Moravia Urban Renovation Project, Colombia 2014

Life Cycle Phase(s)

Project type

Neighbourhood, policy

Impacts

Environmental impacts, social impacts, green jobs and skills

SDGs related

SDG1, SDG3, SDG5, SDG6, SDG8, SDG10, SDG11

Keywords

Policies promoting circularity, Adaptability, flexibility and refurbishment of buildings and neighbourhoods, Circular water

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https://www.unescosost.org/post/restauraci%C3%B3n-socio-ambiental-en-moravia-medell%C3%ADn-colombia

Overview
By 1970s – 1980s “Morro (hill) Moravia” was Medellin´s municipal dump and the livelihood source for poor people working on waste recovering. After closure, it eventually became an informal settlement. By 2000s. The hill was housing more than 2000 families, living under precarious and permanent risk conditions (environmental pollution, fires, landslides). Starting in 2007, a project was developed by the Medellín mayor's office, with the cooperation of the Government of Catalonia and the participation of the UNESCO Chair of Sustainability, with the aim of improving life conditions for the local community while reducing environmental risks.

Impacts
Social impacts: 2224 families relocated in more decent and safer settlement,
Environmental impacts: 4.4 hectares of land under environmental recovering by phyto-remediation, using buffer-strips and constructed wetlands
Green jobs and skills: 200 jobs created on community gardening and flowering production

Replicability and scalability
The project could be replicated in other urban environments in countries of the global south, considering local particularities

Main challenges
Initial resistance of the settlers to leave their environment and livelihood
Continuity of the project throughout the different periods of government

Main success factors
Improvement of the quality of life of poor communities, environmental and landscape recovery of a degraded urban area

Figure 1: Community gardening in Moravia. Credit: UNESCO Chair on Sustainability. Technical University Catalonia

Moravia Urban Renovation Project, Colombia 2014

Figure 2: Community gardening in Moravia. Credit: UNESCO Chair on Sustainability. Technical University Catalonia

Figure 3 & 4: Constructed wetlands installed in Moravia. Credits: UNESCO Chair on Sustainability. Technical University Catalonia

Figure 5 & 6: Moravia before (2004) and after (2014) intervention. Credits: UNESCO Chair on Sustainability. Technical University Catalonia

BioHotel, Colombia 2015

Life Cycle Phase(s)

Project type

Building

Impacts

Environmental impacts, social impacts, green jobs and skills

SDGs related

SDG6, SDG7, SDG11, SDG13

Keywords

Construction and demolition waste management, Use of reused or recycled content in new products and buildings, Circular water, Circular energy

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https://repository.eia.edu.co/bitstream/handle/11190/1933/RamirezSantiago_2014_EvaluacionPracticasUtilizadas.

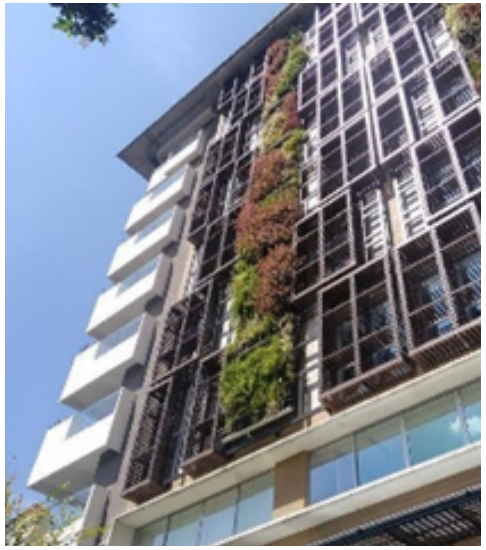


Figure 7: Building façade showing window elements designed for allowing natural light while avoiding sunshine income, thus providing energy efficiency and indoor comfort
Credit: MARES Consultoría Sostenible S.A.S.

Overview
Terra Bio Hotel is a small hotel with 41 rooms built in the city of Medellín, incorporating sustainability criteria in design and construction. The project was built on urban land on a lot where a house previously existed, which was deconstructed and dismantled, allowing the reuse of materials and elements. The soil removed in the excavation was used for the production of aggregates that were used in the concrete blocks that form the envelope. The water used in the construction phase was treated and recycled within the process. The architectural design used bioclimatic strategies for ventilation and natural lighting. In its operation phase, the building captures rainwater and reuses previously treated gray water for tiolets and general cleaning. The solid waste management room includes a composting system for the use of organic waste.

