LEED CS in Brazil: Discussing the Validity of the Method for the Improvement of Environmental Quality on Buildings

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ACKNOWLEDGMENT

Purpose: This research has the intent to analyse the contribution of LEED rating system for the improvement of environmental performance in Brazilians' buildings

LEED CS in Brazil: Introduction

The environmental certification has arisen as a consequence of the global effort towards the improvement of environmental performance on buildings.

The first Brazilian Building to obtain an environmental certification was a bank, which received a LEED certification on 2007.

Ventura Towers (photo) was the first building to receive LEED CS certification (on 2010)

On August 2016 there was 354 LEED certified Buildings. (404 on March 2017)

Ventura Towers – Rio de Janeiro Brazil – LEED C&S Gold

LEED CS in Brazil ⟺ PROCEL

First question: which LEED certification mode has been more adopted in Brazil?

Table 1 – LEED certifications granted in Brazil until August 2016

	PLATINUM	GOLD	SILVER	CERTIFIED	TOTAL
LEED CI	6	21	8	8	43
LEED CS	**5**	**71**	**45**	**28**	**149**
LEED OM	0	9	10	5	24
LEED Home	0	0	1	0	1
LEED School	0	1	1	0	2
LEED NC	3	41	45	30	119
LEED Retail	1	2	3	10	16
TOTAL	15	145	113	81	**354**

Source : Green Building Council Brazil, 2016

LEED CS in Brazil

Second question: where are located the LEED certified buildings in Brazil?

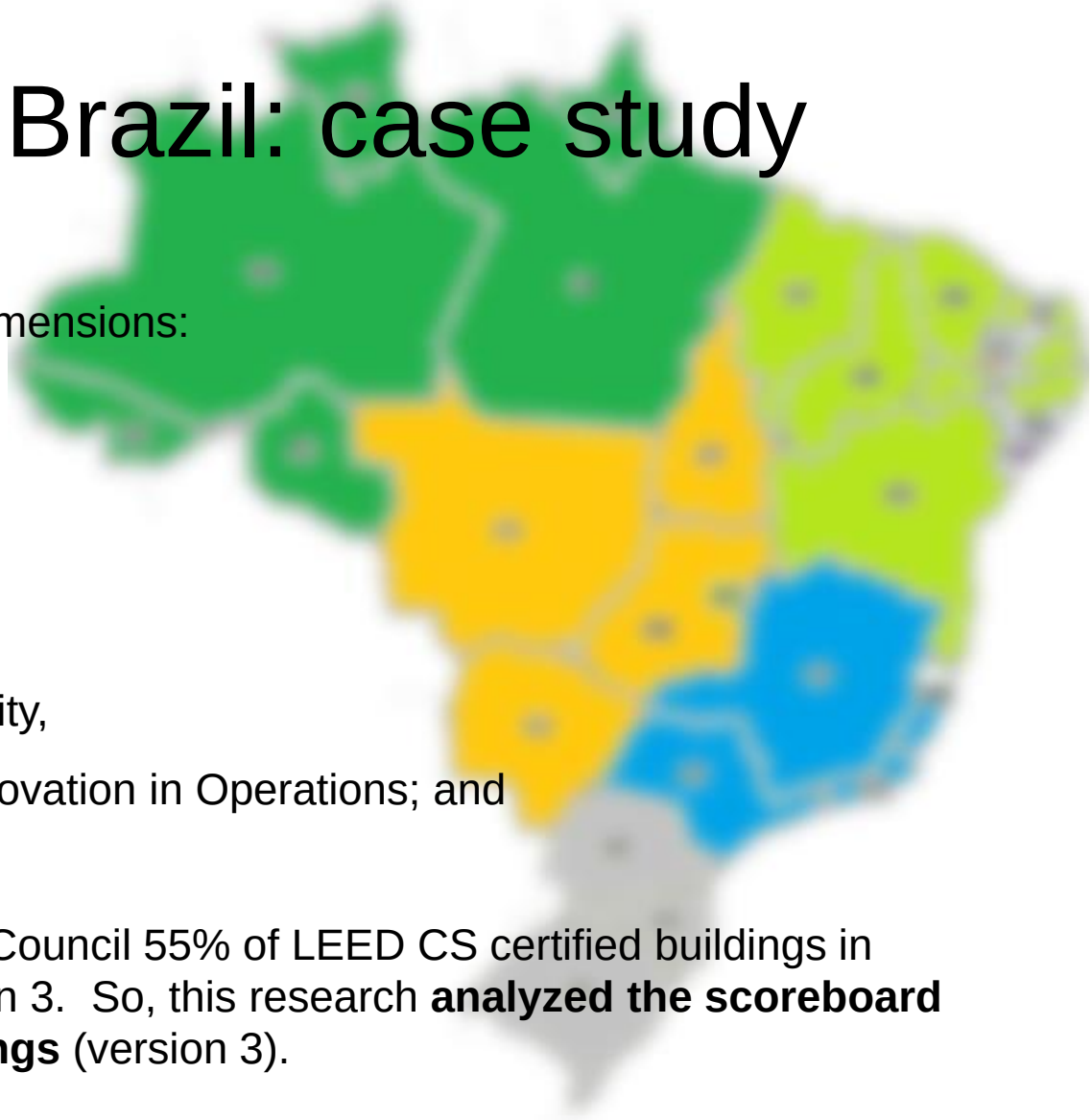
Table 2 – Distribution of Certified LEED CS Buildings in Brazil (until August 2016)

