

The Cream of BEAM Plus (2021)

A General Sharing of BEAM Plus Certification Data

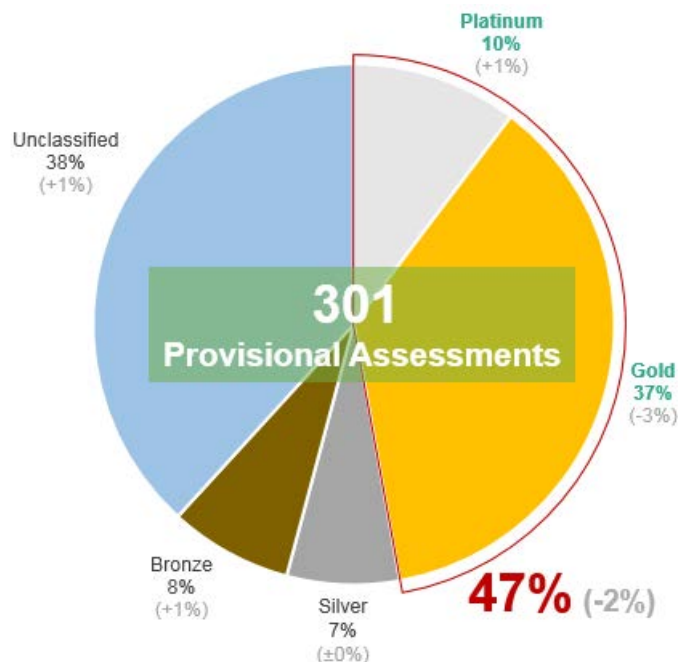
(This paper provides a **gist** of the CPD Training Video “Cream of BEAM Plus (NB) 2021” and Internal data analysis of EB, BI & ND project data. For further details, readers are advised to view the training video on HKGBC On-line Training Portal.)

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 2021, providing readers with more updated analysis.

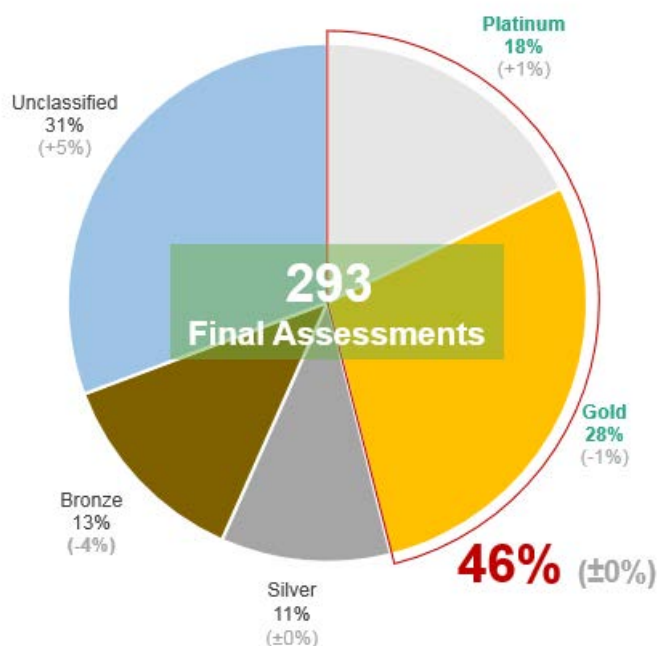
GRADING DISTRIBUTION

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 47% of the PA results is at Gold or above.



Time Period: 2018 – Mid-Apr 2021

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.



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). The red and green figures/arrows show the change compared to the previous year.

Change in Ratings from PA to FA

A total of 375 NB Projects have completed FA since launch of BEAM Plus
(+70 compared with last year)

PA \ FA	Platinum	Gold	Silver	Bronze	Unclassified
Platinum	92%	7%	2%	0%	0%
Gold	15%	76% → 2%	5%	2%	2%
Silver	7%	25%	48% ← 4%	20%	0%
Bronze	0%	7%	22% ← 4%	62%	9%
Unclassified	0%	3%	2%	10%	85%

