MACROFUELS

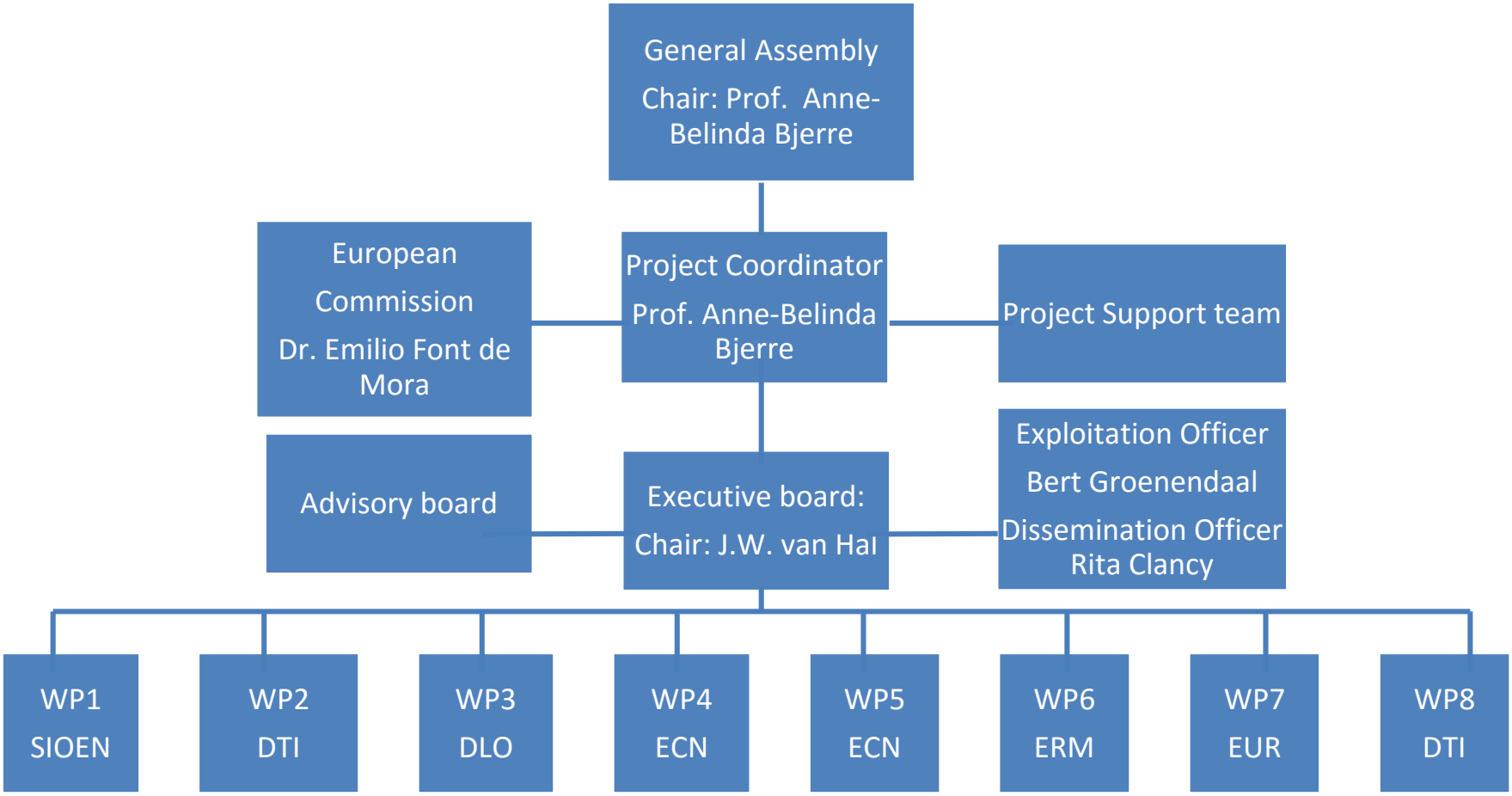
MacroFuels

Management group, Objectives, WP-diagram and Pert Chart

Coordinator Prof. Anne-Belinda Bjerre

TEKNOLOGISK INSTITUT · ECN · FOOD & BIOBASED RESEARCH WAGENINGEN UR · avantium · SAMS · SIOEN INDUSTRIES · ERM · AARHUS UNIVERSITY DEPARTMENT OF BIOSCIENCE · EURIDA · matis · FERMENTATIONEXPERTS AS –for your health

