

# Sustainability Programme for Urban Planning and Building in Ronneby

Sustainable development inspired by Cradle to Cradle®

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Ronneby has been inspired by programmes initiated by Växjö, Malmö and Lund. Other sources have been Michael Braungart’s and William McDonough's book from 2009 - *Cradle to Cradle - Remaking the way we make things*, William McDonough's and Douglas Mulhall's book from 2010 - *Cradle to Cradle - Criteria for the built environment* and *Social hållbar stadsutveckling* (2009) by the Swedish Planning Board.

## Introduction

The way we use the earth's resources in our modern world is a major problem. Many times products are made and used without the slightest thought about how raw materials are extracted, what the production process looks like, if the materials in the products can be re-used or if the whole product must be thrown into the garbage dump when their useful life has expired. This all too normal process can be called "cradle to grave".

To meet this problem society needs to be built sustainably with more effective use of our resources and a positive impact on the environment. The purpose of this document is to support such a development. Ronneby aims to become a sustainable society where resources are used and re-used in effective ways. Inspiration has been fetched from the guiding principles from Cradle to Cradle®.

## Why a sustainability programme?

We see the sustainability programme as a way of defining the general principles of Cradle to Cradle® when we plan and build the Ronneby of the future. Ronneby has previously defined principles for sustainability in for example the comprehensive plan for Ronneby Local Authority (2006), the budget plan 2012-2013 and the local environmental goals.

The sustainability programme will be used as a tool to ensure that sustainability goals are implemented during the planning and construction and/or renovation of the built environment in Ronneby. The sustainability programme concentrates on a few focus areas - energy, water, building materials and indoor air quality, biological diversity and open spaces and social diversity.

The sustainability programme has been ratified by the city council and will be upgraded and revised according to need. The Department of Planning and Environment is responsible for evaluating and revising the programme and will consult with other departments as needed.

## Project Sustainability Programme

The sustainability programme contains rather general goals for planning and construction, so for specific construction projects, which could be new construction or renovation of existing buildings, a project sustainability programme needs to be drafted in co-operation between the local authority and the construction company and sometimes even with the end-users.

In the detail plan (*detaljplan*) that the authority drafts for most projects it is possible to define a number of factors such as land use, density, design etc. A project sustainability programme aims at establishing goals that cannot or should not be regulated in a detail plan. It will be a link between the detail plan, contracts and building permissions and also a starting point for the necessary dialogue with construction companies.

## Cradle to Cradle® in the built environment

### Vision

A Cradle to Cradle® building contains elements that add value and celebrate innovation and enjoyment by: measurably enhancing the quality of materials, biodiversity, air and water; using current solar income; being deconstructable and recyclable and performing diverse practical and life-enhancing functions for its stakeholders.

*Cradle to Cradle® "Criteria for the built environment" D Mulhall & M Braungart 2010.*

Construction in Ronneby of the future - whether it is new construction or refurbishing existing buildings - will be designed and built to meet the measurable goals that are decided on in the project sustainability programme. These goals will be inspired by the principles that were initially introduced by Michael Braungart and William McDonough in Cradle to Cradle®. The same principles are the base for the development of Ronneby CEFUR, a centre for research and development with a special focus on sustainability (<http://ronneby.se/cefur>).

Cradle to Cradle® aims to maximize economic, ecological and social values by attacking the threats to the environment we are facing in the right way instead of the current fashion of minimizing the negative effects. The Cradle to Cradle® strategy of eco-effectiveness is more profound than eco-efficiency. By this Michael Braungart and William McDonough mean that design should maximize benefits instead of focusing on minimizing problems. Cradle to Cradle® belies the assumption that growth and welfare can be positive without impacting nature negatively.

Another way of looking at it is that Cradle to Cradle® takes its inspiration from nature in thinking and designing products intelligently. Michael Braungart and William McDonough have three principles to define this theme:

