



University of
Salford
MANCHESTER

Exploration of Building Energy and Environmental Assessment Certification (BEEAC) tools

Osaji, EE

Title	Exploration of Building Energy and Environmental Assessment Certification (BEEAC) tools
Authors	Osaji, EE
Type	Monograph
URL	This version is available at: http://usir.salford.ac.uk/id/eprint/61038/
Published Date	2021

USIR is a digital collection of the research output of the University of Salford. Where copyright permits, full text material held in the repository is made freely available online and can be read, downloaded and copied for non-commercial private study or research purposes. Please check the manuscript for any further copyright restrictions.

For more information, including our policy and submission procedure, please contact the Repository Team at: usir@salford.ac.uk.



CARBON BITES

From the CIBSE ENERGY PERFORMANCE GROUP

Exploration of Building Energy and Environmental Assessment Certification (BEEAC) Tools

On 14th November 2018, Emeka Efe Osaji delivered a CIBSE ASHRAE Group webinar, entitled “Enhancing Building Energy and Environmental Assessment Certification (BEEAC)”. It is available at: <https://www.cibseashrae.org/presentations/Osaji141118.pdf>

BEEAC tools share an underlying principle to facilitate: **(1)** Transparency; **(2)** Certification; **(3)** Rating; and **(4)** Efficiency in the energy performance of buildings. Table 1 illustrates “Building Energy and Environmental Assessment Certification (BEEAC) Tools” while Table 2 illustrates “Global Coverage of BEEAC Tools”.

Table 1: Building Energy and Environmental Assessment Certification (BEEAC) Tools

(Source: Emeka Efe Osaji)

Number of Countries		Building Energy & Environmental Assessment Certification Tools	Data Source & Reliability
1	Antarctica	(1.1) The Passivhaus Standard	BRE Ltd (2018d)
2	Australia	(2.1) National Australian Built Environment Rating System (NABERS) (2.2) Green Star (2.3) The Passivhaus Standard	NABERS (2010) GBCA (2011) BRE Ltd (2018d); Passive House Institute (2015b)
3	Austria	(3.1) DGNB (Deutsche Gesellschaft für Nachhaltiges Bauen) (3.2) The Passivhaus Standard	DGNB GmbH (2018) Passive House Institute (2015b)
4	Belgium	(4.1) The Passivhaus Standard	Passive House Institute (2015b)
5	Bangladesh	(5.1) LEED	USGBC (2017)
6	Brazil	(6.1) AQUA (6.2) LEED	Gomes <i>et al.</i> (2008) Holmes (2014)
7	Bulgaria	(7.1) DGNB (Deutsche Gesellschaft für Nachhaltiges Bauen)	DGNB GmbH (2018)

		(7.2) The Passivhaus Standard	Passive House Institute (2015b)
8	Canada	(8.1) BREEAM (8.2) DGNB (8.3) ENERGY STAR (8.4) Green Globes (8.5) LEED (8.6) The Passivhaus Standard	BRE Ltd (2017a); BRE Ltd (2017b); Dixon <i>et al.</i> (2007) DGNB GmbH (2018) EPA (2018) Green Building Initiative (2018); Green Globes (2011) CaGBC (2011); Holmes (2014); USGBC (2017) BRE Ltd (2018d); Passive House Institute (2015b)
9	Chile	(9.1) The Passivhaus Standard	Passive House Institute (2015b)
10	China	(10.1) DGNB (10.2) GBAS (Green Building Assessment System) (10.3) LEED (10.4) The Passivhaus Standard	DGNB GmbH (2018) Borong <i>et al.</i> (2007) Holmes (2014); USGBC (2017) BRE Ltd (2018d); Passive House Institute (2015b)
11	Colombia	(11.1) LEED	USGBC (2017)
12	Costa Rica	(12.1) LEED	USGBC (2017)
13	Croatia	(13.1) The Passivhaus Standard	Passive House Institute (2015b)
14	Cyprus	(14.1) The Passivhaus Standard	Passive House Institute (2015b)
15	Czech Republic	(15.1) DGNB (15.2) SBToolCZ (Czech Sustainable Building Tool) (15.3) The Passivhaus Standard	DGNB GmbH (2018) Hajek & Tywoniak (2008); Larsson (2015) Passive House Institute (2015b)
16	Denmark	(16.1) DGNB (16.2) SPeAR ® (Sustainable Project Appraisal Routine) (16.3) The Passivhaus Standard	DGNB GmbH (2018) Arup (2018); Earley (2013) Passive House Institute (2015b)
17	Dominican Republic	(17.1) LEED	USGBC (2017)
18	Estonia	(18.1) The Passivhaus Standard	Passive House Institute (2015b)
19	Finland	(19.1) PromisE (19.2) LEED (19.3) The Passivhaus Standard	DESA (2010) Holmes (2014) Passive House Institute (2015b)

