ORDINUL ARHITECȚILOR DIN ROMÂNIA
TRANSILVANIA



Sisteme de evaluare a sustenabilității clădirilor

2 aprilie 2014

Sisteme de evaluare a sustenabilității unei clădiri

Definiții, istoric, tipuri de evaluări

Sisteme de evaluare a sustenabilității unei clădiri

Definiții, istoric, tipuri de evaluări

Grile de evaluare a calității construcțiilor

Sisteme de evaluare a sustenabilității unei clădiri

Definiții, istoric, tipuri de evaluări

- 1990 – BREEAM (Building Research Establishment's Environmental Assessment Method)
- 2005 – LEED (Leadership in Energy and Environmental Design)
- 2006 – LBC (Living Building Challenge)
- 2008 – DGNB (Deutsche Gesellschaft für Nachhaltiges Bauen)

Sisteme de evaluare a sustenabilității unei clădiri

Definiții, istoric, tipuri de evaluări

Tipuri de evaluări

- Clădiri noi
- Reabilitări majore
- Clădiri existente
- Comunități

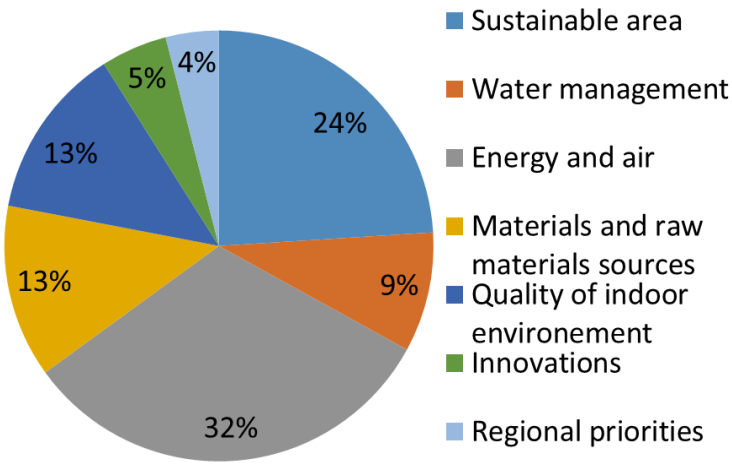




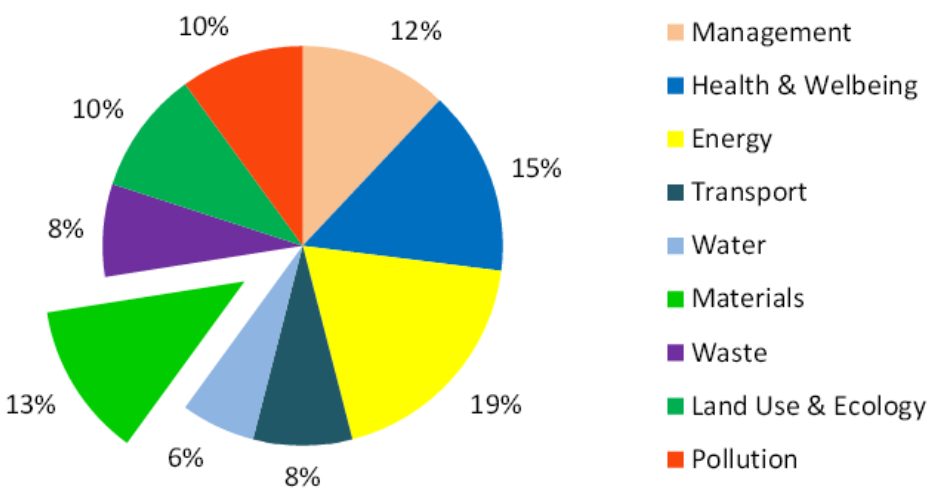


Sisteme de evaluare a sustenabilității unei clădiri

Categorii de criterii la LEED



Categorii de criteria la BREEAM



Cerințele BREEAM

Management

MAN 1 – Commissioning	2
MAN 2 – Constructors' Environmental & Social Code of Conduct	2
MAN 3 – Construction Site Impacts	4
MAN 4 – Building User Guide	1
MAN 12 – Life Cycle Cost Analysis	2