Impacts
- 70% of materials from deconstruction of pre-existing building recovered (figure 3.4)
- 60% of soil from excavation used for construction materials (figure 3.5)
- Energy efficiency and comfort provided by passive design (figures 3.6 and 3.7)
- 50% of water needs at operational stage reduced from water efficient devices, rainwater use and grey water reuse (figure 3.8)

Replicability and scalability
The principles of the project are replicable, but it is important to evaluate the economic and financial impacts of the decisions made

Main challenges
Project management took a long time to make decisions, which delayed development time and led to cost overruns. Some sustainability-oriented decisions were not easily understood or accepted by local authorities

Main success factors
Neighbours involved in the environmental management of the project, several articles published in events and scientific magasines, dissemination of the project in local events, quantifiable reduction of environmental impacts

BioHotel, Colombia 2015

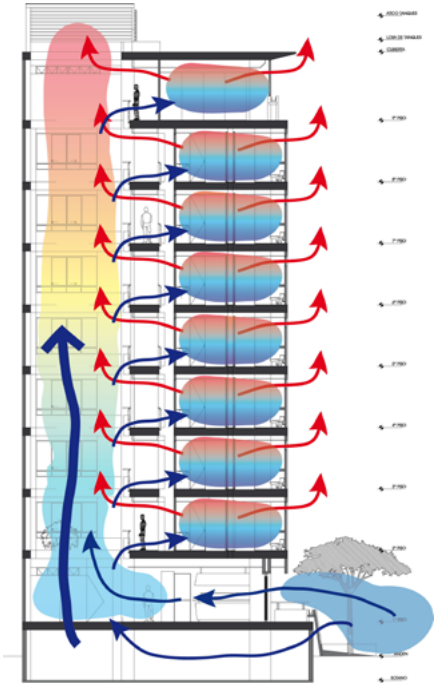
Figure 8 & 9 (up, down): Indoor and Outdoor inventory of existing building for material recovering previous to deconstruction of the pre-existing building.
Credits: MARES Consultoría Sostenible S.A.S.

Figure 10 (up): C&D waste from excavation and concrete blocks fabricated from it.
Credit: MARES Consultoría Sostenible S.A.S.

Figure 11 (down): Building façade showing window elements designed for allowing natural light while avoiding sunshine income, thus providing energy efficiency and indoor comfort
Credit: MARES Consultoría Sostenible S.A.S.

Figure 12 (up): Grey water and rainwater treatment plants installed in the Biohotel.
Credit: MARES Consultoría Sostenible S.A.S.

Figure 13 (right): Schematic representation of natural ventilation system.
Credit: MARES Consultoría Sostenible S.A.S.



CEMEX Circularity strategy, Mexico, El Salvador, Guatemala, Nicaragua, Panama, Costa Rica, Puerto Rico, Dominican Republic, Jamaica, Trinidad and Tobago, Colombia, Peru, Ongoing project

Life Cycle Phase(s)

Project type

Material manufacture

Impacts

Environmental impacts, social impacts, green jobs and skills

SDGs related

SDG6, SDG7, SDG11, SDG12, SDG13, SDG15

Keywords

Construction and demolition waste management, Use of reused or recycled content in new products and buildings, Circular water, Low carbon construction meterials, industrial symbiosis, biodiversity recovering

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https://database.globalreporting.org/organizations/849/
https://www.cemexcolombia.com/sostenibilidad/gestion-ambiental/economia-circular
https://www.cemexcolombia.com/sostenibilidad/modelo-de-sostenibilidad

Overview

CEMEX is a global building materials focusing on concrete and cement products. The company's sustainability model incorporates circular economy activities that include: 1) the substitution of raw materials for resources with less environmental impact, including secondary materials from other economic sectors, 2) energy efficiency and substitution of fossil fuels in production of energy from non-recyclable waste, 3) efficiency, recirculation, reuse and industrial symbiosis in water management, 4) Recovery of quarry sites to enable ecological connectivity and recovering biodiversity

Impacts

- Low to zero-carbon concretes based on: 1) Clinker plants using biomass (wastewater sludge, rice scale) and non-recyclable waste (non-recyclable plastics) as energy source, 2) Cement substitution by alternative raw materials (clay) and industrial waste (fly ash, mil scale), 3) Recycled aggregates from C&D waste and 3) Compensation of transport emissions via reforestation plans (figures 3.9 to 3.12)
- Circular Water: Currently 95% of concrete operations and 75% of cement production plants recirculate and recycle wastewater from production process. A concrete plant in Colombia is treating water from the food sector and reusing it for concrete production in a joint initiative with a food company "Meals de Colombia S.A
- Recovery of former quarry sites: Reshaping of soils and reforestation of quarry sites after finishing extraction activities. Biodiversity is being monitored and is being recovered" (figures 3.11 and 3.12)

Replicability and scalability

The projects developed so far have been taken on an industrial scale and are part of the company's production processes. Due to the global scope of the company, all projects are potentially replicable, according to local peculiarities

Figure 14: Tree production for biodiversity recovering. Credit: CEMEX

CEMEX Circularity strategy, Mexico, El Salvador, Guatemala, Nicaragua, Panama, Costa Rica, Puerto Rico, Dominican Republic, Jamaica, Trinidad and Tobago, Colombia, Peru, Ongoing project

Figure 15 & 16 (left & middle)**:** Rice scale used for energy production. Credit: CEMEX

