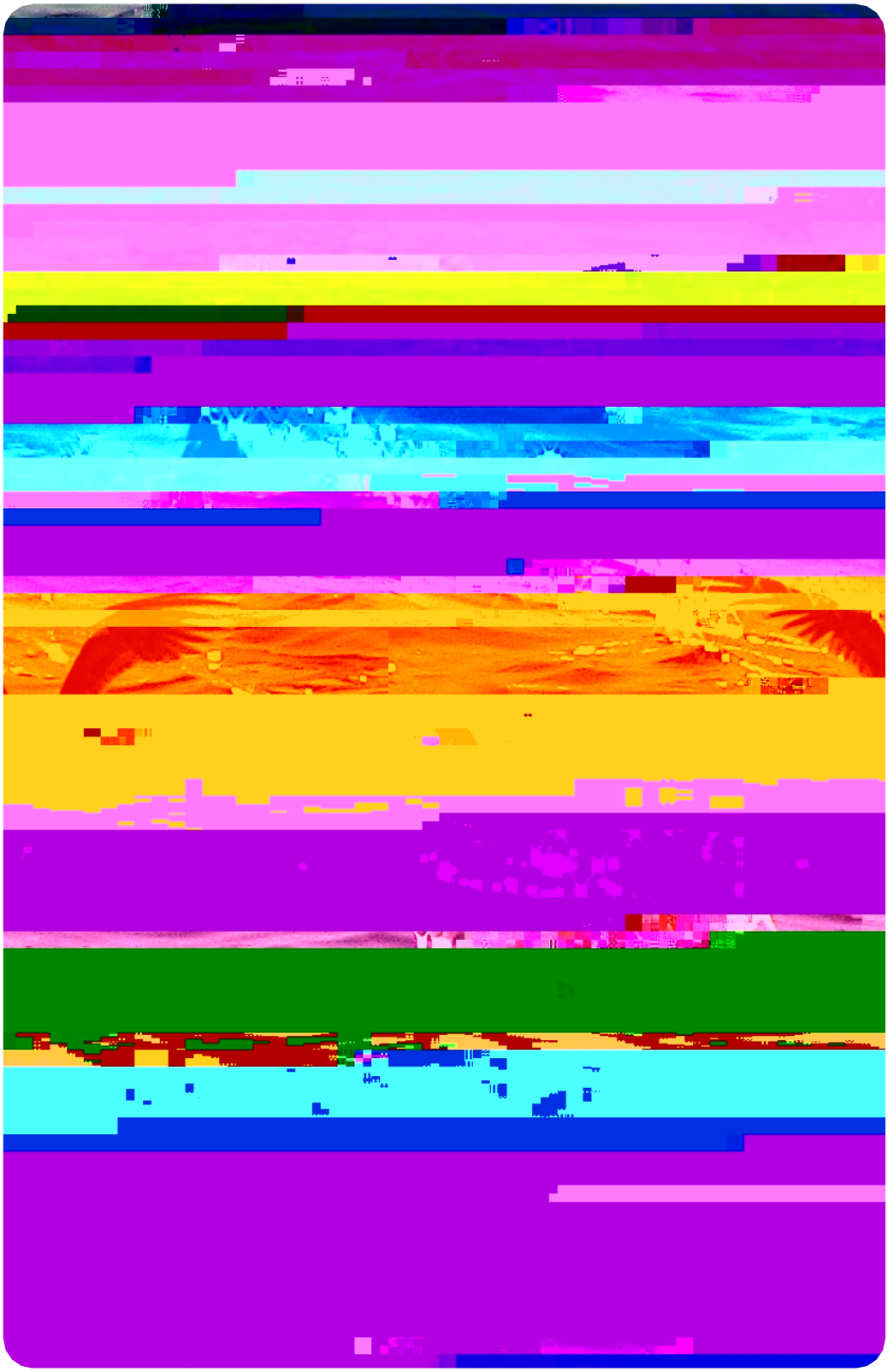
Case Studies



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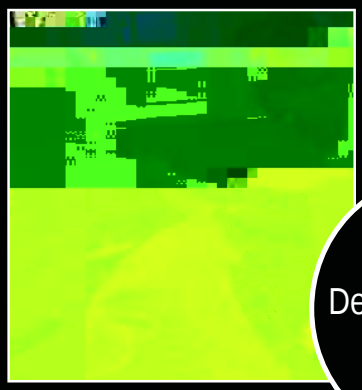

By-catch and fish waste were mixed with household wastewater and macro-algae to create a fish mince biomass used in the biogas test plants.

