

The circular economy in green buildings and sustainable communities

Lecturer PhD. Arch. Daniel N. Armenciu



BUILDINGS' CIRCULAR ECONOMY

19 Iulie 2022 / 16:00
ONE Tower Calea Floreasca 165
www.circularbim.eu

ECONOMIA CIRCULARĂ A CLĂDIRILOR

Co-funded by the Erasmus+ Programme of the European Union

PROGRAM

15:30 – 16:00 - Primirea și înregistrarea participanților
Beatrice Dumitrascu, ONE United Properties

16:00 - Deschiderea oficială a evenimentului
Andrei Botis, Președinte RoGBC

16:05 - Presentation of CircularBIM Erasmus+ proiect
Juana Torrecilla, CT Viarmol / University of Seville, Spain

16:30 - Economia circulară în clădiri „verzi” și comunități sustenabile / Implementarea proiectului CircularBIM în România
Lect. dr. arh. Daniel N. Armenciu, RoGBC / Universitatea de Arhitectură și Urbanism „Ion Mincu”

17:00 - Case study: Green Homes and circular economy
Beatrice Dumitrascu, ONE United Properties

17:20 - Perspectiva stakeholderilor / Dezbateri pe tema economiei circulare și a importanței EPD-urilor
Cristian Sipos, Ciprian Sipos Green Interiors (moderator)
Gabriel Golumbeanu, Saint Gobain România
Alina Alexandru, Knauf Insulation
Razvan Copoiu, Signify
Dana Diaconescu, Decan FAI, Universitatea de Arhitectură și Urbanism „Ion Mincu”

19:00 - Cocktail dinner

Parteneri CircularBIM



PhD. Ec. Monica Ardeleanu
PhD. Arch. Daniel N. Armenciu
PhD. Eng. Dorin Beu
Eng. Elena Rastei



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programa Erasmus+
de la Unión Europea

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Universitatea
Transilvania
din Braşov



