MacroFuels

WP7 – Dissemination and communication

Rita Clancy

1st Project Meeting – 29th June 2016 Iceland

Progress M1-6

- Objectives for the initial project phase
- Activities performed between M1 and M6
- Deliverables and other results achieved
- Lessons learnt so far

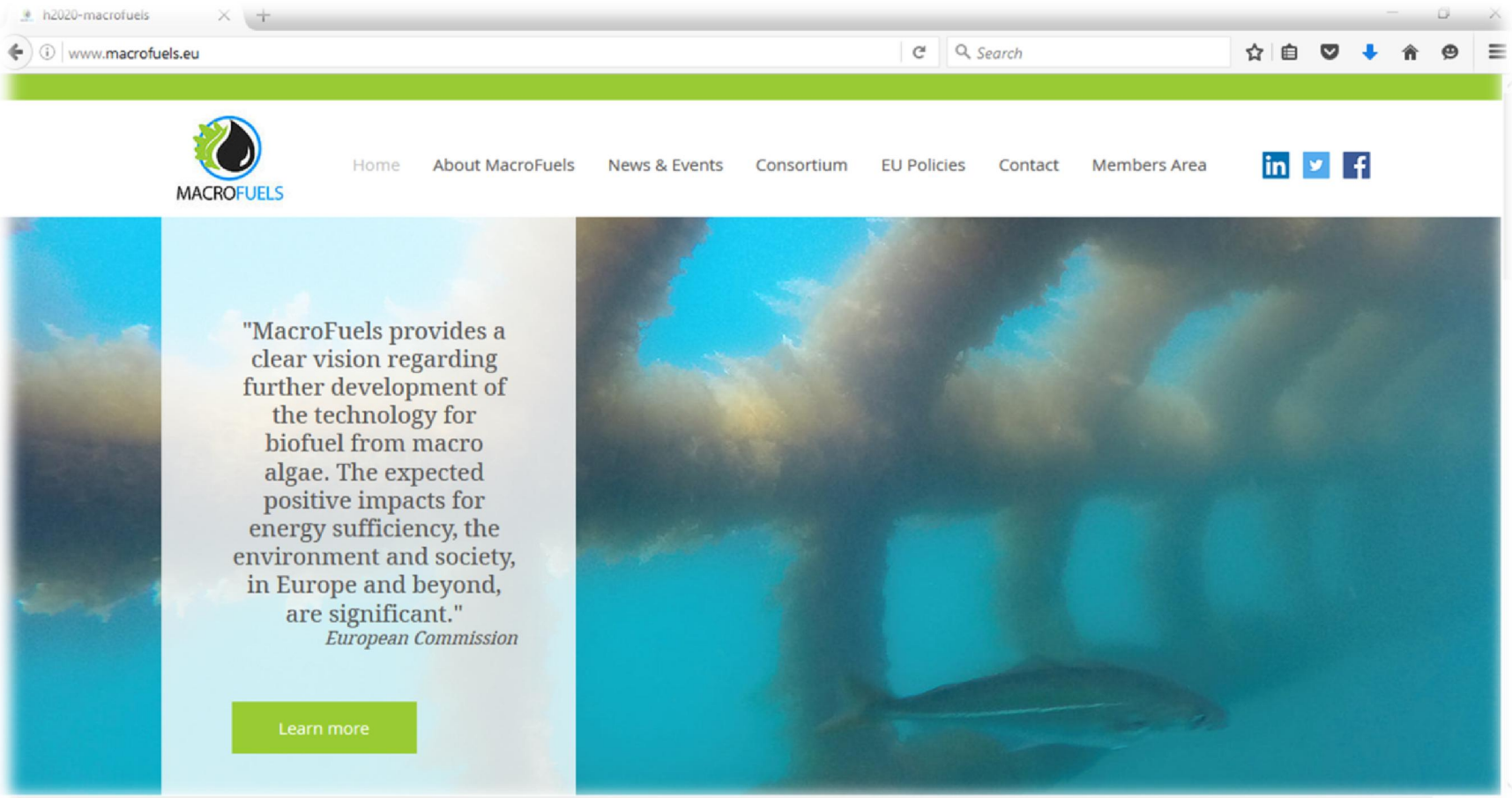
Objectives for M1-6

- Introduce the project and raise awareness among the target community
- Establish the general dissemination and press strategy
- Set the framework for managing and protecting the intellectual property generated in the project and that way, to guide the exploitation of research

