

The Cream of BEAM Plus (2020)

A General Sharing of BEAM Plus Certification Data

(This paper provides a **gist** of the CPD Training Videos “Cream of BEAM Plus 2020”.

For further details, readers are advised to view the videos on HKGBC On-line Training Portal.)

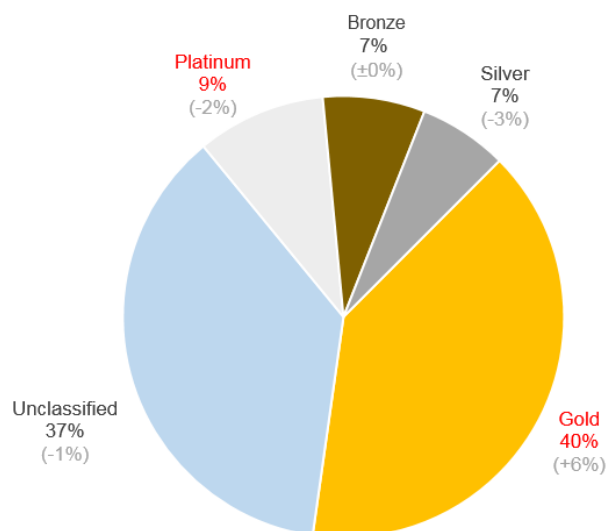
INTRODUCTION

“The Cream of BEAM Plus” is a paper published regularly to disseminate the performance of BEAM Plus-certified green buildings. In this paper, the study period is extended to mid-April 2020, providing readers with more updated analysis. Besides, a comparison of PA and FA results is added to give readers insight into this topic. Last but not least, the analysis is now covering all rating tools, i.e. not only NB, EB and BI, but also ND.

GRADING DISTRIBUTION

For **PA**: The NB projects were analysed in terms of their grading distribution throughout the latest three years – see pie chart below. The percentage changes compared to last year’s results are given in brackets (the grey figures). One point worth mentioning is that 49% of the PA results is at Gold or above – this is an all-time high figure.

PA Rating Distribution of NB Projects



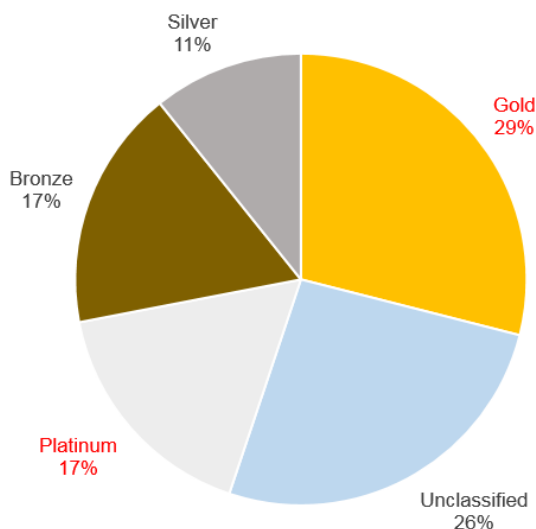
308 assessed projects

49% (+4%, all-time high)
achieved Gold or above

Time Period: 2017 – Present

For **FA**: The NB projects were also analysed in terms of their grading distribution throughout the latest three years – see pie chart below. Compared to PA, the percentage of projects attaining Platinum in FA is greater, whereas the percentage attaining Unclassified in FA is lower than PA.

FA Rating Distribution of NB Projects



214 assessed projects

46% achieved Gold or above

Time Period: 2017 – Present

To illustrate how the results of NB projects are changed when they proceed from PA to FA, a matrix is formulated below. It can be seen that the majority of projects have FA results that are at least as good as the PA (i.e. green cell figures added up > pink cell figures added up).

Change of rating from NB Provisional Assessment to Final Assessment

PA \ FA	Platinum	Gold	Silver	Bronze	Unclassified
Platinum	91%	6.8%	2.3%	0.0%	0.0%
Gold	15%	78%	2.8%	2.8%	1.4%
Silver	8.8%	24%	44%	24%	0.0%
Bronze	0.0%	2.9%	23%	66%	8.6%
Unclassified	0.0%	3.8%	2.6%	13%	81%

Notes:

- 1) Majority of PA projects achieved the same rating in FA (i.e. figures on the diagonal line).
- 2) Green cells indicate that the FA results are better than the PA.

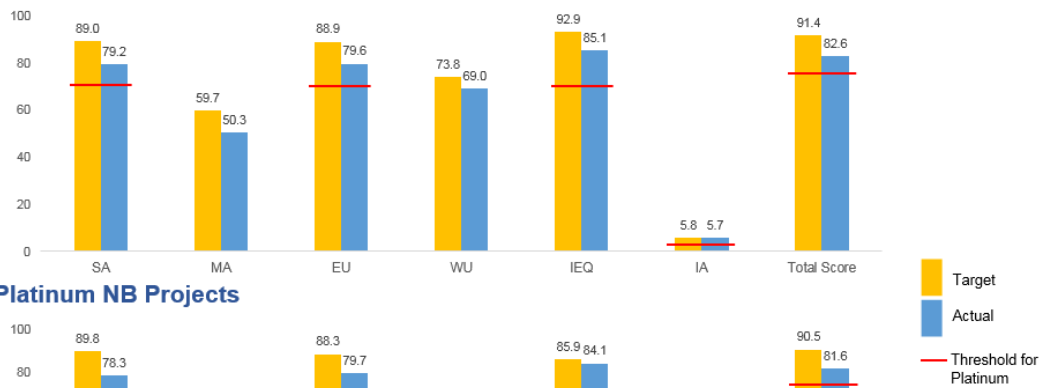
Include 305 assessed projects with both PA and FA up to Mid-Apr 2020