Marianne Willemoes Jørgensen Ph.D student, Department of Environmental Engineering, DTU.

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Consultation & Sampling

Consultation : A consultation took place between ARTEK, community leaders and fishermen in Uummannaq in the Summer of 2007. The focus was on the potential to use organic waste, including by-products from the fish industry, to supply the necessary lipids and proteins for the biogas process.

Sampling: Between 2008-2010 samples of shark, halibut and shrimp were shipped to the Technical University of Denmark for testing as well as 10 kg of frozen and 3 kg of live algae.

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Final results of the research will be written up in the Ph.D thesis of Marianne Willemoes Jørgensen, due in November 2011

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Demonstration Pilot Plant

Small-scale, portable demonstration plant in Uummannaq, with parts constructed, tested and documented at ARTEK.

Scientific publications and ongoing training to include the results of this project. See end of case-study for further details

Series of publications and short reports from ARTEK/ DTU

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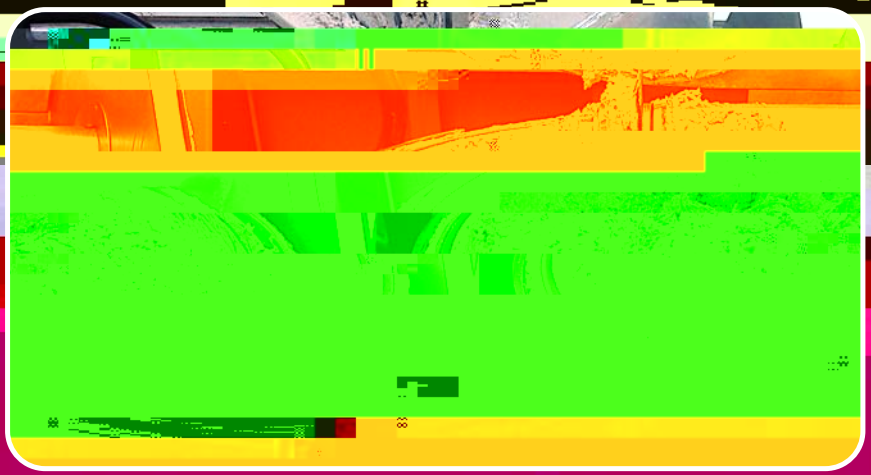
- A demonstration pilot plant will be set up in the ARTEK Innovation Centre in Sisimiut, for capacity building purposes.
- There will be further research and development of biogas potential in South Greenland where warming has enabled agriculture to expand and increase suitable biomass.
- There will be ongoing optimisation of biogas production techniques by ARTEK students.
- There will be continued expertise exchange between ARTEK/DTU, Greenlandic communities and international partners.



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Loss of Key Personnel : Key contacts in Uummannaq have been lost. This is in part due to the transient nature of the Danish workforce in Greenland, and also due to the reorganisation of municipalities in 2009 resulting in Uummannaq being incorporated into Qaasuitsup municipality, with administrative control passing to Ilulissat. Loss of these contacts has put a strain on the future siting of the pilot biogas plant.

Remoteness and Isolation: The project has been managed by ARTEK/DTU, with most work taking place in Copenhagen. While the Uummannaq community were consulted in 2007, limited communication, since, has created a social as well as physical distance from the project, which could inhibit community take up of the biogas units once they are available for domestic use.

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Enduring Set-backs: While the main contacts for the project within Uummannaq are no longer there, the project has maintained momentum as overall control and financing was in the hands of ARTEK/DTU.

Expanding Options: The profile of ARTEK/ DTU in Greenland, coupled with extensive networking has raised interest in using biogas in the expanding farming communities to the south of Greenland

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- Potential biogas resources do exist in Greenland.
- Greenlandic industries and communities are interested in biogas facilities, but they need support.
- While the project has maintained momentum under ARTEK/ DTU, limited communication and large physical distances have restricted community involvement and thus ownership.
- In response, a small-scale demonstration biogas plant is being developed for education and capacity building purposes in Greenland.

