

ECOLOGICAL EFFICIENCY IN URBANISM AND LAND PLANNING

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Abstract

This paper explains what the Cradle to Cradle concept would be like in the practice of urbanism and landscaping. The ecological efficiency described by this concept provides a handy tool, both in planning thinking and discussions, and for creating sustainable alternatives. Cradle to Cradle is a sustainable development concept that teaches us how to apply sustainability to new dimensions by creating quality products both biologically and technically. It provides us with in-depth knowledge and tools to work on Cradle to Cradle type projects, not only in industrial design, but in all fields such as architecture, infrastructure, energy, politics, scientific research, etc., not only with materials and products, but also with logistics, partnerships, business models, and the pooling of materials or things developed and / or re-designed in accordance with C2C requirements.

Key words: concept, sustainable development, effective, design, urban planning

INTRODUCTION

Since 2000, more and more attention has been paid to urbanism and spatial planning both around the world and in our country, more exactly to: spatial quality, sustainable development, ecological efficiency of spaces, in both urban and rural environments (Timofte, 2016). Sustainable development and environmental awareness are not just areas for activists. That is why the media puts a special emphasis on sustainable development. Even the government and the private sector feel more involved in this and play an important role into it. In our country, there is the Agency for Sustainable Development for each county, in order to facilitate cooperation between member administrative-territorial units, in order to promote and implement development projects of common interest in compliance with the principles of sustainable development.

A new way to become sustainable is the "Cradle to Cradle" concept created by M. Braungart and W. McDonough in 2002. They thought of this concept as a journey. In their book, the two authors insisted on the right of humanity and nature to co-exist, recognized interdependence, respected the relationship between spirit and matter, accepted the consequences of design, created objects safe with long-term value, eliminated the concept of waste, rely on natural energy flow, understood the limitations of designers, seek constant improvement by sharing knowledge. (Braungart, & McDonough, 1992) Then the two thought of this concept as a frame: by cultivate

diversity, connect place and context, combine city and nature, anticipate change, continue innovation, design healthy systems, empower people to transform the city.

These are the three C2C principles:

1. Waste = food; any food can be a nutrient for something else. Biological or technological nutrients should be reused as nutrients for natural and/or production processes.

2. Use solar energy: energy should come from renewable resources.

3. Celebrate diversity: biological, cultural and conceptual diversity should be strengthened, promoted and combined.

In other words, sustainable development can be achieved by using recycled materials in a closed circuit and giving up strict dependence on raw materials. This means that the products are made of pure components, which are easy to disassemble, in order to create new products, and to reintroduce them either in a biological or a technical cycle. Manufacturing processes are based on renewable energy, water conservation and embrace social responsibility. (Working and learning in a world of C2C, 2013)

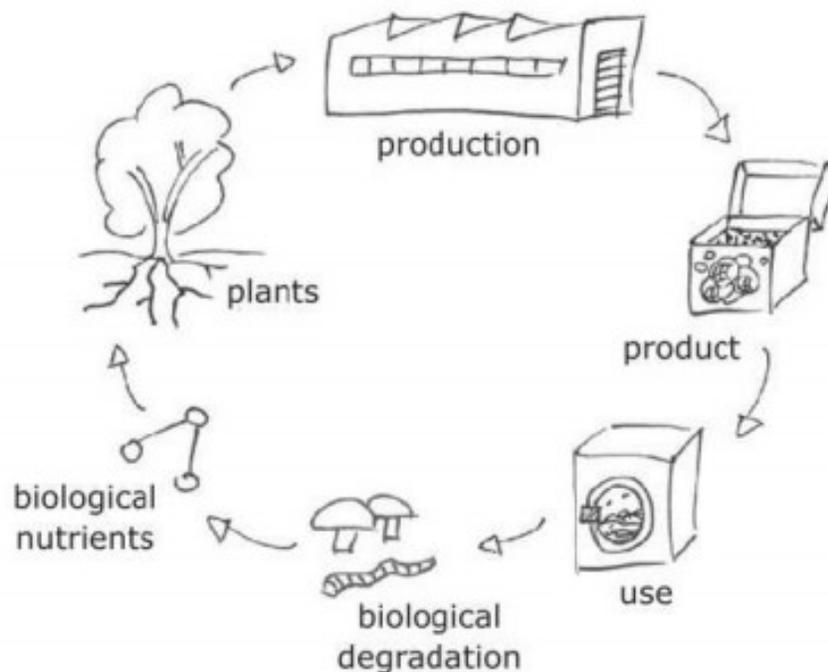


Fig. 1 Biological cycle of consumer products
(www.EPEA-akademie.de)