	NORTH	NORTHEAST	MIDWEST	SOUTHEAST	SOUTH
PLATINUM	0	0	0	**3**	2
GOLD	0	1	5	**55**	10
SILVER	0	1	1	**37**	6
CERTIFIED	0	1	0	**27**	0
TOTAL	0	3	6	**122**	18

Source : Green Building Council Brazil, 2016

Third question: is there any LEED requisite that are not being accomplished by the certified buildings?

LEED CS in Brazil: case study

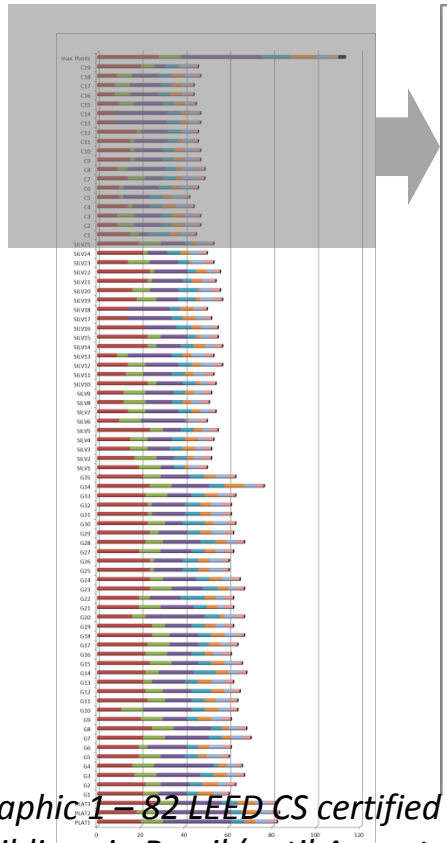


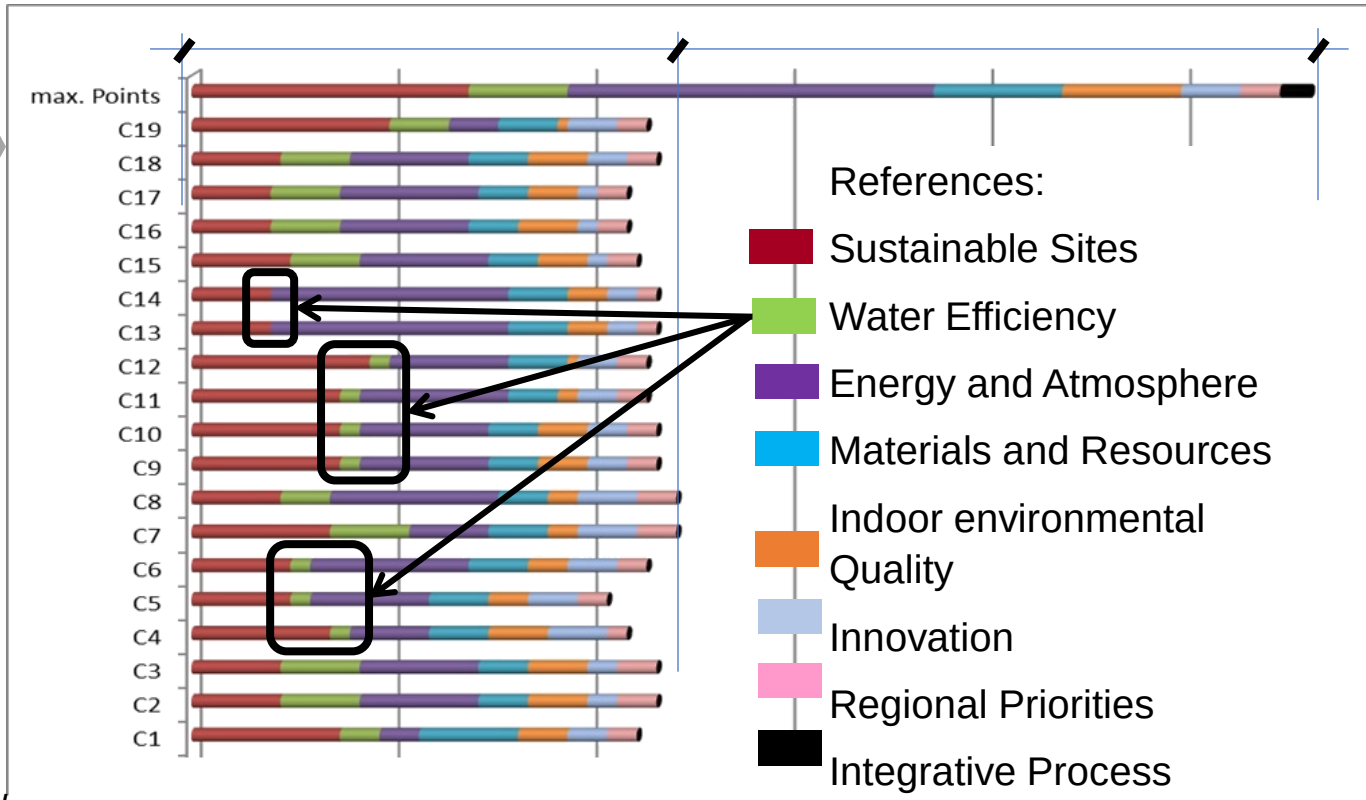
LEED CS considers seven dimensions:

- Sustainable Sites,
- Water Efficiency,
- Energy & Atmosphere,
- Materials & Resources,
- Indoor Environmental Quality,
- Innovation in Design or Innovation in Operations; and
- Regional Priority Credits

According to Green Building Council 55% of LEED CS certified buildings in Brazil has adopted the version 3. So, this research **analyzed the scoreboard of LEED CS certified buildings** (version 3).