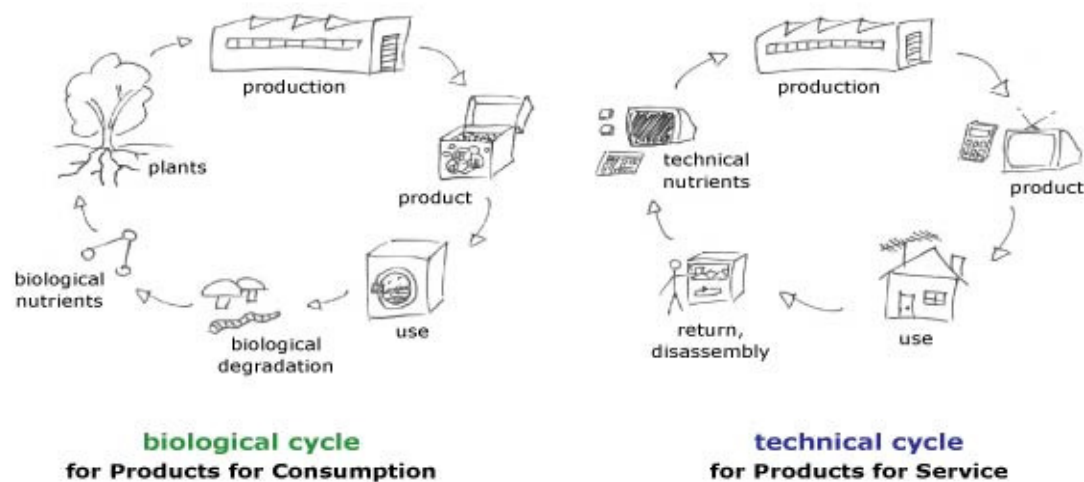
**WASTE = FOOD**, i.e. products should be safe for our health and designed to remain in a technical or biological eco-system. This puts demands on the material we choose to make a product, how we produce things and how we use and re-use them.

**USE CURRENT SOLAR INCOME**. Maximizing the use of renewable energy resources is crucial to sustainable growth. Renewable energy sources can be solar panels, photovoltaic panels, natural daylight, wave-and wind-energy and heat exchangers.

**CELEBRATE DIVERSITY**. Nature is based on complexity and diversity. Cradle to Cradle® understands that local conditions vary so this is taken into account during the design stage. Social environments are recognized for their celebration of variation and diversity.

These main principles put demands on the design phase, manufacturing process, use and opportunity of re-use of a product. Focus will be on the creation of a building or area that will maximize the quality of life for its inhabitants.

How can we achieve this? One way is to use materials that follow the technical or biological eco-system throughout manufacturing, construction and use; by ensuring that materials are certified and guaranteed healthy. It is also important to realize that a building constructed according to Cradle to Cradle®-principles functions economically throughout it's lifespan. These are just a few examples of Cradle to Cradle® in the built environment.



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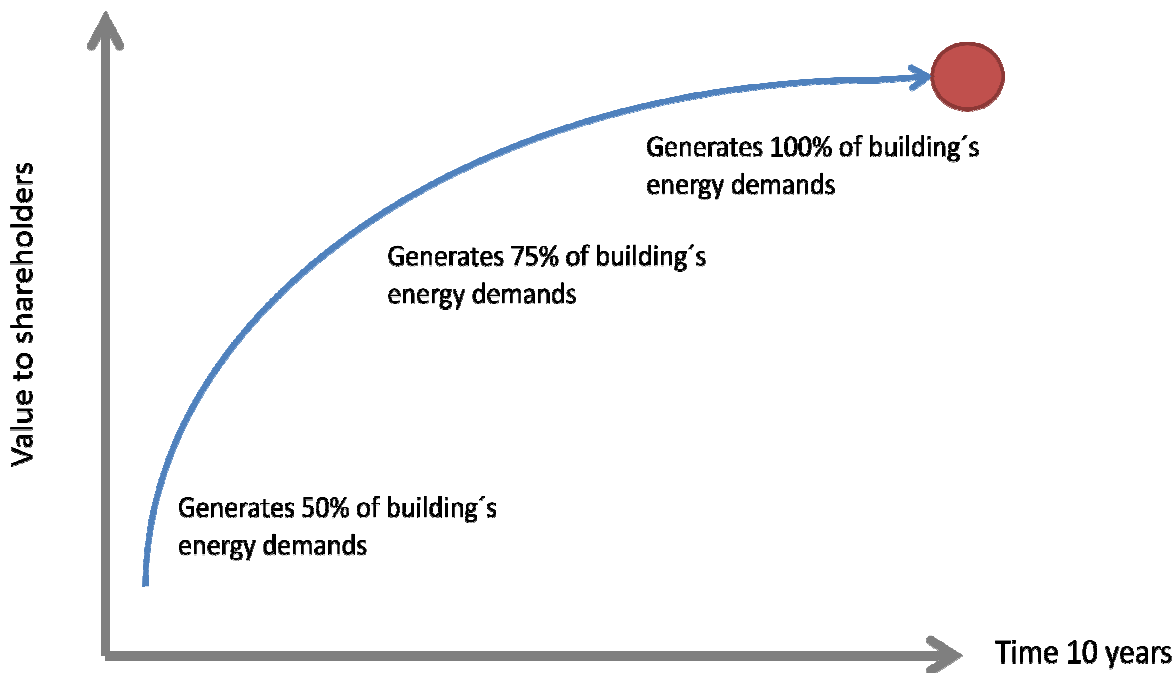
## Focus areas

The sustainability programme focuses on five areas: energy, water, building materials and indoor air, biological diversity and open spaces and social diversity. They have been chosen as central themes in any Cradle to Cradle®-inspired building in future Ronneby.