20	France	(20.1) HQE (High Quality Environmental Standard) (20.2) The Passivhaus Standard	Association HQE (2011) Passive House Institute (2015b)
21	Germany	(21.1) DGNB (Deutsche Gesellschaft für Nachhaltiges Bauen) (21.2) CEPHEUS (Cost Efficient Passive Houses as European Standards) (21.3) LEED (21.4) The Passivhaus Standard	DGNB GmbH (2018); GeSBC (2012) Passive House Institute (2011) Holmes (2014) BRE Ltd (2018d); Passive House Institute (2015a; 2015b)
22	Greece	(22.1) LEED (22.2) The Passivhaus Standard	USGBC (2017) Passive House Institute (2015b)
23	Hong Kong	(23.1) BEAM Plus (23.2) CEPAS (Comprehensive Environmental Performance Assessment Scheme for Buildings) (23.3) HK BEAM (Building Environmental Assessment Method)	Hong Kong GBC Ltd (2018) Buildings Department (2018) BEAM Society (2011)
24	Hungary	(24.1) DGNB (24.2) The Passivhaus Standard	DGNB GmbH (2018) Passive House Institute (2015b)
25	Iceland	(25.1) ENERGY STAR	EPA (2018)
26	India	(26.1) GRIHA (Green Rating for Integrated Habitat Assessment) (26.2) IGBC Green SEZ Rating System (26.3) LEED-INDIA for New Construction	GRIHA (2017) IGBC (2008a) Holmes (2014); IGBC (2008b); USGBC (2017)
27	Indonesia	(27.1) Greenship Existing Building (27.2) Greenship New Building (27.3) The Passivhaus Standard	GBC Indonesia (2010) GBC Indonesia (2010) Passive House Institute (2015b)
28	Ireland	(28.1) The Passivhaus Standard	Passive House Institute (2015b)
29	Italy	(29.1) LEED Italy (29.2) Protocollo Itaca (29.3) SBTool (29.4) The Passivhaus Standard	GBC Italy (2011) ITACA (2011) Larsson (2015) Passive House Institute (2015b)
30	Japan	(30.1) CASBEE (Comprehensive Assessment System for Built Environment Efficiency) (30.2) ENERGY STAR	JSBC (2006) EPA (2018)

		(30.3) The Passivhaus Standard	BRE Ltd (2018d); Passive House Institute (2015b)
31	Jordan	(31.1) EDAMA (an Arabic word meaning 'sustainability')	EDAMA (2009)
32	Kazakhstan	(32.1) The Passivhaus Standard	Passive House Institute (2015b)
33	Latvia	(33.1) The Passivhaus Standard	Passive House Institute (2015b)
34	Liechtenstein	(34.1) ENERGY STAR	EPA (2018)
35	Lithuania	(35.1) The Passivhaus Standard	Passive House Institute (2015b)
36	Luxembourg	(36.1) DGNB (36.2) The Passivhaus Standard	DGNB GmbH (2018) Passive House Institute (2015b)
37	Macedonia	(37.1) The Passivhaus Standard	Passive House Institute (2015b)
38	Malaysia	(38.1) GBI (Green Building Index)	GBI (2011)
39	Mexico	(39.1) LEED Mexico (39.2) The Passivhaus Standard	Bondareva (2005); USGBC (2017) Passive House Institute (2015b)
40	Moldova	(40.1) The Passivhaus Standard	Passive House Institute (2015b)
41	Monaco	(41.1) SBTool	Larsson (2015)
42	Mongolia	(42.1) DGNB	DGNB GmbH (2018)
43	Netherlands	(43.1) BREEAM-NL (43.2) DGNB (43.3) The Passivhaus Standard	DGBC (2011) DGNB GmbH (2018) Passive House Institute (2015b)
44	New Zealand	(44.1) Green Star NZ (44.2) Homestar (44.3) The Passivhaus Standard	NZGBC (2008a) NZGBC (2008b) Passive House Institute (2015b)
45	Norway	(45.1) ENERGY STAR (45.2) The Passivhaus Standard	EPA (2018) Passive House Institute (2015b)
46	Pakistan	(46.1) LEED	USGBC (2017)
47	Peru	(47.1) LEED	USGBC (2017)
48	Philippines	(48.1) BERDE (Building for Ecologically Responsive Design Excellence)	PHILGBC (2010); WGBC (2011)