Management Group and Support



Roles

- Project Coordinator PC (Prof. Anne-Belinda Bjerre):
  - Responsible for the all-over coordination and activities of the project
  - Chairs General Assembly
  - Maintains close contact with the WP-leaders
  - Reponsible for the on-time delivery of project deliverables, milestones
  - Responsible for exploitation and dissemination of results
  - Acts as intermediary between EC and the project

Roles

- WP-leaders
  - Responsible for the daily acitivities in each WP
    - Initiation of WP activities
    - Meeting arrangement (minimum 4 times/year, with approved agenda, minutes taking – SKYPE or similar is recommended)
    - Initiation of tasks
    - Appointemt of task leaders
  - Responsible for communication with PC and Chair of Executive board
  - Representing results and activities for Executive board every 6 months.

Support team

DTI team

- Dr. Xiaoru Hou (manager assistant)
- Charlotte Öhlenschlæger (controller)
- Kirstie Wild (EU expert and legal aspects)

roles

- Chair of executive board CEB (Jaap van Hall)
  - Responsible for scientific and exploitation management of the project
  - Reports to Generel Assembly
  - Meets with WP-leaders minimum 4 times a year
  - Executive Board can make short term and execute long term more strategic decisions

Roles

- Exploitation officer EO (Bert Groenendahl)
  - Responsible for tracking and managing of potential IPR
  - Preparation of exploitation and business plan
  - Collaborates with PC, DO and WP-leaders

Roles

- Dissemination Officer DO (Rita Clancy)
  - Responsible for the overall communication of the project
  - Preparation of a dissemination and communication plan

Objectives

MACROFUELS

MacroFuels aims to develop technologies to produce advanced liquid transportation biofuels (*i.e.*: aviation, cargo and truck fuels) from seaweed

Objective in pictures

Sun, CO_2, no added fertilizer

Advanced cultivation

Mechanical harvesting, storage and logistics

Advanced pre-treatment

Advanced (bio)chemical fuel production

Advanced biofuels

Identified sub-objectives

1. Advanced cultivation

- Rotating crop scheme, year around harvesting
- Target yield > 25 kg/m2
- Subsequent automated harvesting concept (1000m2/hour)

2. **Storage and logistics**

- Storage at sea using 25m3 flexible storage tanks
- Transportation target: 2 km at sea
- Combined storage and pretreament by ensiling of seaweed on land

3. **Preatment and fractionation**

- Provide concentrated sugarstreams from seaweed for fermentation and thermal conversion
- Enzymatic and chemical pretreatment

Identified sub-objectives

4. Reduction of process water

- 50% reduction of added process water during enzymatic hydrolysis
- Inherent algal salts to be used as catalyst during pretreatment

5. Improved ethanol and ABE (Acetone, Butanol and Ethanol) production

- 90% conversion of hydrolysed C6 sugars to ethanol
  - Target ethanol yield > 4% (= sugar concentration of minimum 10%)
- 90 % conversion of hydrolyse and polymeric algal sugars to ABE production
  - Target conversion aim: to use microorganism with inherint enzyme system, so that enzymatic hydrolyses can be avoided.

6. Anaerobic digestion

- To efficently convert left-over carbon in residuals to methane
- Target is to convert 90% of remaining carbon left to biogas containing 60% methane

Identified sub-objectives

7. Thermochemical conversion of algal sugars to furan

- Conversion of alginic acid to furan
- Development of a continuous process
- Target : kg/hour-scale

8. **Fuel assesment**

- Algae fuels tested under realistic conditions in relevant engines

9. **Valorisation of the side- and waste streams**

- Screening for most viable market products
  - Protein for feed
  - Minerals for fertilizer

Identified sub-objectives

10. Economic viability

- Data from assessment will be used as feedback for improvement to optimise commercial implementation

