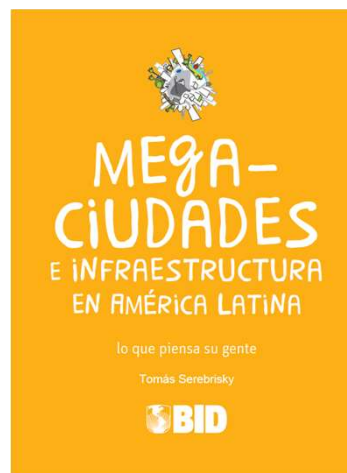


Sustainability is just making its way...

According to IDB, there are **other pressing priorities** for *Mexican* citizens:

- 1.- Security
- 2.- Transparency
- 3.- Bureaucracy
- 4.- Citizen Participation
- 5.- Climate change**
- 6.- Rain Storms
- 7.- Inequity
- 8.- Air quality**



Source: Megaciudades e infraestructura en América Latina, BID



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Projected GHG emissions for 2050

Table 6.5 - GHG emissions under BAU and projected decarbonisation pathway in 2050.

Category	2012 (MtCO ₂ e)	2050 GEA-BAU (GtCO ₂ e)	2050 Decarbon- isation pathway (GtCO ₂ e)	Driver
Total	4623	5.3	-0.1	
Power generation (*)	544	1.1	0	Solar, wind, geothermal already competi- tive, increase their margins overtime; grid integration and distributed power aid the transition.
Industrial processes, manufacturing & construction	494	0.5	0.4	Industry/manufacturing implements energy savings and technology improvement measures.
Transportation	665	1.4	0.2	Rapidly evolving electric vehicle technol- ogies and air-quality policies assist in trans- formation, overtaking internal combustion options for electrification of the sector.
Land use & forest- ry, agriculture and waste	2574	1.9	-1.1**	Zero deforestation and large-scale restora- tion and reforestation efforts are imple- mented. Nutrient management measures in cropland and CH ₄ abatement from live- stock are implemented following current trends.
Other Sectors***	346	0.4	0.4	Fugitive emissions and other fuel con- sumption kept constant as per GEA-BAU

Source: Zero Carbon Latin America. A pathway for net decarbonisation of the regional economy by mid-century



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Net Zero Housing Program



Vinte, a recognized Mexican housing developer, exhibited in 2018 the first program for Net Zero Housing in the region, named "Zero Gas Hybrid House".

These units claim to reduce up to half a ton of CO2 per household/year.



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Latin American cities... united on EE/NZEB

On August 2019, authorities from 18 Latin American cities met to discuss strategies to **accelerate city-scale climate change actions**, including net zero carbon buildings.

- Santiago, Chile
- Guadalajara, Mexico
- Mexico City, Mexico
- Yucatan, Mexico
- Buenos Aires, Argentina
- Quito, Ecuador
- Lima, Peru
- Bogotá, Colombia
- Medellín, Colombia
- Cali, Colombia
- Montería, Colombia
- Rio de Janeiro, Brazil
- São Paulo, Brazil
- Fortaleza, Brazil
- Recife, Brazil
- Curitiba, Brazil
- San Salvador, El Salvador
- Belen, Costa Rica



Source: Worldgbc.org



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OUM:
A flagship NZEB
project



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Net Zero Energy Building Program

Engagement and collaboration... Day One

CESPEDES (WBCSD Mexico) and WRI Mexico developed a kick-off workshop in March 2016.

Define and achieve Net Zero Building through a proof-of-concept project:

- Demonstrate attractive ROI
- Better design and real-time performance
- Create a market for NZEB in Mexico

Source: wriciudades.org



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NZEB:Mexico Consortium



Project *goals & features*



Flagship project for Mexico & Latin America



No extra costs for the developer



Appealing Real Estate product



Extensive media exposure



Innovative project

OUM Project

Is a wellness-oriented commercial project aiming to harmonize body, mind and spirit.

- In Monterrey, MEXICO
- 140,455 sqf construction
- 40,000 sqf net leasing space
- 224 parking spaces
- Aiming for Zero Energy, LEED Platinum & WELL Certifications



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OUM Commercial Project



San Pedro Garza Garcia, NL, MEXICO




Net Zero Energy Program

A replicable model for **future buildings...**



SIZE OPTIMIZATION


ENVELOPE & PASSIVE DESIGN




EFFICIENT ACTIVE TECHNOLOGIES

ON-SITE RENEWABLES

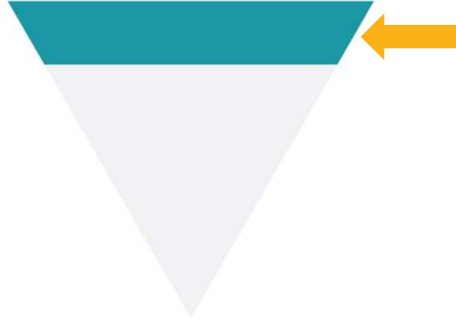



5-step approach to EE & NZEB @ OUM

1. **Integrative Design**
2. **Passive Strategies**
3. **Active Strategies**
4. **Operational Controls**
5. **On-site Renewable Energy**