49	Poland	(49.1) DGNB (49.2) The Passivhaus Standard	DGNB GmbH (2018) Passive House Institute (2015b)
50	Portugal	(50.1) LiderA - Sustainable Assessment System (50.2) SBTool (50.3) The Passivhaus Standard	LiderA (2012) Larsson (2015) Passive House Institute (2015b)
51	Republic of Korea (South Korea)	(51.1) GBCS (Green Building Certificate System) (51.2) LEED (51.3) The Passivhaus Standard	KGBC (2000) Holmes (2014) Passive House Institute (2015b)
52	Romania	(52.1) DGNB (52.2) The Passivhaus Standard	DGNB GmbH (2018) Passive House Institute (2015b)
53	Russia	(53.1) DGNB (53.2) The Passivhaus Standard	DGNB GmbH (2018) BRE Ltd (2018d)
54	Serbia	(54.1) The Passivhaus Standard	Passive House Institute (2015b)
55	Singapore	(55.1) BCA (Building & Construction Authority) Green Mark Scheme (55.2) LEED	Building & Construction Authority (2011) Holmes (2014)
56	Slovakia	(56.1) DGNB (56.2) The Passivhaus Standard	DGNB GmbH (2018) Passive House Institute (2015b)
57	Slovenia	(57.1) The Passivhaus Standard	Passive House Institute (2015b)
58	South Africa	(58.1) Green Star SA Rating Tools, e.g., Green Star SA – Office v1	GBCSA (2012)
59	Spain	(59.1) DGNB (59.2) LEED (59.3) SBTool (59.4) The Passivhaus Standard (59.5) VERDE Certificate	DGNB GmbH (2018) GBCe (2012a); Hui (2010); USGBC (2017) Larsson (2015) Passive House Institute (2015b) GBCe (2012b)
60	Sweden	(60.1) The Passivhaus Standard	Passive House Institute (2015b)
61	Switzerland	(61.1) DGNB (61.2) ENERGY STAR (61.3) LEED	DGNB GmbH (2018); GeSBC (2012) EPA (2018) USGBC (2017)

		(61.4) MINERGIE (61.5) The Passivhaus Standard	MINERGIE (2012) Passive House Institute (2015b)
62	Taiwan	(62.1) EEWH (Ecology, Energy Saving, Waste Reduction & Health) (62.2) ENERGY STAR (62.3) Green Building Label (62.4) LEED (62.5) The Passivhaus Standard	Southern Taiwan Science Park Administration (2012) EPA (2018) Madew (2011) Holmes (2014) Passive House Institute (2015b)
63	Thailand	(63.1) DGNB	DGNB GmbH (2018)
64	Trinidad & Tobago	(64.1) LEED	USGBC (2017)
65	Turkey	(65.1) DGNB (65.2) The Passivhaus Standard	DGNB GmbH (2018) Passive House Institute (2015b)
66	Ukraine	(66.1) DGNB (66.2) The Passivhaus Standard	DGNB GmbH (2018) Passive House Institute (2015b)
67	United Arab Emirates (UAE)	(67.1) Estidama Pearl Rating System (PRS) v.1.0 (67.2) Estidama PRS v.2.0 (67.3) LEED (67.4) The Passivhaus Standard	Abu Dhabi UPC (2010) Abu Dhabi UPC (2010) Holmes (2014) Passive House Institute (2015b)
68	United Kingdom (UK)	(68.1) BREEAM (68.2) CEEQUAL (Civil Engineering Environmental Quality Assessment & Award Scheme) (68.3) Code for Sustainable Homes (68.4) Green Deal (68.5) Green Mark (68.6) SBEM (SBEM supports the operational phase by providing analysis of a building's energy consumption. It is used for non-domestic buildings in support of the Green Deal, National Calculation Methodology (NCM) & Energy Performance of Buildings Directive (EPBD). The NCM & EPBD underlie the DEC & AR, which are applied at the operational phase) (68.7) SKA Rating	BRE Ltd (2017a); BRE Ltd (2017b) BRE Ltd (2018b) Department for Communities and Local Government (2010) BRE Ltd (2018c) Green Mark (2018) BRE Ltd (2018c) RICS (2018)

