

Bæredygtige byggematerialer ved Ressource City Næstved

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The municipality of Næstved has a desire to create a new identity as a green city, and thereby become the center for a sustainable industrial cluster with the prospects of green growth. To achieve the above, the municipality of Næstved has initiated a local and regional master plan. One of these initiatives is *Resource City* and is developed in collaboration with Lendager Architects.

Resource City will be a new sustainable industrial area, which have place in the old area of Maglemølle in the center of Næstved. In this industrial cluster environmentally oriented companies will lie side by side and thus utilize each other's resources with view on energy, water, materials and especially waste.

Through innovative ideas by the interaction between companies and educational institutions new methods on how to upcycle and thereby creating valuable products will emerge.

The purpose of the bachelor project is to investigate how waste resources can be exploited as new building materials. The bachelor project is benchmarked in Resource City Næstved, where waste flows in and around Resource City Næstved will be mapped, and the potential of the waste examined.

The bachelor project is written in collaboration with Lendager Architects, where it will contribute the further development of the master plan of Resource City Næstved.

The project will provide recommendations on how potential or already existing companies will be able to exploit the waste resources, and thereby establish whether the companies has future residency in Resource City Næstved.

The recommendation will be based on technical analyses such as Mass Flow Analysis (MFA) and Life Cycle Assessment (LCA), national and global waste statistics plus a holistic understanding of the area of Næstved.

Given particular criteria will make sure to undertake the green innovative environmental profile of Næstved. The purpose of the criteria is to suggest how to exploit the waste resource and to which building materials. It will include how already existing companies will benefit from the internal waste resources and thereby create a green industrial symbiosis. The fundamental ideologies of this project are *Circular Economy* and *Cradle to Cradle*. The resources will be classified based on the recycling method: Upcycling, recycling or downcycling as well as scaling level: Component, element or material level.

The results of this project are four mass flow analyses and four life cycle assessments divided on two different strategies. The first strategy will describe the mass flow and the life cycle of different scenarios with open and closed loops among the companies placed in Resource City. The second strategy will describe the mass flow and the life cycle of implementation of waste recycling vs. no recycling in the companies' production.

The results determine which strategy Resource City should use in the process of achieving a green environmental profile.