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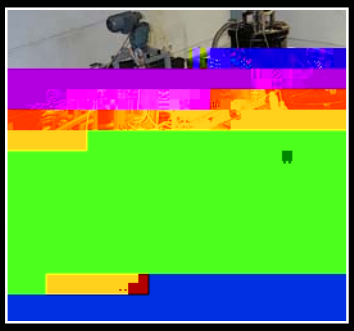

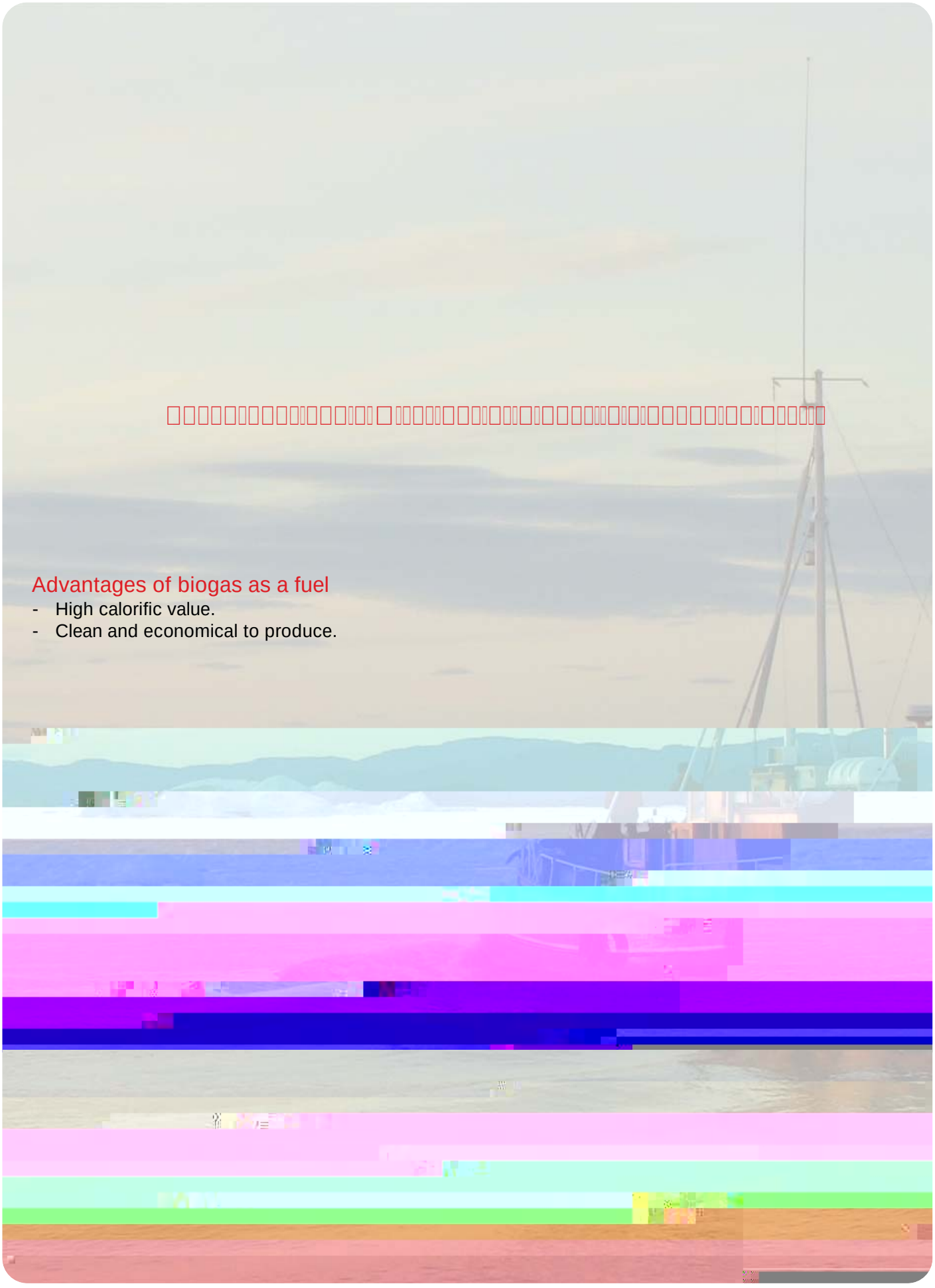

Advantages of biogas as a fuel

- High calorific value.
- Clean and economical to produce.

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[illegible]

DTU Environment Technical University of Denmark www.env.dtu.dk
ARTEK Arctic Technology Centre, Sisimiut, Greenland www.artek.byg.dtu.dk/English.aspx

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From ARTEK/ DTU
Biogas Production from the waste of the shrimp manufacture (English)
Biogas_as energy source_palvig (English)
PPT Biogas project,report Rovaniemi Feb. 2010 (English)
DTU Avisen no. 2, 2009 pdf. (Danish)

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From the wider EU.
http://www.thecrownestate..