		(68.8) SPeAR ® (Sustainable Project Appraisal Routine) (68.9) The Passivhaus Standard	Arup (2018); Earley (2013) Passive House Institute (2015b)
69	United States of America (USA)	(69.1) ENERGY STAR (69.2) Green Globes (69.3) International Green Construction Code (IgCC) (69.4) LEED (Leadership in Energy & Environmental Design) (69.5) Living Building Challenge (69.6) The Passivhaus Standard (69.7) WELL Building Standard / WELL v2	US EPA & US DOE (2017) Green Building Initiative (2018); Green Globes (2011) International Code Council (2018) USGBC (2017) International Living Future Institute (2018) BRE Ltd (2018d); Passive House Institute (2015b) International WELL Building Institute (2017)
< 70	In at least 24 countries	(70.1) HQE (High Quality Environmental Standard)	Alliance HQE-GBC (2017)
< 71	Expected in at least 29 countries (i.e., 28 EU Member States & Norway)	(71.1) Energy Performance Certificates (EPCs) (Based on the EPBD requirements)	Arcipowska <i>et al.</i> (2014)
< 72	In at least 37 countries, i.e., USA, 4 countries plus those of the European Union (EU) & European Free Trade Association (EFTA) that have agreements with the USA EPA on ENERGY STAR The EU-USA ENERGY STAR Agreement expired on 20/02/2018	(72.1) ENERGY STAR	EPA (2018)

< 73	In at least 39 countries	(73.1) WELL Building Standard / WELL v2	International WELL Building Institute (2017)
< 74	In at least 49 countries	(74.1) The Passivhaus Standard	Passive House Institute (2015b)
> 75	In at least over 76 countries	(75.1) CEEQUAL	BRE Ltd (2018a)
> 76	In at least 78 (or over 76) countries, including the UK, USA, Netherlands, Norway, Spain, Sweden, Germany, Austria, Switzerland	(76.1) BREEAM	BRE Ltd (2017a); BRE Ltd (2017b); BRE Ltd (2018a)
> 77	In at least 140 countries	(77.1) EDGE (Excellence in Design for Greater Efficiencies)	IFC (2018)
> 78	In at least over 140 countries	(78.1) LEED (Leadership in Energy & Environmental Design)	Holmes (2014)

Table 2: Global Coverage of BEEAC Tools
(Source: Emeka Efe Osaji; and Based on Table 1)

	Building Energy & Environmental Assessment Certification (BEEAC) Tools	Countries where they are (have been) used	In at least Number of Countries
1	AQUA	Brazil	1
2	BCA (Building & Construction Authority) Green Mark Scheme	Singapore	1
3	BEAM Plus	Hong Kong	1
4	BERDE (Building for Ecologically Responsive Design Excellence)	Philippines	1
5	BREEAM	In at least 78 countries, including the UK	78
6	BREEAM-NL	Netherlands	1
7	CASBEE (Comprehensive Assessment System for Built Environment Efficiency)	Japan	1
8	CEEQUAL (Civil Engineering Environmental Quality Assessment & Award Scheme)	In at least over 76 countries, including UK	76
9	CEPAS (Comprehensive Environmental Performance Assessment Scheme for Buildings)	Hong Kong	1
10	CEPHEUS (Cost Efficient Passive Houses as European Standards)	Germany	1
11	Code for Sustainable Homes	UK	1
12	DGNB (Deutsche Gesellschaft für Nachhaltiges Bauen)	In at least 20 countries	20
13	EDAMA (an Arabic word meaning 'sustainability')	Jordan	1
14	EDGE (Excellence in Design for Greater Efficiencies)	In at least 140 countries	140
15	EEWH (Ecology, Energy Saving, Waste Reduction & Health)	Taiwan	1
16	ENERGY STAR	In at least 37 countries, including the USA	37
17	Energy Performance Certificates (EPCs)	Expected in at least 29 countries based on the EPBD (i.e., 28 EU Member States & Norway)	29
18	Estidama Pearl Rating System (PRS) v.1.0	UAE	1
19	Estidama PRS v.2.0	UAE	1
20	GBAS (Green Building Assessment System)	China	1
21	GBCS (Green Building Certificate System)	Republic of Korea (South Korea)	1
22	GBI (Green Building Index)	Malaysia	1
23	Green Building Label	Taiwan	1
24	Green Deal	UK	1
25	Green Globes	Canada, USA	2
26	Green Mark	UK	1