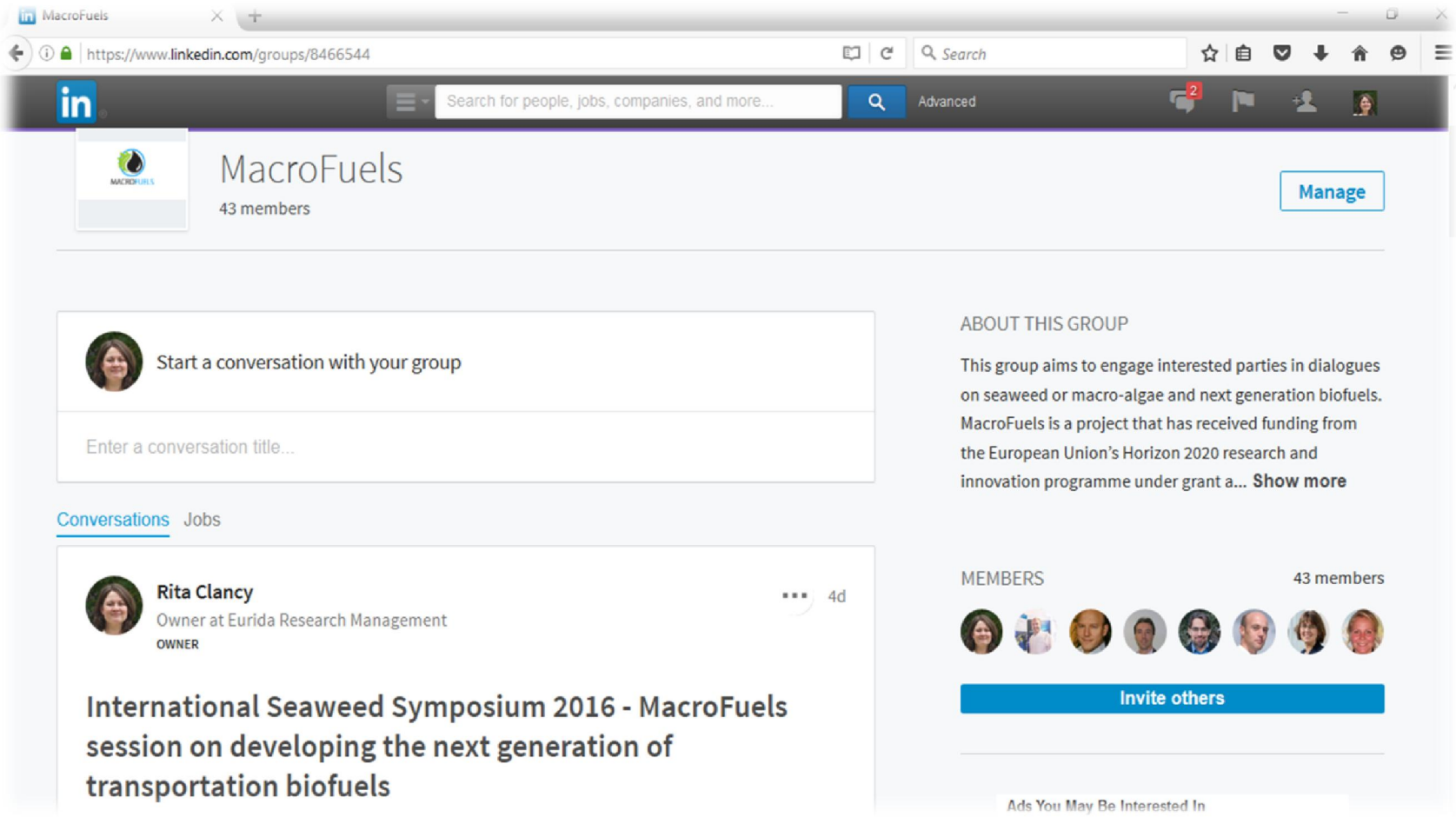
Tasks performed

- Dissemination channels and material have been created
- The MacroFuels dissemination and exploitation plan has been developed
- MacroFuels has been presented at two conferences – EUBCE and ISS 2016
- First contacts have been established with related projects (e.g. Waste2Fuels) and EU stakeholders (e.g. EU Maritime & Fish)
- A first MacroFuels press release has been sent out (a. o. response from Guardian, feature on BE Sustainable Magazine)