Cerințele BREEAM

Health & Wellbeing

HEA 1 – Daylighting	1
HEA 2 – View Out	1
HEA 3 – Glare Control	1
HEA 4 – High frequency lighting	1
HEA 5 – Internal and external lighting levels	1
HEA 6 – Lighting zones and controls	1
HEA 7 – Potential for Natural Ventilation	1

Cerințele BREEAM

Health & Wellbeing

HEA 8 – Indoor Air Quality	1
HEA 9 – Volatile Organic Compounds	1
HEA 10 – Thermal Comfort	2
HEA 11 – Thermal Zoning	1
HEA 12 – Microbial Contamination	1
HEA 13 – Acoustic Performance	1
HEA 14 – Office Space	2 (la birouri nu se aplică)

Cerințele BREEAM

Energy

ENE 1 – Energy Efficiency	15
ENE 2 – Sub-metering of Substantial Energy Uses	2
ENE 3 – Sub-metering of High Energy Load and Tenancy Areas	1
ENE 4 – External Lighting	1

Cerințele BREEAM

Energy

ENE 5 – Low or Zero Carbon Technologies	3
ENE 6 – Building Fabric Performance and Avoidance of Air Infiltration	2 (nu la birouri)
ENE 7 – Cold Storage	1 (nu la birouri)
ENE 8 – Lifts	2
ENE 7 – Escalators and travelling walkways	1 (nu la industrial)

Cerințele BREEAM

Transport

TRA 1 – Provision of Public Transport	2	(4 la retail)
TRA 2 – Proximity to Amenities	1	
TRA 3 – Alternative Modes of Transport	2	
TRA 4 – Pedestrian and Cyclist Safety	1	(2 la retail)
TRA 5 – Travel Plan	1	
TRA 6 – Maximum Car Parching Capacity	2	(nu la retail)
TRA 7 – Travel Information Point	1	(doar la retail)

Cerințele BREEAM

Water

WAT 1 – Water Consumption	3
WAT 2 – Water Meter	1
WAT 3 – Major Leak Detection	3
WAT 4 – Sanitary Supply Shut Off	1
WAT 6 – Irrigation Systems	1
WAT 7 – Vehicle Wash	1 (doar la retail)
WAT 8 - Sustainable on-site water treatment	2

Cerințele BREEAM

Materials

MAT 1 – Materials Specification (Major Building Elements)	4 (2 la ind.)
MAT 2 – Hard Landscaping and Boundary Protection	1
MAT 3 – Reuse of Facade	1
MAT 4 – Reuse of Structure	1
MAT 5 – Responsible Sourcing of Materials	3
MAT 6 – Insulation	2
MAT 7 – Design for Robustness	1

Cerințele BREEAM

Waste

WST 1 – Construction SiteWaste Management	3
WST 2 – Recycled Aggregates	1
WST 3 – Recyclable Waste Storage	1
WST 4 – Compactor / Baler	1 (nu la birouri)
WST 5 – Composting	1
WST 6 – Floor Finishes	1 (doar la birouri)

Cerințele BREEAM

Land Use and Ecology

LUE 1 – Reuse of Land	1
LUE 2 – Contaminated Land	1
LUE 3 – Ecological Value of Site and Protection of Ecological Features	1
LUE 4 – Mitigating Ecological Impact	5
LUE 6 – Long Term Impact on Biodiversity	2

Cerințele BREEAM

Pollution

POL 1 – Refrigerant GWP – Building Services	1
POL 2 – Preventing Refrigerant Leaks	2 (1 la ind.)
POL 3 – Refrigerant GWP – Cold Storage	1 (nu la bir.)
POL 4 – NOx emissions from heating source	3 (2 la ind.)
POL 5 – Flood Risk	3
POL 6 – Minimising Watercourse Pollution	1
POL 7 – Reduction of Night Time Light Pollution	1
POL 8 – Noise Attenuation	1

Cerințele BREEAM

Innovation

MAN 3 – Construction Site Impacts

HEA 1 – Daylighting

HEA 9 – Volatile Organic Compounds

HEA 14 – Office Space (BREEAM Retail & Industrial Schemes only)