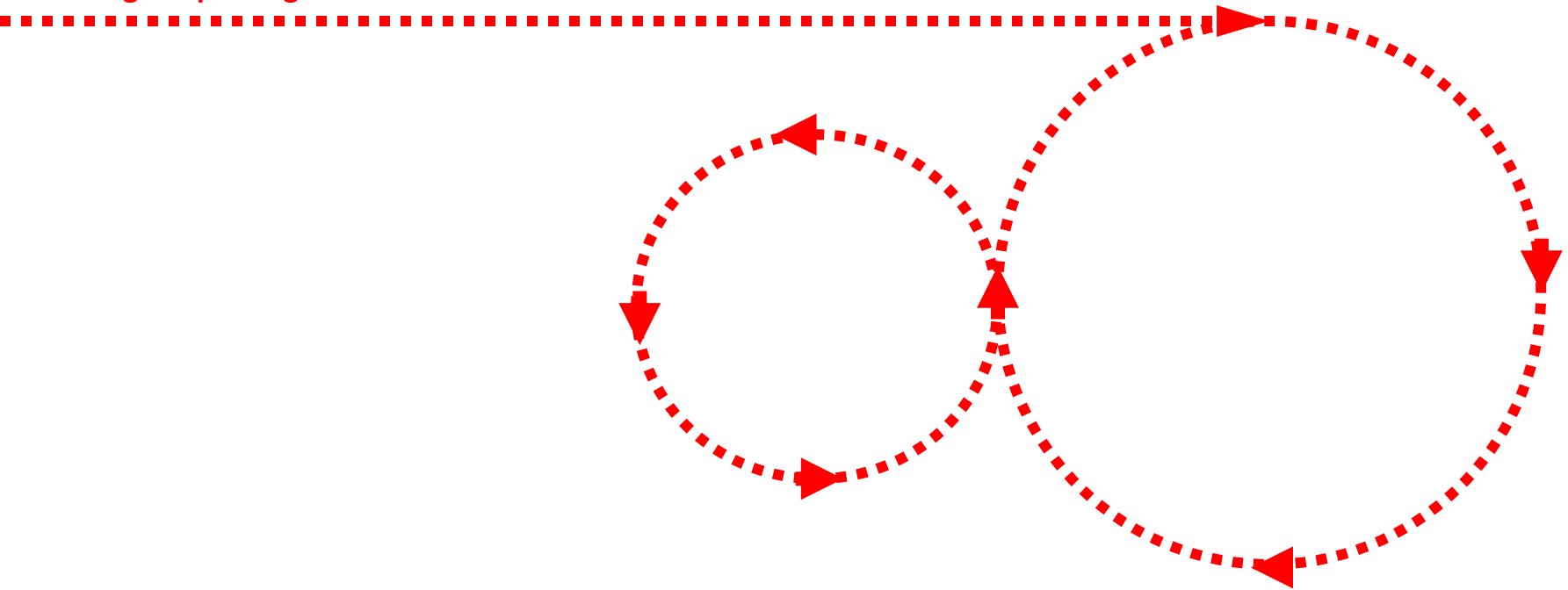
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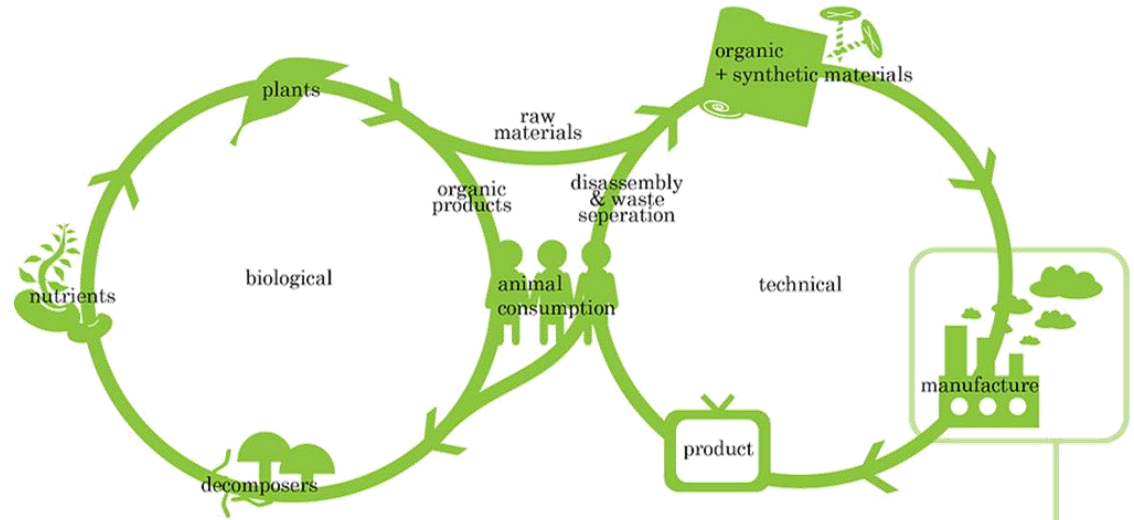
Consortium members: Universidad de Sevilla (USE), Asociación Empresarial de Investigación Centro Tecnológico del Mármol, Piedra y Materiales (CTM), CYPE SOFT SL (CYPE), Universitatea Transilvania din Braşov (UTBv), Asociația România Green Building Council (RoGBC), Centro Tecnológico da Cerâmica e do Vidro (CTCV) and Universidade do Minho (UMinho).