27	Greenship Existing Building	Indonesia	1
28	Greenship New Building	Indonesia	1
29	Green Star	Australia	1
30	Green Star NZ	New Zealand	1
31	Green Star SA Rating Tools, e.g., Green Star SA – Office v1	South Africa	1
32	GRIHA (Green Rating for Integrated Habitat Assessment)	India	1
33	HK BEAM (Building Environmental Assessment Method)	Hong Kong	1
34	Homestar	New Zealand	1
35	HQE (High Quality Environmental Standard)	In at least 24 countries	24
36	IGBC Green SEZ Rating System	India	1
37	International Green Construction Code (IGCC)	USA	1
38	LEED (Leadership in Energy & Environmental Design)	In at least over 140 countries	140
39	LEED-INDIA for New Construction	India	1
40	LEED Italy	Italy	1
41	LEED Mexico	Mexico	1
42	LiderA - Sustainable Assessment System	Portugal	1
43	Living Building Challenge	USA	1
44	MINERGIE	Switzerland	1
45	National Australian Built Environment Rating System (NABERS)	Australia	1
46	PromisE	Finland	1
47	Protocollo Itaca	Italy	1
48	SBEM	UK	1
49	SBTool	Czech, Italy, Monaco, Portugal, Spain	5
50	SBToolCZ (Czech Sustainable Building Tool)	Czech Republic	1
51	SKA Rating	UK	1
52	SPeAR ® (Sustainable Project Appraisal Routine)	Denmark, UK	2
53	The Passivhaus Standard	In at least 49 countries	49
54	VERDE Certificate	Spain	1
55	WELL Building Standard / WELL v2	In at least 39 countries	39

Key Issues

- How can Building Energy and Environmental Assessment Certification (BEEAC) likely be enhanced to support an effective response to climate change, CO₂ emissions, and the 'Performance Gap'?

Links

1. Abu Dhabi UPC (2010) **Pearl Rating System** [Online]. Available from: <www.estidama.org/pearl-rating-system-v10.aspx?lang=en-US> [accessed 10 January 2012].
2. Alliance HQE-GBC (2017) **HQE Brochure** [Online]. Available from: <http://www.hqegbc.org/wp-content/uploads/2017/10/HQE-brochure_EN_2017.pdf> [accessed 31 October 2018].
3. Alliance HQE-GBC (2017) **HQE Brochure**. Paris: Alliance HQE-GBC.
4. Arcipowska, A., Anagnostopoulos, F., Mariottini, F. and Kunkel, S. (2014) **Energy Performance Certificates Across the EU. A Mapping of National Approaches**. Brussels: The Buildings Performance Institute Europe (BPIE).
5. Arup (2018) **Flexible and robust sustainability decision-making tool** [Online]. Available from: <<https://www.arup.com/projects/spear>> [accessed 04 November 2018].
6. Association HQE (2011) **High Quality Environmental (HQE) Standard** [Online]. Available from: <<http://assohqe.org/hqe/>> [accessed 17 March 2011].
7. BEAM Society (2011) **BEAM - Building Environmental Assessment Method** [Online]. Available from: <<http://www.beamsociety.org.hk/general/home.php>> [accessed 15 June 2011].
8. Bondareva, E.S. (2005) **Green Building in the Russian Context: An Investigation into the Establishment of a LEED-Based Green Building Rating System in the Russian Federation** [M.A. thesis]. Cornell University.
9. Borong, L., Yingxin, Z., Lei, T. and Youguo, Q. (2007) Study of Several Factors for Green Building Assessment System in China. **SB07 Seoul: Proceedings of the International Conference on Sustainable Building Asia, June 27-29, 2007, Seoul, Korea**.
10. BRE Ltd (2017a) **BREEAM in numbers worldwide** [Online]. Available from: <<http://www.breeam.com/>> [accessed 19 June 2017].
11. BRE Ltd (2017b) **BREEAM: What is BREEAM?** [Online]. Available from: <<http://www.breeam.com/index.jsp>> [accessed 20 June 2017].
12. BRE Ltd (2018a) **BREEAM delivered by BRE** [Online]. Available from: <<https://www.breeam.com/location/>> [accessed 07 November 2018].