Despite the fact that Cradle to Cradle has been widely applied in product development, with a focus on recycling and use of materials (for example: Nike shoes, Rohner Textile AG Climatex - textiles, Herman Miller office chair, floor, roof, lighting, Desso - carpets, etc. (MBDC all with C2C certificates, 2011), the application of this concept is less known in other areas such as urbanism and landscaping. (9)

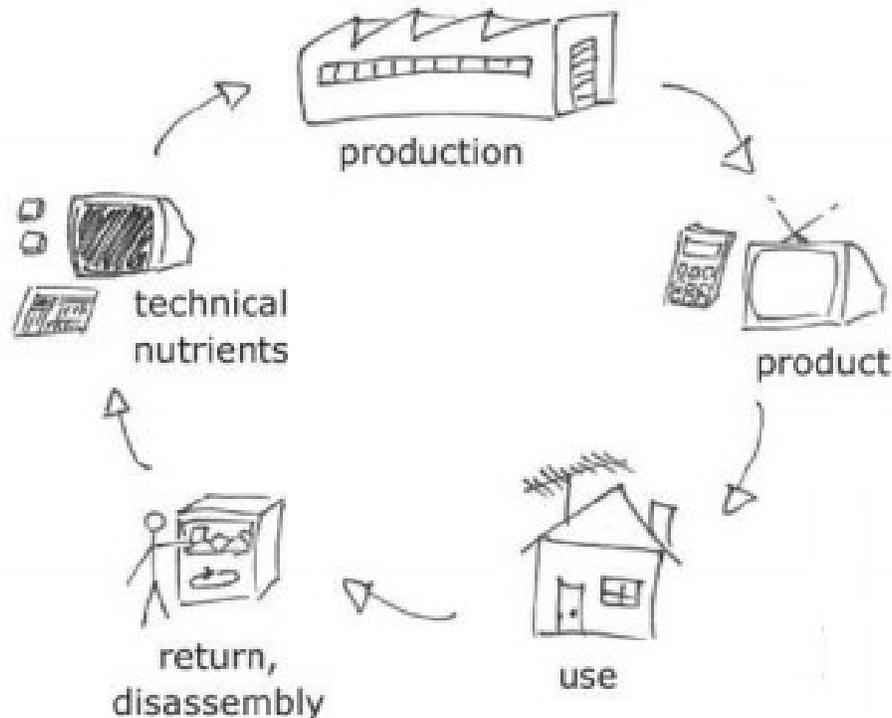


Fig. 2 Technological cycle of products that provide services
(www.EPEA-akademie.de)

However, unlike other concepts, Cradle to Cradle is not just about recycling waste and generating energy but goes deeper into the process of turning an urban or rural area into something that involves a lot of intangible products. Therefore, in applying the concept of Cradle to Cradle in the process of urbanization and landscaping of a city it is important to focus on its guiding principles and principles of transformation. (Feddes,, 2008)

As it was presented earlier, this concept is inspired by nature. Ecological efficiency aims at designing systems that simulate the healthy

abundance of nature in a city. It is a change of perspective, from the old perspective of nature, to something to be controlled.

Using natural resources efficiently, we create an ecosystem that integrates easily into nature and produces abundant resources for another ecosystem. Its main design objective is to be energy efficient. From an industrial design perspective, this means products that work in life cycles from cradle to cradle not from cradle to grave. (8)

MATERIAL AND METHOD

Eco-efficiency or ecological efficiency means consuming and producing less by minimizing, avoiding and reducing waste. The goal is to create a society with: zero waste, zero emissions, zero ecological footprint. As long as human beings view the word zero as a "zero" word, a "zero society" is a good goal. (Albrechts, 2001)

Ecological efficiency, on the other hand, is certainly a well-intentioned concept, but unfortunately it is not a successful long-term strategy because it does not address the issue in depth. It works within the same system that caused the problem, slowing it down with moral reproaches and punitive demands. Based on the ecological efficiency of saving the environment, this concept will actually achieve the opposite - it will let the industry finish everything quietly, persistently and completely. (Tosics, 2003).