Figure 17 (right): Recovery of former quarry sites. Credit: CEMEX

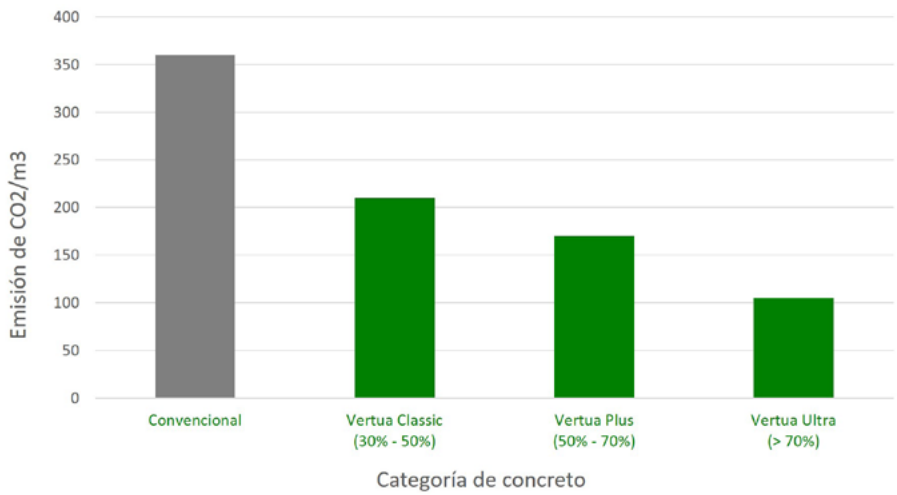

Figure 18: Low carbon concretes emission factors. Credit: CEMEX

Main challenges

- Political cycles hinder the continuity of projects that involve the public sector
- Legal instability in Latin American countries
- Persistence of disincentives to circular activities
- Lack of instruments to internalise environmental externalities
- Lack of sustainability and circularity criteria in public procurement and public-private alliances
- Lack of skills and knowledge concerning sustainability and circularity in professionals related to the construction sector (architecture and engineering)

Main success factors

Projects built with materials produced with circular processes, urban developers and projects that are interested in reducing the environmental impact of their activities, alliances with companies from other sectors, alliances with the public sector, compliance with national environmental regulatory frameworks and contribution to compliance of global environmental goals

Sinesco C&D waste integral management, Colombia 2010-

Life Cycle Phase(s)

Project type

Waste valorisation

Impacts

Environmental impacts, social impacts, green jobs and skills

SDGs related

SDG11, SDG12

Keywords

Construction and demolition waste management, Use of reused or recycled content in new products and buildings

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Figure 19: Stony waste separated for recovering. Credit: SINESCO S.A.S

Overview
Sinesco is a company offering services of collecting, managing and recycling construction and demolition waste (figures 3.13 to 3.15), producing recycled aggregates that are supplied for on-site concrete fabrication in construction works. We work to satisfy and exceed the needs of our clients, with competent and committed personnel, promoting sustainability and the culture of the circular economy in the construction sector and profitability for our shareholders. We are one of the first companies in Colombia working on the integral management of C&D waste and we have helped construction companies respond to the emerging regulatory framework in Colombia that made the reuse of C&D waste mandatory as of 2018

Impacts
85 thousand tons of recycled aggregates annually produced (figure 3.13)
New building materials produced from C&D waste (figure 3.16)

Replicability and scalability
The initiative already operates on an industrial scale and it is potentially replicable in all cities of Colombia and Latin America

Main challenges
Obtaining environmental permits for the operation was a challenge at the beginning, the lower service prices offered by operators that do not advise their clients, or value or take advantage of waste, hinders the expansion of the business

Main successes
The main success consists of having put the business model and the waste reuse plant into operation before the regulatory framework at the national level pointed in this direction.

Sinesco C&D waste integral management, Colombia 2010-

Figure 20: Timber pallets separated for material recovery. Credit: SINESCO S.A.S

Figure 21: Expanded polyurethane pallets separated for material recovery. Credit: SINESCO S.A.S

Figure 22: Cobblestones out of C&D waste. Credit: SINESCO S.A.S

Green Sacks Argos, Colombia and Honduras, ongoing project

Life Cycle Phase(s)

Project type

Waste valorisation

Impacts

Environmental impacts, social impacts, green jobs and skills

SDGs related

SDG12

Keywords

Construction and demolition waste management, Design for disassembly,
Reuse and easy to recycle, Waste reduction, disposal

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https://colombia.argos.co/sacos-verdes/
https://www.youtube.com/watch?v=Ib91LyVsQnc
https://www.youtube.com/watch?v=9-8pdtk0ARU
https://youtu.be/HqPP-BGeXjk

Figure 23: Used up sacks packed for valorisation. Credit: Cementos Argos

Overview

Based on our Sustainability and Environmental strategy, in 2013 we started with the Green Sacks Programme (figure 3.17), an initiative to use cement sacks to reduce waste at the construction site and give them a correct disposal. The purpose of contributing to the design and construction of more sustainable and environmentally friendly projects has driven us over the years to raise awareness of the importance of collecting and using waste paper sacks after using cement. It is no secret that empty sacks are considered garbage at construction sites and can end up anywhere, generating waste and particulate matter emissions. Paper can be recycled up to 11 times and can be converted into different types of paper and cardboard; in addition, paper recycling saves 30% of the electrical energy and 70% of the water that would normally be used to produce it from wood.

