

BioMara

Sustainable Fuels from Marine Biomass
An INTERREG IVa Project

INTRODUCING THE BIOMARA PROJECT *including the* **Belfast Stakeholder Workshop Summary**

The Sustainable Fuels for Marine Biomass (Biomara) project is a UK/Irish research Project co-ordinated by the Scottish Association for Marine Science (SAMS) to demonstrate the feasibility and viability of producing third generation biofuels from marine biomass.

Researchers from six different institutions across the UK and Ireland are investigating the potential use of both micro and macro-algae as alternatives to terrestrial agri-fuel production. The practicalities of using algal biomass as a competitive, sustainable biofuel source are considered in concert with wide stakeholder engagement, whilst environmental impacts of algal cultivation and extraction are also a core element of the research.

The €6 million project is funded by the INTERREG IVA Programme. Match funding is provided for the Scottish Partners by the Crown Estate and Highlands and Islands Enterprise, in Northern Ireland by the Department for Energy, Trade and Industry and in the Republic of Ireland by the Department of Communications, Energy and Natural Resources.

Within the Biomara project the practicalities of using algal biomass as a competitive sustainable biofuel source will be considered in concert with wide stakeholder engagement, whilst environmental impacts of algal cultivation and extraction will be core considerations of the project.

High rainfall and poor agricultural land in areas of Western Scotland, Northern Ireland and the Republic of Ireland severely limit cereal and oil seed cultivation, restricting the potential production of terrestrially derived biofuels.



Biomara aims to provide the region with a sustainable fuel source by providing locally produced, renewable and relatively cheap low-impact fuel that may help to support traditional ways of life.

Belfast Stakeholder Workshop. The Belfast Stakeholder Workshop was held at the Northern Ireland Science Park, Belfast. The meeting was split into two sessions; the first consisted of the official launch of the Biomara project in Northern Ireland and the second consisted of a series of presentations by Project Partners (listed below) followed by an interactive workshop discussion

Presentations given at the Belfast Stakeholder Workshop are listed below:

The Potential of Marine Algae as a Source of Biofuel in Ireland (Dr Michele Stanley, SAMS)

Overview of Local Project Partners Role in Biomara (Prof Neil Hewitt, UU)

Algal Biotechnology: Facts, Fiction and Future prospects (Dr John Day, SAMS)

Fuel from seaweed (Dr Michele Stanley, SAMS)

The presentations are available to download from www.biomara.org

Belfast Stakeholder Workshop Summary

Approximately 108 individuals were invited to attend the Stakeholder Workshop with 32 delegates arriving on the day. All participated in group discussions on the BioMara project and their expectations of it. Following formal presentations by representatives of DETI, DCNER and SEUPB, and technical presentations by Biomara Partners, many remained and participated in a Q&A session and discussion group. 16 completed enquiry forms in which they recorded their opinions. This is a summary of those opinions as expressed during the Q&A sessions, group and open discussions and on enquiry forms.

Please note that while every effort has been made to ensure all views have been captured accurately; they have been edited and synthesised for conciseness. They do not necessarily represent the views of BioMara, its partners or its sponsors.

Outcomes from the facilitated discussion session

Outcome 1: Areas of interest.

Unsurprisingly the areas of interest ranged from the general to the specific. Most participants were concerned with:

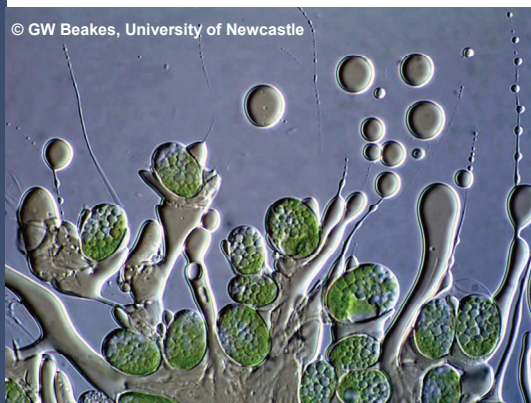
- Techno-economic evaluation and
- Environmental impacts and sustainability

Half of the participants were from the public sector and identified their key additional interests as:

- Socio-economic impacts
- Training opportunities
- Culture and harvesting issues
- Process optimisation.