Certified Buildings – LEED C&S

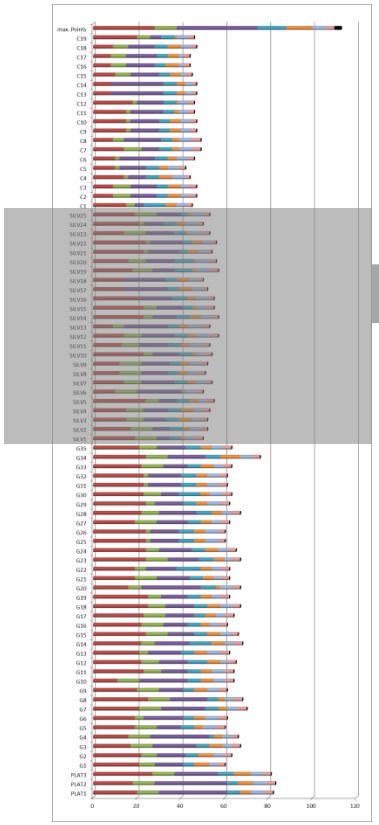


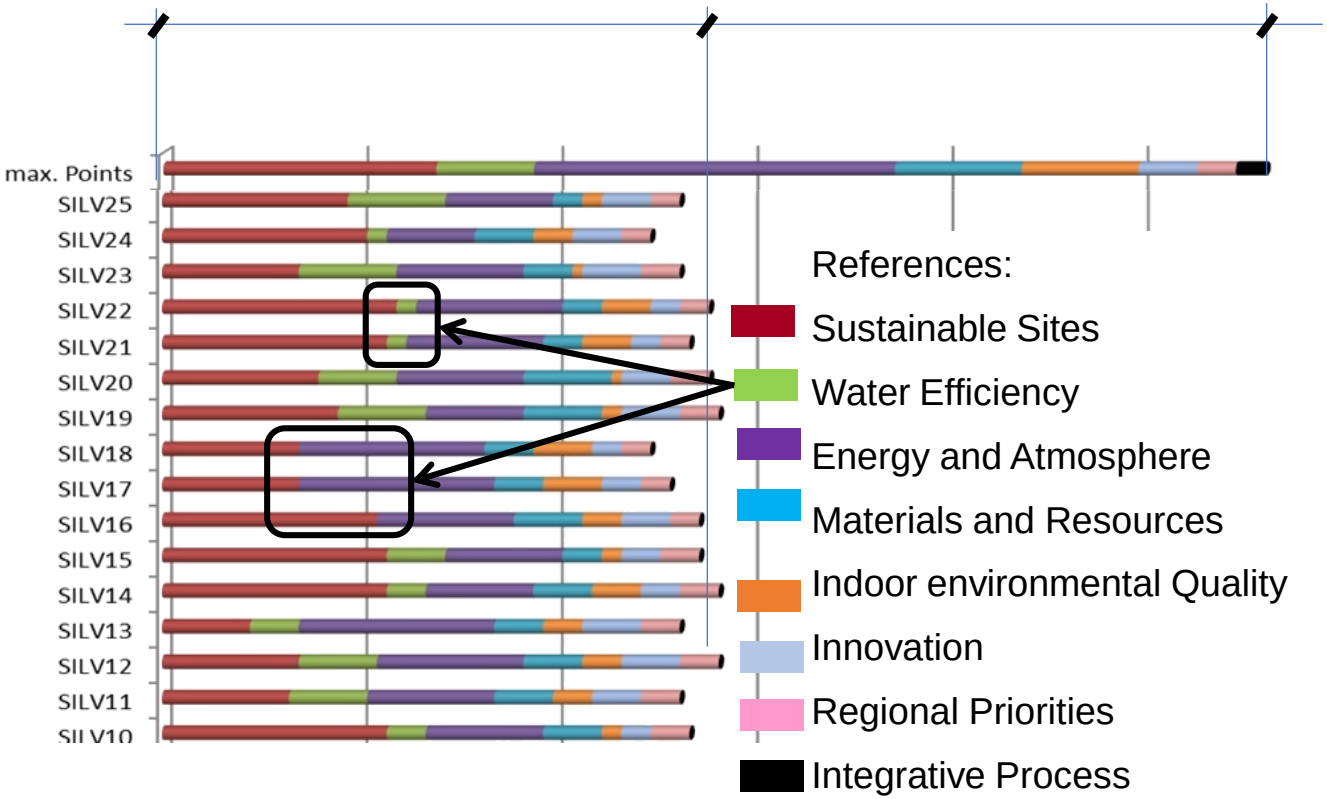


Graphic 1 – 82 LEED CS certified buildings in Brazil (until August, 2016) - percentage achieved in each Dimension

LEED considers the building as "certified" if it has achieved over 40 points in assessing environmental requirements.