The Green Sacks programme arise from the need to provide an solution to our customers regarding the question “What is the correct disposal of the sacks? Therefore, in 2013 we conducted a pilot with two construction companies and approximately 20 construction sites in the city of Medellin, we conducted an investigation on the proper use of these bags and we made inroads in the generation of culture in works for the collection of the bags, in our drivers for the collection of these and our logistical and administrative staff to handle the bags inside our distribution centre, we were able to demonstrate the interest of everyone in contributing to the environment, the results were satisfactory, we achieved a return of 60% of the material we dispatched, and with this experience we began the launch of the program as such in 2014, and there we began to receive much more material and seek logistical solutions to take advantage of everything that came to us from our customers.

Impacts

With the Green Sacks program, the amount of trees and water required for the manufacture of new products is reduced, as these sacks are the raw material for new products in the fiber-cement and paper pulp industry (figure 3.18). From 2013 to 2020, 10,025 trees have not been cut down and 80,198 m3 of water have not been consumed, which is equivalent to supplying 471,751 people in one day.

Green Sacks Argos, Colombia and Honduras, ongoing project

Figure 24: Green sacks programme. Credit: Cementos Argos

Replicability and scalability
The project is scalable. However there are several challenges concerning logistics and the linkage of some costumers. The project is also replicable through the work with the provider of the sacks and the training of the clients.

Main challenges
The Green Sacks program was born as a proposal to meet the needs of our customers in IDEAXION, a program that we have within Argos to promote initiatives that create value, based on the need of customers to give a correct use to these sacks, we started looking for companies that could take advantage of this material, which had a limitation in the recycling of paper, However, during the green sacks pilot we managed to find companies interested in testing this material, until they were able to adjust their products with the characteristics of our sacks, such as the ink of the packaging, the texture, the packaging, the cement content, among others.

Main success factors
With this initiative we stop cutting down trees and consuming water for the production of new materials, we avoid waste and handling of material used in the projects, we improve cleanliness and reduce the dispersion of particulate matter, we avoid polluting because the cement sacks are not being disposed of properly, generating an impact on the environment because once the cement is used, the empty sack becomes a non-usable waste. At Argos we are convinced that all actions that help care for the environment contribute to a better future for everyone.

Circular economy of organic waste for cities and rural areas

Colombia, Paraguay, Cuba and Ecuador, 2010-

Life Cycle Phase(s)

Project type

Waste valorisation

Impacts

Environmental impacts, social impacts, green jobs and skills

SDGs related

SDG11, SDG12

Keywords

Policies promoting circularity, Financing circular processes,
Composting, Urban Agriculture

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https://www.earthgreen.com.co
https://www.youtube.com/channel/UC_VjayJxN5N7AuygJKLGHFw

Figure 25: Urban gardening using compost produced by earthgreen systems. Credit: Earthgreen S.A.S.

Overview

2,000 million tons / year of waste are generated in the world. 50% are organic. In Latin America, 200 million tons / year are generated; 100 million tons / year are biodegradable organic waste. In South Africa, 175 million tons / year are generated; 45-50% are organic waste and wood, biodegradable, which can go to composting (80 million tons / year). 27% are recyclable waste. 9% are plastics, 10%, paper and cardboard. 70% of the waste goes to open dumps and only 1% goes to composting. With composting and recycling programs, 50-65% of the waste generated can be used. With 80 million tons / year of organic waste, 30 million tons / year of compost or organic fertilisers are produced by composting, in 60 days, with which they recover or improve 6 million hectares / year (5 tons / ha / year), for Urban gardening (figure 3.19), Regenerative Agriculture, organic and healthy food production

Impacts

Earthgreen has standardised to date 16 composting models: 8 SAC models: Small-scale Autonomous Composting Systems (1 to 500 families of 4 people / family: 1 kg to 500 kg / day of organic waste) (figure 3.20) and 8 models of Stacks Mixed Earthgren (PME), for medium-scale composting plants: 550 to 25,000 families (600 kg, up to 50 tons / day of organic waste). To date, there are success stories, in all SAC systems and in composting plants, up to 15 tons / day. In the Earthgreen Circular Economy model there are: development, prototype validation, patented, production modeling, production, marketing, installation, commissioning of composting systems. In the chain of replication and growth of the model and value proposition in other countries, or regions of the world, the complete proposal can be exported and implemented, with training and training throughout the value chain of small and medium-scale composting.