13. BRE Ltd (2018b) **CEEQUAL** [Online]. Available from: <<http://www.ceequal.com/>> [accessed 26 October 2018].
14. BRE Ltd (2018c) **SBEM: Simplified Building Energy Model** [Online]. Available from: <<https://www.bre.co.uk/page.jsp?id=706>> [accessed 04 November 2018].
15. BRE Ltd (2018d) The Passivhaus Standard [Online]. Available from: <<https://www.bre.co.uk/page.jsp?id=2856>> [accessed 27 October 2018].
16. Building and Construction Authority (2011) **About BCA Green Mark Scheme** [Online]. Available from: <http://www.bca.gov.sg/GreenMark/green_mark_buildings.html> [accessed 10 January 2012].
17. Buildings Department (2018) **Comprehensive Environmental Performance Assessment Scheme for Buildings** [Online]. Available from: <https://www.bd.gov.hk/english/documents/index_CEPAS.html> [accessed 04 November 2018].
18. CaGBC (2011) **Introduction to LEED** [Online]. Available from: <<http://www.cagbc.org/AM/Template.cfm?Section=LEED>> [accessed 17 March 2011].
19. Department for Communities and Local Government (DCLG) (2010) **Code for Sustainable Homes. Technical Guide. November 2010**. London: Communities and Local Government Publications.
20. DESA (2010) **Trends in Sustainable Development. Towards Sustainable Consumption and Production**. New York: United Nations.
21. DGBC (2011) **Dutch Green Building Council (DGBC) - BREEAM-NL** [Online]. Available from: <http://www.dgbc.nl/wat_is_dgbc/dgbc_english> [accessed 15 June 2011].
22. DGNB GmbH (2018) **DGNB pre-certified and certified projects** [Online]. Available from: <<https://www.dgnb-system.de/en/projects/index.php>> [accessed 04 November 2018].
23. Dixon, T., Gallimore, P., Reed, R., Wilkinson, S. and Keeping, M. (2007) **A Green Profession? RICS Members and the Sustainability Agenda**. London: Royal Institution of Chartered Surveyors (RICS).
24. Earley, K. (2013) **Arup: sustainability shapes every project** [Online]. Available from: <<https://www.theguardian.com/sustainable-business/arup-sustainability-shapes-project>> [accessed 04 November 2018].
25. EDAMA (2009) **EDAMA - Emerging Objectives** [Online]. Available from: <http://www.edama.jo/static/what_EDAMA.shtm> [accessed 15 June 2011].
26. EPA (2018) **ENERGY STAR International Partners** [Online]. Available from: <https://www.energystar.gov/index.cfm?c=partners.intl_implementation> [accessed 30 October 2018].
27. GBC Indonesia (2010) **Greenship** [Online]. Available from: <<http://www.gbcindonesia.org/greenship.html>> [accessed 15 June 2011].
28. GBC Italy (2011) **Certification** [Online]. Available from: <<http://www.gbcitalia.org/certificazione>> [accessed 15 June 2011].