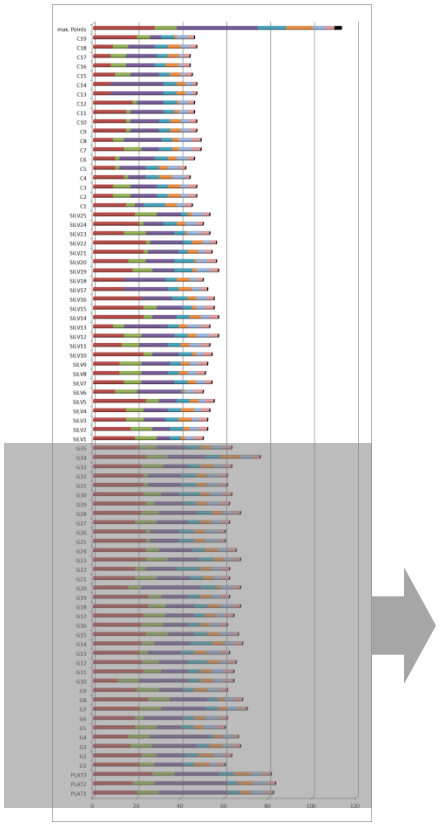
Silver Buildings – LEED C&S





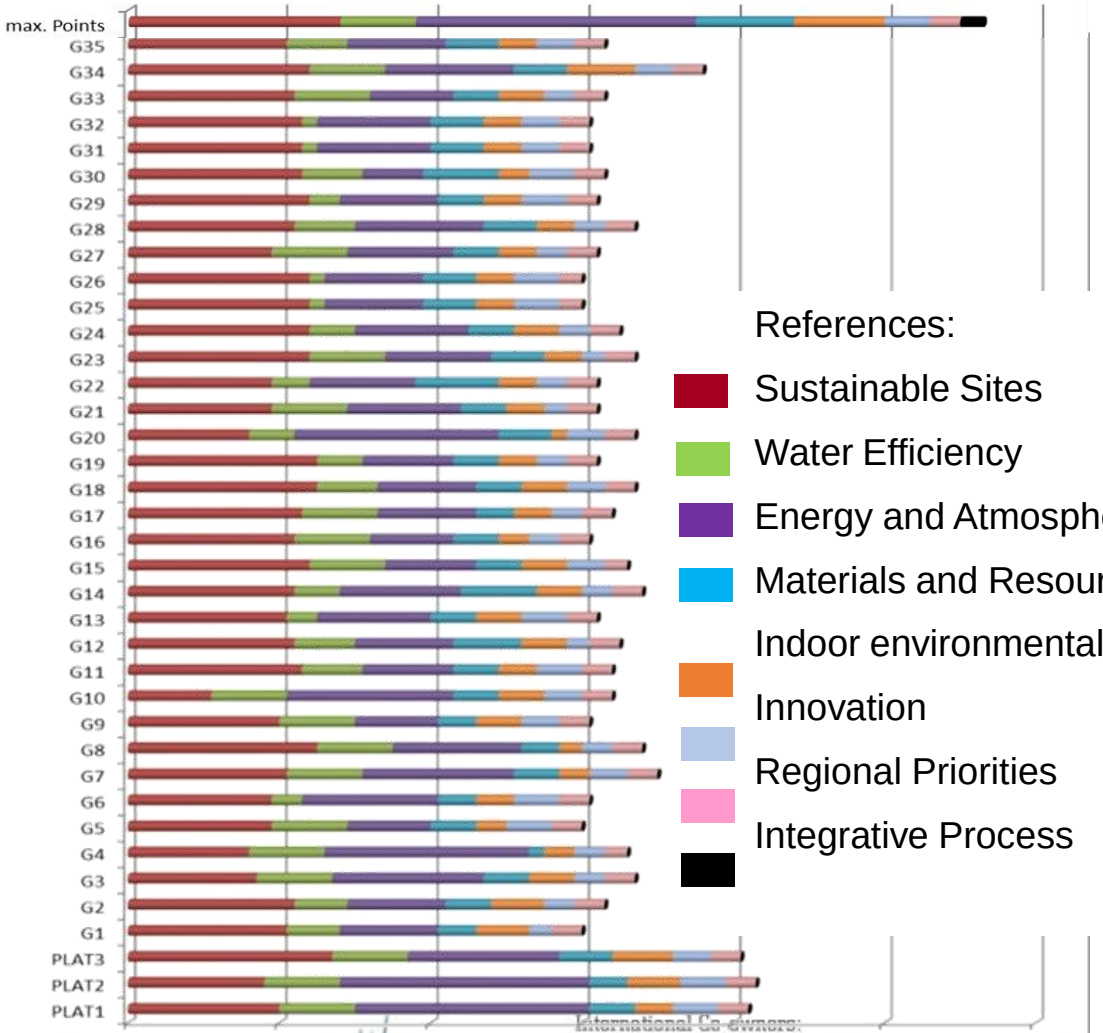
LEED considers the building as “Silver" if it has achieved over 50 points in assessing environmental requirements.