SCORING

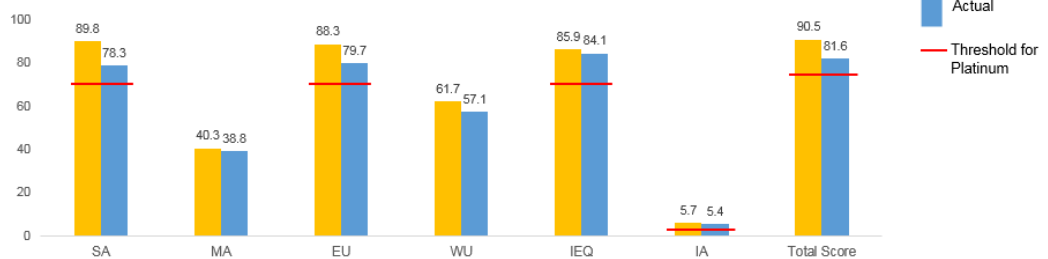
The target scores and actual scores achieved per aspect are analysed, with results given in the following graphs.

Average Target & Actual Scores

6 Latest Provisional Platinum NB Projects



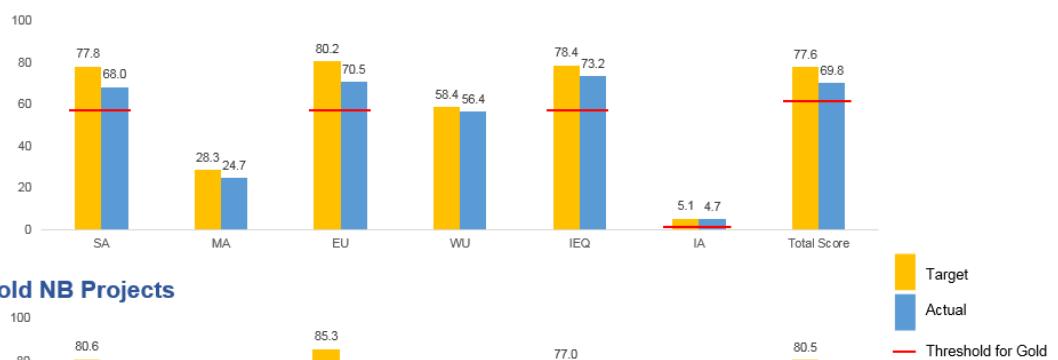
23 Latest Final Platinum NB Projects



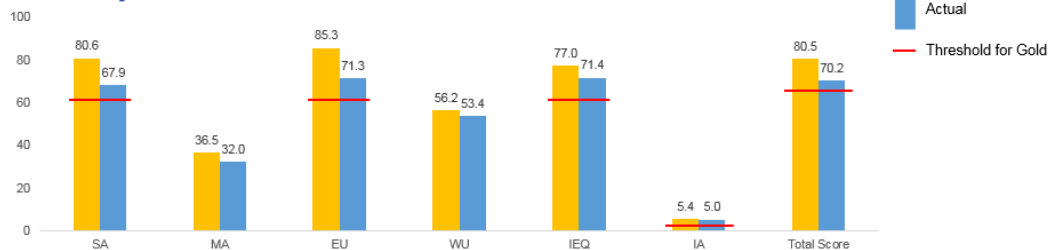
Time Period: 2019 + 2020 YTD

Average Target & Actual Scores

35 Latest PA Gold NB Projects



31 Latest FA Gold NB Projects



Time Period: 2019 + 2020 YTD

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CREDIT ACHIEVEMENT RATES

The most achieved and the least achieved credits are listed below. Figures in the two RHS columns are the achievement rates.

Zoom into the Upper End (2019 + 2020 YTD)

(Gold or above) : 41 projects
(All Ratings) : 87 projects

Credit	Gold or Above	All ratings
IA03 BEAM Professional	1.00	0.63
MA08a Refrigerants (GWP & ODP impact evaluation)	1.00	0.58
SA04 Site Design Appraisal	1.00	0.58
SA10 Environmental Management Plan	1.00	0.57
SA11 Air Pollution During Construction	1.00	0.56
SA12 Noise During Construction	1.00	0.57
SA13 Water Pollution During Construction	1.00	0.56
WU06 Effluent Discharge to Foul Sewers	1.00	0.58
EU10c Commissioning	0.98	0.56
EU10d Commissioning Report	0.98	0.56
EU11a Operation and Maintenance manual	0.98	0.57
EU11b Energy Management Manual	0.98	0.57
IEQ23b Amenities for Improved operation and maintenance	0.98	0.56
MA08b Ozone Depleting Materials	0.98	0.56
IEQ04 Waste Disposal Facilities	0.98	0.56
IEQ22 Access for Persons with Disability	0.98	0.55
IEQ23a Amenities for the benefit of building users	0.98	0.56