Project Visibility - Website



Project Visibility - LinkedIn



Project Visibility - Twitter

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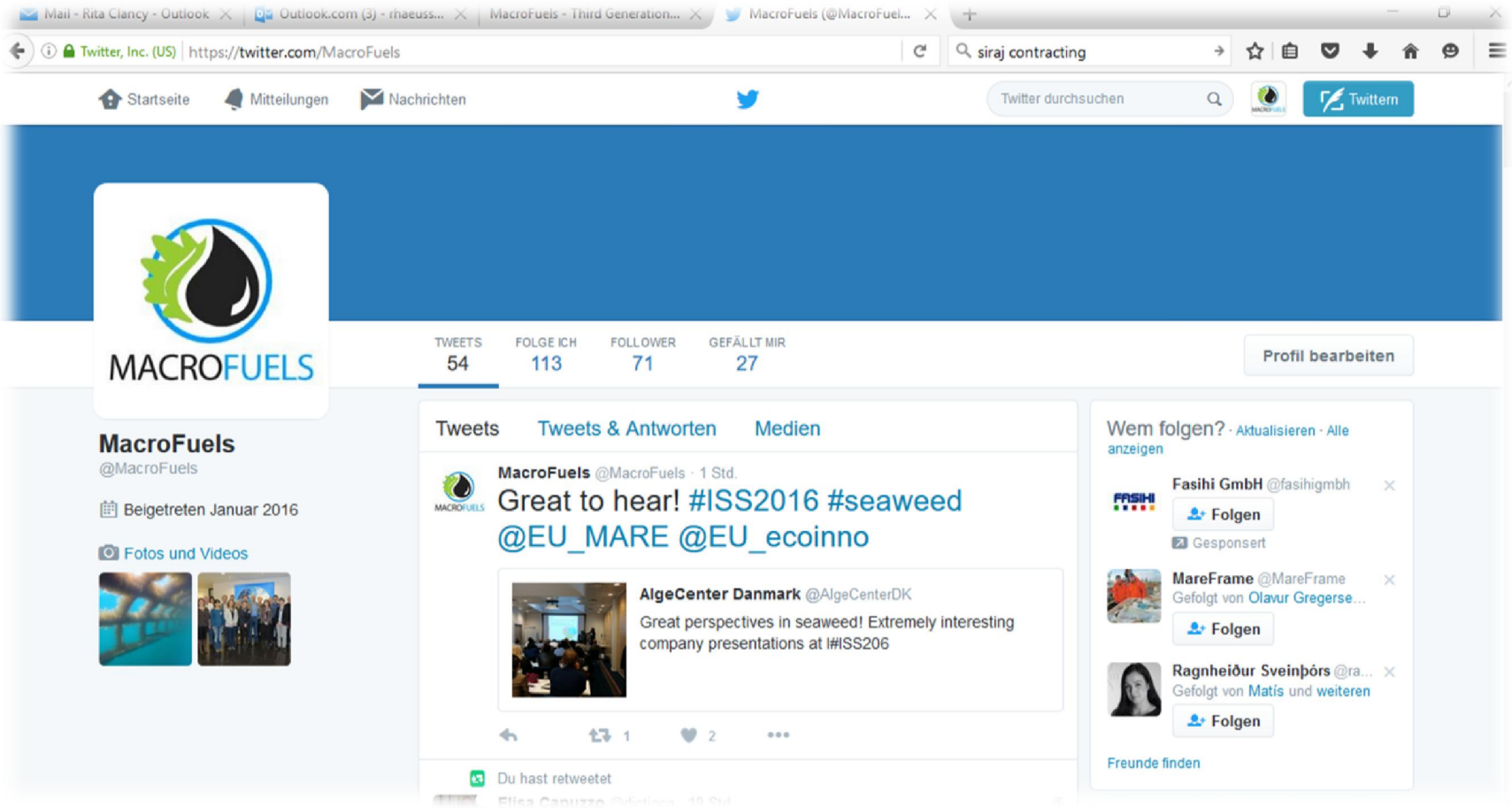
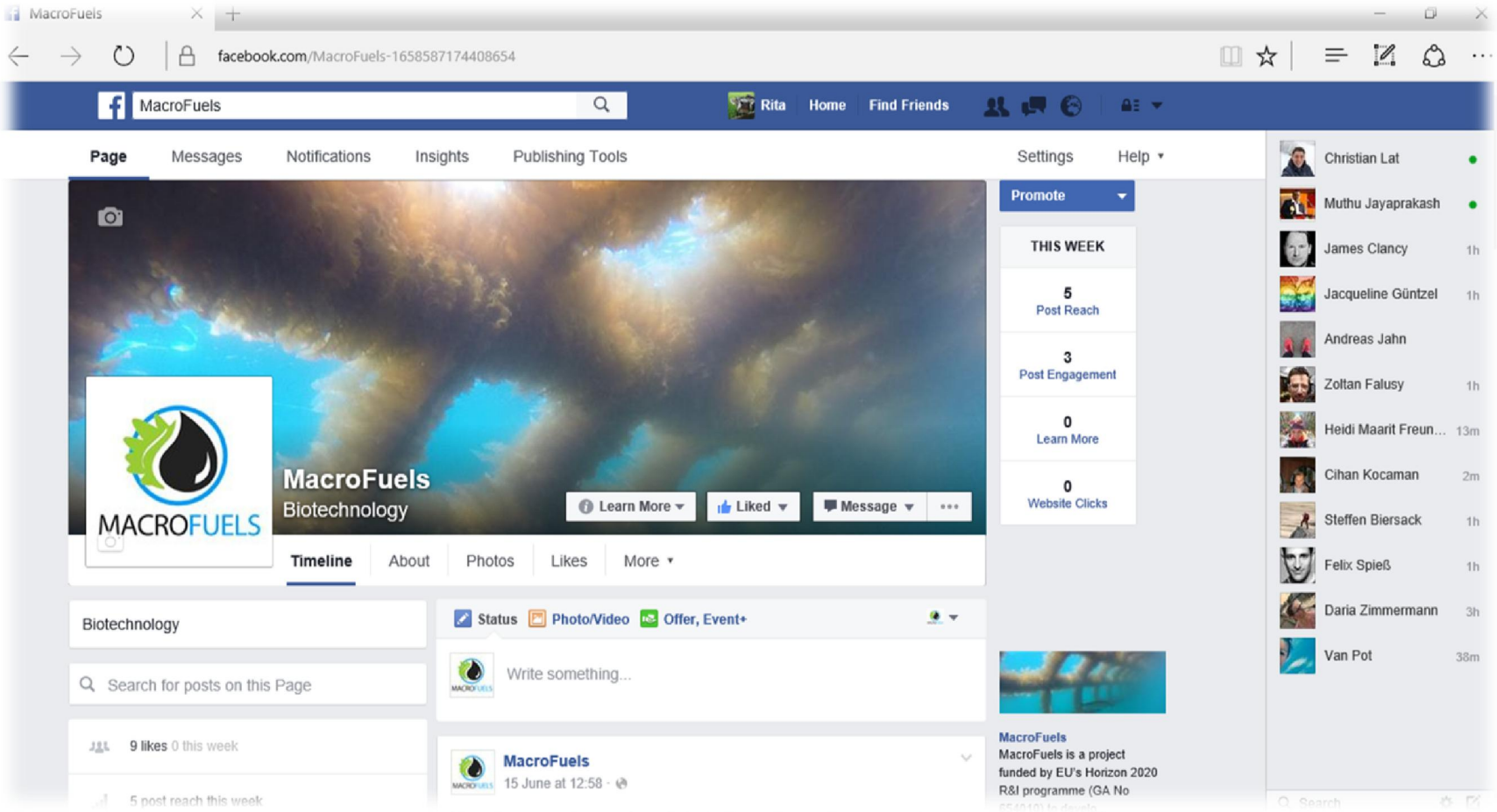


