Collecting data from small scale commercial and retail buildings

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Partial results from the research:
Sustainable Upgrades in Regional Small Commercial and Retail Buildings.
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Energy Epidemiology: using building data to support energy and carbon policy in Latin America

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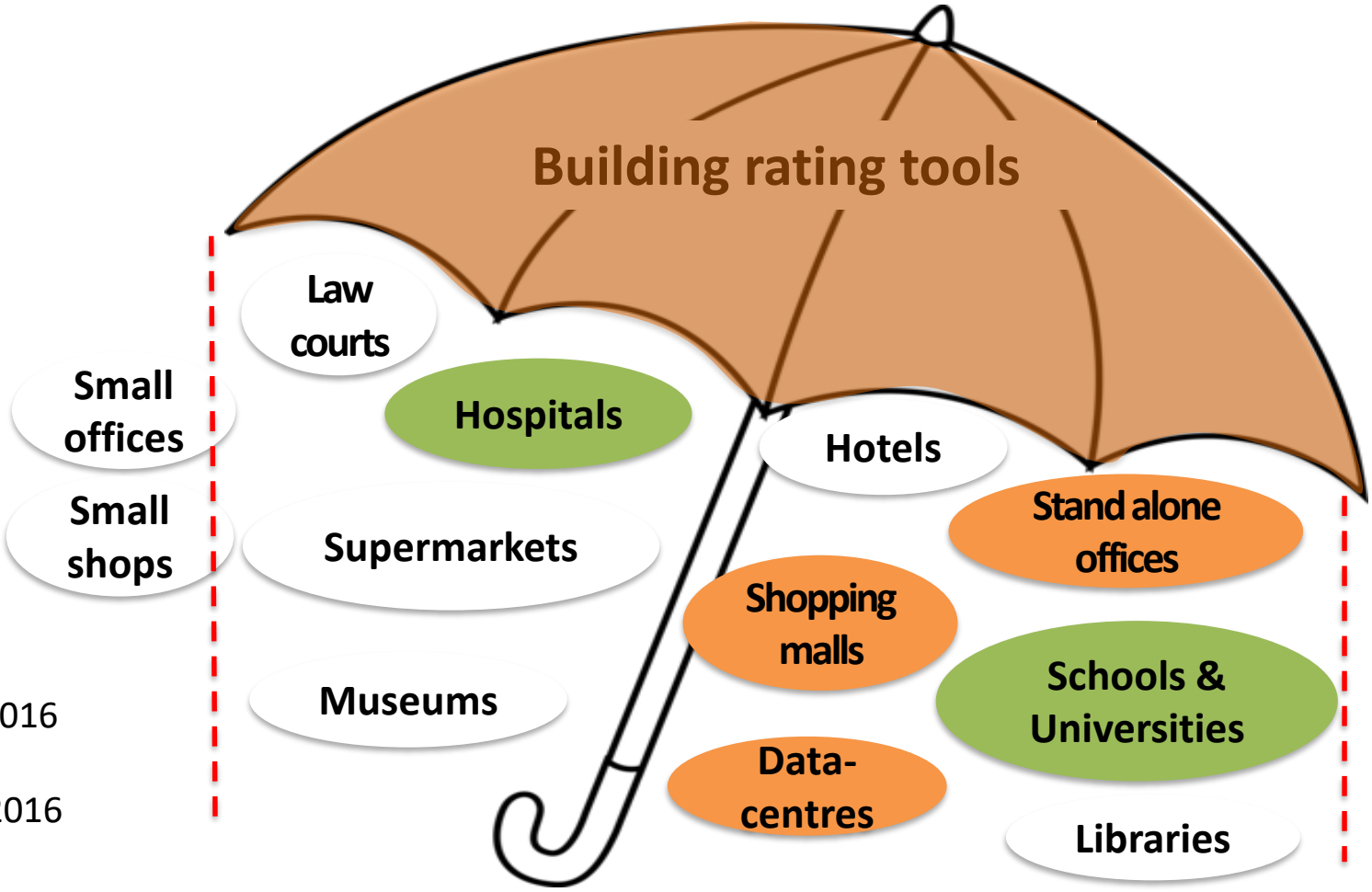
Rating schemes for non-residential buildings



CBD
Until July 2016
< ~~2,000m²~~
After July 2016
<1,000m²

Data collection aims

Collect the best amount and quality of building related data to:

- Allow the development of benchmarks in this sector;
- Provide actionable feedback to participants, so they can improve the performance of their buildings;
- Provide evidence to support Energy Efficiency policies and the implementation of related projects;
- Other aims…

Requirements to data collection in this sector (SCRB)

Different building sectors need different approaches. The commercial sector requires:

- Non-invasive procedures (regarding the privacy of people and businesses;
- Non-disruptive to business routine;
- Culturally acceptable;
- Low-cost and easy to implement protocol.

