C2C NETWORK

POLICY RECOMMENDATIONS

European Union
European Regional Development Fund

INTERREG IVC
INNOVATION & ENVIRONMENT
REGIONS OF EUROPE SHARING SOLUTIONS

Colophon

This report was commissioned by the Cradle to Cradle Network, a project part-financed by the European Regional Development Fund through the INTERREG IVC programme.
Under the Authority of the Province of Limburg, the Netherlands.

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Design
Magutdesign, Sesto San Giovanni (MI) Italy

Printed by
Gruppo Stampa GB, Cologno Monzese (MI) Italy

Publication date
November 2011

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1 Introduction

1.1 Introducing Cradle to Cradle

The Cradle to Cradle concept was developed by William McDonough and Michael Braungart[1]. The name C2C refers to the continuous cycle in which materials should remain in circulation, essentially creating systems that are waste-free. Cradle to Cradle as a conceptual framework is a business model with the ambition to create completely safe and healthy products and to maximise the positive impact of human activities. Its appeal to business stems from its focus on adding value by enhancing quality. This makes Cradle to Cradle distinct from other interpretations which see sustainability and environmental aspects from an efficiency or cost perspective and are therefore considered not or less compatible with economic progress. The Cradle to Cradle approach advocates an eco-effective way of working.
The power of the Cradle to Cradle concept lies in its innovativeness and its ability to mobilize and inspire. The Cradle to Cradle approach is a positive one, starting with an initial smart design. It is a concept that integrates, since it combines a design approach with systems thinking. It covers supply chains (the recycling of natural resources, via product and manufacturing design, to high value re-use), and involves systems as well as management. It envisages a challenging future and incites us to move to a radically new way of product design and innovation. Indeed given its highly ambitious goals for continuous loops in production and the use of renewable energy, particularly in building and area spatial design, Cradle to Cradle can justifiably be described as innovative. Cradle to Cradle challenges us to design our buildings as if they were trees and our cities as if they were forests.

Cradle to Cradle is based on three principles:

- Waste equals food: everything is a nutrient for something else. Biological and technological 'nutrients' are reused as nutrients for natural and/or human production processes;
- Use of current solar income: the use of energy sources that are renewable within in the timeframe that they are used;
- Celebrate diversity: promoting and combining biological, cultural and conceptual diversity.

These principles are key to any Cradle to Cradle inspired development and are supplemented with other principles based on local conditions and interests.
It is not about 'doing more with less' and reducing waste (cradle to grave) but about 'doing right from scratch'. Obviously such transitions cannot be realized overnight. A growth path needs to be developed to lead people to these newly set goals. Continuous improvement is thus an inherent part of Cradle to Cradle.

1 William McDonough and Michael Braungart. (2002). Cradle to Cradle: Remaking the way we make things

1.2 Introducing the Cradle to Cradle Network

The C2C Network is an EU capitalisation network funded under the INTERREG IVC programme, which aims to reduce the use of raw materials to generate less waste and less environmental pollution, as well as to enhance innovation and economic development and social well-being. The network consists of ten partners across Europe and runs for two years (01/2010-12/2011). It brings together ten EU regions to share and capitalise on regional good practices in the implementation of C2C principles in relation to waste prevention and ecological materials management. The European Commission has given priority (fast track status) to this project and is actively involved.
The overall objective of the network is to develop regional action plans which reflect the principles of the Cradle to Cradle concept and enable its application at regional level. These action plans set out how the good practices, identified by the network can be reflected and implemented in the regional mainstream structural funding programmes.
The C2C Network project focuses on the following short term operational objectives within the broader strategic objectives:

- Create an enduring network of regions related to Cradle to Cradle
- Promote regional stakeholder at the regional level
- Disseminate and communicate approved methods for the application of the Cradle to Cradle philosophy in a range of sectors to a wider EU audience outside the partnership (through awareness-raising) and the European Commission (by developing policy recommendations).

The network activities centred around two phases. Phase 1 focused mainly on an inventory and analysis of the good practices, while phase 2 addressed the interregional transfer of good practices and the development of regional action plans. The network accomplished this by developing:

- **Four perspective studies.** These studies served as frame of reference for follow-up activities and exchanges inside and outside the Cradle to Cradle Network. The aim was to reflect the current challenges and opportunities associated of a Cradle to Cradle approach. In total, four perspective studies were written: one on industry, one on area spatial development, one on governance and one on the build theme. These studies are not formal academic literature reviews. They were written from a practical perspective and offer some general understanding and guidelines for those engaged in C2C initiatives and for policymakers. They consider 'on the ground' delivery of the C2C philosophy and reflect on both theory and practice.

