The Cradle to Cradle Islands project works towards a clean and healthy future for the islands in the North Sea region through the implementation of innovations based on the Cradle to Cradle® concept.

WATER

ENERGY

MATERIALS

"Dear reader

The Cradle to Cradle Islands project can look back on a successful first project year. Ideas together with the research have been translated into projects. In October we had our second transnational partner meeting on Runde Island in Norway. What a creativity and enthusiasm! Results of the investigation phase have been presented and shared with partners. Workshops on the themes of Water, Energy and Materials have been conducted. Ideas for potential pilot projects have been discussed and agreed that before the end of the year pilots from each partner will be selected. We had two productive days on Runde where we got to know each other better. The clusters Water/Energy, Energy/Mobility and Materials/Energy are well on track to get a good perception. You can find more information about the progress of each cluster further in the newsletter.

In September we joined the 400 year celebration of the friendship between the United States and The Netherlands, which gives us lots of opportunities.
On behalf of the team of Cradle to Cradle Islands We wish you a happy 2010."

Anne de Vries, project manager
Hans van Meerendonk, project coordinator

Construction of Runde Environmental Centre and the Cradle to Cradle® concept

Runde and Cradle to Cradle

While the centre's main focus is to provide facilities for environmental research and education on the Norwegian west coast Island of Runde, the testing and demonstration of innovative and 'green' technologies in the actual building of the centre are equally important.

However, in a country rich of fossil fuels, with low population densities and water resources plentiful enough to be named almost exclusively in the context of too many rainy days, renewable energy production, recycling of materials and water conservation have not been priorities, especially in the building sector.
Hence, Runde Environmental Centre (REC) represents a pilot demonstration project, where principles of sustainability and, ultimately, also the Cradle to Cradle® concept are being implemented.

- With exceeding the newest regulations for energy conservation in Norway, the centre's energy consumption will be less than 50% of a conventional commercial building.
- To limit heat loss across exterior surfaces, walls in the three-section construction (apartment complex, visitor centre and office/laboratory wing) have 30cm rock wool insulation, while the roof has 45cm. Heating will be provided from a sea water-to-air heat exchanger which taps into the Gulf Stream at 40m water depth off the island. The constant 7 degree water may not seem warm to us, but by using just a 3 degree differential the entire 2000m^2 building will be heated from it.
- More conventional hydroelectric energy consumption for lighting and power is being limited by using motion sensors and low-energy LED lights.
- In addition, the centre is equipped for integrating and upgrading to renewable energy sources in the future, e.g. solar energy, wave or wind energy and biogas. Currently, the island of Runde is becoming an attractive location for testing renewable ocean energies. With its powerful wave climate, for example, Runde represents a prime test region for wave energy production,

and two pilot wave power generators have been installed recently.
- With regard to water conservation, REC uses vacuum toilet technology previously used primarily on ships. In addition to limiting water to just 0.5l per flush, this technology follows key Cradle to Cradle® principles: instead of having a problem with 'waste' water treatment, the sewage is collected as a resource – for both energy production in the form of biogas and recycling of nutrients.

The successful partnership at Runde. The complete Cradle to Cradle Islands project team.

In many instances, the material and energy cycles used at REC have been tested elsewhere; however, implementing them in this region and on a comparatively small (one building) scale is rather unique. The centre works closely with stakeholders from the region (including public institutions, private businesses and schools) in order to proliferate the experiences and disseminate the knowledge gained in the process, so that sustainability concepts

in general and Cradle to Cradle® principles in particular may be spread in theory and turned into practice.

As an example of a Cradle to Cradle®-certified product, REC has acquired a carpet for the auditorium which is used to elucidate Cradle to Cradle® principles and the certification process.

Wetsus: the sustainable water House Ameland

Development cluster Water/Energy

The main activity for this cluster was investigation of water situation on the islands, hence the questionnaire was developed by Wetsus to collect data about the water cycles (and related energy use of the water cycle) on the islands. Meetings of water cluster partners (OOWV- East Frisian Water board, Spiekeroog, Vitens, Wetterskip Fryslân, Province of Fryslân and Wetsus) to exchange knowledge about the Blue Energy concept and the Microbial Fuel Cell and to select concrete demo projects on the islands have been conducted. Moreover, Wetsus is working out a concept of a decentralised water system for a summer holiday house on one of the islands, which is based on separation of household water in several streams. Water saving (e.g. vacuum toilet, water efficient cloth washer), water reuse (shower direct loop, grey water reuse) and new water sources (water from air) are the key factors in this concept. These new water concepts and technologies are planned to be implemented, tested and demonstrated in an existing holiday house on the island Ameland. Next year this will be ready for testing.
Ideas for pilots developed by Wetsus are to renovate existing/new hotel by implementing new water technologies in combination with materials/energy, testing and demonstration; also ideas for 2 PhD research and proposal for Interreg IVA program.
Vitens made a study on 'use of Aquifer Storage and Recovery' in the natural hydrological water cycle for collecting rainwater in winter and making it available in

summer. OOWV water board developed maps in the themes of drinking water supply, waste water supply and surface water management. Additionally maps regarding geology, soil and hydrology were developed to get a comprehensive overview of the islands demands. Aalborg University started to develop similar to Energy SWOT tool to map the water system on islands (interactive Water SWOT tool). Activities of Runde are related to:

a) installation of a vacuum toilet system (water conservation) and ongoing work to connect the collected sewage to a biogas power plant;
b) development of integrated aquaculture technologies (water-energy, water-material clusters);
c) installation of a wave power test site (MAREN) at Runde, where Runde is a contractor for environmental monitoring and facilitator to the project owners (Swedish Vattenfall AB and the local Norwegian energy provider TUSSA AS).