Landscaping is vital to the future of any country. In particular, urbanism contributes to the conservation of common resources: land, air and water, which are subject to increasing development pressure. If a city is to have sustainable economic growth and an equitable society, then ecologically efficient spatial planning is needed. The specific strength of urbanism lies in its ability to create opportunities and counter threats posed by new developments. Urbanism is situated, simultaneously, between the long-term action and the application, in emergency regime, of some immediate effective actions.

The common vision and principles adopted by urban planners across Europe guide their actions towards achieving greater coherence and greater and lasting cohesion. These objectives can be achieved by developing networks of cities and regions interconnected with each other, efficiently with the whole society.

Urbanism allows communities to formulate strategic visions to achieve their aspirations. The expression of these strategic visions can directly and significantly influence the creation of optimal living areas and the construction of a sustainable future for communities across Europe. Urbanism, associated with land use planning, intervenes at all territorial

levels, from the local to the national, cross-border and beyond European borders.

European diversity is expressed by the local specificity and by the interdisciplinary nature of the urban planning profession in Europe. These particularities guarantee that urbanism takes into account the diversity of cities, regions and other European entities, which are defined by specific geographical, environmental, landscape and cultural conditions. Therefore, this ecologically efficient concept does not advocate a unique system of spatial planning, but emphasizes the value of urbanism and spatial planning as tools of work and creation, regardless of the administrative framework in which it intervenes.

RESULTS AND DISCUSSION

The landscaper or urban planner sets some ecologically efficient principles from the beginning of the project so that in the end the chances of success are maximum:

Setting the intention - choosing a new paradigm. Thus, in planning or transforming an urban area, do not choose an old model to do something efficient, but choose a new effect. This requires a clear vision that must be clearly communicated to all affected actors so that everyone can see and understand your intention, the direction of development of your urban or rural intention.

Restoration - something new does not mean the destruction of all that is old. It is important to fight for it to create a good local image. In other words, you can design a neighborhood with "restoration capacity" by using the history, local culture or elements of nature that function as "carriers" for its urban transformation. Here are some examples: the use of a portion of an "old street" to restore a new area has proven that it can be restored and may even remain habitable; or restoring the original structure of a natural feature can create more space for other natural elements, which in turn can improve the quality of our urban environment or even mitigate natural disasters. (Kusumo, 2011)

Be inventive - restoration does not mean that we stop in time and do not innovate anything. Don't just focus on basic activities, but leave room for innovation, new experiments, and adjustments to new situations. Sustainable development is often a long-term process. Due to the complicated trajectory of the permit, it takes years before a plan can be made. If the plan was completed, the community changed and a new social trend emerged. Therefore, a modern large-scale landscaping, after a few years, will be old. This makes the plan quite rigid and inflexible. On the other hand, eco-efficient small-scale planning provides more room for real-

time adjustments and innovations. In this way, you can create a neighborhood where the use of the land and its functions are flexible and multifunctional, offering opportunities for change or dividing the plots only when necessary. In this way, the neighborhood will be ready for any change in the future and will be invented with the change. This will stimulate diversity and mixed function, so that the inhabitants of the neighborhood can be preserved.

Preparing the roadmap - innovation requires openness to the signals that come from society, the environment and the world in which we live. It is not a long process but it is the result of our communication with all the parties involved. Regarding the C2C concept, McDonough & Braungart (2002) said: "be open to feedforward, not just feedback". Understanding these signals and continuing to learn from them will make it easier to recognize that change can be difficult, messy, and time-consuming. But it is important to offer a way to adapt and invent on the go. Rather than spending time and money correcting an existing plan, it would be better to design an environmentally oriented plan, a future-oriented plan, an innovative plan based on "feedforward" involving different disciplines, a new technology, the principles of nature and society in which live.

