

1^{ème} année master – Architecture

Notions de durabilité à l'échelle urbaine

Matière : Séminaire Curriculaire

Enseignant : Youcef Mokrane

Sommaire

1. Introduction : La ville un organisme complexe,
2. Le projet urbain durable,
3. Les principes de l'urbanisme durable,
4. Urbanisme durable : quelques principes de certification environnementale : Leed
5. Liens et références : Durabilité urbaine.

Introduction :

La ville un organisme complexe

- La Ville : est considéré comme un organisme complexe.
 - Système (نسق), organisme (جسد ، متعضية), complexe (مركب).
 - 1. Doté et reconnu par une **morphologie** (مرفولوجيا)
 - 2. une **physiologie**.
 - 3. Une intelligence.
- Un fonctionnement systémique et cybernétique.

Le projet urbain durable.

- Problématique de la durabilité de l'espace urbain,
- Rapport Brundtland sur le développement durable (1987) :
« le développement durable est un développement qui répond aux besoins du présent sans compromettre la capacité des générations futures de répondre aux leurs »
- Agenda 21 et agendas 21 locaux
- Problématique du développement durable urbain.
- L'environnement urbain considéré comme système organique, constitué de sous-systèmes : physique, économique et social.
- La notion de systémique et d'organiscité devient essentielle pour concevoir des projets pour la ville et non des plans.
- Plusieurs principes régissent le urbanisme durable *Sustainable development.*

Principes de l'urbanisme durable

- Biophilie
- Corridors durables
- Haute performance énergétique
 - Efficience énergétique
 - Usage des énergies propres
 - Un meilleur environnement intérieur,
- Réduction des pollutions des ressources naturelles,
 - Amélioration des conditions des relations sociales
- Participations, inclusion des acteurs urbains,
- Flexibilité des décisions, ittérativité des processus, multiplicité des scénarios.
- Développement des espaces publics et communautaires
- Gestion des risques majeurs,
- Haute performance des infrastructures (formes construites):
 - Mixités fonctionnelles,
 - Design intégré.

Principes de l'urbanisme durable

- Le projet urbain est une dénomination qui a suivi une prise de conscience de rupture avec l'urbanisme moderne (législations, pratiques) :
 1. Ville en projet et non ville en plan.
 2. Bien-être physiologique, sociologique, psychologique, des occupants.
 3. Participations, concertations, négociations : Modération d'intérêts de tous les acteurs de la ville.
 4. Implique une multitude d'acteurs du fait urbain,
 5. Espace public : Favoriser le vivre ensemble et améliorer la qualité du lien social.
 6. **Dépasse les cloisonnements d'échelles,**
 7. S'intéresser à la dimension environnementale :
 - modes de transports alternatifs,
 - gestion des déchets,
 - développement des espaces verts,
 - réduction des émissions de CO₂,
 - réduire le temps des déplacements,
 - protection des ressources naturelles.
 8. Prévenir les risques majeurs

Principes de l'urbanisme durable

- Plusieurs paramètres affectent les formes urbaines nouvelles :
 - La flexibilité, l'ouverture,
 - les mixités fonctionnelles,
 - la promotion de l'espace publique e
 - la facilitation des mobilités et de l'accessibilité,
 - Le développement des espaces verts et des espaces bleu.

Principes de l'urbanisme durable

- Thèmes de réflexion
 - Villes vertes et éco-quartiers
 - Résilience urbaines,
 - Villes à empreinte énergétique positive,
 - Villes et certification.
 - Bâtiments verts.
 - Tendances au paramétrisme et au biomimétisme.

Urbanisme durable : quelques principes de certification environnementale : Leed

■ Certification LEEDs : (USA) : V4.1.

Highlights of LEED v4.1 BD+C

Integrative Process	<ul style="list-style-type: none"> The credit has a more balanced approach for project teams to understand, improve, and document both the process and outcomes of integrated design through a new documentation approach of a project team letter. Project teams have greater flexibility to tell the story of their integrative process and earn more points for exemplary performance for new areas of interdisciplinary analysis at the frontier of green building, including social equity and public health. Projects can also demonstrate their thoughtful site selection decisions. 		<ul style="list-style-type: none"> Site Assessment is more relevant to international project teams; the US specific TR-55 standard is no longer required.
Location and Transportation	<ul style="list-style-type: none"> Reduced Parking Footprint recognizes variations in consumer behavior; preferred parking requirements are removed and three new credit options are added that reward projects for no off-street parking, providing carshare parking, or unbundling parking. Green Vehicles is renamed Electric Vehicles; the credit now refers to electric vehicles only and offers a new option rewarding the installation of electric vehicle infrastructure. Bicycle Facilities requirements better accommodate diverse project-types; storage requirements are more representative of common site conditions and differing shower amounts were added for large-occupancy projects. 	Water Efficiency	<ul style="list-style-type: none"> Updates to Indoor Water Use Reduction recognize variations in standard supply pressure across the globe and the European product labeling program. Optimize Process Water Use requirements are adjusted to be more relevant and achievable for projects; two new credit options incorporate a previous pilot credit and reward the use of alternative recycled water to meet process water demand. Core and Shell only; Points are re-allocated from Indoor Water Use Reduction to Outdoor Water Use Reduction and Optimize Process Water Use to better align with Core and Shell scope of work.
Sustainable Sites	<ul style="list-style-type: none"> Protect or Restore Habitat is more accessible for projects with a reduced restoration threshold, new soil and vegetation guidance, and lowered financial requirements. Rainwater Management requirements are more applicable and achievable; the credit features a reduced minimum percentile storm events and more guidance for zero-lot-line projects. 	Energy and Atmosphere	<ul style="list-style-type: none"> The referenced standard for energy performance is updated to ASHRAE 90.1-2016; projects are now required to demonstrate performance against two metrics: cost and greenhouse gas emissions. Optimize Energy Performance includes a new prescriptive option for individual systems optimization in BD+C. Renewable Energy Production and Green Power and Carbon Offsets are combined into a new credit, Renewable Energy, to better address diverse methods of renewables procurement and evolving global renewables markets. Demand Response is updated to Grid Harmonization to recognize role of buildings in supporting grid-scale de-carbonization; the new credit option rewards technologies and strategies for building load flexibility and management.
	<ul style="list-style-type: none"> Site Assessment is more relevant to international project teams; the US specific TR-55 standard is no longer required. 		