Project Visibility - Facebook



Project Visibility - Flyer

Our Project Team

The MacroFuels consortium brings together specialists along the entire chain of biofuel production, from seaweed cultivation up to fuel testing via fuel production. Feedback loops between the experts ensure crosspollination of ideas, concepts and insights. The cultivation, pre-treatment and conversion experts are further complemented by experts in the field of sustainability assessments, risk analysis and mitigation, commercial deployment and IP monetisation, as well as communication.

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This flyer is part of the MacroFuels project.
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 654010.

Third-Generation Biofuels from Seaweed

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MacroFuels - Turning a Vision into a Solution

Project Visibility - Flyer

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MacroFuels in a Nutshell

MacroFuels aims to produce advanced biofuels from macroalgae, commonly known as seaweed. The targeted biofuels are ethanol, butanol, furanics and biogas. The project will achieve a breakthrough in biofuel production from macroalgae by:

- Increasing biomass supply by developing a rotating crop scheme for cultivation of seaweed, using native, highly productive brown, red and green seaweeds, in combination with the use of advanced textile substrates resulting in a year round biomass yield.
- Improving the pre-treatment and storage of seaweed and to yield fermentable and convertible sugars at economically relevant concentrations (10-30%)
- Increasing bio-ethanol and bio-butanol production to economically viable concentrations by developing novel fermenting organisms which metabolize all sugars at 90% efficiency
- Increasing biogas yield to convert 90% of the available carbon in residues by adapting the organisms to seaweed
- Developing thermochemical conversion processes of sugars to furan-based fuels
- Performing an integral techno-economic, sustainability and risk assessment of the entire seaweed to biofuel chain

MacroFuels will develop technologies for the production of fuels which are suitable as liquid fuels of precursors thereof for the heavy transport sector as well as potentially for the aviation sector. MacroFuels will furthermore expand the biomass available for the production of biomass available for the production of advanced biofuels. Seaweed does not need fresh water, arable land or fertilizers to grow, which provides environmental benefits, and, in addition, has a high carbon dioxide reduction potential as well as reduces the demand for natural resources on land. The technology offers many novel opportunities for employment along the entire value chain.

Benefits and Impacts

The progress that will be achieved by MacroFuels will have significant impact on various economic fields, and - most importantly - paves the way towards a sustainable solution that is not competing with arable land or food, in contrast to 1st and 2nd generation biofuels derived from food-based crops and residuals. Thus, MacroFuels aims to make a substantial contribution towards renewable energy from photosynthesis and towards the goal set by the European Union of 10% of the transport fuel of every EU country to come from renewable sources such as biofuels by 2020.