- **A Theoretical Framework.** While the four perspective studies focus on applications in one thematic area, a separate document – the Theoretical Framework – provides more detailed information on the principles of the Cradle to Cradle concept and its implications at theoretical level. The framework helped to develop a common language for the network and underpinned the perspective studies and the work of the C2CN.

- **A Journey from Cradle to Cradle: C2C Network initiatives guide.** This guide can best be seen as a catalogue of C2C inspired practices that are being planned and/or are happening in Europe. The cases in this guide come from stakeholders who understand that we need to go beyond eco-efficiency and have already embarked on their journey towards eco-effectiveness. The good practices in this book do not only describe C2C certified products or services. They are not pure examples, neither are they the best or ultimate examples of C2C applications. The good examples in this handbook are first and foremost examples of practical efforts or practices aiming at the actual implementation of C2C-inspired thinking (thus: collection of C2C inspired cases).

- **Guide on C2C beyond waste management.** The Guide on C2C beyond waste management provides insight in the major European policies and challenges for making the transition towards a society where waste will become a resource. This guide is also developed from a practical point of view with regard to policymakers.

- **10 regional action plans**

- **Policy recommendations (see 1.3)**

These activities have been supported by both regional and joint activities e.g. thematic expert seminars, study visits, transfer workshops and regional stakeholder meetings, which have ultimately resulted in the transformation of C2C-inspired practices into action plans. The studies and the initiative guide are expected to be of great value, also for other interested parties outside the project partnership and can be downloaded from the project website (www.c2cn.eu).

1.3 Introducing the Policy Recommendations

The C2C network wants to promote the way of thinking and the philosophy behind C2C as well as the governance and steering mechanisms that help to distribute and apply this way of thinking. The project is about knowledge building and raising awareness. The recommendations have been formulated largely from the results and the lessons learnt from the following activities:

- Guide on C2C beyond waste management, including policy recommendations at the strategic level to guide EU policy towards eco-effectiveness
- Perspective studies on industry, area spatial development, governance and build theme
- A journey from Cradle to Cradle: C2C network initiatives guide
- Transfer workshops, study visits, regional meetings, expert seminars

We started our Cradle to Cradle journey at the beginning of January 2010. At the end of 2011 it comes to an end. The recommendations in this additional document should be read as a contribution to the C2C movement. They can help policymakers at European, national and regional level to take (small) steps towards an eco-effective society. The (non-exhaustive) list of recommendations provides signposts for an eco-effective society. Some of the recommendations are strategic, whilst others are operational. The work of the network led to four recommendations that are discussed in detail in the next chapter:

- Create a common framework for an eco-effective society;
- Stimulate the market for C2C-inspired materials, products and services;
- Support innovation through partnerships;
- Finance the transition to an eco-effective society.

2 Policy Recommendations

2.1 Create a common framework for an eco-effective society

Europe, its member states and its regions are targeting jobs and growth. Europe wants to remain one of the prime knowledge-based economies of the world. C2C with its positive message of sustainable solutions, economic development, innovation opportunities and social well-being is one of the tools that can bring Europe's resource efficiency objectives beyond mere efficiency to an innovative, resource effective, safe and healthy Europe. C2C acknowledges an eco-effective way of working and the need to change systems. This new transition requires a common framework which can give structure and direction and support a coherent approach for the integration of C2C principles in existing policy lines.

European Level

[1] Create a common understanding

In order to support policy coherence and the acceptance of C2C by businesses and consumers, a common framework is needed whereby C2C principles can be incorporated in existing policy lines and policies can be redesigned to meet the C2C principles. The diversity of EU members in terms of actual waste management and the introduction of resource efficiency measures represents a challenging starting point for defining new policies. What is too ambitious for one may be infeasible for the other. A flexible implementation will be necessary.

A common framework does not necessarily mean a separate C2C directive. On the contrary, it means that a coherent approach for integrating the C2C principles in existing policy lines becomes possible. It would for instance mean the integration of a resource and material focus in the Eco-Design directive.

It requires ambitious objectives and targets, supported by a good monitoring system.

A common framework based on C2C principles will open up possibilities for removing the policy obstacles that stand in the way of an eco-effective society. Amongst other things, it will mean dispensing with subsidies and other public support mechanisms for initiatives and practices that do not take account of life cycle costs and/or which lead to lock-in effects or eco-ineffective solutions. Such a framework should re-channel the financial resources into incentives for eco-effective innovation and implementation.