Urbanisme durable : quelques principes de certification environnementale : Leed

Materials and Resources	<ul style="list-style-type: none">• To encourage greater uptake of all Materials and Resources credits, additional credit pathways and updated credit achievement thresholds are introduced for several credits, including Building Life-Cycle Impact Reduction and Building Product Disclosure and Optimization (BPDO) credits.• The credit category fine-tunes requirements with revised credit achievement thresholds to acknowledge variations for different project types and scopes of work. These updates include revised thresholds for number of products, cost and manufacturers in BPDO credits for smaller and/or less material intensive projects and project types such as Warehouses and Core and Shell to make credits more achievable.• The Construction and Demolition Waste credit is revised for challenging project sites and features updated total waste reduction thresholds.• Greater emphasis and weighting is given to embodied carbon reductions through building reuse, salvage, whole building LCA, and EPDs.
Indoor Environmental Quality	<ul style="list-style-type: none">• The calculation methodology in the Low-Emitting Materials credit is restructured to be more straightforward and organized around product categories. The compliance thresholds have also been adjusted.• The air quality testing option for Indoor Air Quality Assessment has been revised with two testing pathways and a small list of required contaminants.• The entry points for both the Daylight and Acoustic Performance credits are lowered to encourage more projects to consider daylight and acoustic performance during design. Both credits also give more flexibility to the designer to appropriately address important design considerations: including excessive sunlight (for daylight) and sound transmission between spaces (for acoustics).

Liens et références : Durabilité urbaine

Définitions :

1. **Sustainable urbanism. (2021). In *Wikipedia*.**
https://en.wikipedia.org/w/index.php?title=Sustainable_urbanism&oldid=1023017798
2. Urban ecology. (2021). In *Wikipedia*.
https://en.wikipedia.org/w/index.php?title=Urban_ecology&oldid=1017477559
3. **Urban resilience. (2021). In *Wikipedia*.**
https://en.wikipedia.org/w/index.php?title=Urban_resilience&oldid=1023017707
4. Whitehead, M. (2020). Sustainability, Urban. In A. Kobayashi (Éd.), *International Encyclopedia of Human Geography (Second Edition)* (p. 169-176). Elsevier. <https://doi.org/10.1016/B978-0-08-102295-5.10795-4>

Liens et références : Durabilité urbaine

Articles :

1. Kissinger, M., & Stossel, Z. (2021). An integrated, multi-scale approach for modelling urban metabolism changes as a means for assessing urban sustainability. *Sustainable Cities and Society*, 67, 102695.
<https://doi.org/10.1016/j.scs.2020.102695>
2. **Agenda 21 .:. Sustainable Development Knowledge Platform. (s. d.). Consulté 5 juin 2021, à l'adresse**
<https://sustainabledevelopment.un.org/outcomedocuments/agenda21>
3. Liu, C., Yang, R. J., Yu, X., Sun, C., Wong, P. S. P., & Zhao, H. (2021). Virtual power plants for a sustainable urban future. *Sustainable Cities and Society*, 65, 102640. <https://doi.org/10.1016/j.scs.2020.102640>
4. Puchol-Salort, P., O'Keeffe, J., van Reeuwijk, M., & Mijic, A. (2021). An urban planning sustainability framework : Systems approach to blue green urban design. *Sustainable Cities and Society*, 66, 102677.
<https://doi.org/10.1016/j.scs.2020.102677>
5. Sharifi, A. (2021). Urban sustainability assessment : An overview and bibliometric analysis. *Ecological Indicators*, 121, 107102.
<https://doi.org/10.1016/j.ecolind.2020.107102>

Liens et références : Durabilité urbaine

Certification environnementale :

1. *BREEAM : The world's leading sustainability assessment method for masterplanning projects, infrastructure and buildings.* (s. d.). BREEAM. Consulté 5 juin 2021, à l'adresse <https://www.breeam.com/>
2. *HQE definition—What does HQE stands for ?* (s. d.). Consulté 5 juin 2021, à l'adresse <https://www.behqe.com/presentation-hqe/what-is-hqe>
3. *LEED v4.1 | U.S. Green Building Council.* (s. d.). Consulté 5 juin 2021, à l'adresse <https://www.usgbc.org/leed/v41>

Autres liens :

1. *HVE - accueil.* (s. d.). HVE - Haute Valeur Environnementale. Consulté 5 juin 2021, à l'adresse <https://hve-asso.com/>