Achievement means full marks

Zoom into the Lower End (2019 + 2020 YTD)

(Gold or above) : 41 projects
(All Ratings) : 87 projects

Credit	Gold or Above	All Ratings
IEQ13b Room air distribution	0.10	0.05
IEQ15 Daylight Factor (95% area meet 1%)	0.08	0.03
MA11 Construction Waste Recycling (60%)	0.07	0.03
SA07b Soft Landscaping to at least 40%	0.07	0.03
EU08 Clothes Drying Facilities	0.05	0.02
MA07c Recycled Material in Interior Components	0.05	0.02
MA03 Prefabrication	0.03	0.01
MA07b Recycled Material in Structure	0.03	0.01
SA01B Contaminated Land	0.03	0.01
EU06 Renewable Energy Systems	0.02	0.01
SA08b Shade for at least 50% non-roof imp surfaces	0.02	0.01
WU02 Water Leakage Monitoring	0.02	0.01
WU04b Grey Water Recycling	0.02	0.01
IEQ19b Impact Noise Isolation between Floors	0	0
MA01 Building Reuse	0	0
MA05 Rapidly Renewable Materials	0	0

Achievement means full marks

ENERGY REDUCTION TREND

The mean annual energy reduction (EU1) achieved by NB projects from Bronze to Platinum are given below. LHS is PA figures whereas RHS is FA figures.

EU1 Baseline minus design case of Annual Energy Consumption

Rating	No. of projects	Average Reduction (exclude "nil submission")
PA Platinum	83	28% (+1%)
PA Gold	232	21% (-1%)
PA Silver	81	17% ($\pm 0\%$)
PA Bronze	81	15% (-1%)

Time Period: ALL PA assessed projects up to Mid-Apr 2020

Rating	No. of projects	Average Reduction (exclude "nil submission")
FA Platinum	57	29%
FA Gold	73	23%
FA Silver	28	20%
FA Bronze	44	17%

Time Period: ALL FA assessed projects up to Mid-Apr 2020

WATER REDUCTION TREND

The mean potable water reduction (WU1) achieved by NB projects from Bronze to Platinum are given below. LHS is PA figures whereas RHS is FA figures.

WU1 Baseline minus design case of Annual Water Consumption

Rating	No. of projects	Average Reduction (exclude "nil submission")
PA Platinum	83	43% ($\pm 0\%$)
PA Gold	232	38% (+1%)
PA Silver	81	37% (+2%)
PA Bronze	81	37% (+2%)

Time Period: ALL PA assessed projects up to Mid-Apr 2020

Rating	No. of projects	Average Reduction (exclude "nil submission")
FA Platinum	57	43%
FA Gold	73	38%
FA Silver	28	36%
FA Bronze	44	39%

Time Period: ALL FA assessed projects up to Mid-Apr 2020

CONTESTED RATES

The contested rates of credits in Gold or above NB PA projects are shown below. Reasons of contesting were explained in the training video.

Contested Rate

46 PA Gold and 10 Platinum Projects

	Credit	Contested Rate	Total Submitted Projects
	IEQ11b Exhaust for Tenant Fit-out	50%	10
	IEQ18 Room Acoustics	47%	17
	WU03 Water Efficient Irrigation	45%	11
	IEQ13b Room air distribution	44%	9
	IA01 Innovative Techniques	40%	15
	EU07 Air-Conditioning Units	35%	17
	WU02 Monitoring and Control	33%	3
	MA07c Interior Components	33%	6
	IA02 Performance Enhancements	33%	52
	IEQ19 Noise Isolation	32%	19
	IEQ16B Interior Lighting in Normally Occupied Areas	31%	16
	IEQ20 Background Boise	29%	28
	IEQ03 Biological Contamination	27%	37
	IEQ10 Background Ventilation	27%	15
	MA01 Building Reuse	25%	4
	SA07a Hard landscaping	25%	12
	SA01B Contaminated Land	25%	4
	IEQ16 Interior Lighting in Normally Occupied Areas	25%	24
	SA02a Car parking provisions	25%	40
	IEQ12a Ventilation by any means	24%	29

Time Period: 2019 + 2020YTD (including PA assessed projects up to Mid-Apr 2020)

INNOVATIONS AND ADDITIONS

The IA1 (innovative techniques) items adopted by the 2019/20 NB projects include:

- Smart home panels
- Use of podium for organic farming
- Use of waste cooling oil and grease trap waste as bio-fuel for tri-generation
- Hybrid ventilation plus multi-mode AC system
- Solar smart glass
- Nano-silver photo-catalyst coating
- Underground automatic bicycle parking facilities
- Enhancing the social value of an old building through revitalisation