Life cycle thinking

Change of paradigm: from Linear to Circular model



From Cradle-to-Cradle

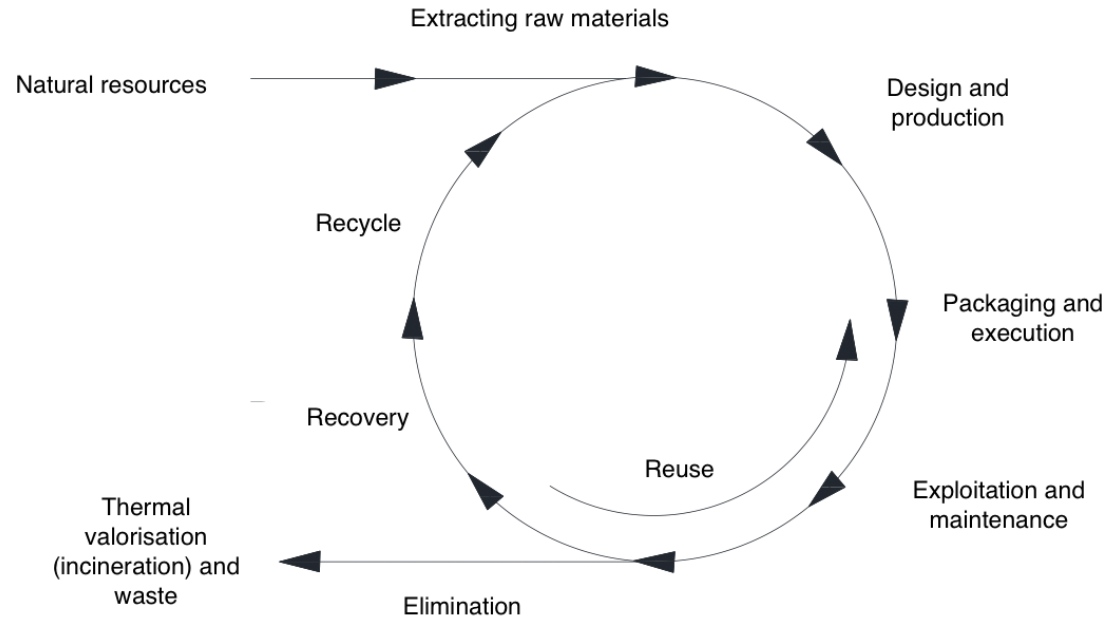


- 5 criteria
- 1 100% Renewable Energy Use
 - 2 Water Stewardship clean water output
 - 3 Social Responsibility positive impact on community
 - 4 Material Reutilization recyclability / compostability
 - 5 Material Health impact on human & environmental

From Cradle-to-Grave

...

From Cradle-to-Gate





=

A major stakeholder of
sustainable buildings'
promotion in Romania

RoGBC encourages the **transition towards circular economy** via the following routes:

- **Tools:** certification systems that promote mandatory whole building LCA requirements and Environmental Product Declarations such as GREEN HOMES, GREEN BUILDING: RESTORE, NET ZERO CARBON and GREEN SCHOOLS. Energy Awards for cities and partnership in developing other schemes such as ZERO WASTE certifications.
- **Education:** dedicated courses focused on circular economy in buildings
- **Technical support** for developing best practice projects in both cities and buildings.
- **Awareness and promotion** of the best practice projects and service providers.



GREEN HOMES

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GREEN SCHOOLS

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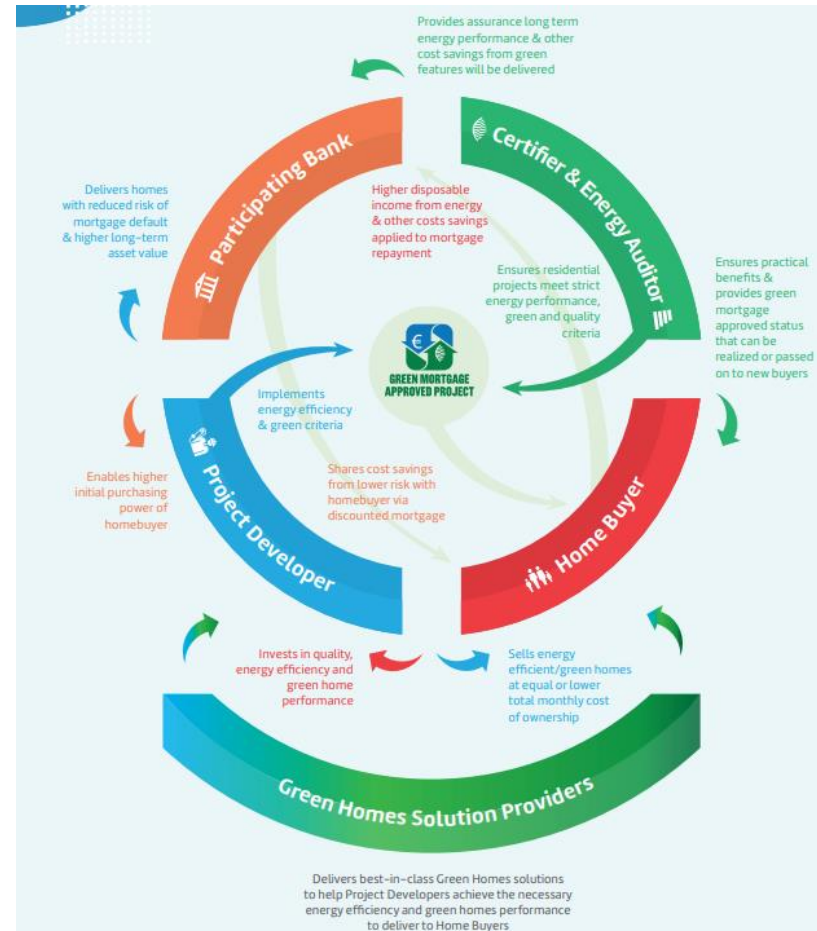
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Appendix 1: Multi-Family