5-step approach to EE & NZEB @ OUM

Energy Demand Reduction



1) Integrative Design

- Clear Goal Setting
- Multi-stakeholder meetings
- Energy Modeling iterations
- Synergies among certifications



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5-step approach to EE & NZEB @ OUM



2) Passive Strategies

- Passive Solar Design
- Bioclimatic façade
- Natural air-conditioning @ common areas
- Optimal thermal insulation for envelope



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5-step approach to EE & NZEB @ OUM



3) Active strategies

- High-efficiency HVAC
- Demand controlled ventilation
- Smart lighting
- Heat recovery for outdoor air
- Heat Pump
- Elevators w/ regenerative system



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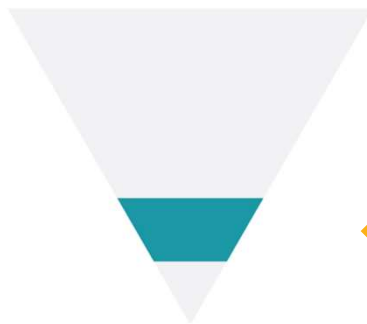


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5-step approach to EE & NZEB @ OUM



4) Operational Strategies

- Extended sub-metering and monitoring
- Green Lease contracts w/ incentives for energy savings
- Enhanced Commissioning for all spaces & systems



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5-step approach to EE & NZEB @ OUM



5) On-site renewables (PV)

- 110% generation through photovoltaic panels



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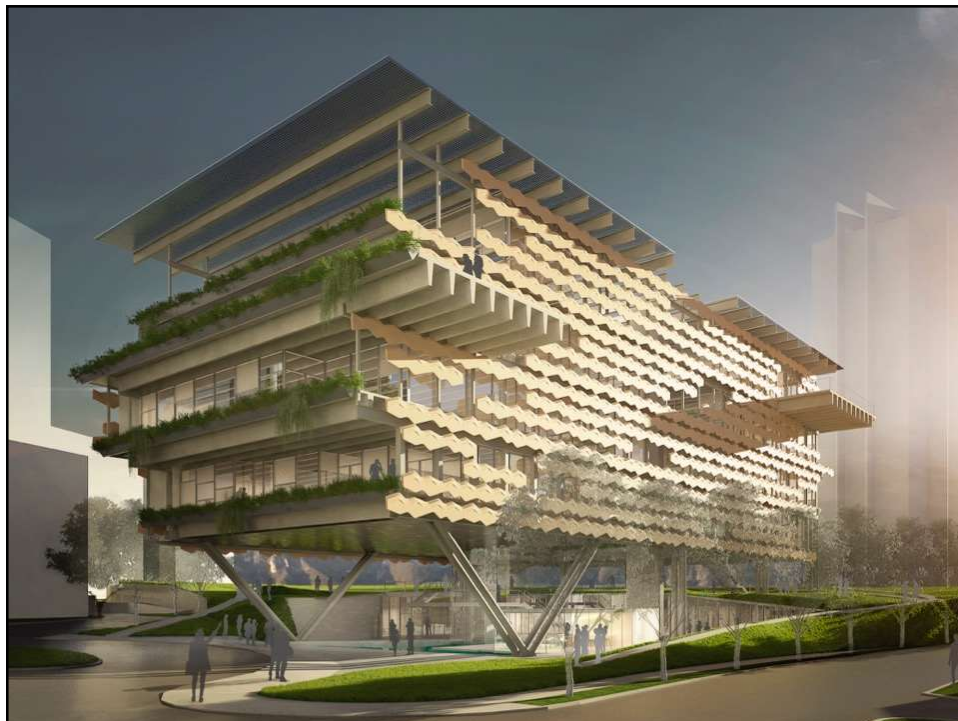
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What we've learned so far...

Technical (49%)

- ☐ Clear Goals + Integrated Design Process
- ☐ Whole Building Energy Model iterations
- ☐ Fundamental + Enhanced Commissioning
- ☐ Proven technologies

Human (51%)

- ✓ Leadership
- ✓ Alignment of expectations
- ✓ Maximizing capacities
- ✓ Willingness
- ✓ Endurance
- ✓ Tolerance
- ✓ Training & Learning for all!



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Challenges ahead...

- ✧ Quality Control in Construction Phase
- ✧ Achieve tenant collaboration
- ✧ Strict Monitoring & Verification
- ✧ Continuous Risk Management
- ✧ Operational & Embodied Carbon Goals
- ✧ Confirm the Business Case for NZEB
- ✧ **Share, Scale up & Replicate!**

**+ Humane and Positive message
for the superior goals of Climate Change ☺**



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