Advanced technologies and decreased production costs for third-generation biofuels will offer many novel opportunities for employment along the entire value chain. MacroFuels estimates that about 15.000 jobs can be created based on the EU target of 2.5% biofuels, which corresponds to 5000 km^2 of cultivated seaweed area.

✓ MacroFuels converts seaweeds more efficiently to biofuels via breakthroughs in pre-treatment (water reduction of more than 50% and total elimination of process steps are among our ambitious goals), via wet, sugar preservative storage methods, and by improving the ethanol and butanol productivity up to economic levels.

✓ MacroFuels enables a favourable energy balance as well as significant potential for cost reduction, which will permit our targeted fuels to eventually compete favourably with fossil or 1st and 2nd generation biofuels.

✓ MacroFuels stimulates stakeholder dialogues and international collaboration by bringing together experts that are involved in international activities on seaweed-derived biofuels, and by entering dialogues with stakeholders to understand their interests and concerns. Although the objective is unique, MacroFuels will not be an isolated effort. Indeed, the links with other projects and networks ensure that MacroFuels will be up to date on the latest trends and support maximising the project's impacts.

✓ MacroFuels improves innovation capacity by integrating prior state-of-the-art, know-how and experience along the entire seaweed to biofuels chain. Bringing together key players in the seaweed to biofuels area will accelerate innovation and market deployment and broaden the business-case for companies.

Economic viability and sustainability

MacroFuels will determine the economic viability of the seaweed to biofuel production chains by using accurate verified experimental data, obtained under relevant conditions. The data from the assessment will be used in a feedback loop to further inform the experiments, thus ensuring that the chances of commercial implementation are maximised.

Valorisation of the side- and waste-streams

Side- and waste-streams will be valorised by screening them for high value marketable components and identifying the most viable products. We will further assess the proteins liberated during the entire process for their use to augment feed supply in the EU, as well as the mineral streams for use as inorganic fertilizer in terms of primary, secondary and trace elements. This assessment will result in a potential value and market of these streams.

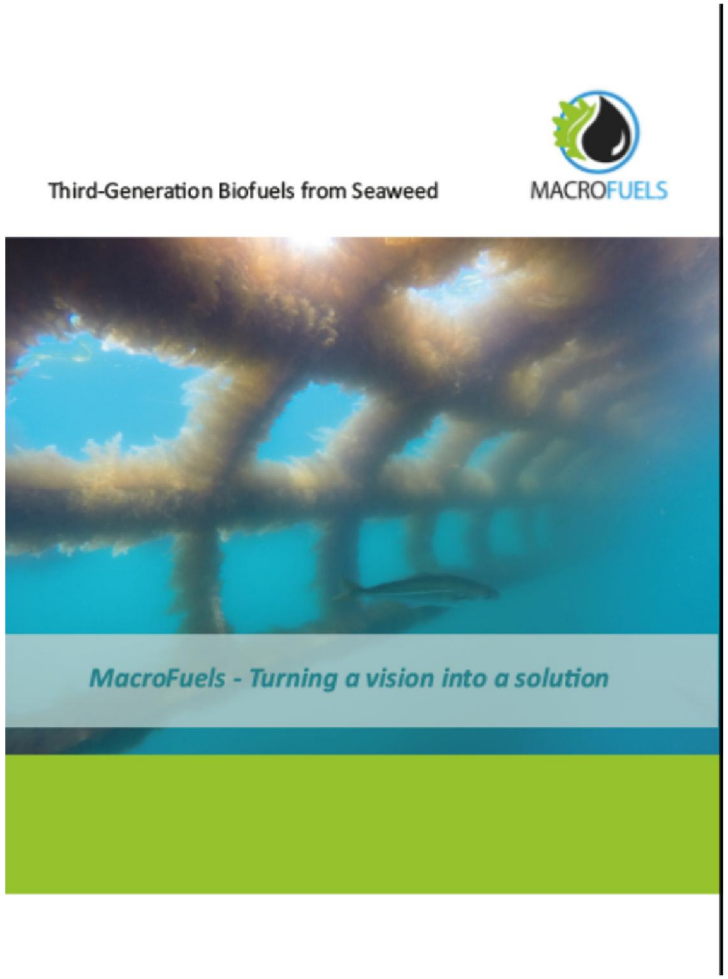
Fuel assessment under realistic conditions

Fuel assessment under operating conditions will be performed by utilising the DTI fuel assessment facilities. Fuel mixtures will be prepared and tested in the relevant engines to assess the suitability of these fuels under different realistic transport conditions.