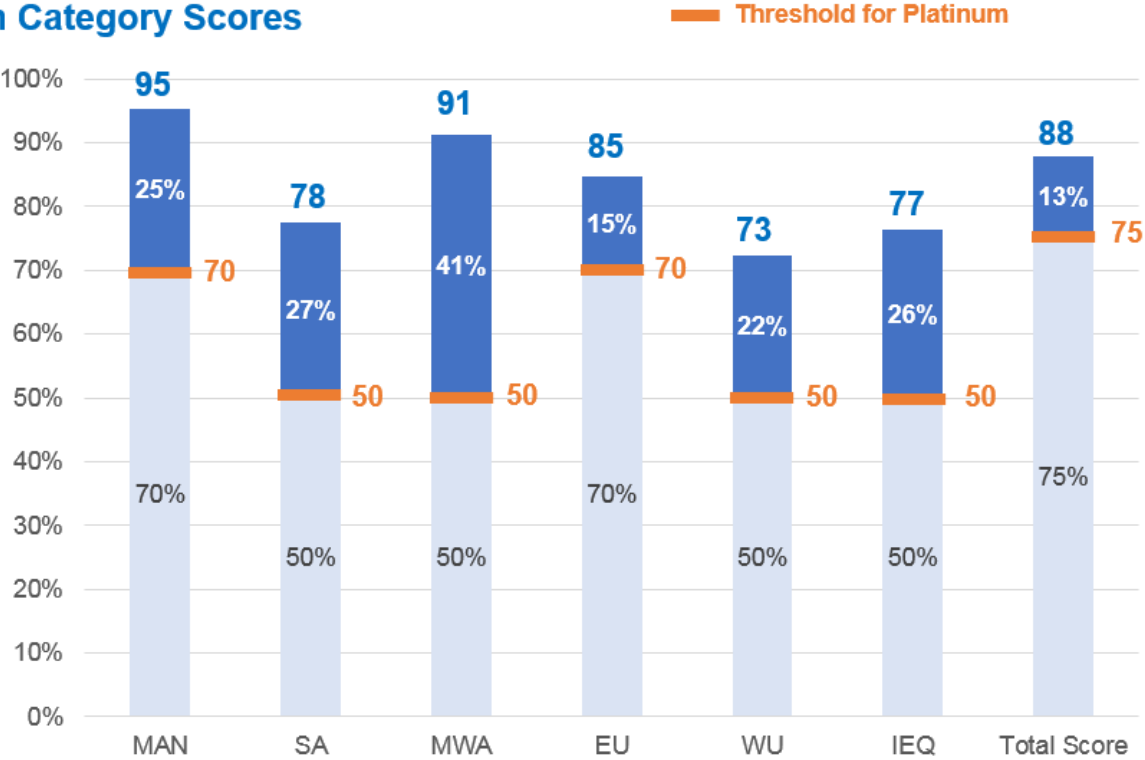
The IA2 (performance enhancement) items include:

- Twin-tank system
- EV charging facilities
- BIM
- Internet project communication centre
- Two-level lighting system
- IAQ excellent class
- Multi-sensory map
- Food waste decomposer
- Enhancement under SA8b(ii)
- Home automation system
- Hard-paved construction site

Existing Buildings (EB V2.0)

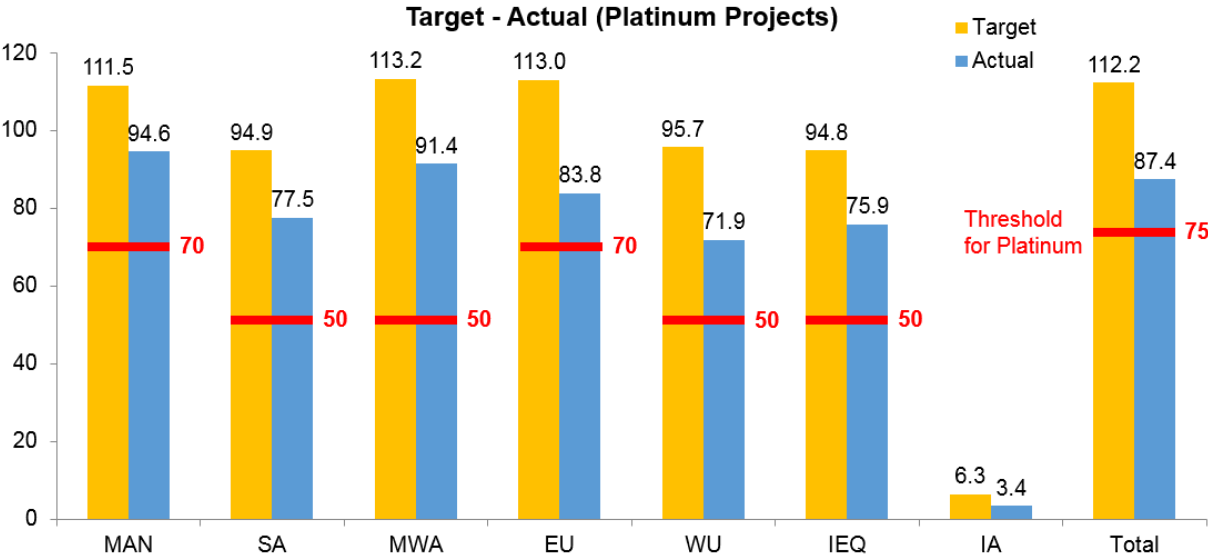
The study also analysed the performance of 24 EB Comprehensive Scheme Platinum projects. Their scoring analyses are given below.

