change and energy efficiency targets 118

What is carbon? 119

Sustainable construction and energy policies 120

UK Code for Sustainable Homes 121

New planning policy framework 123

The zero carbon myth 123

The carbon spike concept 125

Energy in use or 'operational energy' is all that matters to many 126

How embodied energy was discounted 128

Carbon footprinting 132

Passive design approaches 133

Do natural and renewable materials have lower embodied energy? 133

Carbon sequestration in timber 136

Wood transport issues 137

Carbon sequestration in hemp and hempcrete 138

The Green Deal 139

Official promotion of synthetic insulations 140

Other attitudes hostile to natural materials – the food crops argument 142

Transport and localism 143

Cost 144

6 Building physics, natural materials and policy issues 148

Holistic design 149

European standards, trade and professional organisations 151

Building physics – lack of good research and education 154

Lack of data and good research on sustainable buildings 155

Energy simulation and calculation tools 157

Assessment of material's environmental impact and performance 160

Moisture and breathability and thermal mass 164

Breathability 168

Thermal mass and energy performance in buildings 170

Building physics research into hempcrete 174

Indoor air quality 178

7 Other solutions for low energy housing 187

Hemp lime houses 187

Hemp houses in Ireland 189

Local sheep 's wool in Scotland 192

Strawbale houses in West Grove, Martin, North Kesteven, Lincolnshire 192

Timber experiments 194

Scottish Housing Expo 197
Using local materials? 197
Greenwash projects? 199
So-called 'carbon neutral' developments 202
Earth sheltered building 203
BRE Innovation Park 204
Masonry construction for low energy houses 205
Blaming the occupants 209
Back to the 60s and 70s – déjà vu 210

8 A future for renewable materials? 214

Middlemen 216
Postscript 217
References 219

We would urge the committee to consider the following

1. Giving recognition to the importance and value of renewable and natural materials in construction
2. Encourage bodies such as the EPSRC, TSB, Carbon Trust and EST to support more research into the use of natural and renewable materials in both new build and retrofitting
3. Encourage bodies such as the Zero Carbon Hub and other construction industry bodies to pay greater attention to natural and renewable materials

We would ask that the committee allows us to give oral evidence and to also bring along examples of natural and renewable materials, as members of the committee may not be familiar with such products

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Tom Woolley B.Arch, PhD is an architect and environmental researcher living in County Down Northern Ireland. He was Professor of Architecture at Queens University Belfast from 1991 to 2007 but now works as a freelance educator and environmental consultant for Rachel Bevan Architects and is currently a Visiting Professor at the University of Central Lancashire. He has been Visiting Professor of Architecture at the Centre for Alternative Technology Graduate School of the Environment in Wales, and also Professor of Sustainable Rural Architecture at the Countryside and Communities Research Institute, University of Gloucestershire.

He is well known for his work on low cost housing, housing co-operatives, community participation and ecological architecture. He is a member of the Ministerial Advisory Group for Architecture (Northern Ireland) and has been chair of the Northern Ireland Building Regulations Advisory Committee. He is Chair of the Northern Ireland Co-operative Party. He is on the Board of the NI Chartered Institute of Housing and the European Board of Natureplus.

His principle research work has been on sustainable and renewable bio-based construction materials including strawbale and hemp lime construction. Research projects have been funded under EU programmes, the Technology Strategy Board, Energy Saving Trust, the Irish EPA and Carbon Trust. He is currently working on a project funded under the Creative Industries Innovation Fund.

Tom Woolley has published widely on sustainable construction. He was editor of the *Green Building Handbook* and author of *Natural Building* (Crowood Press) and *Hemp and Lime Construction* (BRE/IHS Press). He is one of the founder members of the Alliance for Sustainable Building Products, UK, EASCA and the Living Building Institute in Ireland.