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Businesses tended to focus their interests towards supply chain and end-user activities such as:

- AD technology and bioreactor design/development
- Process development and optimisation
- Seaweed harvesting, culture processing and extraction
- Biogas production
- Strain development, maintenance and optimisation

Outcome 2: Maintaining communications.

There was a clear positive reaction to this workshop, the technical presentations and a desire to be kept in touch with any developments. The preferred mode of communication was e-mail, but some participants emphasised the value of regular workshops and meetings. Quarterly bulletins or newsletters were the most popular frequency for up-dates. The idea of a web forum was proposed.

There was emphasis on technical/research outcomes and environmental issues being key areas on which stakeholders most wished to be kept abreast.

Outcome 3: Record of Open Discussion at Workshop Interactive Session.

Interests were broadly expressed in two main areas: Environmental issues and Economics.

Environmental Issues. Concerns were raised by stakeholders regarding the potential conservation issues that could arise from seaweed farming and harvesting. In France intensive harvesting practices had adversely affected the ecosystem and other seaweed species. The response from Biomara partners was that this was much more of an issue in the Far East where growth was taken to extremes with no consideration for the environment. Biomara will investigate the environmental impacts on animal and plant life of removing seaweed from an area. The Northern Ireland Environment Agency has already produced a harvesting guide.

Seaweed has the potential to reduce nutrient loading in the marine environment, which would be beneficial to coastal areas. SAMS will be working with mussel farmers based in the west coast of Scotland to investigate what effect the presence of seaweed may have on nutrient levels in the sea. As seaweed removes heavy metals from the marine environment these would become concentrated in the end-product digestate. This was a problem in Japan where large areas have become contaminated by mercury. Currently Swedish researchers are developing technology to remove metals from digestate.

There is also the potential for seaweed farms to off-set the effects of fish farms. This has been investigated previously by SAMS, but on a small scale. It would be interesting to develop this further on a larger scale but that area of research is outwith the remit of Biomara, which is more concerned with the processes involved, how and what can be extracted from seaweed.

Economics. Biofuel is relatively low value product with more lucrative developments involving seaweed based pharmaceutical products, (some seaweed products fetch £1,000 per gram from the pharmaceutical industry). It is important to get the right balance between the needs of the pharmaceutical industries and the rural communities based in areas suitable for seaweed cultivation. Although Biomara is investigating sourcing biofuels from seaweed, this should not be dismissed as low value. The technologies produced by the project have the potential to answer various other industry and economic needs not just the creation of biofuels. The Biomara project will undertake an complete economic review of the systems developed during the project. It is hoped that the end products of Biomara may provide a selection of final products for different fuel needs, which will be especially important for island communities. All systems from small to large scale could be viable; actual viability will be dependent on the economics of scale and this will also be reviewed during the project.



Dr Michele Stanley and Energy Minister Arlene Foster.

Dr Michele Stanley and Energy Minister Arlene Foster discuss seaweed



Several stakeholders commented that the Steering Committee should be very commercially aware and concerned with the eventual economic viability of the technologies under development.

An interesting point was noted that the development and use of biofuels is not a recent development, the Ford motor company used biofuels in the 1920's.

Howard Keery (SEUPB), Dr Michele Stanley (SAMS), Arlene Foster (DETI) and Bob Hanna (DCNER)



THE BIOMARA PROJECT IS FUNDED BY:



European Union
European Regional
Development Fund
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Government**



**Highlands & Islands
ENTERPRISE**



Department of
**Enterprise, Trade
and Investment**
www.deti.gov.uk



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