The different focus areas are presented more in detail later. But they are inter-related to each other. Goals and actions in one area can influence another focus area both negatively and positively.

The concept of the roadmap is always evident in Cradle to Cradle® to focus on both long-term and short-term goals and create valid and relevant target periods. To make goals more easily achievable a roadmap has a time-frame of ten years at the most. In each project sustainability programme the authority will co-operate with construction companies to create road maps for each focus area in a project.

# Roadmap to create a C2C-building



## Energy

A very traditional way of looking at energy in Sweden and the rest of Europe focuses on minimizing energy use in buildings. Energy from a Cradle to Cradle® perspective focuses instead on maximizing the amount of energy a building or area uses or generates and not just minimizing the use of fossil fuels. Even the materials that are used to generate your energy e.g. cables, wires or solar panels will of course also be part of the technical or biological eco-system and be re-used in an intelligent way.

A first phase in a roadmap for energy could be a target to generate at least 25% of the building's energy demands through solar income with a final goal of generating as much energy as the building uses.

## Water

Water is diverse - drinking-water, grey water and sewage. The release of grey water and treated sewage from the built-up environment is a major cause of leakage of phosphor and nitrogen to our rivers and seas.

A long-term goal for water in a Cradle to Cradle®-building could be that the water that leaves the building should be as clean, if not cleaner, than the water that came in. Suitable goals would therefore focus on re-using grey water for re-use in toilets; that water could be re-used and integrated into the production of bio-mass to make soil; or integrated with green roofs and façades. Open ponds or streams can delay the release of storm-water to the mains system but can also be a part of an exciting open space increasing biological diversity.

## **Building materials and indoor air quality**

The choice of materials used in a building is important not least for the quality of our indoor air. The quality of air is vital for our health and well-being. Indoor air quality encompasses everything from dust, off-gassing, noise, temperature, humidity, lighting and colouring. One factor alone or in combination with others can have a significant negative impact on a person's health depending on the individual's sensitivity. Studies show that indoor air quality in urban areas is often worse than the air outside. This is due to emissions from building materials.

A long-term Cradle to Cradle® goal would be to choose building materials that enhance the health of the people living in the building. Ronneby will co-operate with Cradle to Cradle®-specialists, construction companies and building suppliers to create a materials bank that can be used by everyone, whether they are building a city block in Ronneby or an extension to their summer-house. A suitable roadmap goal for the next project sustainability programme in Ronneby is to choose building materials that enhance indoor air quality so that allergies in the authority are demonstrably reduced.

## **Biological diversity and open spaces**

In our urban environment there has been a marked reduction in the number of biotopes, which has led to a reduction in the number of species we can find in our towns and cities. There are ways to break this trend and at the same time make our green areas and parks more exciting and attractive.

A long-term Cradle to Cradle®-goal is to increase the number and type of biotopes in the urban environment. This can be achieved by application of a green-area factor, where the degree of "greenness" in an area is measured and evaluated. Vegetation on roofs and façades is seen as an alternative or complement to plants on the ground.

A goal for a project sustainability programme is to introduce at least one biotope onto the plot. An example is a meadow, wetland area or wild bushes. Putting up bird's and bat's nests can provide help to lure species back into the urban environment.

## **Social diversity**

The built environment is immensely important for the well-being of our inhabitants. The identity of a place and its attraction is linked to the way we build our towns and the general well-being of the population. Efforts to integrate social diversity in planning a future Ronneby are linked to the third main principle in Cradle to Cradle® - celebrate diversity. Examples of social diversity can be to have a holistic approach to city planning, to improve integration by encouraging greater variation in functions, tenancy options and design of open spaces. It is even important to provide links to other parts of the city, to give inhabitants a positive feeling about their neighbourhood so that it is also seen positively by outsiders. It should also be obvious that any redevelopment of an area should be planned in co-operation with the inhabitants of that area.

Suitable road map goals can be to find a way to link the new area to its surroundings or to balance functions and different forms of tenancy in a wider area.

### **Where do we go from here?**

For each new construction project the authority will draft a specific project plan detailing the short-term road map goals for the focus areas which are relevant for a building that is to be built in the near future. The process starts with a workshop where dialogue with architects, builders and inhabitants is central to the final design. On completion, monitoring of the building is important to provide feedback for designing the roadmap for the next project.



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