Replicability and scalability

Earthgreen's value proposition is replicable to any country in the world. You have all the designs, plans, specifications, production. There are processes of commercialisation, training, training, community education. They are known and have intervened in the planning and local, regional organisation, with plans, development of local regulations and policies, they can be adapted in measurable and controllable times. The achievements of 10 years can be replicated in 3 years in other countries, with projections of exponential growth and high economic, social and environmental impact.

Circular economy of organic waste for cities and rural areas

Colombia, Paraguay, Cuba and Ecuador, 2010-

Figure 26: Small composting systems that can be used indoors for houses and apartments.
Credit: Earthgreen S.A.S.

Earthgreen is scalable in all social sectors, agro-industry, commerce, institutions, education, health, security, recreation. How: 1-Dimension of the problem, characteristics, need for the solution. 2- Production of the models in S. Africa with the. Rotational molding industry. 3- Business agreements to produce in Africa.- 4: Manufacture of molds in S.Africa, Europe or China, or in Colombia. 5- Training in the manufacture, assembly of composters. 6-Training of personnel in S. Africa in composting according to the Earthgreen model- 7- Planning and implementation of pilot projects, with training of local personnel. 8-Adaptation of local planning models for Waste Management, with training of technical personnel and government managers and leaders. 9- Development and adaptation of pedagogical models to learn by doing with communities- 10 Information systems. 11-Agreements with universities for applied research in composting

Main challenges

1-Marketing of the solution- 2- production of composting models-3 Growth and working capital

Main successes 1-Design of composters- 2-Acceptance of models when known-3 Usability: customer satisfaction and educational projection of the Earthgreen model are continuously reported

Main success factors

Composting is the most efficient and demonstrative alternative for the Circular Economy of organic matter. It is the alternative, more economical and universally viable, to recycle and take advantage of biodegradable organic waste; composting allows, that the C, O, N, P; K, S, Ca, and beneficial micro organisms, return to soils, elements that are in 95% of living beings and are essential for the production of healthy food in the world. Earthgreen composting models are patented and are based on thermodynamic principles, bio oxidative, production variables per person of organic waste, they are tested and validated in laboratories and applications for 10 years

Development of alkaline activated concrete from silic-aluminum waste, as an alternative for reducing greenhouse gas emissions in the construction sector, Colombia, 2019

Life Cycle Phase(s)

Project type

Research

Impacts

Environmental impacts, social impacts & green jobs and skills

SDGs related

SDG12, SDG13

Keywords

Use of reused or recycled content in new products and buildings

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Overview

Mine tailings cause several environmental impacts, due to high and progressive mineral exploitation, as well as waste management considerations. This study focuses on the use of waste from the mining industry in Antioquia, Colombia (figure 3.21 and 3.22), to manufacture construction materials. The study found that use mining waste as the main cementitious material with partial substitutions of cement, can increases compressive strength by 10% and reduces greenhouse gas emissions by 29%, compared to reference concretes (figure 3.23).

Impacts

- Identify adequate compressive strength conditions for the possible implementation of concrete with mining waste.
- Validate the reduction in greenhouse gas emissions in concrete with mining waste.
- Identify the economic increases per cubic meter of concrete with mining waste.
- Determine the reduction in the carbon footprint of a building when implementing concrete with mining waste

Replicability and scalability

The project is replicable with a complete study of characterisation of raw materials. Scalability depends on the type of mining waste. Once the type of waste has been identified, a complete physical and chemical characterisation must be carried out. Subsequently, after validating the residue, it is taken to particle sizes similar to cement, and then the dosages of the concretes are calculated.

Figure 27: Best condition mortar (CFm30) to develop concrete. Credit: Nicolas Pardo

Development of alkaline activated concrete from silic-aluminum waste, as an alternative for reducing greenhouse gas emissions in the construction sector, Colombia, 2019

Figure 28: Sampling in El Bagre, Antioquia, Colombia. Flotation tails corresponding to vein gold mining waste. Credit: Nicolas Pardo

Figure 29: Laboratory work drying for subsequent milling. Credit: Nicolas Pardo

Main challenges

- To validate the other properties of resistance and durability of conventional concretes.
- To validate the economic and environmental cost associated with transporting mining waste to cement companies for use.
- To socialise the results with a large number of mining companies for their possible implementation

Main success factors

The study identified a condition in which the compressive strength of concrete with mining residues was higher than that of reference concrete, reducing the emissions associated with manufacturing. After analysing the feasibility of implementation, the results of the analysis showed that concretes with alkaline-activated mining residues are suitable for substituting conventional concretes, with a reduction in the building of 8.02% in greenhouse gas emissions.