ENE 1 – Reduction of CO2 emissions

ENE 5 – Low or Zero Carbon Technologies

Cerințele BREEAM

Innovation

TRA 3 – Alternative modes of transport

WAT 2 – Water Meter

MAT 1 – Materials Specification

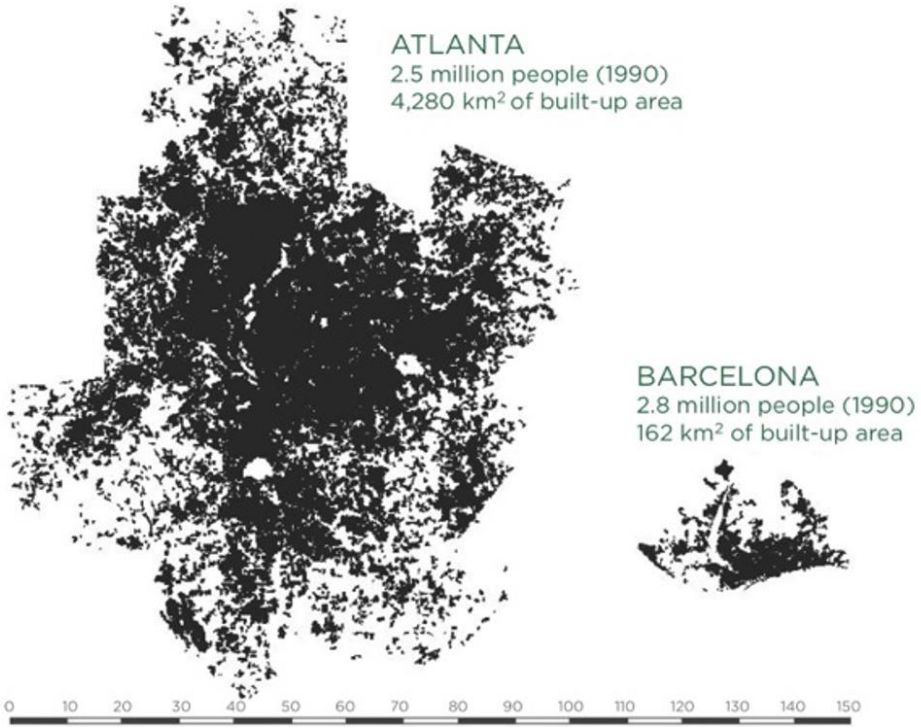
MAT 5 – Responsible Sourcing of Materials