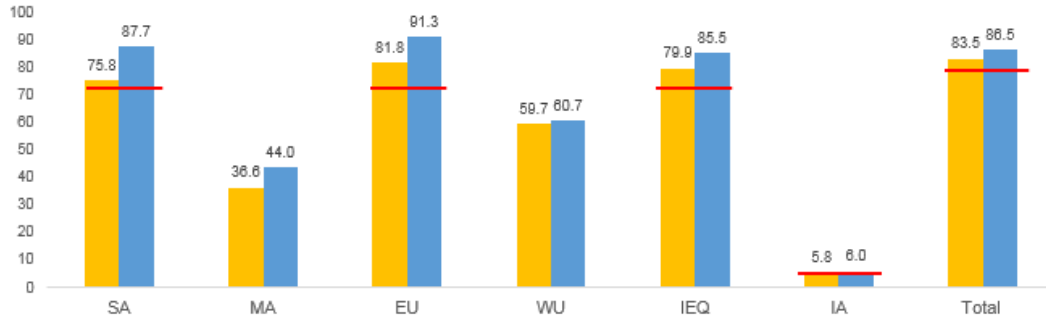
- 1) The majority of PA projects achieved the same rating in FA (i.e. figures on the diagonal line).
- 2) Green cells indicate that FA results are better than PA results. Pink cells are the reverse.
- 3) Compared with last year's report,
 - a) slightly more (+2%) PA Gold projects are downgraded in FA.
 - b) more (+4%) PA Silver projects attain the same rating in FA
 - c) more (+4%) PA Bronze projects achieve FA gold rating.

Time Period: All up to Mid-Apr 2021

SCORING

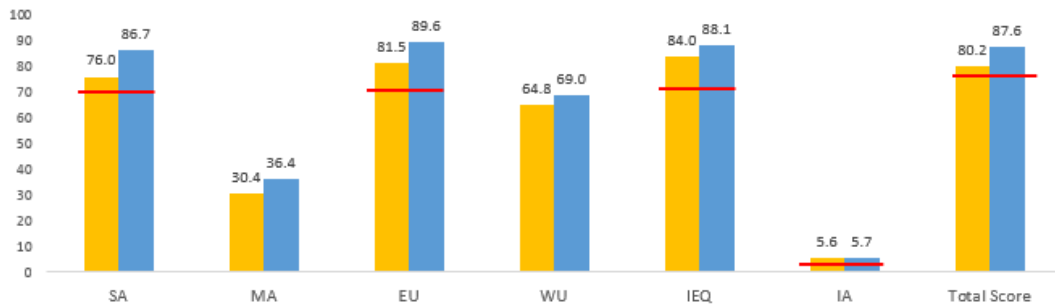
The target scores and actual scores achieved per aspect are analysed, with results given in the following graphs.

14 Latest Provisional Platinum NB Projects



21 Latest Final Platinum NB Projects

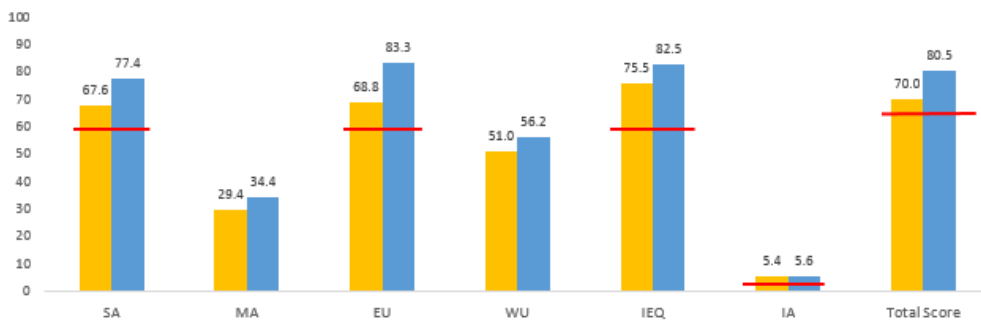
FINAL



Actual
Target
Threshold for Platinum

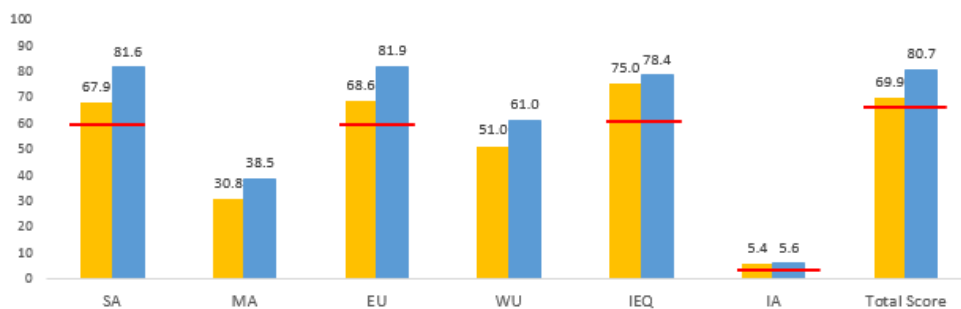
Time Period: 2020 +2021 Mid-Apr

31 Latest Provisional Assessment Gold NB Projects



30 Latest Final Assessment Gold NB Projects

FINAL



Actual
Target
Threshold for Gold

Time Period: (2020 + 2021) Mid-Apr

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 (2020 + 2021 YTD)