[2] Redirect the Roadmap to a Resource Efficient Europe towards resource effectiveness

Despite the reference to a circular economy, the Roadmap to a Resource Efficient Europe advocates an eco-efficiency approach to sustainability. The basic assumption behind C2C is that such an approach will prove inadequate: demographic and economic growth are bound to outweigh the environmental benefits of the minimizations of input/output in materials and energy within decades. From a C2C perspective, it is essential to redirect the Roadmap towards resource effectiveness.

[3] Including sufficiency measures to complement eco-effectiveness

Both C2C and the Roadmap to a Resource Efficient Europe embrace the productivity narrative, which is guided by an unquestioned belief in growth as the driver of well-being. While this appears to contribute strongly to the appeal of C2C, the C2CN Perspective Study on Governance points out that the emphasis that C2C places on shifting from eco-efficiency to eco-effectiveness, in effect, masks another shift, which may be equally important, i.e. from efficiency to sufficiency. This shift requires that the C2C focus on sustainable production / construction be complemented by proper attention to sustainable consumption and a corresponding, new approach to market creation.

[4] Redefine waste as a resource

An essential element of the redesigned policy will be to re-label waste as a resource (with economic and ecological value). If the EU wants to move away from thinking in terms of resource-to-waste (or cradle-to-grave), it should design its future framework with a view to a circular economy. Then the EU will have to look again at definitions, because the formulation or interpretation of waste legislation at national level often hinders the adoption of closed loop production systems.

National and/or regional level

[5] Formulate guiding principles at local or regional level

In the C2C network, the Cradle to cradle philosophy is positioned in relation to industry, building design, governance and area spatial development. Spatial planning, as the geographical expression of the social, economic, cultural and ecological values and policies of regions and communities, has always been a path for development strategies. In the years to come, a C2C-inspired approach will prove invaluable in ensuring the full-range sustainability of areas that bring together quality of life, economic growth, inclusion and environmental quality. Our experience is that C2C challenges stakeholders to accentuate the strengths of the area and to formulate and integrate long-term strategic ambitions for economy and ecology as well as society. The C2C approach helps to set new and ambitious goals and challenges people to think and act eco-effectively.

Area spatial development is regarded as a learning-by-doing approach. C2C-inspired principles are a powerful tool for safeguarding the ambitions and mission defined at local or regional level at the start of an area spatial development project. In the end, these principles must lead to strategies and concrete measures. For developments already underway the principles are a powerful tool to structure goals and measures. In general, throughout the whole development process the C2C principles will inspire stakeholders to come up with innovative solutions and realise better and more sustainable area spatial development. Typical examples are the Limburg, Hannover and Almere principles.

2.2 Stimulate the market for C2C-inspired materials, products and services

The Cradle to Cradle philosophy assumes that interactions between humans, the environment and the economy must be mutually beneficial. This implies that negotiations about making the right choices, are negotiations about finding the right combinations, and hence that C2C is an issue of trade-offs and optimisation. A C2C approach reduces for society the costs of waste management and limits the exploitation of non-renewable resources. At the moment the product prices seldom reflect the full cost, complete with the environmental and social impact of their overall life cycle. When costs that have previously been ignored are internalized, it becomes possible to consider the full costs of a course of action. These full costs may then influence the choices and policies of organizations as they align their operations with lower environmental impacts. Product prices can therefore be considered as a market failure that obstructs the breakthrough of sustainable products in general.All tiers of government and society may stimulate both the supply and demand side of the market for C2C-inspired materials products and services.

[6] Use market driven instruments

Market-based instruments (MBIs) could be adequate and intelligent instruments for promoting C2C. MBIs include charges, subsidies, tradable permits and other financial incentives. Lowering VAT for products that comply with C2C/closed loop criteria should be considered as support for these products. Specific fiscal mechanisms could be encouraged for the development of buildings which demonstrably and measurably contribute to the incremental development and uptake of C2C-inspired approaches including micro-renewables. Mechanisms should be introduced to encourage implementation at different stages of a building's life-cycle (design, construction, use and deconstruction) that will ensure the delivery of the initial eco-effective ambitions.

[7] If you are in the public sector, lead by example

All tiers of government should recognise the importance and value of green procurement. When it comes to stimulating demand, public bodies play an important role through procurement. Green public procurement means that public bodies seek to achieve the appropriate balance between the three pillars of sustainable development - economic, social and environmental - when procuring goods, services or works at all stages of the project. Innovative public procurement can challenge the market to come up with innovative eco-effective solutions (quality) rather than eco-efficiency.