Mean Category Scores



24 EB V2.0 Platinum Projects

Target vs Actual Scores



24 EB V2.0 Platinum Projects

Credits with High Achievement Rates

Credit		Achievement Rate (%)
EU01a	Energy Management Policy	100%
IEQ08	IAQ Monitoring	100%
MAN02	Environmental, Social and Governance (ESG) Disclosure	100%
SA07	Amenities for Operation and Maintenance	100%
MWA04	Waste Management Plan	100%
MWA08c	Waste and Recycling Records	100%
EU01c	Appointment of Energy Warden	96%
EU02c	Data Analysis	96%
SA06	Corporate Social Responsibility Facilities/ Services	96%

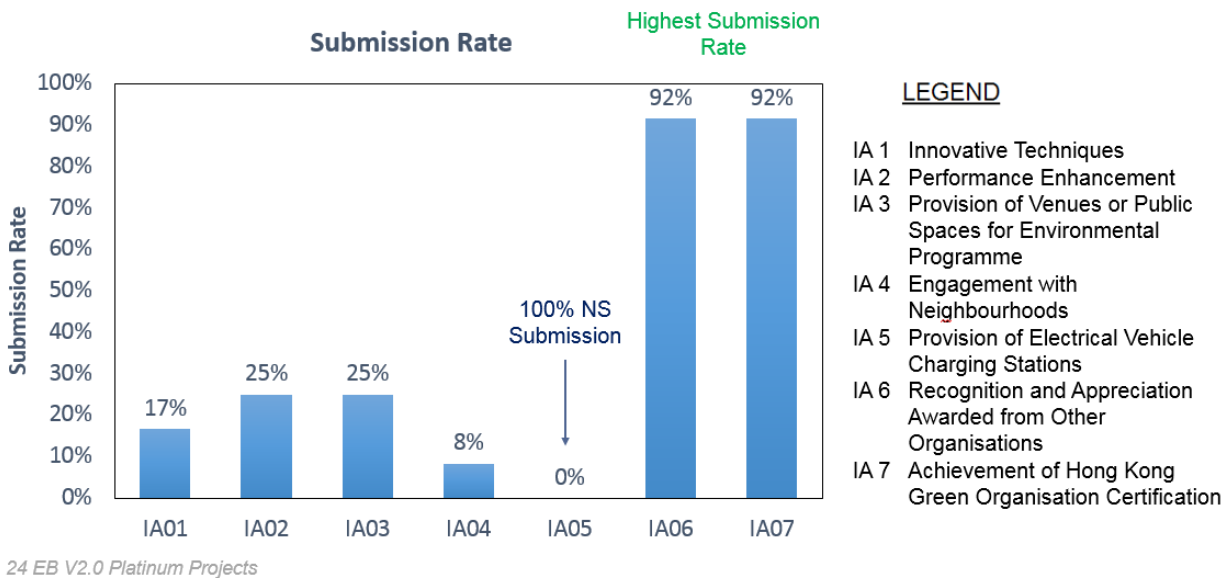
24 EB V2.0 Platinum Projects

Credits with Zero Achievement Rates

Credit	Description
MAN12B	Green Lease
MWA01	Materials Purchasing Practices
MWA01B	Materials Purchasing Practices – Bonus Credit
MWA02B	Use of Certified Green Products
EU04bB	Self-Improvement (extra savings)
EU05B	Enhancement
WU02B	Water Use For Irrigation
WU04B	Water Recycling
WU12	Quality Water Supply Scheme for Buildings – Flushing Water
IEQ10B	Interior Lighting in Normally Occupied Areas
IEQ14B	Noise Isolation
IA01B	Innovative Techniques
IA02B	Performance Enhancements
IA05B	Provision of Electrical Vehicle Charging Stations