Sustainable and circular interventions in vulnerable communities: a proposal for social technology, Brazil, ongoing project

Life Cycle Phase(s)

Project type

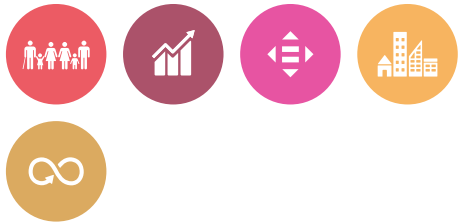
Research

Impacts

Environmental impacts, social impacts, green jobs and skills

SDGs related

SDG1,SDG8, SDG10, SDG11, SDG12



Keywords

Policies promoting circularity, Adaptability, Flexibility and refurbishment of buildings and neighbourhoods

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Overview
Housing units have a long life cycle, in which the construction process exploits a large number of resources. Improvements that extend the life of the building, and that do not necessarily imply the demolition and construction of new units, have significant potential for reducing the environmental impact. The challenge of the Project is to promote tools and technologies that underpin the ways to incorporate resilience and circularity into social housing, by prioritising these interventions, since the main objective is to provide affordable, decent and safe housing for the most vulnerable and poorest people, in order to make the most of the existing building material and consider the wishes and needs of these citizens.

Impacts
The project is still under development. Our vision is to have a prototype developed, tested and improved in the end of the project. In a one-year picture we expect to have a solid set of performance indicators and apply for funding (i.e. venture capital, etc), in order to grow and expand to more areas.

Replicability and scalability
The platform is being developed based on the design science research methodology. Considering the regional aspects, a similar artefact can be developed in other regions. On the other hand, the platform will be developed considering the particularities of one or more vulnerable areas located in Salvador (Bahia – Brazil), but it will developed considering the possibility to adapt for use in other communities.

Main challenges
The main challenges include: the complexity of the process and its various stakeholders; the lack of technological infrastructure in the sector; (3) the lack of knowledge and expertise in the applied technologies in the sector.

Main success factors
So far, the project identified and selected, through a systematic review of the literature, technologies applicable to the treatment of data to characterise the resilience of HUVS. In the future, the project will analyse data to characterise the resilience of housing units in a vulnerable situation (HUVS), considering identified assessment criteria, and will develop and evaluate a proposal for a data processing platform that seeks to guide the prioritisation of HUVS interventions to promote circularity and sustainability in the region; involving decision makers and citizens.

The main successes include: (1) the use of a structured methodology based on applied problem solving (Design Science Research methodology); (2) The project has important scientific relevance and impact for society, as its results involve the creation of an artifact that aims to directly contribute to the sustainability of buildings located in vulnerable communities; (3) Technological gains can provide a fluid, structured and efficient process, with a view to guaranteeing the quality, cooperation, responsibility and transparency necessary for interventions and constructive improvements in housing units in a vulnerable situation.

Green Chain Project: Blockchain technology for a Sustainable Management of Supply Chains in the Construction Industry, Brazil, ongoing project

Life Cycle Phase(s)

Project type

Tools, guidelines and platforms

Impacts

Environmental impacts, social impacts, green jobs and skills

SDGs related

SDG11, SDG12

Keywords

Construction and demolition waste management, Management of material and waste flow

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Overview/Summary

In contrast to a world that lives the era of integration, transfer and interpretation of data and values almost simultaneously, the construction industry is the second least computerised industrial sector in the globe. Thus, concepts, such as Industry 4.0, Society 5.0, and Blockchain Technology, are yet to be fully adopted by the construction sector, bring relevant windows of opportunities for developers that understand the pains, desires and the complex context of this industry. The Green Chain Project aims to sole this real file problem: the lack of efficient, auditable and distributed systems to foster Circular Economy in the Construction & Demolition Industry (C&D industry).

The major pains points to be addressed by the Green Chain Project are: (1) inefficient mechanisms for registration, trade and traceability of all construction systems used in a building; (2) the search for a decentralised system to promote the best results with the lowest possible cost, creating a favourable environment to flourish Circular Economy business opportunities.

Impacts

The project is still under development. Our vision is to have a MVP (Minimum Viable Product) developed, tested, improved and launched and to reach the one-year timeframe with at least 30 clients in the State of Bahia in Brazil (5 free trails and 25 first adopters). In a one-year picture we expect to have a solid performance indicators and apply for funding (i.e. venture capital, etc), in order to grow and expand to new markets.

Replicability and scalability

The platform is being developed based on the design science research methodology. Considering the regional aspects, a similar artifact can be developed in other regions. On the other hand, the platform is being developed considering the supply and waste management processes of the construction industry in Brazil, but it can be adapted for use in other regions, as these processes have similarities around the world.

Main challenges

The main challenges include: (1) the complexity of the construction sector and its various stakeholders; (2) the lack of technological infrastructure, knowledge and expertise in the sector; and the uncertainties about governance, security and privacy, and (3) interoperability in processes.

Main success factors

So far, the project has carried out a systematic review of the literature, a process mapping through interviews and field observations and a proposal of framework. Algorithms for smart contracts are being developed to implement the model. The performance of the framework will be evaluated through simulation and quantitative and qualitative indicators.

