



# **Renewable Feedstock for Sustainable Materials**

## **- BIOPRODUCTS -**

### **Their Importance to Wales: A Scoping Study**

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## **EXECUTIVE SUMMARY**

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## EXECUTIVE SUMMARY

### Introduction:

Renewable biomass feedstock forms the basis of many successful industries. The pulp & paper and wood products industries are admirable examples of enterprises that use renewable feedstock extremely effectively and profitably. As a means of supporting long-term sustainable technological growth, the development of industries, based substantially upon a renewable feedstock and that are independent of fossil reserves, are of paramount importance.

Annual industrial crops, grown for fibre, oils or other materials could provide the necessary feedstock to supply a number of industries. Whilst there has been some limited commercialisation of processes based upon these 'renewables', many other industries could begin to utilise this raw material to manufacture their products in a more sustainable fashion; to manufacture so called 'bioproducts'.

This present study was envisioned to provide the necessary platform upon which to develop an effective strategy to support the emerging bioproducts industry in Wales. Background research for the study consisted not only of an appraisal of the status of bioproducts world-wide and the drivers and barriers dictating commercial growth, but also an extensive survey of industry and recognised experts in the field. The survey consisted of both personal interviews and a questionnaire sent by mail. Through this, the authors believe that a 'rounded' assessment of the current state of play of the bioproducts industries within the UK, and especially within Wales, has been achieved. The findings of the study have been developed into a series of recommendations and proposals, comprising a strategy for the further development of the bioproducts industry in Wales.

At the outset 5 major industrial sectors were identified – composites, construction, pharmaceuticals, resins, plastics & coatings and chemicals. There has, inevitably, been a degree of crossover between sectors (for instance composites are frequently used in the construction industry) and bioproducts appear in sectors other than those noted above.

### Key Findings:

A number of general findings arose from the survey:

- There is a steadily developing world-wide bioproducts market driven on by a number of factors. In Europe, it is recognised that, amongst other benefits, the use of industrial crops can help in the reduction of greenhouse gas emissions [1]. This is set against a backdrop of increasingly stringent legislation on waste disposal and increasing awareness, at a corporate level of sustainable development. This has already led to the commercialisation of a number of "eco-products", such as thermal insulation materials based on natural fibres and composite products that incorporate such fibres.
- A high general level of awareness and a positive attitude towards sustainable development was recorded, with over half of the respondents

to the mail survey indicating that sustainable development was currently part of their business plan.

- 60% of companies polled considered their current raw materials and processes to be sustainable; the main reason being recyclability. However, only 18% currently use a bio-derived raw material.

A number of drivers and opportunities for, as well as barriers to, the development of sustainable industries based upon renewable resources were also identified. Amongst these were:

- Environmental issues and the desire to produce a greener product are the main reasons why companies are using, or are considering using, renewable materials.
- Current and proposed legislation is seen as the major factor in the move towards the widespread introduction of products from renewable resources.
- There is, however, only a small demand from customers for such products and the majority of industry has experienced no significant increase in this demand.
- Encouragingly, 75% of businesses would like to increase their use of renewable materials.
- In the bid to reduce CO<sub>2</sub> emissions, all industry sectors understood that guidelines and grants are becoming more widely available, but it was perceived that these programmes are not geared toward developing alternative sustainable feedstock.
- Cheaper materials, tax refunds and grants were seen as the key incentives to promote these technologies.
- The lack of a developed supply chain was seen as a barrier to the widespread development of products and processes based on renewables.
- There is a perception that the cost of these materials would prohibit development.
- A lack of adequate (and in many cases any) technical information is a barrier.
- The perception of renewable materials as being somehow inferior to synthetic alternatives is a potential hindrance.
- The introduction of appropriate standards may well assist in changing this perception.
- The cost of raw material or product certification is seen as a barrier.
- Development should be integrated. It is essential that if an industry based upon renewable feedstock (industrial crops) is to be developed then the cost structure must be adequately addressed. It is pointless to consider developing a supply chain if, financially, it is not viable for any part of that chain, as ultimately this could not be sustained.

## Recommendations:

To promote the development of an industry utilising renewable resources to manufacture materials and products in a more sustainable fashion, a number of measures are proposed. These measures, which fall broadly into three main categories, MUST be adopted in an integrated fashion in order to form an holistic strategy, for progress in this sector to occur. These are:

- Market development and stimulation of consumer demand for “eco-products”.
- Development of the supply chain.
- Product research and development.

Within each of these sectors a number of specific recommendations are proposed.

### Market development

- It is vital that public awareness be raised and adverse perceptions challenged. The current lack of knowledge or demand by the general public for sustainable products has made the transfer to bio-derived materials too risky for the majority of businesses.
- Coupled with the need to raise the profile of products manufactured in a more sustainable fashion, is the need to inform and educate designers and specifiers of the benefits of these materials. Furthermore, there is a need to provide reliable and unbiased technical information on raw materials and products from renewable resources. In conjunction with this, standards will need to be implemented to ensure confidence in their use.
- Chemicals and composites have been identified as the main areas to focus attention in the short term.
- With regard to the composite sector (with some crossover into the construction industry) there is a need for demonstrator products and industry friendly data to promote awareness. Further work would also be required to create new supply chains and assist with technical problem solving.

### Supply chain development

- Industry lacks confidence in the supply and logistics associated with renewable materials. Assurances on the continuity of supply, quality and price are necessary and the development of a ‘Trade Association’ was suggested as the best way to provide this information. In the first instance, such a service need to be implemented and subsequently developed by specialists, such as seed merchants, processors, waste handling companies etc. The service must be available to a number of companies but with no conflicts in commercial interest. This is also an opportunity for joint marketing approaches for a cluster of companies who employ renewable materials in their processes.

## Research and development

- Wales is well placed within the UK to exploit this emerging technology through strong links with agriculture, access to R&D capabilities and a wide portfolio of funding sources. At the present time there a number of funding opportunities available to Welsh industry and academia in support of R&D.
- A means of 'fast tracking' grant applications made to Welsh sponsors that can demonstrate potential for step changes in improvements to sustainability should be implemented. This might be through some form of 'tick box' on the grant application forms.
- The chemical industry has responded very positively to the issues of sustainability and is actively looking for replacements to the many petrochemical feedstock currently used. Research into selection and/or adoption of potential renewable feedstock will, if successful, unlock large receptive markets

### **Specific actions:**

A number of specific actions are proposed to stimulate development in the sector. These include:

- ⇒ Publish and disseminate the report and its findings.
- ⇒ Appoint, within the Agency, a 'Champion' for the development of an industry based upon renewable feedstock for sustainable materials within Wales.
- ⇒ Organise a workshop to bring together all stakeholders.
- ⇒ Establish a funded 'hub' within Wales to co-ordinate activities in the sector.
- ⇒ Establish a 'fast tracking' system for grant applications pertaining to sustainable materials from renewable feedstock, to Wales specific sponsors.