24 EB V2.0 Platinum Projects

Listed IA Techniques

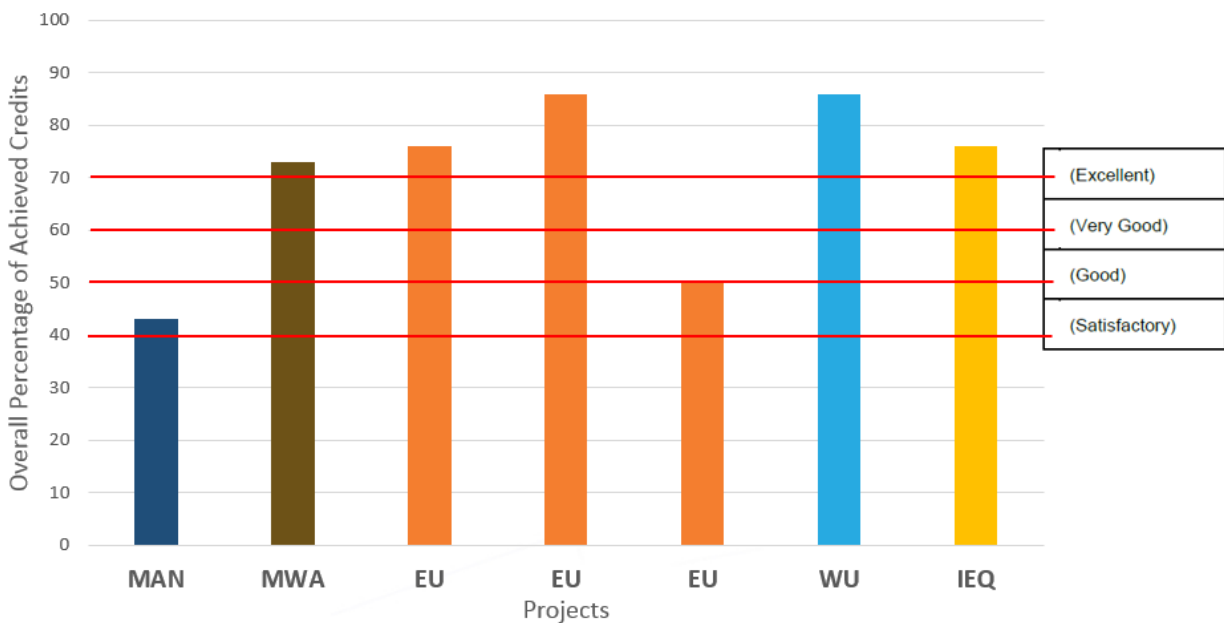


Within IA1, the adopted innovations include:

- nano-treatment to elevator surfaces to improve IAQ.

For EB Selective Scheme, the study has included 7 recent projects. Their scores are as follows:

Scores of 7 Recent Selective Scheme Projects



7 Recent Selective Scheme projects : 1 MAN, 1 MWA, 3 EU, 1 WU, 1 IEQ
 Assessment Report dates from May 2019 – March 2020

The commonly achieved and least achieved credits in the EB Selective Scheme (EU) projects are as follows:

Closer Look at EU

Most Achieved Credits

Credit head / subhead	Description	Achievement Rate
EU1a	Energy Management Plan	100%
EU1b	Appointment of Energy Warden	100%
EU2b	Data Collection Record	100%
EU3a	Energy Efficient Practices	100%
EU4b	Self-Improvement (normal credits)	100%
EU 6	Educational and Promotional Programmes	100%

Not Applicable (NA) Rate

Credit head / subhead	Description	NA Rate
EU4a	Benchmarking	33%

Not Submitted (NS) Rate

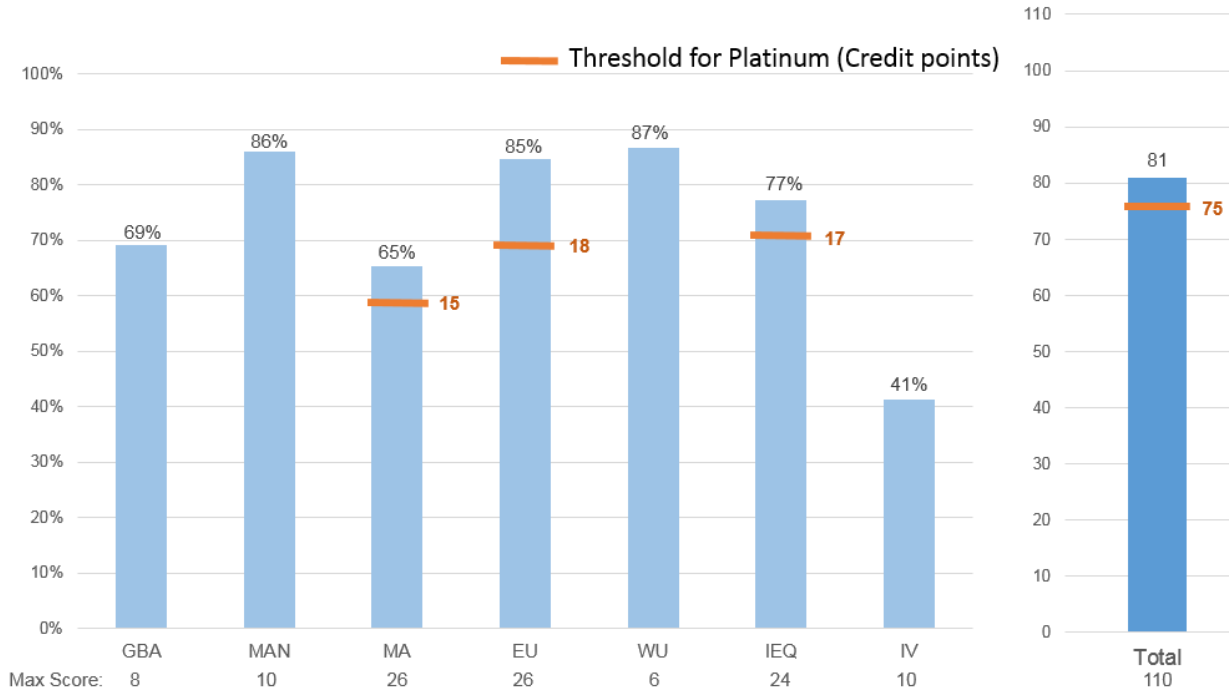
Credit head / subhead	Description	NS Rate
EU7a	Innovative Techniques	100%
EU7b	Performance Enhancements	100%

3 Selective Scheme projects undergoing Energy Use aspect

BEAM Plus Interiors (BI)

The study also analysed the performance of 15 BI Platinum projects. Their scoring analyses are given below.