Techno-economic and sustainability assessment

As part of MacroFuels, a multi-criteria assessment of the sustainability of substituting conventional, fossil-based transportation fuels and currently available biofuels with seaweed-derived fuels will be performed. The sustainability assessment will take into account economic, environmental, social, health and safety, and risk aspects and will consider the entire value chain of the transportation fuels using a life cycle comparison approach.

Project Visibility - Brochure



Project Visibility - Features

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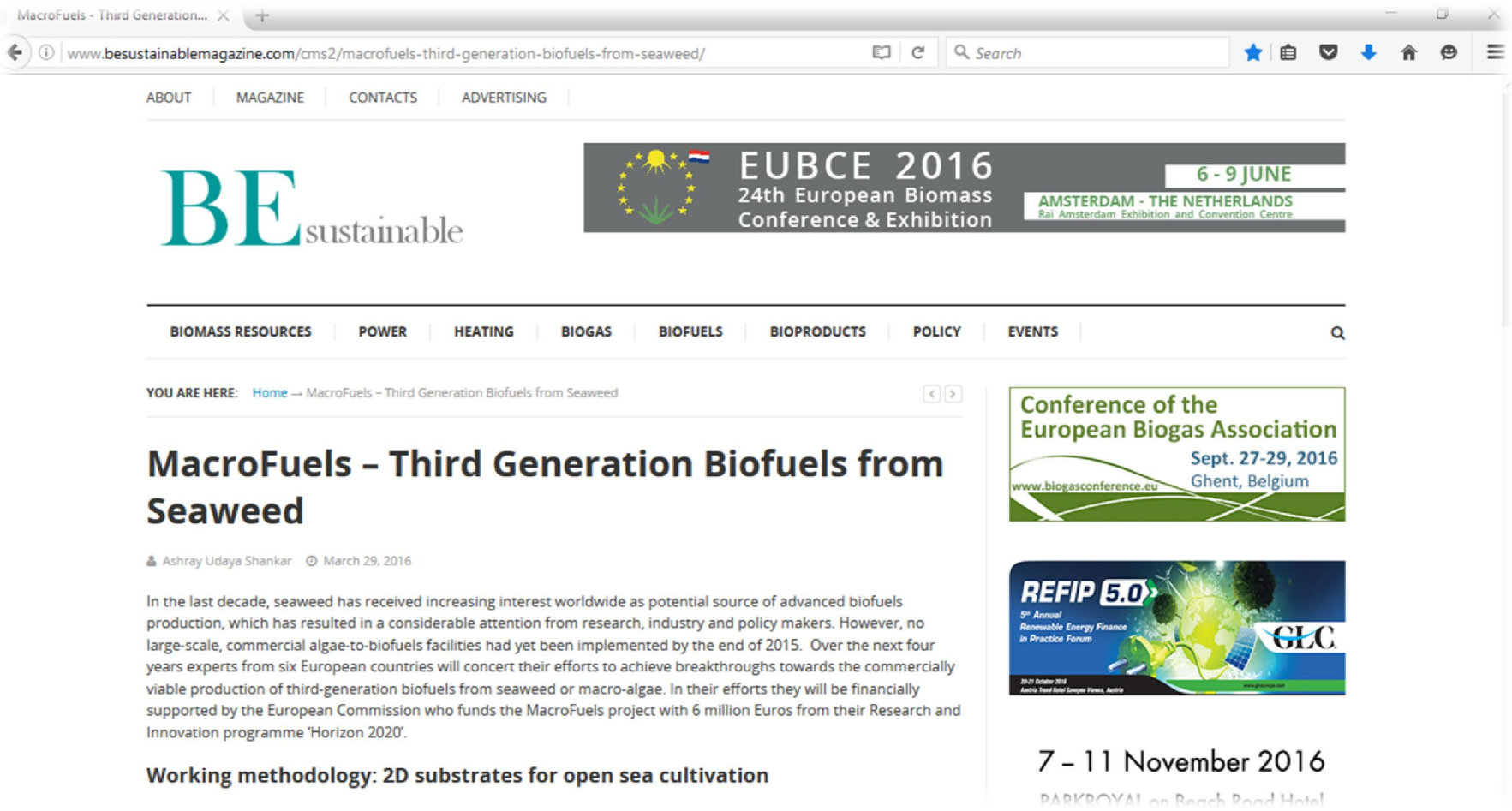

Conference Participation

Online Conference Programme

programme.eubce.com/abstract.php?idabs=12399&idses=429&idtopic=17

EUBCE 2016

AMSTERDAM - THE NETHERLANDS
6 - 9 JUNE 2016

24th European Biomass Conference & Exhibition

Programme

Back to programme - Print

Monday, 06 June 2016
Room: G103
15:15 - 16:45
Session code: 3AO.6 **Biorefinery processing**

Biorefineries

Session Description

In this session integrated biorefineries are addressed taking into account several aspects related to conversion processes.

