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Seaweed for Renewable Building Materials

Reinier Nauta (WMR), Maarten Kootstra (WFBR), Harry Bitter (BCT), Tijs Ketelaar (Cell Biol), Otto van der Linden (Cell Biol), Martien van den Oever (WFBR)

To which design flagship did you submit your proposal?

B: Design Flagship Proof of Principles

What are you exploring? With what objective?

In recent years, seaweed has gained interest in research and society, mostly for food related applications. Whilst production and cultivation are substantially increasing globally, copious amounts of naturally growing seaweeds washing ashore poses issues in several areas. Examples are the coast of Sweden, the Dutch Antilles (Caribbean), and Namibia. Possibilities for this seaweed in food and feed applications are very limited due to the variation in quality, quantities and relatively fast decomposition. Especially this decomposition poses problems for both local communities as well as the environment.
The aimed utilization is intended to replace materials from non-renewable resources, or to extend the range of renewable products already available.

What are the key activities or steps?

This project investigates what the diversity and the potential are for seaweed as a raw material for building materials. Therefore, we will look into the following topics:

- What species and quantities of seaweed wash ashore at the chosen locations (e.g. Sweden, Dutch Antilles, Namibia)?
- What environmental impacts connect to the removal of this biomass?
- What is the biochemical composition of the beached seaweeds?
- What building materials may be produced from these types and amounts of seaweeds and can the quality demands that these products pose on the raw material be met?

Why is this interesting scientifically?

Research on seaweed has nowadays largely focused on cultivation and harvest from natural populations. However, seaweed washing ashore is a third seaweed source which largely has been left untouched. This resource could potentially be a valuable asset to be used for the production of carbon-based building materials as well as for coastal communities. Researching and clarifying the potential of these natural resources and understanding the quality, quantities, and demands of the application purposes are key for application of these resources, hereby strengthening the expertise and position of WUR in the field of renewable materials for building material applications.

What are key deliverables?

Inventories of:

- Species and amounts.
- Environmental impacts connected to removal.
- Biochemical composition of beached seaweeds.
- Possible building materials and demands; aim for actual production of prototype.

How is this relevant to the materials transition?

With more knowledge on possibilities for application of seaweed in the production of building materials, WUR can contribute to strengthening the societal maturity and readiness of these applications as a part of the transition pathway to renewable carbon-based building materials.

One what issues would you like to get input from others?

- General ideas & suggestions.
- Are we missing something important?
- Are there known advantages and/or disadvantages using seaweed for building materials?

Wageningen University & Research
P.O. Box 123, 6700 AB Wageningen
Contact: maarten.kootstra@wur.nl
T + 31 (0)317 48 43 90, M +31 (0)6 19 26 78 26