11. Multicriteria evaluation of the sutainability

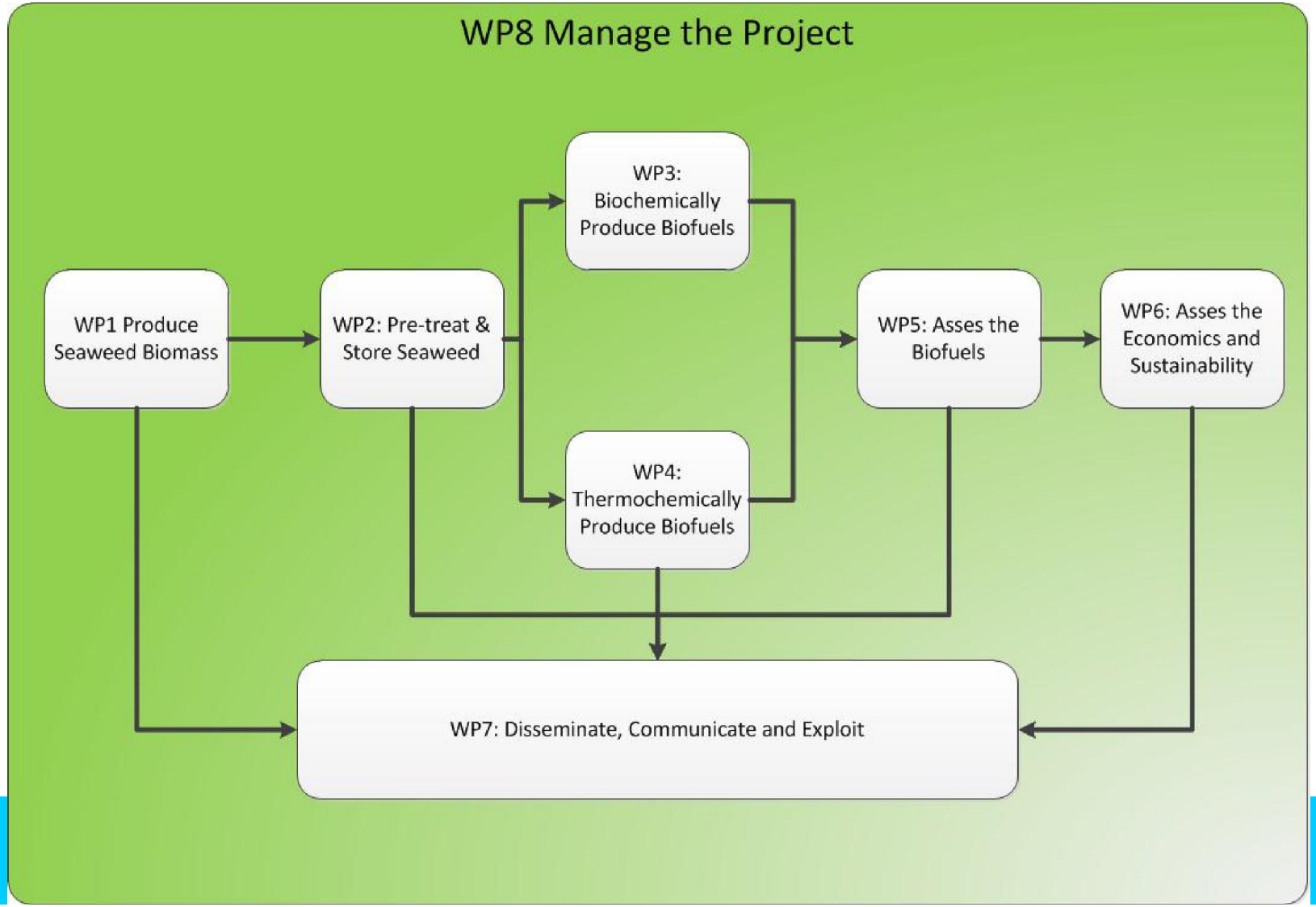
- Taking into account all factors from technological, environmental, economic, social, Health and Safety