Example of assessment criteria for Green Homes certified projects New Construction & Major Refurbishment, Renovation & Retrofits

Appendix 2: Single-Family

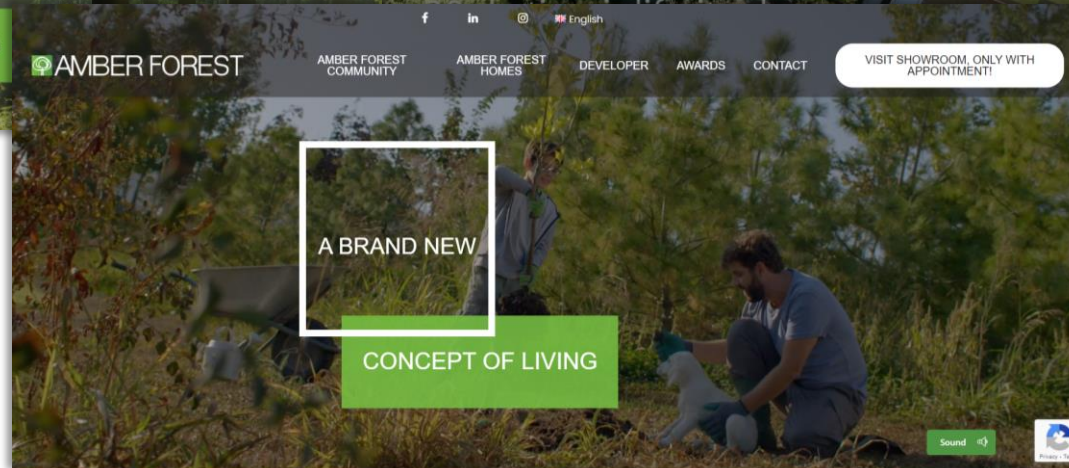
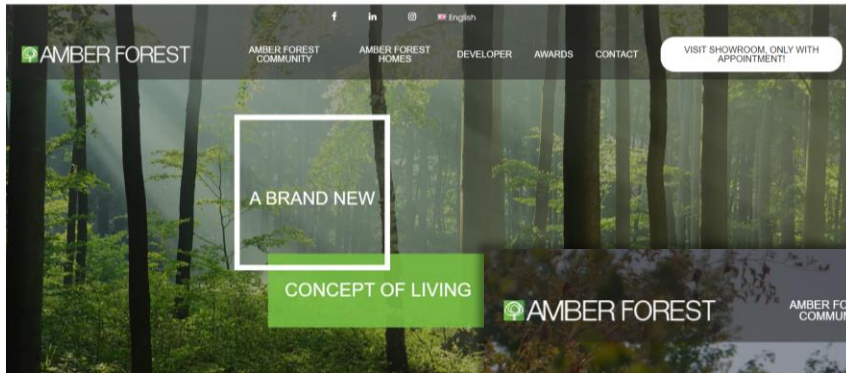
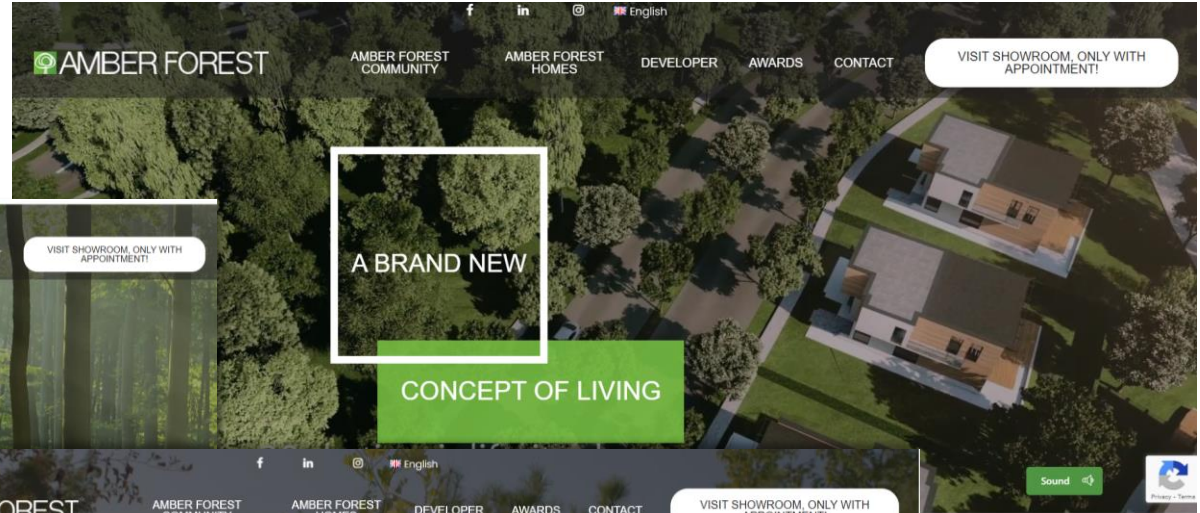
Example of assessment criteria for Green Homes certified projects New Construction & Major Refurbishment, Renovation & Retrofits