WST 1 – Construction SiteWaste Management

POL 4 – Nox emissions of heating source

Sisteme de evaluare a sustenabilității unei clădiri

Living Building Challenge - Amplasament

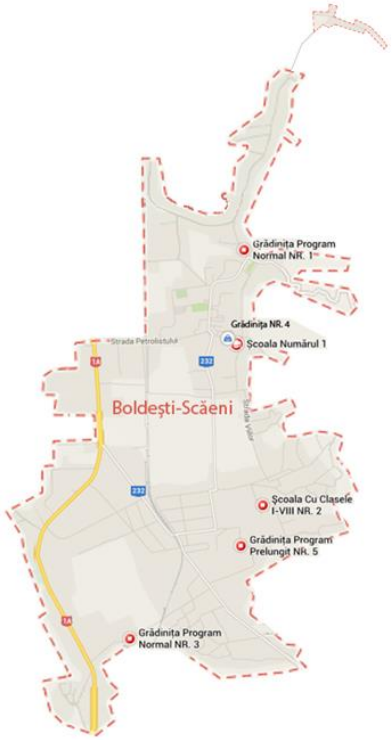


Living Building Challenge - Amplasament

1. Limit to Growth
2. Urban Agriculture
3. Habitat Exchange
4. Car Free Living

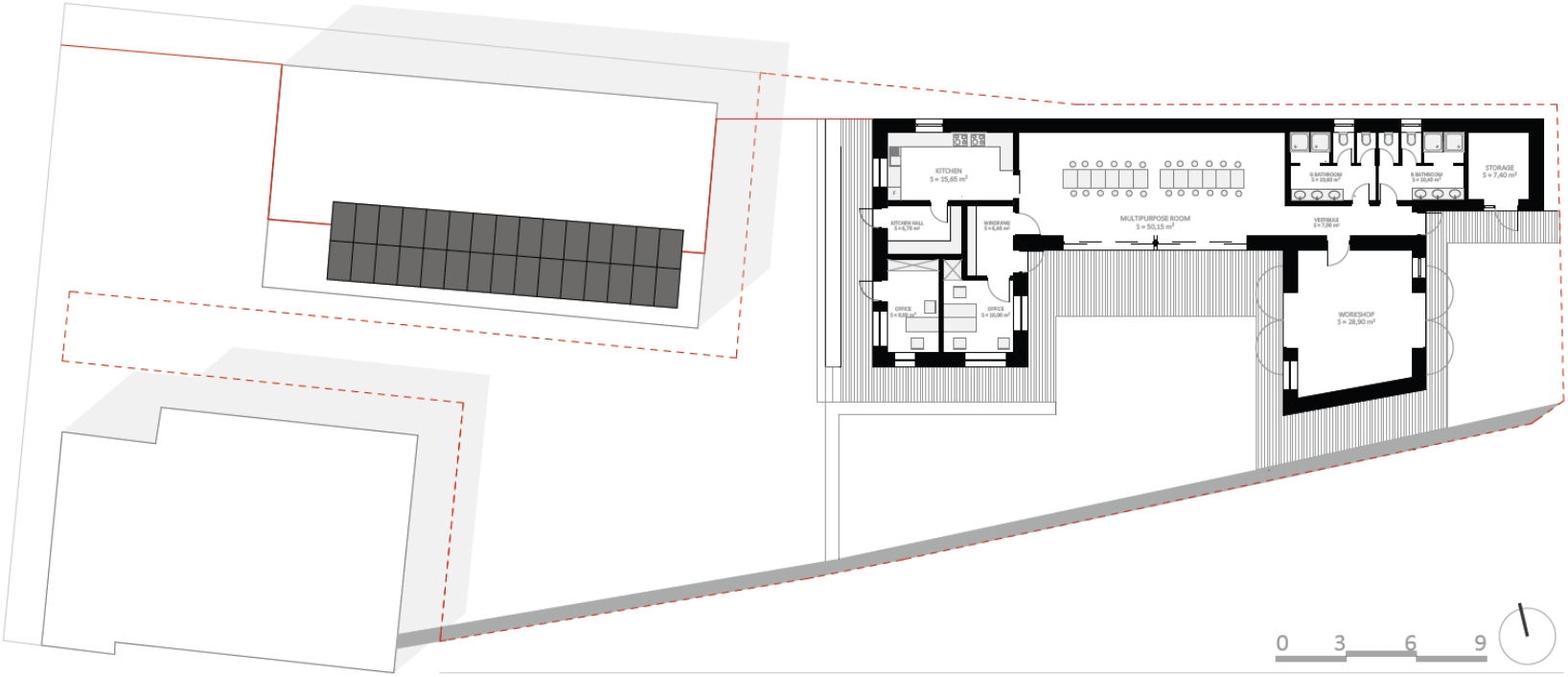
Sisteme de evaluare a sustenabilității unei clădiri