[8] Developers (and financers) should be encouraged to use the life cycle approach to costing (LCC) and reflect this in the pricing

Life-Cycle Costing (LCC) is a technique for estimating the total cost of ownership. It allows comparative cost assessments to be made over a specific period of time, taking account of relevant economic factors in terms of initial capital costs and future operational and asset replacement costs. There is no legislation in Europe which says that LCC must be taken into account in procurement procedures, but the Most Economically Advantageous Tender (MEAT) mechanism introduces it as an option in public procurement exercises. Tools such as LCC and LCA should be further developed – focusing on the assessment of the avoided burden which is most applicable in the Cradle to cradle context – and their use should be encouraged to help reconcile the economic interests of the developers with those of the users by incorporating the estimated costs of deconstruction in the development costs.

For instance if the building has great disassembly potential and consequently a high transformability capacity, high additional value and benefits could be created in the long term (by the recovery of materials, pre-empted environmental impacts).

Further research is necessary in this context:

- on how to include disassembly and deconstruction feasibly and effectively in the costs and the initial development. This research would need to consider the possibility of a standard methodology for measuring and estimating such costs. Parallel work should focus on the activities associated with design and disassembly.
- on a 'flagship' C2C construction project which analyses the possibilities and limitations of different groups of material with regard to Design for Disassembly (DfD) and consequently transformability.

Integrating an appreciation of the full-life cost and benefits of 'Cradle to cradle' in construction trainings already on offer would be beneficial for students as well as professionals. It could include subjects such as designing for disassembly, construction from used materials and targeted selection of materials to demonstrate that this is feasible and cost-effective.

[9] Stimulate inventories of the materials available in buildings

Detailed information on the types, amounts and potential locations of materials embedded in buildings could be useful in the deconstruction and management of materials for added-value applications in the future. It could also assist defined or suggested end-of-(building)life material-use pathways to encourage up-cycling rather than down-cycling or to cascade uses towards lower values. Such inventories, which drive the focus on the availability and use of materials in the future, could also strengthen the focus on design-for-disassembly and thereby enable the recovery of materials. Information from quantity surveyors is frequently available in the construction stage and could form the basis of such an inventory. However, this information is rarely passed on when ownership of property changes hands.

[10] Stimulate system thinking in designing and marketing products and services

Cradle to Cradle does not only imply the design or marketing of the right product. Whether a product lives up to the high standard of the C2C principles, is also determined by the system in which the product is embedded. For instance, is their a guarantee that the product will be returned for recycling after its useful life? Is it designed for multiple life cycles or just one life cycle? Does the producer who places a product on the market take responsibility for the product over its complete life cycle or does this responsibility stop after it has been sold? Producers who take on responsibilities over the complete life cycle and who focus on delivering the right service instead of the right product should receive positive market incentives. Therefore existing regulatory schemes and market based instruments should be evaluated whether they deliver these incentives.

2.3 Support innovation through partnerships

A closed loop economy is based on governance structures that allow all the players to discharge their shared responsibilities. Governance structures at local, regional, national and global level need to be aligned and mutually-reinforcing for innovation to occur. A closed loop economy means working through new approaches that facilitate innovative collaborations and partnerships between business, government and civil society. Such collaborations can come in many shapes and sizes such as public-private partnerships, business value chain engagements and alliances with universities and consumers.

European Level

[11] Europe could take a supporting and leading role in the co-creation of national (regional) transition networks

Europe could take a supporting and leading role in the co-creation of national transition networks. A transition network or (multi-stakeholder) platform brings stakeholders from different backgrounds together in order to co-create a circular economy. The EU could build on the leading role Belgium (specifically the Flanders Region) and the Netherlands have with respect to transition management. Using the present experience and unfolding it on a European scale could significantly speed up the process of transition towards a circular economy.

[12] From Fast Track to Follow Track

The EU has already improved its connection with the network by interacting more closely through the Fast Track label. A new kind of follow-up engagement could be launched, say, a Follow Track label. This would guarantee the continuation of the interaction and follow it up with a network for creating a circular economy. This Follow Track label should ensure further policy integration on the one hand and increased use and dissemination in the regions on the other.

National and/or regional Level

[13] Stimulate trans-sectoral networks

Innovations often cross the boundaries between domains that are subject to different regulations and therefore necessitate the rearrangement of existing policies and routines. Policymakers should use their role as facilitators and conveners to encourage open dialogue and social learning, creatively searching for possibilities within existing frameworks through patterning the innovation and reinterpreting current policies. Integration and promotion are all about connecting the new stories about innovation to the traditional stories and identity of existing organizations. They play a key role in legitimizing new practices and in establishing roots in existing configurations. It is no less important to raise cultural awareness among consumers and among companies and their value chains.