A1.1	Education for the design team	2	The RoGBC team will conduct workshops for the design team to explain the certification process and green building principles. The design team members will be required to attend a minimum of 3 courses within the Green Building Professional education platform. The cost of these courses is included in the Green Homes certification agreement.
A2	Life Cycle Assessment	Required	To create benchmarks, to identify and use construction materials with a low environmental impact, including embodied carbon, over the full life cycle of the building. The analyses will be performed by the RoGBC specialist.
A2.1	Life Cycle Assessment	1	To create benchmarks, to identify and use construction materials with a low environmental impact, including embodied carbon, over the full life cycle of the building. The analyses will be performed by the RoGBC specialist.
A3	Construction Waste Management Planning	3	To divert from landfills and incinerators the waste generated from construction or renovation/ refurbishment. The diversion can be achieved by implementing waste prevention measures and strategies, reuse on site, or sorting for recycling.
A4	Responsible construction practices	3	To reduce pollution and disruption caused by construction activities and to recognise and encourage an environmentally and socially responsible approach to construction site management.
A5	Operational waste management	Required	Above the legislation requirement and in line with the zero waste sorting criteria. 1. (Required) To include within the design and construction stage a system for the homeowners to sort inside their home by at least three main categories: recyclables, biodegradable and residual waste. Recyclable materials must include mixed paper, corrugated cardboard, glass, plastics and metals. 2. (Required) a special outside area must be dedicated to the safe collection, storage, and disposal of the following: batteries, mercury-containing lamps, and electronic waste.
A5.1	Operational waste management - BIOWASTE	3	3. If the above has been achieved, additional points can be earned for including a composting area or compost tumbler for yard clippings and kitchen food waste. The owners/tenants shall be provided with composting instructions in the manual referenced in section B2: Education for homeowner / Ensuring Green Performance.