Living Building Challenge - Amplasament



Sisteme de evaluare a sustenabilității unei clădiri

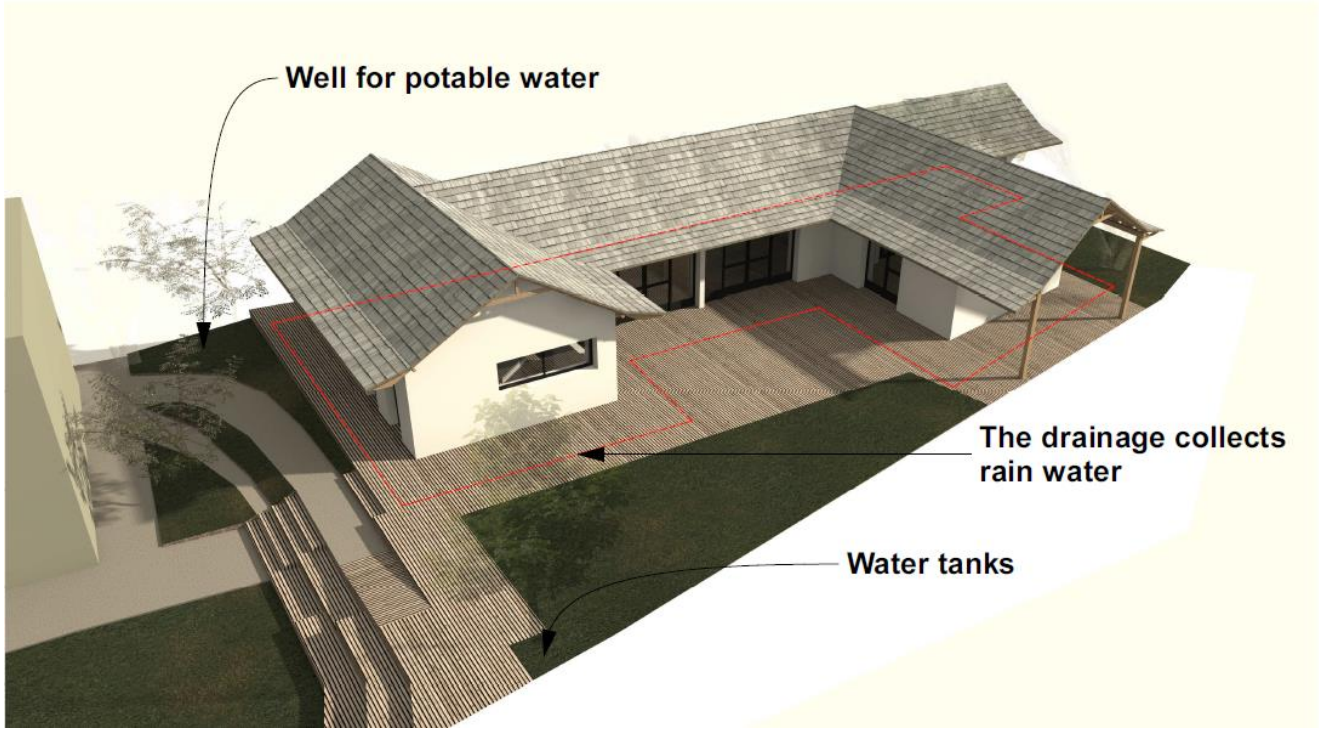
Living Building Challenge - Amplasament



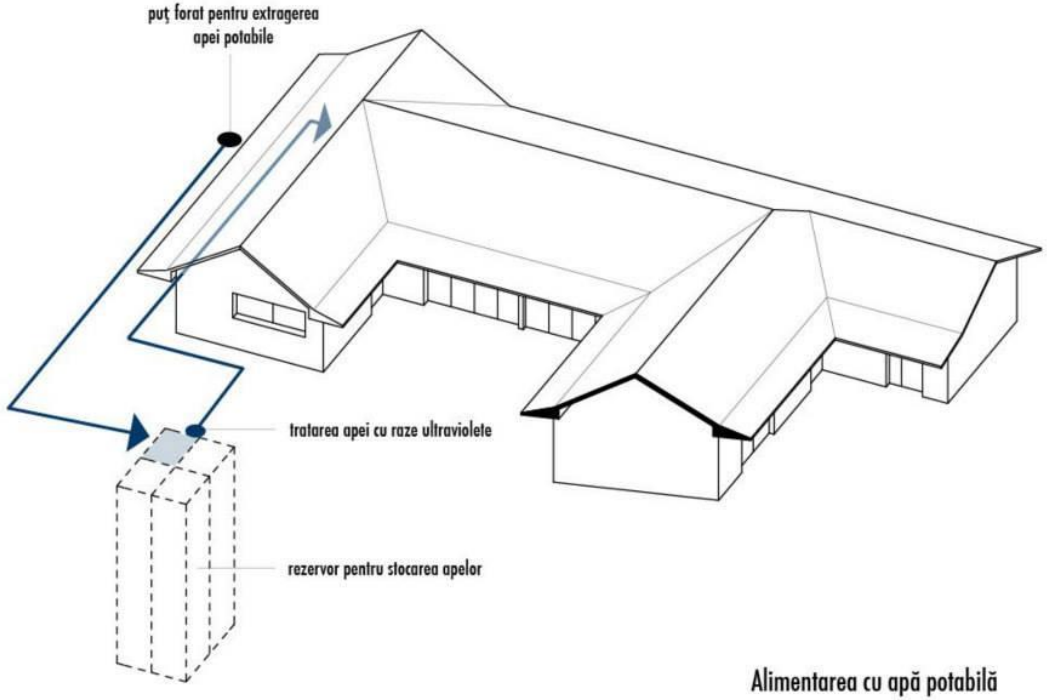
Living Building Challenge – Consumul de apă