The main successes include: (1) the use of a structured methodology based on applied problem solving; (2) the work focused on delivering a remarkable and intuitive user experience (UX) that seeks to influence users to join our community, using design elements that evoke familiarity and the feeling that the platform is responding to their pains and desires; (3) the high potential of impact once the platform is launched. In Bahia, the construction sector handles $ 2.2 billions per year in materials. In Brazil the construction retail sector handled $ 110 billions per year.

Construye 2025, Chile, ongoing project

Life Cycle Phase(s)

Project type

Tools, guidelines and platforms

Impacts

Environmental impacts, social impacts, green jobs and skills

SDGs related

SDG11, SDG12, SDG13

Keywords

Policies promoting circularity, Construction and demolition waste management, Design for disassembly, reuse and easy to recycle Adaptability, flexibility and refurbishment of buildings and neighbourhoods, Use of reused or recycled content in new products and buildings, Financing circular processes

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Overview

Construye 2025 issued a roadmap for circular economy in the construction sector (figure 3.24). This initiative is led by the public sector, in the context of an Inter-Ministerial agreement, with the participation and representation of the private sector and academia, with a national presence (figure 3.25). The roadmap is based on the common vision / dream: “a country that manages its resources efficiently, positively impacting the social, environmental and economic spheres” (figure 3.26). To achieve this, five strategic axes are defined that promote the circular economy under construction: the sustainable planning and ordering of the territory; public coordination and articulation; sustainable and circular ecosystems and value chains; the need to develop and strengthen data platforms that provide information for the design of public policies and the creation of new markets around the circular economy, and environmental remediation for the impacts resulting from the extraction of aggregates and improper disposal of C&D waste.

The project involves the Ministry of Housing and Urbanism, Ministry of the Environment, Ministry of Public Works, Corfo (Productive Development Corporation of the Ministry of Economy)

Replicability and scalability

The roadmap is an initiative with interministerial scope under a National Sustainable Construction Plan that incorporates Circular Economy and Carbon Footprint, among other topics. Based on the agreement, the Regional Commissions for Sustainable Construction are formed, these commissions operate in different regions across the Country

Figure 30: Front page of the Roadmap for Circular Economy in the Construction Sector.
Credit: Construye 2025, Chile

Construye 2025, Chile, ongoing project






Main challenges
The construction sector, mainly the challenge is for the union to visualise the benefits of sustainable waste management and business opportunities around the circular economy.
Main successes

Main success factors
Articulation between different sectors of the public sector to align efforts based on collaborative work. Advances in regulatory framework, requirements in public tenders, initiatives and promotion of innovation and entrepreneurship (figure 3.27).

Figure 31-36: Reviste is an emerging company recovering timber from construction works to manufacture new building materials. This initiative is supported by Construye 2025
Credit: Reviste https://www.reviste.cl/ and Construye 2025

Construye 2025, Chile, ongoing project

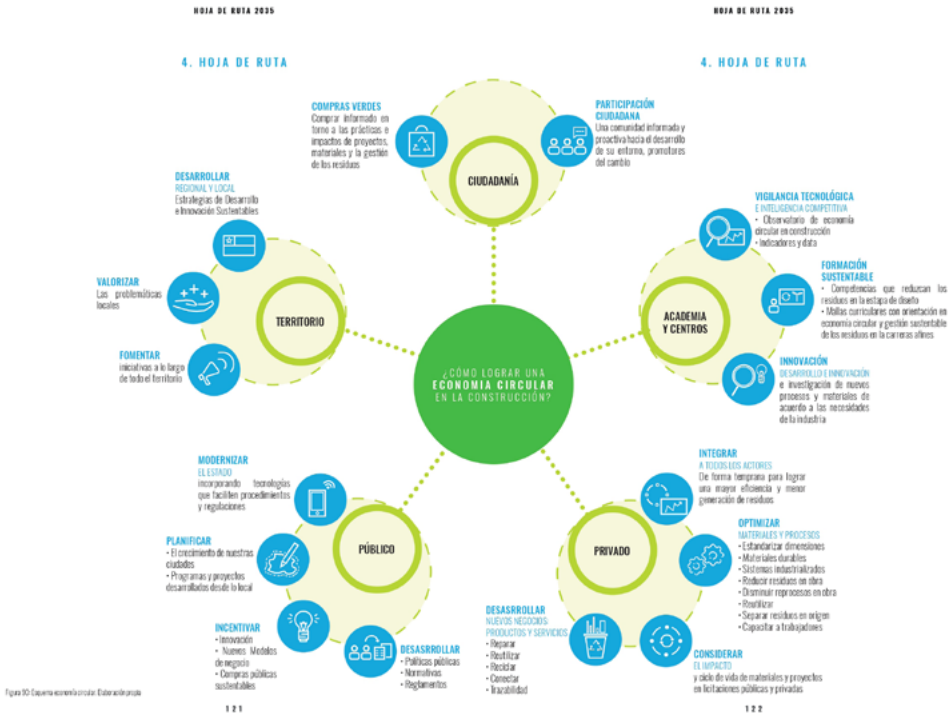

Figure 37: Stakeholder approach for Circular Economy in the Construction Sector.
Credit: Construye 2025, Chile