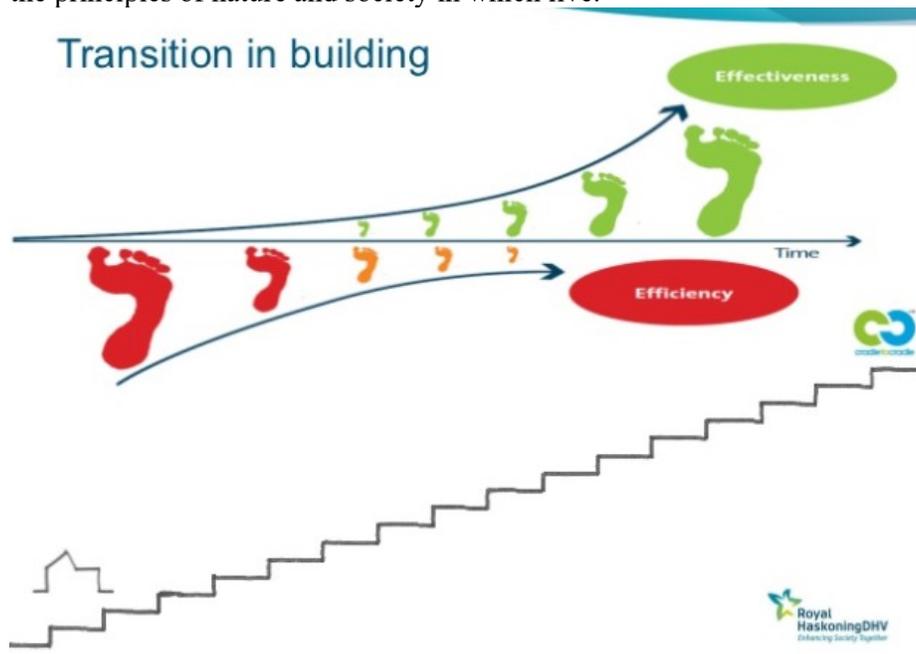


Fig. 3 Road Map
(Michiel Visscher (Cradle to Cradle consultant Buildings, Royal Haskoning DHV))

Accountability - one of the main goals of sustainable development is to design a neighborhood where the basic needs of the next generation can be guaranteed. One way to do this is by trying to be trained in the basic needs of our modern society, such as food, water and energy. The supply of necessary food can be done by creating urban farms or by stimulating urban agriculture and urban gardening. The inhabitants of the city can use the space in front of the block or from their own balconies to generate their own food. In this way, many families can (partially) meet their nutritional needs. Obviously, another way would be to stimulate the local economy or even social cohesion in the neighborhood. Along with food, clean water should be guaranteed for the next generation, applying the principles of ecological efficiency of water recycling, making them aware of its efficient use. Energy availability is another important factor for the next generation. Designing a neighborhood that encourages walking and creates sustainable transportation systems reduces energy demand in any urban area. Projects must be submitted for the use of sustainable energy and the natural resources such as wind, solar energy and water inside the neighborhood must be renewable. And encouraging the community to use fossil fuel energy as efficiently as possible.



Fig. 4 Forrest in Rotterdam

These eco-efficiency principles are citizen-oriented and focus heavily on participation and communication between landscapers and society. In this way, the Cradle to Cradle concept can be effectively applied in urban planning and landscaping and considered a modern process.

Applying these principles to field projects will be a personalized task of innovation and design, but it will allow these projects to pursue their full potential. One of the first examples of the application of the Cradle to

Cradle principle for urban planning was made in the city of Venlo, one of the satellite cities in the Netherlands (6).

CONCLUSIONS

At first glance, it seems that the Cradle to Cradle concept can offer only a limited solution for sustainable urban development, but if we study in depth its ecologically efficient vision, we realize that it offers a lot of possibilities: a different approach to sustainable planning of a city, a direction to create socially and economically sustainable environments.

A good long-term sustainable solution will be: stop investing in buildings as if they were static objects or short-term businesses, but start investing in performance like: dynamic, infinitely reusable building business, long term business case, keep the value of knowledge and materials. In this way, the landscaper will not be limited to solutions that focus only on the recycling of equipment or materials, but will overcome this and take into account the whole context around him.

Eco-friendly vision can function as a holistic economic and social framework, can provide an umbrella for other sustainable methods in urbanism, can provide transformation tools that focus more on participation and communication between landscapers and our society.

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