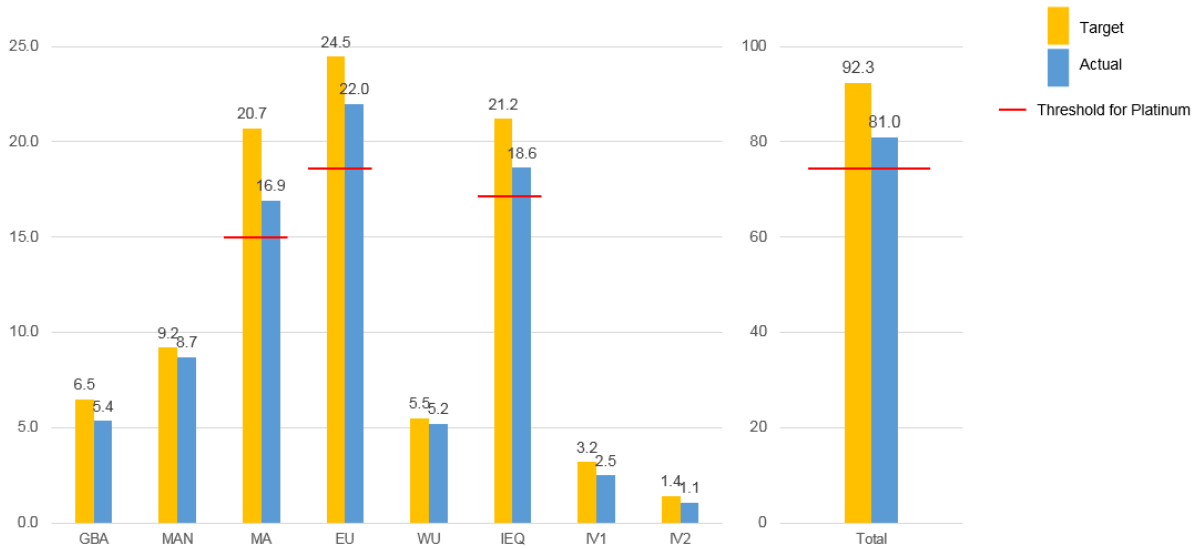
Aspect Mean Achievement



15 Platinum BI projects

Target vs Actual

Mean no. of credits



15 Platinum BI projects

The credit achievement rates and innovation practices of BI projects are given below:

Credit Achievement Rates

Credit		Achievement Rate
IEQ1	Indoor Air Quality	100%
IEQ7b	Relative Humidity	96%
IEQ7c	Air Movement	96%
MA10	Ozone Depleting Substances	96%
MA6c	Environmentally Manufactured Materials	96%
MAN3	Construction Noise	96%
MAN6	User Guidance	96%
IEQ3	Minimum Ventilation Performance	91%
MA1	Waste Recycling Facilities	91%
MAN1	BEAM Professional	91%
MAN2	Construction IAQ Management	91%
EU3a	Commissioning Plans	87%
EU3b	Commissioning Reports	87%
IEQ7a	Temperature	87%
MAN4	Green Cleaning	87%
WU1	Water Quality Survey	87%
WU4	No Bottled Water	87%
MA4	Modular Design Materials	26%
EU1b	Energy Performance – Prescriptive-based Approach	22%
GBA1	Green Building Attributes	17%
IEQ11	Acoustics	9%
MA8a	Sustainable Wall and Door Products - Rapidly Renewable Materials / Recycled Materials / Sustainable Timber	9%
MA9	Zero PVC	9%
IEQ6	Uncontrolled Ventilation	4%

15 Platinum, 4 Gold, 3 Silver and 1 Unclassified BI Projects

Achievement means full mark

Listed Innovations

Appendix 9.4

	No. of Projects
1. IAQ Excellent Class	9
2. Real Time Energy Monitoring Display	8
3. Partition System	3
4. Renewable Energy Systems	3
5. Temporary Protection Made From Recycled Materials	3
6. Waste Recycle Facilities For Business Specific Materials	2
7. Certification	2
8. Air-conditioning Condensate Reuse	1
9. Energy / Carbon Audit	1
10. Outstanding Energy Performance	1
11. Mixed Mode Ventilation Systems	1
12. AI Thermal Comfort Control	1