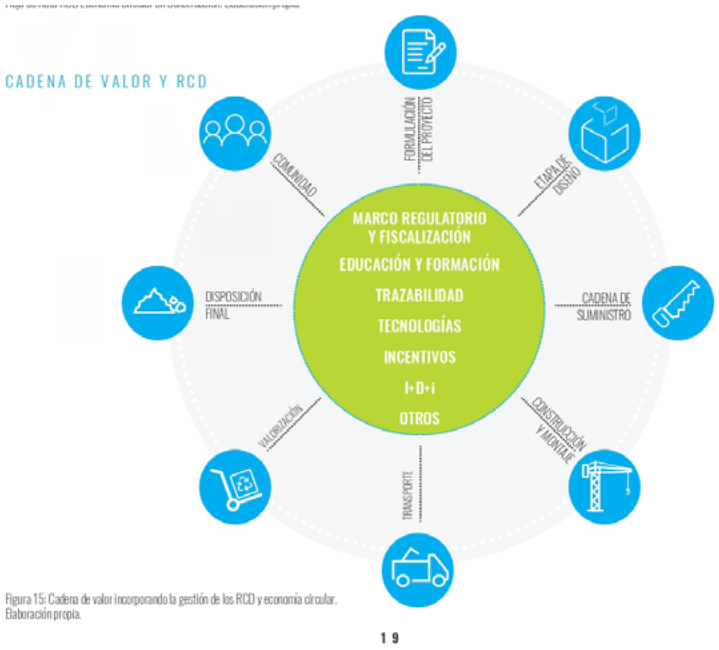

Figure 38: Value chain for Circular Economy in the Construction Sector under a Life cycle approach.
Credit: Construye 2025, Chile

Guidance for sustainable and circular management of construction Works

Colombia, 2021

Life Cycle Phase(s)

Project type

Tools, guidelines and platforms

Impacts

Environmental impacts, social impacts & green jobs and skills

SDGs related

SDG11, SDG12

Keywords

Construction and demolition waste management, Use of reused or recycled content in new products and buildings, Circular water, Circular energy, Construction best practices

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https://www.cccs.org.co/wp/download/guia-de-gestion-sostenible-y-circular-en-obras/

Overview

The Guide for Sustainable Management and Circularity in Construction Works (figure 3.28), has the intention of contributing to the sustainable movement in the construction sector of Colombia. In this publication, you will find a series of strategies focused on the construction phase of projects, as well as considerations on the pre and post-construction stages that provide specific support to the builder. The guide highlights the builder as an actor in the value chain highly committed to sustainability, and with his actions it greatly reduces and mitigates waste and emissions, improves environmental impacts and contributes to the decarbonisation of the sector.

For its preparation, interviews were carried out with experts and professionals responsible for caring for the environment and direct work on site, supported by secondary resources obtained from other studies and existing guides on the matter. At the end of each chapter and sub-chapter you can find a checklist that summarises the actions that the builder must take, in order to follow up on a sustainable work.

The document was structured and prepared by the Colombian Council for Sustainable Construction (CCCS) and the Colombian Chamber of Construction (CAMACOL), two leading organisations with extensive experience in the construction and sustainability sector.

Figure 39: Front page Guidance for sustainable and circular management of construction Works. Credit: Colombian Green Building Council. https://www.cccs.org.co/wp/download/guia-de-gestion-sostenible-y-circular-en-obras/

Guidance for sustainable and circular management of construction Works

Colombia, 2021

Impacts

The guide has annexes for the application of all the best practices described: Master checklist, Matrix of environmental aspects and impacts, Erosion, sedimentation and discharge control, Inspection format, RCD management, RCD control format, Traffic management, Air pollution control, Indoor air quality, Neighborhood communication format, Noise control, Flora and fauna management, Signage and Education on site

Replicability and scalability

The guide can be used by the construction team of the project and interested parties, including the different contractors, subcontractors, construction managers and people in charge of the planning, execution and control of the work.

The guide can be used by the construction team of the project and interested parties, including the different contractors, subcontractors, construction managers and people in charge of the planning, execution and control of the work.

Main challenges

The collection of information from professionals, construction companies and other actors with the best practices implemented, since there are several who have been working on sustainability. The articulation with national and international regulatory requirements and the structuring of the document so that it is practical and easily applicable. Everything was achieved.

Main success factors

The guide is structured in 4 large chapters following the sequence of the project, starting from the considerations for collaborative methodologies that are transversal to every project, followed by the considerations from the planning and design with emphasis on the decisions that will influence the sustainability of the project construction, giving way to pre-construction where the work is planned and ending with a chapter associated with construction where the activities for the execution of the work are broken down according to a standard construction process. The main success is to unify all the best practices in a single document. Cover not only the aspects of work but also the previous and subsequent phases as well as collaborative methodologies, and deliver a tool that is easy to apply for builders in any type of building work.