



IDEA ROADMAP TOWARDS IMPLEMENTATION OF ECONOMIC VIABLE ALGAE VALUE CHAINS IN NWEUROPE

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Introduction

The Interreg NWEurope project IDEA envisions the development and enrolment of economic viable value chains based on micro-algae in NWEurope, with focus on phototrophic microalgae for higher value applications like feed, food and cosmetics.

Aim: Propose concept of an algae value chain implementation plan (roadmap) based on:

- (1) needs of actors along the value chain,
- (2) the reality of spatial distributions (logistic aspect),
- (3) quantities of biomass (fractions) required,
- (4) product specific requirements, and
- (5) economic aspects.

Challenges/opportunities for algae value chains

- Multiple algae species are a source of a variety of compound:
 - Which algae species to focus on?
 - Which compounds to target?
 - How to process the biomass? Required quality?
 - Tailoring algae biomass (fractions) towards specific ingredients
- Year-round cultivation in NWEurope climate
- **Economic viability**
- Algae as alternative crops for farmers \rightarrow how to start?
- Contribution of algae to carbon capture and ultilisation and/or storage (CCU/CCS)
- Contribution of algae to circular economy for side-stream re-use
- Linking offer and demand of algae biomass

Elements for inclusion in roadmap

- Target markets Established markets:
- Aquaculture Short-term: Active ingredients for
 - Petfood
 - Cosmetics
- Medium-term markets: active ingredients for
 - Crop protection
 - Nutraceuticals/food
 - Feed
- ➤ Long-term markets: nutritional ingredients for
 - Feed
 - Food

Which algae species to cultivate?

of algae ingredients?

Added value

Aspect 1:

Realize applications & product development

Why?

Applications are the main driver of the value chain

Product with

algae-based

ingredient

Ingredient requirements

- > Type of ingredient?
- Required quantities?
- > Restrictions?
- ➤ Taste/color/smell?
- > Activities & functionalities required?
- Legislation

Process

according

specifications

Aspect 4: Support the

Multi-

functional

plants.

Year round

processing industry Required cascading processing?

Economic viability

Consumer's

acceptance

- At least 1 high value compound to be targeted
- Cascading approach for maximal use of algae biomass

Short versus long value chain? Whole biomass versus fractions?

Upscaling: - Growth

- Harvest

Year round

cultivation

Aspect 2:

Support algae grower to generate sufficient quantities of quality biomass

> required & available technologies?

How to reach? Prepare

Aim

Produce

corresponding

algae biomass

Composition Produce 1-50 kg Algae (DM) biomass analyses & in (fractions) vitro trial of algae that can produced well Optimisation Marketable of process, In vivo trials product product &

economics

Preservation Approaches?

Aspect 3:

Linking offer & demand with fair division of risks & revenues

Standardization

Approaches

- Growth & processing of biomass on the same location and/or by the same company Several dedicated algae farms linked central processing plant
- Platforms for linking offer & demand
- Bilateral contacts/contracts:
 - With equipment/knowledge provider
- With end-user
- federations
- Cooperatives
- • •



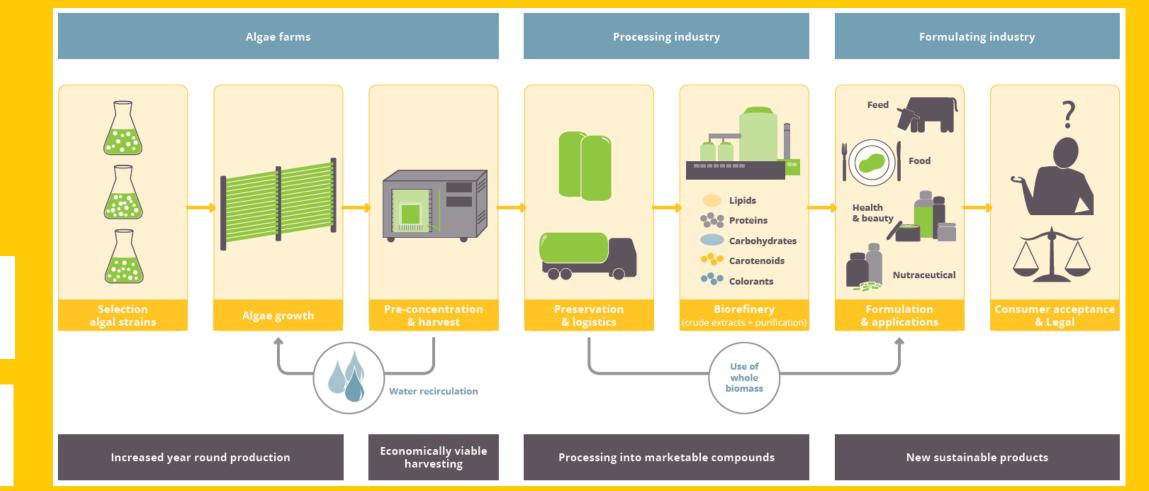
IDEA - Implementation and development of economic viable algae-based value chains (NWE639)

Duration: 9/2017 – 10/2021, capitalisation till 12/2023

Website: www.nweurope.eu/IDEA

Lead partner: VITO, Belgium







Full IDEA

partners:

JÜLICH Innovatiesteunpunt



FEED DESIGN LAB





UNIVERSITY OF TWENTE.