Delft University of Technology/University of Aalborg

Development cluster Energy/Mobility

Within this cluster Delft University is developing alternative mobility products and systems on island including services and infrastructure, inspired by Cradle to Cradle® concept.

For that, collaboration with relevant companies has been made: with Batavus-bicycle manufacturing company; QWIC - electric vehicle manufacturing company for developing natural fibre reinforced electric scooter; ENECO-energy supplier for supplying charging points. The combined activity with Spiekeroog Island is to evaluate and estimate the mobility/energy question on the island and to analyse how the seawater indoor swimming pool on Spiekeroog can be renovated. Student from Delft University of Technology began to elaborate the concept.

Activities related to the development of Eternal Holiday House (EHH) include:

1. Analysis on sustainable building and the implementation of the Cradle to Cradle® concept within the built environment.
2. Developing a tool on sustainable development of the built environment that can be used by all participating islands.
3. Development of an Eternal Holiday House concept on basis of projects that have already or are being carried out. The possibilities of developing the house that is energy producing, constructed with local materials, transportable and biodegradable are being investigated.

Aalborg University developed interactive energy tool to serve as a starting point for the evaluation of strengths, weaknesses, opportunities and threats (SWOT), enabling to communicate the complexity of energy systems by means of number of key parameters in a relatively simple user-friendly and interactive way. The tool can quickly communicate consequences of changes in the energy system to the user, and can thus be a basis for assessing different paths of development within the energy system of an island. In its original version the tool displays a model of the energy system on the island of Samsø.

EPEA

Development cluster Materials/Energy

Activities for this cluster have been mainly realised by EPEA, in terms of introducing partners to Cradle to Cradle® concept. Much progress has been made during the first year of the project, but it is clear that more work has to be done on educating partners about the Cradle to Cradle® concept.

EPEA was working on development of a method for Cradle to Cradle® implementation on the islands. It has been realised that EPEA has to adapt communication of the Cradle to Cradle® concept to a broader, non-scientific audience in a diverse cultural context. The Cradle to Cradle® concept applies to all three theme

The Cradle to Cradle Islands project: a partnership of 10 islands and 12 other organisations (government bodies, educational, environmental and water organisations) cooperating for a healthy and clean future for islands in the North Sea Region.

The partnership: (NL) Provincie Fryslân (Lead Partner), Delft University of Technology, Wetsus, Vitens, Ameland, Texel, Wetterskip Fryslân, HZ University of Applied Sciences; (UK) PURE Energy Centre, Shetland Islands Council, IRRI; (G) Spiekeroog, Insel- und Halligkonferenz, OOWV; (DK) Aalborg University, Samsø Energiakademi, Norddjurs; (SE) Lund University/Ven en Tjörn; (N) Runde Environmental Centre and Storvågan Environmental Centre.

Would you like to know more or want to contribute to the project? Visit our website or contact us.

Website:
www.c2cislands.org
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clusters and many of the cluster activities are interlinked. Thus, partners have been encouraged to recognize the interaction between the clusters. With regard to specific projects, such as Eternal Holiday House, EPEA indicated that more focus on Cradle to Cradle® elements such as energy producing, defined materials, etc. is needed as the project develops. EPEA has started discussions with different stakeholders such as DSM and the Dutch Polymer Institute Value Centre about set up of an innovative research Centre on Biopolymers. The challenge will be to determine if the research centre will be a network of organizations or an actual physical location. Moreover, EPEA has already made an effort to introduce Cradle to Cradle® materials on some islands (e.g. Desso carpets at Runde Environmental Centre) and will continue this activity. Local production of toys or swim suits with innovative materials will probably become an active topic after further introduction of concept into the project.

Pure Energy centre from UK made draft assessment of Shetlands energy mix and opportunities for clean energy technologies. Design and testing of sustainable product/services for island mobility is underway with island communities, as well as linking energy savings with the modernisation of housing. Work has also begun on the development of sustainable solar lighting solutions for domestic use.

Lund University from Sweden carries out supervision of one MSc-thesis regarding the Innovation climate on Cradle to Cradle Islands. Moreover, Lund University negotiates participation of island Ven in the project.

New York/Roosevelt islands

In 2009 the Dutch had celebrated 400 years of friendship ties with the United States. Under the umbrella of 'Made in Friesland', the province of Fryslân participated in the festivities in New York in September. Fryslân was invited to participate in the H209 Water Forum in New York and was asked to organize a water workshop "Decentralized and Self Sufficient Water Systems".

The project Cradle to Cradle Islands was presented as an example. The New York parties became very interested in this project and special interest was expressed from Roosevelt Island - at the East side of Manhattan - as a possible project partner. Ideas about the secondary network and the possible extension of the Cradle to Cradle Islands partnership with a New York partner is further being developed and investigated. The aim of this network would be to share and exchange information on innovations, project knowledge and on the benefits of Cradle to Cradle Islands project with interested parties all over the world through the communication tools which will make interaction easy, attractive and effective among the network partners: for instance, a virtual Eternal Holiday House where one can 'walk around' and look at the innovations in the field of Water, Energy and Materials.

H2O9 water workshop Decentralized and Self Sufficient Water Systems. NY.

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