- 29.GBCA (2011) **Green Star / Green Star Overview** [Online]. Available from: <<http://www.gbca.org.au/green-star/green-star-overview/>> [accessed 2 June 2011].
- 30.GBCe (2012a) **LEED** [Online]. Available from: <<http://www.gbce.es/en/pagina/leed>> [accessed 10 January 2012].
- 31.GBCe (2012b) **VERDE Certificate** [Online]. Available from: <<http://www.gbce.es/en/pagina/verde-certificate>> [accessed 10 January 2012].
- 32.GBCSA (2012) **Green Star SA – Office v1** [Online]. Available from: <<http://www.gbcsa.org.za/greenstar/office.php>> [accessed 10 January 2012].
- 33.GBI (2011) **How GBI Works - The GBI Assessment Process** [Online]. Available from: <<http://www.greenbuildingindex.org/how-GBI-works.html>> [accessed 15 June 2011].
- 34.GeSBC (2012) **DGNB - Deutsche Gesellschaft für Nachhaltiges Bauen** [Online]. Available from: <http://www.dgnb.de/_en/index.php> [accessed 10 January 2012].
- 35.Gomes, V., Gomes, M., Lamberts, R., Takaoka, M.V. and Ilha, M.S. (2008) Sustainable Building in Brazil. **2008 World Sustainable Building Conference (SB08), September 21-25, 2008, Melbourne, Australia.**
- 36.Green Building Initiative (2018) **Green Globes Certification** [Online]. Available from: <<https://www.thegbi.org/green-globes-certification/>> [accessed 05 November 2018].
- 37.Green Globes (2011) **Green Globes - The Practical Building Rating System** [Online]. Available from: <<http://www.greenglobes.com/>> [accessed 15 June 2011].
- 38.Green Mark (2018) **Green Mark: The Low Cost Route To Environmental Accreditation** [Online]. Available from: <<https://greenmark.co.uk/greenmark/>> [accessed 04 November 2018].
- 39.GRIHA (2017) **Green Rating for Integrated Habitat Assessment** [Online]. Available from: <<http://www.grihaindia.org/>> [accessed 19 June 2017].
- 40.Hajek, P. and Tywoniak, J. (2008) Towards Sustainable Building in the Czech Republic. **2008 World Sustainable Building Conference (SB08), September 21-25, 2008, Melbourne, Australia.**
- 41.Holmes, S. (2014) **Top 10 countries for LEED** [Online]. Available from: <<https://www.usgbc.org/articles/top-10-countries-leed>> [accessed 30 October 2018].
- 42.Hong Kong GBC Ltd (2018) **BEAM Plus** [Online]. Available from: <<https://www.hkgbc.org.hk/eng/BEAMPlus.aspx>> [accessed 04 November 2018].
- 43.Hui, S.C.M. (2010) **Building Environmental Assessment** [Online]. Available from: <<http://www0.hku.hk/bse/sbs/sbs0910-01.pdf>> [accessed 10 January 2012].
- 44.IFC (2018) **EDGE** [Online]. Available from: <<https://www.edgebuildings.com/marketing/edge/>> [accessed 27 October 2018].
- 45.IGBC (2008a) **IGBC Green SEZ Rating System** [Online]. Available from: <www.igbc.in/site/igbc/testigbc.jsp?desc=233674&event=233670> [accessed 15 June 2011].

