PROCESSING FACILITY FOR SEAWEED

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SEAWEED - AN UNEXPLOITED NATURAL RESOURCES
COSTAL COMMUNITIES THAT CAN BENEFIT FROM THIS NATURAL RESOURCES

Number of fishermen in Norway

- **Main profession**
- **Part-time profession**
- **All**
A COASTAL CHALLENGE - THE TIDE

- 320 Low water with 20 year return
- 1510 Mean sea level
- 2300 Mean high water (coastal outline)
- 3060 Highest Astronomical Tide (HAT)
- 3950 High water with 1000 year return
- 0 Cart Datum
- -320 Low water with 20 year return
LARGE SCALE OCEAN FARMING OF SEAWEED
VS.
WILD GROWING SEAWEED AND THE MEDIUM SCALE INDUSTRY
The Northern Company has served as the business template for this typology and project.
SEAWEED AS FOOD

Seaspaghetti/Remtang/Himanthalia elongata (Green Algae)

Suger Kelp/Sukkertare/Laminaria saccharina (Brown Algae)

Oarweed /Fingertare/Laminaria digitatae (Brown Algae)

Wakame/Butare / Vingetang/Alaria esculenta (Brown Algae)
MY PROCESS

Re-use or a new typology?
Sketches (a new typology) - production flow, openings, metting between land, water and building
REQUIREMENTS FOR THE TYPOLOGY

After studying the production flow and the metting between land, water, building these following requirements are needed for the typology:

Site

1. INFRASTRUCTURE - in close proximity of existing infrastructure (roads, electricity, freshwater, sewage system etc.)

3. SHORELINE - the site has to be by the shoreline to reduce the transportation distance of the harvested seaweed

4. TIDE - at low tide the sea level has to be high enough for a boat to be able to dock

5. TERRAIN - the terrain has to have a height difference of minimum 3 meters from the top and down to the shoreline because of the tidal water. The maximum and height difference depend on the size of the facility and the specific inclination on the plot

6. SUN - excellent sun conditions throughout the whole day so it is possible to sundrie the seaweed

7. WIND - the site should in some degree be sheltered from the strongest winds from the west.

8. POLLUTION - the seawater in the area should contain as little pollution as possible
1. ON PILOTI - by placing the building on pilots the production facility can be placed in different terrain types
2. BRIDGE - the building needs to function as a bridge between the infrastructure on land and the water
3. SEPAREATED - the structure must be free from the facade to give the needed flexibility in the floorplan
4. PRE-FABRICATION - the building is based on prefabricated elements to ensure that each producer can customize their facility for their production and their specific needs
5. ONE LEVEL - the entire production line must be on one level
EXAMPLES OF PROCESSING FACILITIES IN DIFFERENT TERRAIN TYPES
MY CASE STUDY

Nordland

Nordland

Træna
Population on Træna 1972-2015

Low income households with children
The Northern Company's current harvest areas
THE NORTHERN COMPANY

Program

PRODUCTION VOLUME: 50 ton harvested seaweed pr. season (approx. 2 x 250kg is harvested each day at low tide and there are approx 100 harvest days pr. season)
50 ton harvested seaweed =100 pallets finished products
50 ton harvested seaweed requires 40 pallets of packaging
1 pallets=1,2x0.8x1,5 and takes up 1m2 floorspace

TYPES OF PRODUCTS: Mainly dried products, but also frozen and other further processed products like pesto, pasta, snacks, soups, spices etc.

NUMBER OF EMPLOYEES: 4-10 people depending on the season

NEEDED SPACE: Approx. 700m2 of production space out of which about 325m2 are insulated interior space and the rest outdoor floor space.

Lifting and rinsing space 130 m2 outdoor
Production space/kitchen to cut, sort and pack the seaweed - a space that can also be used for events 140 m2 indoor
Freezer storage 40 m2 (24 pallets) indoor
Dripping/Cold drying room 70m2 outdoor
Warm drying room 30 m3 (200-300 kg) indoor
Packing room 20m2 indoor
Dry storage 65 m2 (44 pallets) indoor
Temporary storage for equipment, pallets and packaging for the products 10-60 m2 outdoor
Wardrobe with a toilet, shower and a drying cabinet 10 m2 indoor
Office space and break room 10 m2 indoor
Workshop and tool shed 10 m2 indoor
Container 25 m2 outdoor
Corridor 90 m2 outdoor
The interior rooms

Freezer

Warm drying and packing room

Tool shed

Dry storage

Container

Office

Main production space/kitchen

Wardrobe, wc and break room

The interior rooms
The Northern Company’s processing facility
The pier where the harvest is lifted up from the boat to the rinsing tubes.
3950  High water with 1000 year return
3060  Highest Astronomical Tide (HAT)
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The production kitchen (where events also take place) and the outdoor cold drying area.
The freezer room, the drying room that is connected to the packing room, the dry storage, the wardrobe and the staff break room
The loading dock/container and the office
Section - situation 2
Model photos - situation 1, 2, 3 and 4
View from the front of the facility