



# Seaweed Anaerobic Digestion

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## Huge Potential

The renewable energy market continues to boom, with a wide array of technologies being developed to meet our energy needs. One particular market that is offering massive potential is the development of technologies to produce biogas. However, biogas faces significant challenges being that it is often from controversial biomass sources and/or can be inconsistent in supply and biogas output; as highlighted in ITI Energy's foresighting report on 'Sustainable Transport Fuels.'

## The Big Idea

To meet these challenges, the Seaweed Anaerobic Digestion (SAD) programme has been developed to facilitate the cost effective exploitation of the under-utilised natural seaweed resource to produce sustainable biogas.

## Key Benefits

Seaweed offers the potential to overcome the challenges linked with other sources of biogas. These include:

- **Breakdown of biomass** – lignin, present in land-based plants but lacking in seaweeds, is difficult to breakdown for the production of biogas.
- **Sustainability** – seaweed is currently an under-utilised resource that does not compete for space with food-crops or require the use of threatened natural habitats for its production or harvest.
- **Consistency** – seaweed can provide a consistent biomass input and thus biogas output, which is difficult to achieve with waste biomass that is increasingly being investigated to produce biogas.

Seaweed, as a wet biomass, is well suited to breakdown by anaerobic digestion to produce biogas. Anaerobic digestion technology is experiencing increasing political and regulatory support, with the allocation of double the Renewable Obligation Certificates (ROCs) for the electricity produced.

### Further Potential

The existing global seaweed market is driven by the direct consumption of seaweed for food and, via the soluble fibres industry, in a wide range of industries such as cosmetics and pharmaceuticals. As such, the first stage of research is looking at using seaweed waste from the soluble fibres industries to produce biogas through anaerobic digestion, thus adding value to their extraction processes. The research will develop the effective technology and suitable microbes to produce cost-effective biogas yields. Once achieved, the technology will be implemented in the field to benefit coastal communities with a sustainable and secure source of energy. To meet the anticipated increased demand for seaweed for biogas production and its other industrial uses, the programme will look to intensify and automate the sustainable harvesting of seaweed.

In summary, the potential benefits of the SAD programme are:

- Sustainable production of biogas
- Value adding process to the soluble fibres industry
- Provision of energy to coastal communities
- The cost-effective exploitation of seaweed for a variety of markets

### The Next Step

If you are interested in exploring any of these exciting opportunities further, from either a research or commercialisation perspective, please contact Dr Craig Rose, SAD Programme Manager, on 01224 282 630 or email [craig.rose@iticontractor.com](mailto:craig.rose@iticontractor.com)

### About ITI Energy

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Set up and funded by Scottish Enterprise, we commission trailblazing R&D programmes to generate market-driven, commercially focussed business opportunities in the energy sector.

Our extensive global market research identifies future commercial opportunities and drives the formation of innovative R&D programmes, designed to develop and deliver platform technologies.

The resulting portfolio of commercially valuable intellectual assets, owned and exploited by ITI, is licensed to new and existing organisations for the benefit of the Scottish economy.

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