Chairpersons:
Maria GEORGIADOU, European Commission, DG Research, Directorate General for Research, BELGIUM
Bryan JENKINS, University of California, Davis, Biological and Agricultural Engineering Dpt., USA

Short introductive summary:

Development of Seaweed Biorefineries for Fuels and Chemicals
We will present the technical viability of the production of biobased chemicals and fuels from brown, red and green seaweeds using species specific biorefineryconcepts. A first example is the biorefinery of the green macroalgaeUlvalactuca to isolate specialty carbohydrates such as rhamnose and conversion of these carbohydrates into furans. Another example is the biorefining of Kelps such as Laminaria digitata and Saccharina lattisima. From these Kelps we have successfully isolated and purified mannitol, alginate and glucose. Mannitol could, e.g. after conversion isomannide, be applied for various biobased plastics. A crucial part of the development of economic seaweed biorefinery concepts is seaweed storage because of the highseasonal variation of the seaweed composition and limited preservability. A coarse techno-economic evaluation of the studied biorefinery concepts including storage will be presented. This work was carried out under the Dutch national project TO2 Seaweed and the EU-FP7 project@Sea.New and future developments within the new

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International Seaweed Symposium 2016

12:20-12:40 OR-02-05 - **Towards a Seaweed Biorefinery - Microwave assisted deconstruction of *Ascophyllum Nodosum*.** - Duncan J Macquarrie*

12:40-13:00 OR-02-06 - **Characterization of alginate gels with chitooligosaccharides of varying composition as crosslinkers** - Yiming Feng*, Georg Kopplin, Kjell Varum

BIOFUEL

Monday, 20 June 11:00 – 13:00 Room: Christiansborg
Chairs: Rocky De Nys, Jessica Adams

11:00-11:20 OR-03-01 - **MacroFuels – a H2020 project for development the next generation transportation biofuels.** - Jaap W. van Hal, Anne-Belinda Bjerre*

11:20-11:40 OR-03-02 - **Enzymatic hydrolysis for algae-derived biofuels** - Francesco Ometto*, Hana Kuci, Annika Björn, Jörgen Ejlertsson

11:40-12:00 OR-03-03 - **SeaGas: farmed *Saccharina latissima* as fresh and ensiled feedstock for anaerobic digestion** - Michelle I Morrison*

12:00-12:20 OR-03-04 - **Production of bio-coal, methane and fertilizer from seaweed using hydrothermal carbonisation** - Aidan M Smith*

12:20-12:40 OR-03-05 - **North Ronaldsay algae eating sheep harbours isolates with Ulvan lyases and cellulase activity** - Lucy A Onime-Akinmosin*, Sharon A Huws, Jessica Adams, David Bryant

12:20-13:00 OR-03-06 - **Carbohydrate analysis of seaweed in the biorefinery to chemicals and fuel context** - Jaap W. van Hal*, Wouter Huijgen, Anne-Belinda Bjerre, Ana M. López Contreras, Michele Stanley, Gudmundur O. Hreggvidsson

20 Jun

ISS 2016 – Copenhagen 20th June

Deliverables & Milestones

Deliverables	Responsible	Delivery
Project online presence	EURIDA	M1
First MacroFuels dissemination, exploitation and communication plan (DEP)	SIOEN	M1
Stakeholder engagement events and results' evaluation report #1 – Scientific community, Citizen Panel	ECN	M24
Knowledge and data repository (e.g. for ERKC, IEE and other stakeholder platforms)	AVT	M47
Policy briefs and strategy papers with recommendations for policy making #1	EURIDA	M30
Stakeholder engagement events and results' evaluation report #2 – Policy makers, scientific community, citizens	ECN	M48
Policy briefs and strategy papers with recommendations for policy making #2	EURIDA	M42
Milestones		
Advanced DEP is set up and approved by all partners	EURIDA	M6

Deliverables

D7.1 Project Online Presence

- Report on online presence delivered at the end of M1
- Available as download at Members Area of the MacroFuels website

D7.2 Dissemination and exploitation plan/DEP

- Delivered at the end of M1
- Available as download at Members Area of the MacroFuels website
- Outlines the MacroFuels dissemination, exploitation and communication strategy and defines roles and responsibilities
- Summarises the contractual requirements as set out in the Grant Agreement (GA), complemented by the Consortium Agreement (CA)
- DEP includes initial timelines and an overview of targeted channels and formats

Outlook next phase

Outlook for the next 6 months…

…what results and deliverables are planned?