Mixed-methods approach

Crown St , Wollongong

Wentworth St , Port Kembla

Desktop survey

Map interpretation

Documentary analysis

Photograph and re-photograph

Fieldwork

Interview with stakeholders

Post-Occupancy survey

Onsite observation

Building audit

Data framework

method	Data framework		
	Source	Type of analysis	Output data or information
Lit Rev	Research on the field of knowledge (books/ academic papers)	Documentation analysis and literature review.	Existing approach to the research problem and gaps in the area of knowledge. Guidance to the research design.
Inter-views	Semi-structured interviews with key-stakeholders (exploratory research)	Identification of trends and clusters.	Different perspectives from stakeholders about the commercial building stock context. Trends and clusters, and guidance for the next research phases. Sample not enough to statistical analysis.
Documentation	Standards	Interpretation	Targets to building performance (cooling, heating, ventilation, assessment)
	Regulations	Precinct and building analysis	Zoning, bdg regulation, …Built environment limitations to constructions
	Rating and decision support tools	Interpretation	Approach to the performance assessment. limitations to existing approach to the problem.
	Wollongong Development Applications (D.A.s)	Statistical analysis (if possible)	Addresses (building location) and type of renovation works.
On line resources	Google EarthPro	Interpretation/ visual analysis	Building location, Roofing materials, Overview of the pilot study area
	Real Estate Websites	Interpretation/ visual analysis	Empty premises in the pilot study area
	SMART dashboard/UOW	Interpretation/visual analysis	Small business potential savings
Onsite obsery	Researcher (External areas)	Location, assure compliance to research scope, Visual analysis and experience in the area	Address, Building material, Surrounding areas Nature of business, Estimation of building height and area, estimate the level of retrofit being practiced (if so), Building materials used, Street landscape, street canyon, Immediate vicinity (buildings), Street dynamics (ambiance) liveability, Public transport availability and bus stops, Parking spots along the street, identification of Uncomfortable or risky areas

Data framework

Walk-through	Physical measures from building	Measurement of accessible areas (when permitted)	Total area, Openings location, Floor plans , Premises location within the building
	Photos from interior of building	Onsite observation and photograph analysis	Overall information about the systems installed (ventilation, cooling, heating, lighting), estimation of energy consumption, location and type of openings.
	Appliances inventory	Inventory and location of appliances in floor plan	Energy appliances present or in use Estimation of energy consumption, estimation of heat generation according to the room where the appliance is in use.
	Water consumption devices inventory	Inventory and location of appliances in floor plan	Number of water consumption devices Number of water devices to estimate water consumption, existence of water saving devices
	Researcher onsite observation	Participatory research, Ask for utility bills	Experience the internal space, estimate level of noise (from street) perception, temperature perception inside the building, Informal conversation with occupants about the building, Real water and energy bills.
Survey with the occupant	Two page-survey to be answered by occupant during the walk-through assessment. Conversation with occupants during the walk-through	Responses interpretation, organization and analysis combined with onsite critical observation regarding the specificities of the building and the business.	Building ownership status, Occupancy status, Respondent qualification and level of influence in retrofit decisions, Date of last upgraded and works done, amount spent. Whether or not was assisted by professionals, how important this support was. Nature of business, time of occupancy, type of lease, number of staff/transients, , Priorities considered when choosing the premises for the business, Priority services/facilities in the building according to business, Common practices when using the building, Thermal comfort in the building during the year, Overall satisfaction with the building, Characterization and estimation of volume of waste production (recyclable/non-recyclable/ compostable), frequency of collection, any treatment prior to collection. Occupants perception on the barriers to retrofit, Occupants preference for a specific strategy or action to upgrade, How are they likely to pay more for an efficient retrofitted building, Impressions on how engaged the occupant is in building use (building literacy)

Data framework

	METHODS								
CRITERIA	desktop survey	photography	interviews	post-occupancy survey	onsite observation	walkthrough audits	map interpretation	total per criteria	
building footprint	X				X	X	X	4	
building orientation	X				X	X	X	4	
type of roof	X	X			X		X	4	
age/ maintenance		X	X	X	X	X		5	
sustainability awareness				X		X		2	
Type of fuel	X		X	X		X		4	
total per method	5	1	3	8	11	17	9		

Thank you!

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