15 Platinum, 4 Gold, 3 Silver and 1 Unclassified BI Projects

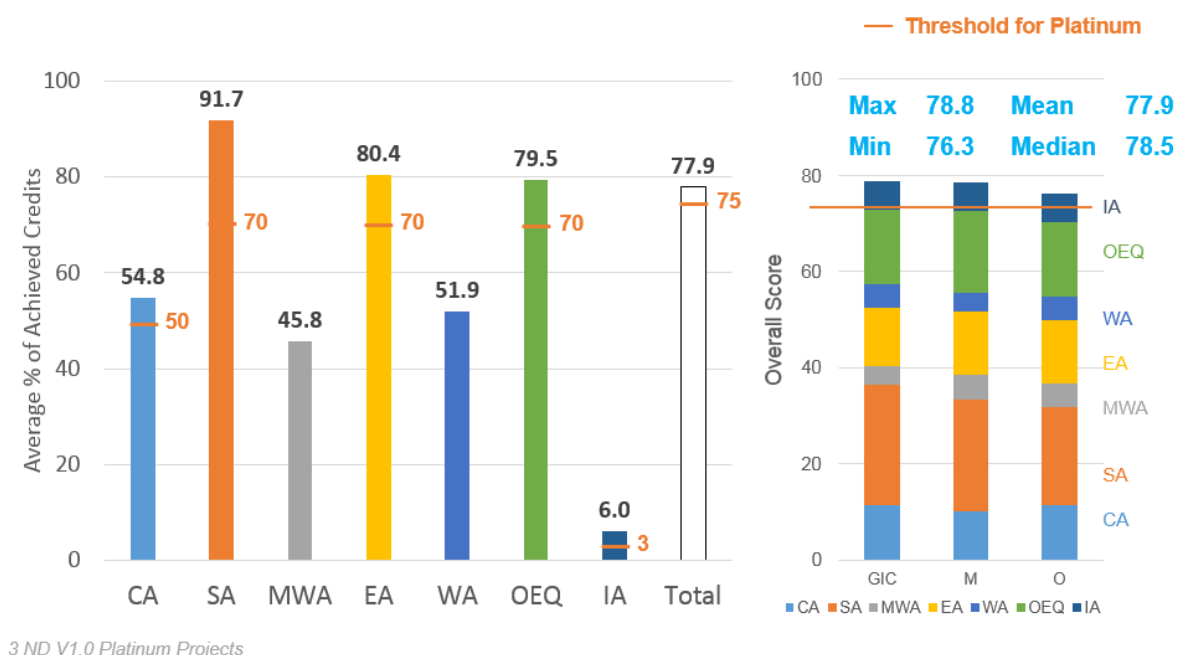
Other un-listed innovations adopted by BI projects include:

- Exercising equipment to promote healthy and active living
- Energy-generating exercising machines
- Reused-bottle wall
- Indoor hydroponic farming
- Education for visitors
- BIM model with O&M database
- Adoption of Oceanic Global Guide to minimize the use of plastic in offices
- Provision of “Room for Moms” to cater for the need of female employees

BEAM Plus Neighbourhood (ND)

The study also analysed the performance of 3 latest ND (Version 1.0) Platinum projects. Their scoring analyses are given below.

Category Mean Scores



Credit Achievement Rates

Credits with 100% achievement rate	
CA02	Sustainable Lifestyle
CA03b	Neighbourhood Recreational Facilities
CA03c	Provision of Basic Services or Recreational Facilities for the Public
CA03d	Shaded or Covered Pedestrian Routes to Basic Services or Recreational Facilities
CA06	Placemaking and Local Character
SA01B	Brownfield Development
SA02	Accessibility to Open Space, Greenspace and Blue Assets
SA03c	Pedestrian-oriented Transport Planning
SA03cB	Pedestrian-oriented Transport Planning - 100% of Applicable Transport Planning Measures
SA03e	Integration with Existing Pedestrian Transport Network
SA04	Site Design Appraisal
SA04B	Site Design Appraisal - 100% of Relevant Sub-items of Urban Design Guidelines
SA07	Quality Open Space

Credits with 100% achievement rate (Cont'd)	
MWA03	Integrated Waste Management
EA02b	Wind Environment
EA03a	Provision of District Energy System
EA04	Renewable Energy
OEQ02b	Intra-urban Heat Island Study
OEQ03	Neighbourhood Daylight Access
OEQ04	Visual Quality
OEQ05	Air Quality of Open Spaces
OEQ07	Universal Access
IA03	BEAM Professional

Credits with 0% achievement rate	
CA 7b	Retaining the Original Use(s) or Introducing an Adaptive Re-use(s)
MWA 2	Minimised Cut and Fill
WA 2b	Stormwater Management through Temporary Storage
OEQ 2a	Tree Coverage

Achievement means full marks

3 ND V1.0 Platinum Projects

Innovation/performance enhancement in these ND projects include:

- new technology to treat waste to produce energy and other useful products
- use of combined heat and power system plus PV to generate a high amount of energy.

FURTHER INFORMATION

The above information gives selected key statistics of the training webinars. If readers want to appreciate the full findings of the statistical study, they are advised to watch the video footages 'Cream of BEAM Plus' which are available on the following On-line Training Portal:

<http://onlinecpdtraining.hkgbc.org.hk/>

-End-