5. Net Zero Water
6. Ecological Water Flow

Living Building Challenge – Consumul de apă

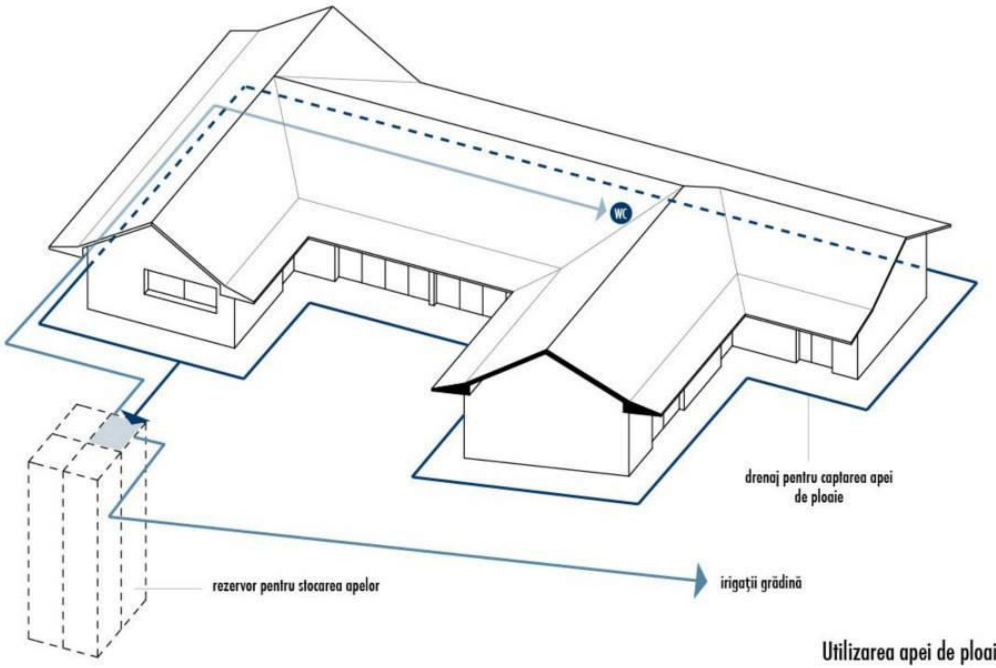


Living Building Challenge – Consumul de apă



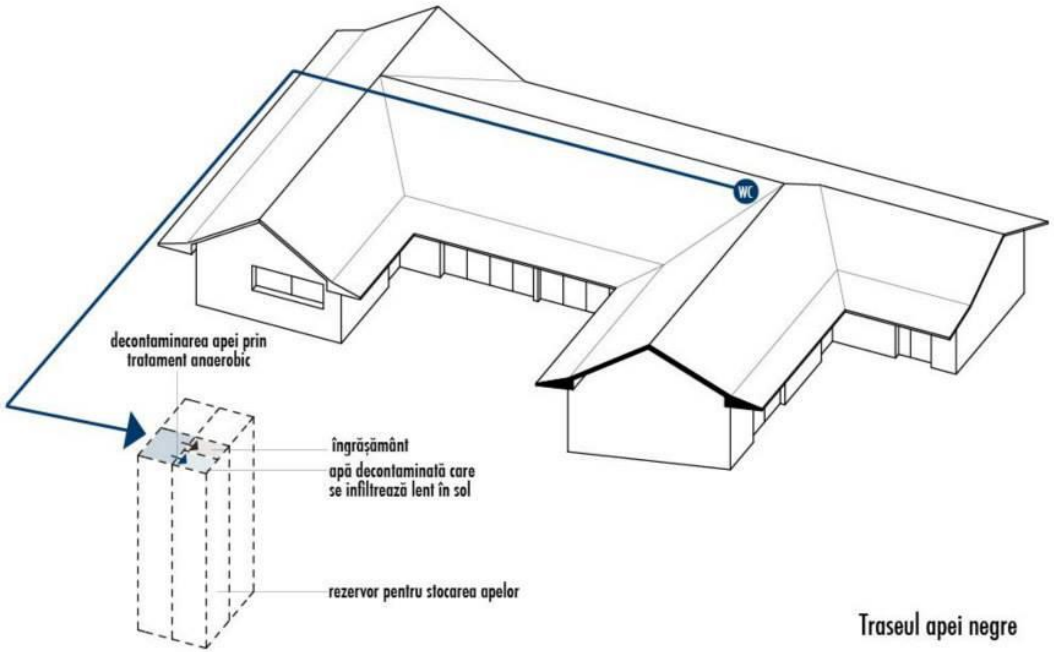
Alimentarea cu apă potabilă

Living Building Challenge – Consumul de apă

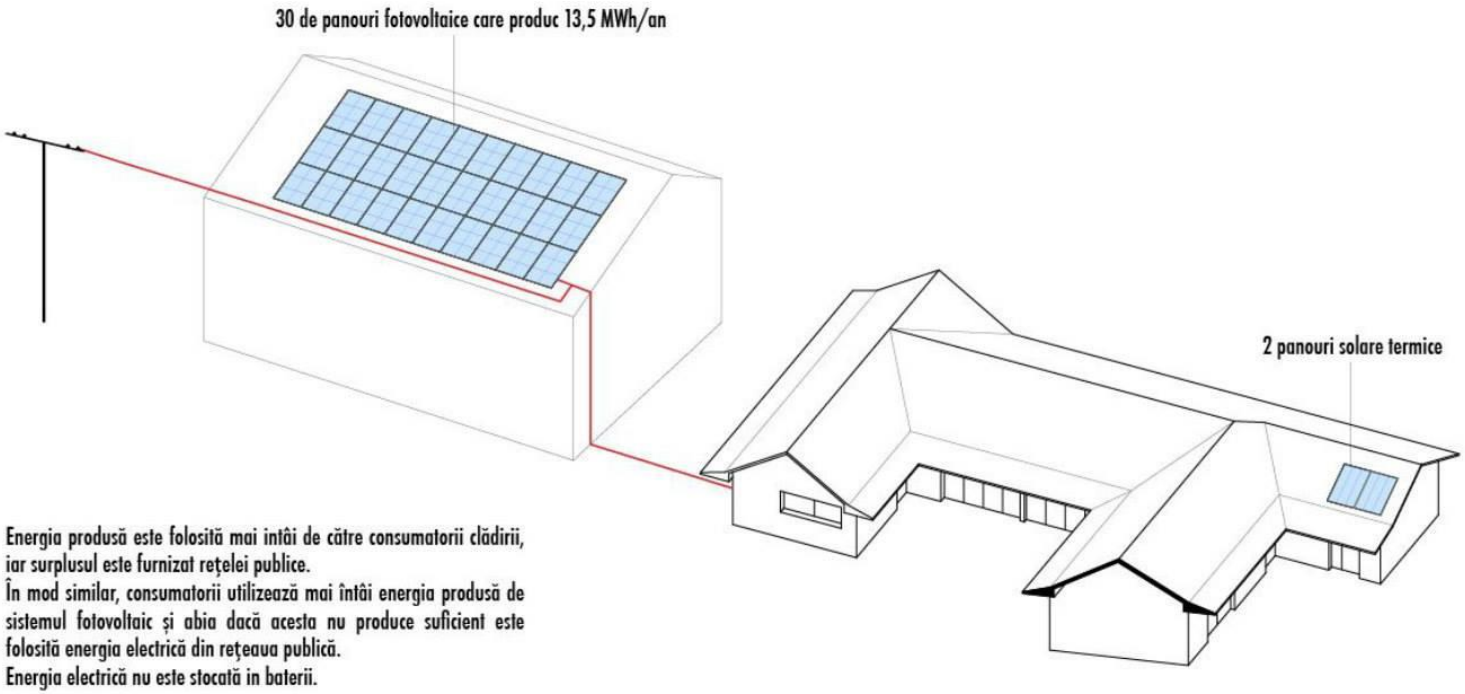


Utilizarea apei de ploaie

Living Building Challenge – Consumul de apă

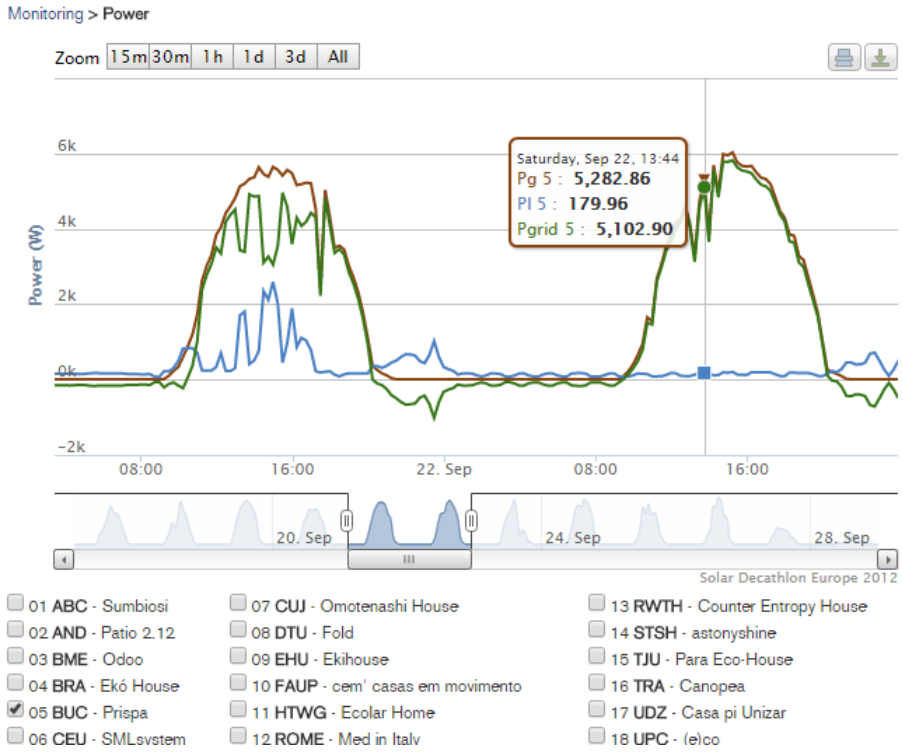


Living Building Challenge – Energie



Sisteme de evaluare a sustenabilității unei clădiri

Living Building Challenge – Energie



SCORINGS

- 1 - Architecture
- 2 - Engineering & Construction
- 3 - Energy Efficiency
- 4 - Electrical Energy Balance
- 5 - Comfort Conditions
- 6 - House Functioning
- 7 - Communication and Social Awareness
- 8 - Industrialization & Market Viability
- 9 - Innovation
- 10 - Sustainability
- Total Scoring (Accumulated)
- Total Scoring (Historical)

COMPARE

- Power (W)