Gold and Platinum LEED C&S



“Gold" : over 60 points

“Platinum”: over 80 points

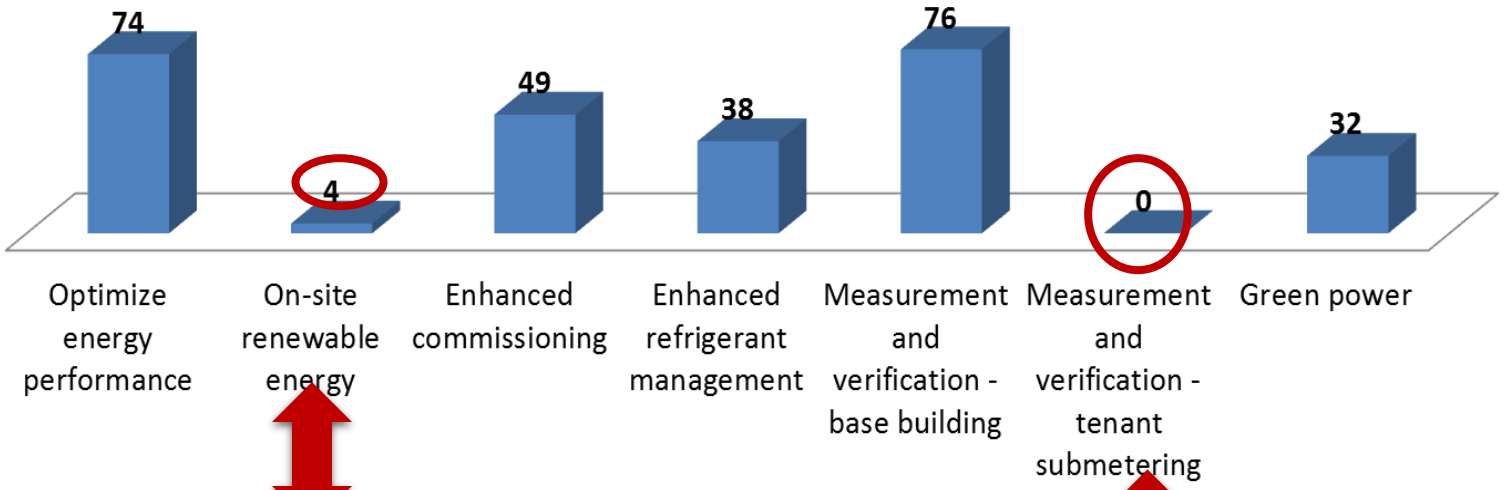


Data analisys – LEED-CS

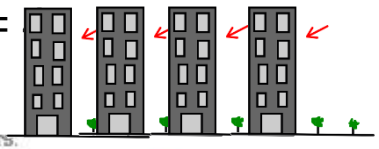
- In relation to "*Materials and Resources*" two goals had not been achieved by most LEED CS buildings:
  - *Building reuse* (related to the recycle or reuse of existing walls, floors and roof); and
  - *Materials reuse (related to the recycle or reuse of preexisting materials)*.
- Some LEED-CS buildings presents minimum punctuation on "Water Management Dimension".
- None of LEED-CS buildings (not even the Platinum certified) had scored on "*Innovation Dimension*", which considers the design solutions with exceptional performance (above the requirements set by the LEED Green Building Rating System).