46. IGBC (2008b) **LEED-INDIA for New Construction and Major Renovations** [Online]. Available from: <<http://www.igbc.in/site/igbc/testigbc.jsp?desc=22905&event=22869>> [accessed 15 June 2011].
47. International Code Council (2018) **International Green Construction Code** [Online]. Available from: <<https://www.iccsafe.org/codes-tech-support/international-green-construction-code-igcc/international-green-construction-code/>> [accessed 05 November 2018].
48. International Living Future Institute (2018) **Living Building Challenge** [Online]. Available from: <<https://living-future.org/lbc/>> [accessed 05 November 2018].
49. International WELL Building Institute (2017) **Welcome to WELL v2** [Online]. Available from: <<https://www.wellcertified.com/>> [accessed 29 October 2018].
50. ITACA (2011) **System of Assessment of Sustainability Energy and Environmental Building - Protocollo Itaca** [Online]. Available from: <<http://www.itaca.org/>> [accessed 15 June 2011].
51. JSBC (2006) **CASBEE - Comprehensive Assessment System for Built Environment Efficiency. An Overview of CASBEE** [Online]. Available from: <<http://www.ibec.or.jp/CASBEE/english/overviewE.htm>> [accessed 15 June 2011].
52. KGBC (2000) **Status of GBGS (Green Building Certificate System)** [Online]. Available from: <<http://greenbuilding.or.kr/>> [accessed 15 June 2011].
53. Larsson, N. (2015) SBTool for 2015. **International Initiative for a Sustainable Built Environment**.
54. LiderA (2012) **LiderA - Sustainable Assessment System** [Online]. Available from: <<http://www.lidera.info/?p=MenuPage&MenuId=29>> [accessed 10 January 2012].
55. Madew, R. (2011) **The WorldGBC and Green Building Rating Tools** [Online]. Available from: <http://www.dgnb.de/fileadmin/downloads/The_WorldGBC_and_greenbuilding_ratingtools.pdf> [accessed 10 January 2012].
56. MINERGIE (2012) **MINERGIE** [Online]. Available from: <http://www.minergie.com/home_en.html> [accessed 10 January 2012].
57. NABERS (2010) **NABERS – FAQs** [Online]. Available from: <<http://www.nabers.com.au/faqs.aspx>> [accessed 15 June 2011].
58. NZGBC (2008a) **Green Star New Zealand** [Online]. Available from: <<http://www.nzgbc.org.nz/main/greenstar>> [accessed 15 June 2011].
59. NZGBC (2008b) **Homestar - New Zealand's Residential Rating Tool** [Online]. Available from: <<http://www.nzgbc.org.nz/main/resources/articles/ResidentialRatingTool>> [accessed 15 June 2011].
60. Osaji, E.E. (2018) **Enhancing Building Energy and Environmental Assessment Certification (BEEAC)** [Keynote Speech Video Webinar]. CIBSE ASHRAE Group Webinar. 14 November. Available from: <<https://www.youtube.com/watch?v=W6KC5k47YiY>>
61. Osaji, E.E., Johnston, D. and Glew, D. (2018) **Enhancing Building Energy and Environmental Assessment Certification (BEEAC). Proceedings of the CIBSE ASHRAE Group Webinar, November 14, 2018, London, UK**. Available from: <<https://www.cibseashrae.org/presentations/Osaji141118.pdf>>

62. Osaji, E.E. (2021) Exploration of Building Energy and Environmental Assessment Certification (BEEAC) Tools. **Carbon Bites**, June. Available from: <https://www.cibse.org/getattachment/Networks/Groups/Energy-Performance-Group/Carbon-Bites/54th-CB_EE-Osaji_FINAL.pdf.aspx?lang=en-GB>
63. Passive House Institute (2011) **CEPHEUS - Cost Efficient Passive Houses as European Standards** [Online]. Available from: <<http://www.cepheus.de/eng/index.html>> [accessed 15 June 2011].
64. Passive House Institute (2015a) **About Passive House - What is a Passive House?** [Online]. Available from: <https://passivehouse.com/02_informations/01_whatisapassivehouse/01_whatisapassivehouse.htm> [accessed 27 October 2018].
65. Passive House Institute (2015b) **Passive House Database** [Online]. Available from: <<https://passivhausprojekte.de/index.php?lang=en>> [accessed 29 October 2018].
66. PHILGBC (2010) **Philippine Green Building Council** [Online]. Available from: <<http://philgbc.org/index.php/home.html>> [accessed 15 June 2011].
67. RICS (2018) **SKA Rating** [Online]. Available from: <<https://www.rics.org/uk/about-rics/responsible-business/ska-rating/>> [accessed 29 October 2018].
68. Southern Taiwan Science Park Administration (2012) **EEWH - The Green Building Rating System in Taiwan** [Online]. Available from: <http://gsp.stsipa.gov.tw/eng/main03_2.html> [accessed 10 January 2012].
69. US EPA and US DOE (2017) **About ENERGY STAR** [Online]. Available from: <<https://www.energystar.gov/about/>> [accessed 20 June 2017].
70. USGBC (2017) **Projects: U.S. Green Building Council** [Online]. Available from: <<http://www.usgbc.org/projects/list?keys=country&=Search>> [accessed 20 June 2017].
71. WGBC (2011) **World Green Building Council** [Online]. Available from: <<http://www.worldgbc.org/site2/#>> [accessed 15 June 2011].

This Carbon Bite has been written by a member of the CIBSE Energy Performance Group and does not necessarily reflect the views of CIBSE. CIBSE and the author are not responsible for the interpretation or application of the information it contains.