E1	Natural materials	5	To encourage the use of lower environmental impact and alternative solutions for masonry and insulation.
E2	Reclaimed materials	5	To encourage the use of reclaimed material (salvaged, refurbished or reused).
E3	Local/regional cladding materials	4	To encourage the use of the local production and to use products that were extracted, processed or manufactured locally.
E4	Recycled content	3	To encourage the use of recycled content materials.
E5	Environmentally Responsible Sources	Required	To encourage selection of products that have been extracted or sourced in a responsible manner
E5.1	Environmentally Responsible Sources	3	Use of minimum 10 products with Environmental Product Declarations (EPDs) and/or sustainability certifications recognized at European/international level such as Cradle to Cradle, Ecolabel etc, FSC, etc.. For the purpose of this requirement, one EPD per category will be considered. Categories: 1. Wood (permanently installed in the building, eg: doors, floating floor, OSB) 2. Concrete and / or cement 3. Steel 4. Stone and / or aggregates 5. Materials made of clay 6. Cardboard bottle 7. Glass 8. Plastics, polymers, resins, paint, other chemicals, bituminous 9. Fiber of animal origin, leather, cellulose fibers 10. Insulation
E5.2	Environmentally Responsible Sources	2	To encourage selection of products that have been extracted or sourced in a responsible manner
E6	Low volatile organic compounds (VOC)	6	To reduce the health risk of the residents by using low (up to 10 grams per liter VOC) or no VOC by reducing concentrations of chemical contaminants that can damage air quality, human health, productivity, and the environment.

C3	Smart development	6	To encourage the safe reuse of former industrial or contaminated sites and to decontaminate and increase their ecological value and the value of the community.
C5	Rainwater management	2	To reduce the rainwater runoff from the existing site by collection and possibly reusing it for the existing landscape.
C8	Alternative transportation	6	To encourage green transport choices by locating the project near public transportation and through the installation of bike lockers or racks, electric charging stations, pedestrian accessibility, car sharing parking spaces, and community transportation.
D3	Fully Operational greywater system	6	To reduce the water consumption by collecting and reusing greywater from the site.
E8	Renewable materials	3	To decrease dependence of non-renewable materials by using at least 30% in volume of renewables and rapidly renewables such as bamboo wood, cork, cotton (recycled denim), agrifiber, natural linoleum, etc. from the total amount of materials used on site.
F6	Urban Farming/ Food Production	4	To improve food security, support a local economy, and contribute to social inclusion Urban Farming and Food Production is encouraged. This is synergic with credit A 3: Operational Waste Management and with C4: Heat Island Effect Reduction. It contributes to the greenery of the city along with efficient use of urban waste.
G1	To reduce excessive energy use, shift toward low carbon energy solutions, improve energy security, and reduce energy costs.	<p>Required improvement in Kwh/sqm/year energy performance compared to the minimum score for achieving an “A” class label in the Romanian Energy Performance Certificate (EPC) and comply to NZEB performance requirements</p> <p>20 45% improvement per above</p> <p>30 60% improvement per above</p> <p>40 PASSIVEHAUS Standard</p>	
H1	Innovative Ideas & Solutions	10	Ideas or Solutions to improve the green performance of the project can be submitted for consideration of awarding of up to 10 points.

Sustainable Buildings & Communities: Amber Forest



Major Refurbishment: Reuse of a former textile factory for a new IT office building
Best practice in urban regeneration and circular economy



Binarium Business centre, Cluj, Romania
Designer – Dico și Țigănaș





And the winner is...

BINARIUM Business Center, Romania

A 1950s factory in the centre of Cluj-Napoca stood empty for almost 15 years, until TACO Developments took on the challenge of transforming it sustainably. The regeneration adopted a circular approach, using cradle-to-cradle certified products, FSC certified wood, and durable materials, while the interior promotes biophilic principles with such features as abundant natural light and greenery. Today, the centre provides innovative and flexible workspace for tech and research-based businesses.

The judges particularly liked the strong focus of this project on taking advantage of the opportunities presented through a major urban regeneration project to deliver social enhancement. The degree of stretch and commitment from the client and project team was particularly impressive when compared to typical practice in the local market.

