Data analisys – LEED-CS

Graphic 2 – Energy and Atmosphere Dimension – number of certified LEED CS buildings in Brazil (2016) that meet the requirement:



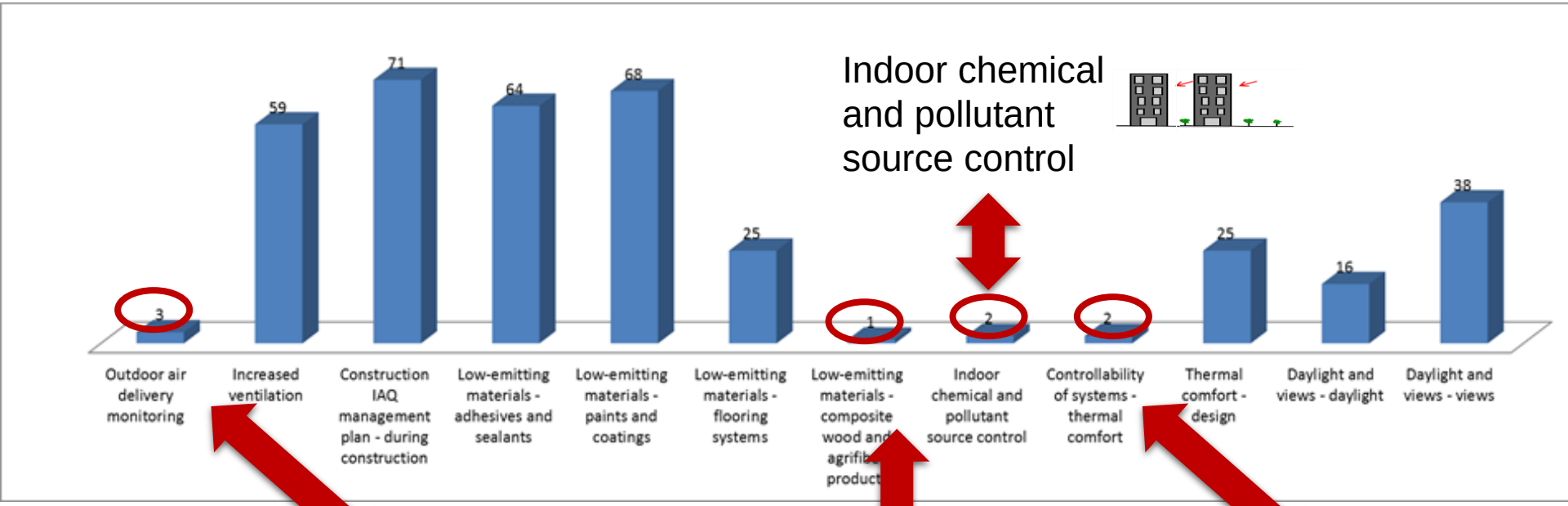
On-site renewable energy self supply (to reduce impacts associated with fossil fuel =



Accountability of building electricity consumption performance over time = 0

Data analisys – LEED-CS

Graphic 3– Indoor Environmental Quality Dimension – number of certified LEED CS buildings in Brazil (2016) that meet the requirement:



Outdoor air delivery monitoring

Reduce indoor air contaminants

Different Thermal control

Final Considerations

- The research indicates that it is not possible to ensure that all LEED CS-certified buildings (version 3) present a differential in environmental quality (only 40 points for "certified" level);
- Although the LEED CS method presents important environmental requisites, some have not been fulfilled not even by the best evaluated buildings (i. e. innovation in design).

- The version 4 of LEED-CS may bring some new approach on the evaluation method, but there are only few buildings in Brazil with this certification.

Final Considerations

- LEED and all the environmental rating systems have been **the first step** towards sustainable construction
- The discussion around sustainable construction is changing, and there are some new concepts emerging as:
  - ***integrative design –*** suggesting a continuous process that never ends, and so, can allow meeting environmental goals at different stages of the design process;
  - ***regenerative design -*** related to an ecological perspective of sustainable construction. It is an architecture that considers the environment as part of building.

The author acknowledge financial support from Federal University of Rio de Janeiro (UFRJ) and National Council for Scientific and Technological Development (CNPq) – Brazil.

Thank you

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