**M** MATERIAL (SEE P.51)

[M1] - A present opportunity is that the material can be valuable for plant growth, because it covers a large part of plant’s nutrients needs and it has the ability to function as a walter holding agent.

[M2] - Present challenges are to deal with the material’s odor, fragility and reproducibility on a large scale.

[M3] - A present market fit can be within the agricultural sector.

[M4] - A future market fit can be within the building industry, because the material is flame retardant and has promising acoustic qualities.

[M5] - A future challenge is to know the specific content and the material’s behavior in dangerous situations.

[M6] - A further future market fit can be (food)-packaging, because the material is resistant to pressure impact and has the potential to be a food-safe material.

[M7] - A further future challenge will concern strict packaging requirements and the material’s low bending resistance.

[M8] - A further future (environmental) challenge will be to improve the material’s process of alginate extraction towards a more bio-friendly one.

**C** MULTIPLE CONTEXT FIT (SEE P.57)

[C1] - A future opportunity will be to close the loops of seaweed products in industrial circular processes for plastic. These are not mature/do not exist yet in both contexts, but are in development (overlap nr 1). Therefore it will not add direct value now, but future seaweed loops can be adapted to them beforehand.

[C2] - A nearby future opportunity is to share techniques of communal house building between the two contexts. There is a need for accessible natural building material in the Netherlands and a need for local and therefore affordable material at St-Maarten. Seaweed could fulfill both needs. This is based on the common context factor that there is a desire for independency in consumerism for building of houses (overlap 2).

[C3] - A current opportunity is that the start-up culture and start-up programmes that connect entrepreneurs at St-Maarten and the Netherlands can connect the contexts in a seaweed project. This is based on overlap 3, that points out the the desire to empower start-ups in both contexts.

[C4] - A present opportunity is that seaweed extracts can be used as a fertilizer in the bio-agriculture industry, since there is a market for this in the Netherlands as well as on St-Maarten. The same techniques could be used for extracting fertilizers from the seaweed, which creates a closed circle of nutrients at St-Maarten and improves the situation of overnutrition of the ocean. (based on overlap 4).

[C5] - A current and future challenge is to deal with the differences in access to resources. Because there is a need for independence of external resources in both contexts in the start-up phase (overlap 5 and difference 9 and 10), a start with accessible resources is desired. In the Netherlands there is better access to production resources, while at Sint Maarten there is better access to seaweed. A current opportunity is to combine both resources, and a future challenge is to prepare both locations for local accessible resources.

[C6] - A present challenge, is to deal with the differences of consumer drivers to buy sustainable products, and the differences between the visibility of the impact of their actions (difference 8). An opportunity here can be to let the contexts influence each other positively, through making impact visible one way and making alternatives to plastic economically accessible the other way.

[C7] - A future opportunity will be to close the loops of seaweed products in industrial circular processes for plastic. These are not mature/do not exist yet in both contexts, but are in development (overlap nr 1). Therefore it will not add direct value now, but future seaweed loops can be adapted to them beforehand.

[C8] - A present challenge, is to deal with the differences of consumer drivers to buy sustainable products, and the differences between the visibility of the impact of their actions (difference 8). An opportunity here can be to let the contexts influence each other positively, through making impact visible one way and making alternatives to plastic economically accessible the other way.
[G1] - Work on different levels of complexity.

[G2] - Design for impact on social, economic and environmental levels.

[G3] - Design material for multiple fitting applications.


[G5] - Control the sharing of knowledge through platform-based sharing.


[G7] - Smart timing of resources and locations.


*[CREATE SPACE TO GUARD VALUES (SEE P.59)]*

[N5] - Then, the impact horizon needs to be told, that explains the exact impact of products on its environment and on the local economy. The main audience here are governments.

[A5] - An exact impact analysis needs to be performed.

[N6] - When the impact of a large scale application of the material is known, it is interesting to communicate material characteristics, material guidelines and how to access the material to designers.

[A6] - For this, material validation tests need to be elaborated on and production methods and characteristics need to be controllable.

[N7] - Important stories to tell at the end of a phase contain the collected data of product impact to the environment or consumer, with research institutes as the audience as well as audiences in the next phase.

[A7] - For this, product feedback over a longer period is needed.

[N8] - The material characteristics and production risks become clearer at the end of a phase, these stories can be told to existing production facilities as the audience, to facilitate transition in material use of these facilities.

[A8] - For this, the material needs thorough characteristic tests and reflection on the production processes.

[N9] - All different narratives of different applications of the seaweed in a future stage, can be collected to facilitate transparency of the industry (see chapter 2.5)

[A9] - For this, a narrative platform needs to be created with industry requirements/rules.

*[NARRATIVES + REQUIRED ACTION (SEE P.61)]*

[N1] - The first story in each phase concerns the product advantages and product meaning for the targeted market. Here, the audiences are the consuming stakeholders (see chapter 5).

[A1] - To tell this story, the product design needs to be completed and validated.

[N2] - When consumer reactions are known, the next step is to convince larger-scale stakeholders. This story concerns the value possibilities of seaweed waste and the requirements that the raw material needs to meet. Here, wild sourcers and the bio-hackers are the most important audiences.

[A2] - To tell this story, the production methods need to be designed, prototyped and validated and the expected impact of the products needs to be explored.

[N3] - The next large-scale stakeholders to convince will be retailers, in order to reach more customers and scale up the processes. For this, the consumer response to the material, the storyline of the material, and the market horizon need to be told, with retail as the audience.

[A3] - A marketing strategy needs to be performed.

[N4] - The next story that needs to be told concerns the market horizon of the first targeted market but also of future targeted markets. The audience here are entrepreneurs, seaweed farmers, bio-hackers, investors, industrial refineries and retail.

[A4] - A thorough market analysis needs to be performed of all the three phases.