**AWARDS 2019
WINNER**

Major Refurbishment: dismantle, reuse, upcycle of an existing public educational building



Major Refurbishment: dismantle, reuse, upcycle of an existing public educational building in

Project partners:

 <p style="font-size: 24px; margin: 0;">EcoBiblioteca</p> <p style="font-size: 18px; margin: 0;">eco biblio tecă</p> <p style="font-size: 16px; margin: 0;">the project that changes us</p>		
INITIATORS	PARTNERS	MEDIA PARTNERS
 <p style="margin: 5px 0;">ROMANIA GREEN BUILDING COUNCIL</p>  <p style="margin: 5px 0;">www.biblionet.ro</p>  <p style="margin: 5px 0;">Comuna Cacica Suceava</p>	<p style="margin: 5px 0;">b lighting</p>   <p style="margin: 5px 0;">CUNDALL</p>  <p style="margin: 5px 0;"><i>Interface</i> FLOR</p>  <p style="margin: 5px 0;"><i>KP</i> landscapes</p> <p style="margin: 5px 0;">OSRAM</p>  <p style="margin: 5px 0;">SMART PEPPER</p>  <p style="margin: 5px 0;">TASSULLO MECANICA DE TERMIER PENTRU A HABITATUL NOU</p>  <p style="margin: 5px 0;">VELUX</p> 	 <p style="margin: 5px 0;">arhitext arhitectură design artă</p>  <p style="margin: 5px 0;">zeppelin ARHITECTURĂ. SPAȚIU. IDEI.</p>

Ecobiblioteca
Cacica, Suceava County, Romania
Designer – Dico și Țigănaș

Major Refurbishment: existing public school - Liceul Onisifor Ghibu - precertified GREEN SCHOOLS



Existing buildings: AMERA TOWER, Zero Waste precertified - an old mill transformed into an office building.

The first office building in Romania on the road towards Zero Waste



Initiatives: RoGBC is part of different partnerships for developing sustainable projects



The EXCITE project supports implementation of the European Energy Award in **Bulgaria, North Macedonia, Romania, Slovenia and Ukraine** by providing direct technical support for 3 pilot cities in each country. On top, we deliver specialized training for local energy managers, tailored business models for local climate actions, and broad civil engagement campaigns.

RoGBC is in charge with WP5 Peer-to-peer learning

Training through MOODLE platform

Peer-to-peer visits

Initiatives: RoGBC is part of different partnerships for developing sustainable projects



europaean
energy award
comunitate sustenabilă



PROGRAMUL DE COOPERARE ELVEȚIANO-ROMÂN
SWISS-ROMANIAN COOPERATION PROGRAMME



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The first Sustainable Community: Vama Buzăului



The last Sustainable Community: Alba Iulia



Education: Green Building Professional developed by RoGBC has been recognised as a good practice exemple in Europe, by European Construction Observatory.

The screenshot shows an events page with a green calendar icon on the left displaying dates from 1 to 31. To the right, the word "events" is written in large green letters. Below it are five filter icons: "all", "Other Trainings" (lightbulb), "Training" (GB PRO), "Conference" (star and signal), and "RoGBC Related" (green leaf). At the bottom, there are navigation options: "By Year", "By Month", "By Week", "See Today", "By Categories", and a "Search" button with a magnifying glass icon.

Circular Economy for Buildings

Location : Webinar
From: Tuesday 29 November 2022, 09:30
To: Tuesday 29 November 2022, 17:00

This course is an optional course within the "Green Building Professional" certification platform.

We will discuss national development and investment projects for job creation and economic growth as well as the integration of the principles of sustainable development, green economy and circular economy.



Research: RoGBC is part of different ongoing research projects

RecoverIND (Ecological and Innovative Technologies for recovering industrial areas from LCA and Energy Efficiency point of view) is a project funded by the Erasmus+ program and aims to deepen the interconnection between energy efficiency, Life Cycle Assessment (LCA) and the use of advanced technologies for building design and rehabilitation of the construction sector, with the need to improve knowledge in the education sector.

New technologies applicable to the conversion and restoration of industrial areas are emerging every day. Therefore, the project will offer training in systems such as collaborative robotics and drones, which will allow the project's target groups to adapt to new management systems and new production processes.

The training of both students and professionals becomes essential to take advantage of the interoperability offered by ICTs with equipment and software for the evaluation of EE and LCA for industrial restoration.



Co-funded by the
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Thank you
for your attention