  - ☑ Power generated by the PV system
  - ☑ Power consumed by the loads
  - ☑ Power exported to the Grid
- Rooms Temp (°C)
- Humidity (%)
- Air Quality (ppm)
- Lighting (lux)
- Fridge/Freezer Temp (°C)
- Dishwasher/Washing Machine Temp (°C)
- Oven temperature (°C)
- Home Electronics Consumption (W)

Sisteme de evaluare a sustenabilității unei clădiri

Living Building Challenge – Calitatea aerului din interior

8. Civilised Environment
9. Healthy Air
10. Biophilia

Sisteme de evaluare a sustenabilității unei clădiri

Living Building Challenge – Materiale

11. Red List
12. Embodies Carbon Footprint
13. Responsible Industry
14. Appropriate Sourcing
15. Conservation and Reuse

Living Building Challenge – Materiale

- Azbest
- Cadium
- Polietilenă clorurată sau clorosulfonată
- Clorofluorocarburi (CFC)
- Cloropren (neopren)
- Formaldehidă (adăugată)
- Tratamente pentru lemn care conțin creozot, arsenic sau pentaclorfenol
- Hidroclorofluorocarburi (HCFC)
- Plumb (adăugat)
- Mercur
- Ingrășăminte petrochimice sau pesticide
- Ftalați
- Policlorură de vinil (PVC)
- Materiale ignifuge halogenate

Sisteme de evaluare a sustenabilității unei clădiri

Living Building Challenge – Materiale





Sisteme de evaluare a sustenabilității unei clădiri

Living Building Challenge – Echitate socială

16. Human Scale and Human Places
17. Democracy and Social Justice
18. Right to Nature

Sisteme de evaluare a sustenabilității unei clădiri

Living Building Challenge – Valoare culturală

18. **Beauty and Spirit**
19. **Inspiration and Education**

Sisteme de evaluare a sustenabilității unei clădiri

Living Building Challenge – Valoare culturală








Sisteme de evaluare a sustenabilității unei clădiri

Concluzii

· Analiza ciclului de viață a clădirii – *Life Cycle Assessment*

· Abordare integrată

· Eficiența energetică vs. sustenabilitate

· Rolul instalațiilor

· Structurarea obiectivelor pe parcursul unui proiect