12. Risk mitigation strategy

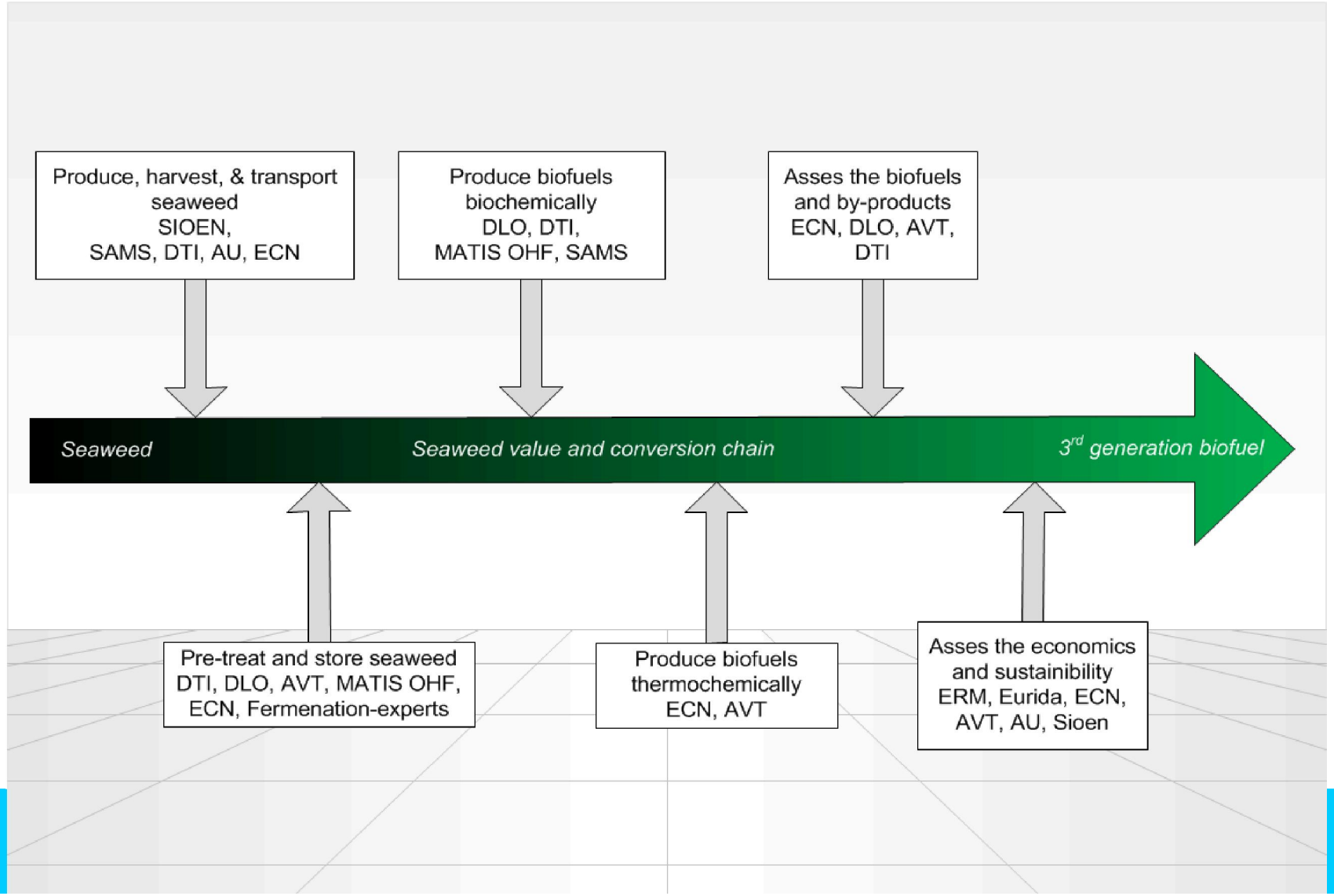
- Quantitative determination of risks of technical and environmental risks of using seaweed for fuel
- Detailed techno-economic assesment

WP diagram

MACROFUELS



The roles of consortium partners



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

macrofuels@dti.dk