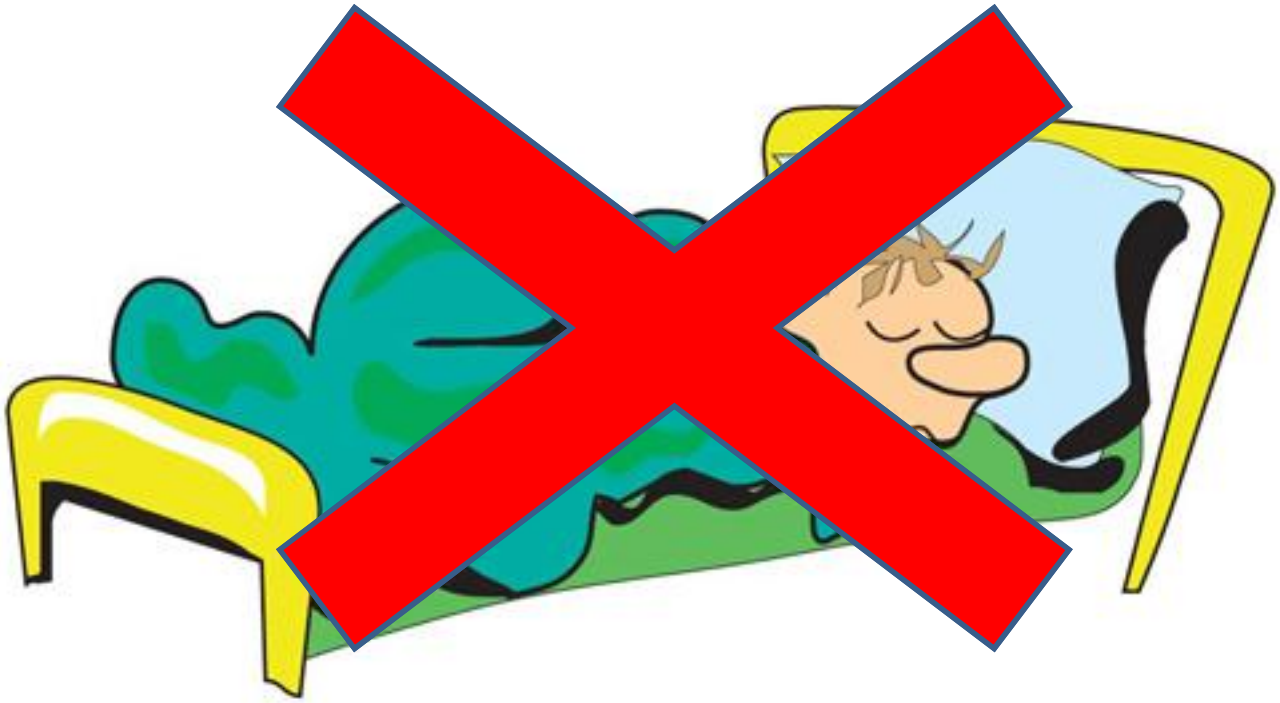
Outlook: Deliverables M7-12

No deliverables planned!

Cliparts.co

Outlook: Deliverables M7-12

No deliverables planned!



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Outlook: Tasks Month 7-12

- Assess the DEP and, if necessary, adapting it to the realities of the project.
- Maintain and update the project website and social media groups and disseminate project news and results via all formats.
- Set up and send out the first issue of the MacroFuels project newsletter to subscribers.
- Manage content for ‘Open Access’ publications and supervise IPR activities and compliance with grant agreement.
- Screen future relevant conferences and fair trades and discuss participation with consortium partners.
- Intensify inter-project knowledge exchange

Outlook: Tasks Month 7-12

- Assess the potential of project results for knowledge and data transfer towards relevant EU stakeholder groups
- Initial preparatory work for setting up a MacroFuels Citizen Panel, incl.
  - (a) initiating contacts with authorities in seaweed cultivation areas to get in touch with local communities
  - (b) starting an information campaign towards local communities
  - (c) developing a first citizen survey to be performed between M12 and M18.

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Support needed by You!

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THE GREAT

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Volunteer Challenge

CHALLENGE NO. 1

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Conferences

Euro Biomass 2016	8th-9th August 2016	Birmingham/UK
Blue Economy Business and Science Forum – The Hamburg Summit 2016	12th-13th September 2016	Hamburg/GER
Biofuels International 2016	22nd-23rd September 2016	Gent/Belgium
SeAgriculture	27th-28th September 2016	Aveiro/Portugal
Nordic Seaweed Conference	12th-13th October 2016	AlgeCenter Danmark
Biomarine Business Convention	19th-21st October 2016	Oslo/Norway
World Ocean Council (WCO)	30th Nov - 2nd Dec 2016	Rotterdam/NL

CHALLENGE NO. 2

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BLOG

Seaweed Analysis

Seaweed Cultivation

Policy Context

Sustainability Assessment

Fuel Production

Acknowledgement

This presentation is part of the MacroFuels project. This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 654010

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