[14] Call on corporations, the academic community, designers and the creative sector to combine their creative powers towards innovative and resource effective projects in construction and area spatial development

Cultural awareness and readiness for eco-innovation is still meagre and is therefore in need of stimulation. The challenge is to find out how more regions/stakeholders can achieve C2C-inspired examples in the construction sector and area spatial development. At the moment it is all down to a learning-by-doing approach. It is important to develop the C2C approach for building and area spatial development by further analysis and the dissemination of leading practices among a wider EU audience outside the present C2C Network. These regional examples may as well be used to create a pan-European community of (C2C-inspired) practices that offer possibilities to link more closely with the different member states. A common charter with specific criteria could guarantee the quality of the projects under development.

[15] Develop reverse logistics

The C2CN Perspective Study on Governance contends that the mobilizing capacity of the C2C approach resides in several characteristics, including its opportunity-orientation (i.e. focus on positives and the future rather than on solving problems from the past), its normative character (i.e. a clear direction and ambition rather than a prescription of what to do and what not to) and its reliance on technological growth and business innovation (calling for creativity and initiative, rather than discipline and restraint). The C2C focus on “remaking the way we make things” calls for creativity and initiative mostly in design and production / construction. The challenges of pursuing C2C through the further value chain are less appealing: they present a social complexity to which technological answers will be partial at best. Hence the reverse logistics involved in moving from recyclable to recycled products are likely to be a bottleneck in C2C practice.

Initiatives that propose eco-effective product innovations without developing corresponding reverse logistics are ineffective. It is ecologically counter-productive to construct production facilities without a reasonable prospect of (f)actually closing the loop.

[16] Complement the focus on high-tech eco-innovation with support for low-tech closing of biological cycles

Industrial and technological pressures are driving sustainability questions in the direction of high-tech answers. While considerations with regard to the competitive advantages of regional industries may justify this general direction, clean closed material loops exist in both high-tech and low-tech environments. In contexts where reverse logistics are not in place, the low-tech closing of biological cycles is less likely to create counter-productive lock-in situations. Complement the focus on high-tech eco-innovations with support for low-tech closing of biological cycles.

2.4 Finance the transition to an eco-effective society

The transition to an eco-effective society needs adequate financial resources. In the current economic climate access to finance, both public and private, poses a challenge in itself. In this context of scarce financial resources it is all the more important to steer existing and future funding instruments towards the closed loop economy.

European Level

[17] The European Commission should link its cohesion policy and future programmes such as Horizon 2020 to eco-effective goals under the Innovation Union and Resource Efficiency flagships and give these goals priority

On 6 October 2011, the European Commission adopted a draft legislative package that will frame EU cohesion policy for the period 2014-2020. The proposals will be discussed by the Council and the European Parliament during 2012-2013 to allow for the start of a new generation of cohesion policy programmes in 2014.

The current proposal for a Regulation of the European Parliament and of the Council on specific provisions concerning the European Regional Development Fund and the Investment for growth and jobs goal should be strengthened. The provisions should be widened by better linking them to eco-effective goals.

National and/or regional Level

[18] National and regional authorities should prioritize truly eco-effective innovative initiatives under the future mainstream programmes (Operational Programmes), paving the way in the upcoming Smart Specialisation Strategies and initiatives

A stronger thematic focus is needed on the priorities of Europe 2020 (with innovation and resource efficiency as two of its seven flagship initiatives). Innovation and resource efficiency/effectiveness should be the guiding principles in defining the strategic goals for regional development based on Smart Specialisation. The upcoming Smart Specialisation Strategies (S3) should pave the way for really innovative eco-effective initiatives under the future mainstream programmes. The S3 concept fits within both the process to align regional policy with the implementation of the Europe 2020 strategy and the need to focus EU resources on a limited number of aims, given the current scarcity of financial resources.

[19] Sustainability must be self-sustaining

The founders of C2C state that the approach doesn't ask for subsidies. The C2CN Perspective Study on Governance recognizes this stand among C2C practitioners. Viewing C2C as a development opportunity, they propose alternative forms of support focused on market creation, including green public procurement and backing risk capital.

This implies that government players should be cautious and selective financers with an immediate interest in removing the 'toxic' ones amongst subsidies and fiscal measures, and that sustainability should not depend on government subsidies.

The Cradle to Cradle Network (C2CN) is an Interreg IV C capitalisation project consisting of ten partners from ten European regions which aims to reduce raw materials' utilisation, to generate less waste and less environmental pollution, as well as to enhance innovation and economic development.

Province of Limburg (NL)
www.limburg.nl

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