(Gold or above) : 46 projects
(All Ratings) : 97 projects

	Credit	Gold or Above	All ratings
EU11a	Operation and Maintenance Manual	1.00	0.66
EU11b	Energy Management Manual	1.00	0.66
SA4	Site Design Appraisal	1.00	0.66
SA10	Environmental Management Plan	1.00	0.66
WU6	Effluent Discharge to Foul Sewers	1.00	0.66
SA11	Air Pollution During Construction	1.00	0.65
SA12	Noise During Construction	1.00	0.65
SA13	Water Pollution During Construction	1.00	0.65
IEQ22	Access for Persons with Disability	1.00	0.64
SA3b	Two Recreational Facilities within 500 m	1.00	0.62
IA3	BEAM Professional	0.98	0.66
EU10c	Commissioning	0.98	0.64
EU10d	Commissioning report	0.98	0.64
MA8b	Ozone Depleting Materials	0.98	0.63
MA8a	Refrigerants	0.98	0.64
IEQ4	Waste Disposal Facilities	0.98	0.63

Achievement means full marks

Zoom into the Lower End (2020 + 2021 YTD)

(Gold or above) : 46 projects
(All Ratings) : 97 projects

	Credit	Gold or Above	All Ratings
IEQ13b	Room Air Distribution	0.05	0.02
MA03	Prefabrication	0.04	0.02
MA01	Building Reuse	0.04	0.01
IEQ11b	Local Exhaust	0.03	0.03
IEQ19B	Noise Isolation	0.03	0.01
SA08b	Elevated Temperatures	0.02	0.01
WU02	Monitoring and Control	0.02	0.01
EU13	Energy Efficient Building Layout – Met All Strategies	0.00	0.00
MA1B	Building Reuse	0.00	0.00
MA5	Rapidly Renewable Materials	0.00	0.00
MA7b	Recycled Content in Building Structure	0.00	0.00
MA7c	Recycled Content in Interior Components	0.00	0.00
SA1B	Contaminated Land	0.00	0.00
WU4b	Grey Water Recycling	0.00	0.00

ENERGY & WATER REDUCTION TREND

The mean annual energy reduction (EU1) and potable water reduction (WU1) achieved by NB projects from Bronze to Platinum are given below:

Annual Energy (EU1) + Water Use (WU1) reductions Baseline Minus Design



Rating	No. of projects		Average Reduction in EU1		Average Reduction in WU1	
	PA	FA	PA	FA	PA	FA
Platinum	97	78	28%	30%	44%	46%
Gold	263	103	20%	24%	39%	38%
Silver	92	39	17%	20%	38%	37%
Bronze	88	52	16%	17%	37%	38%

Exclude "Nil Submission" and projects that adopted EU 1 Option 2

Time Period: ALL assessed projects up to Mid-Apr 2021

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

38 Gold and 16 Platinum Projects (PA)

	Credit	Contested Rate	No. of Submitted Projects
IEQ 11b	General Exhaust for Tenant Fit-out	50%	8
IEQ 13b	Room Air Distribution	50%	6
IEQ 19B	Impact Noise Isolation between Floors	50%	2
MA 5	Rapidly Renewable Materials	50%	2
WU 3	Water Efficient Irrigation	40%	10
EU 13	Energy Efficient Building Layout	30%	10
IEQ 16	Interior Lighting in Normally Occupied Areas	30%	20
IA 2	PE	28%	54
EU 3B	Embodied Energy in Building Structural Elements	27%	11
IEQ 12a	Ventilation in Common Areas	26%	34
MA 4a	Spatial Adaptability	25%	4
IEQ 18	Room Acoustics	24%	17
EU 7	Air-Conditioning Units	23%	13
IEQ 3	Biological Contamination	23%	35
IEQ 20	Background Noise	22%	32
SA 3c	Provision of Basic Services/Recreational Facilities	21%	24
EU 8	Clothes Drying Facilities	20%	5
SA 7a	Hard Landscaping	20%	10
EU 4	Ventilation Systems in Car Parks	18%	11
IA 1	Innovative Techniques	18%	11

INNOVATIONS AND ADDITIONS

The IA1 (innovative techniques) items adopted by the 2020/21 NB projects include:

- Hybrid solar panels (electricity generation + heat collection)
- Light well in a commercial building
- Upcycling of window glass in a renovation project
- Smart home panels

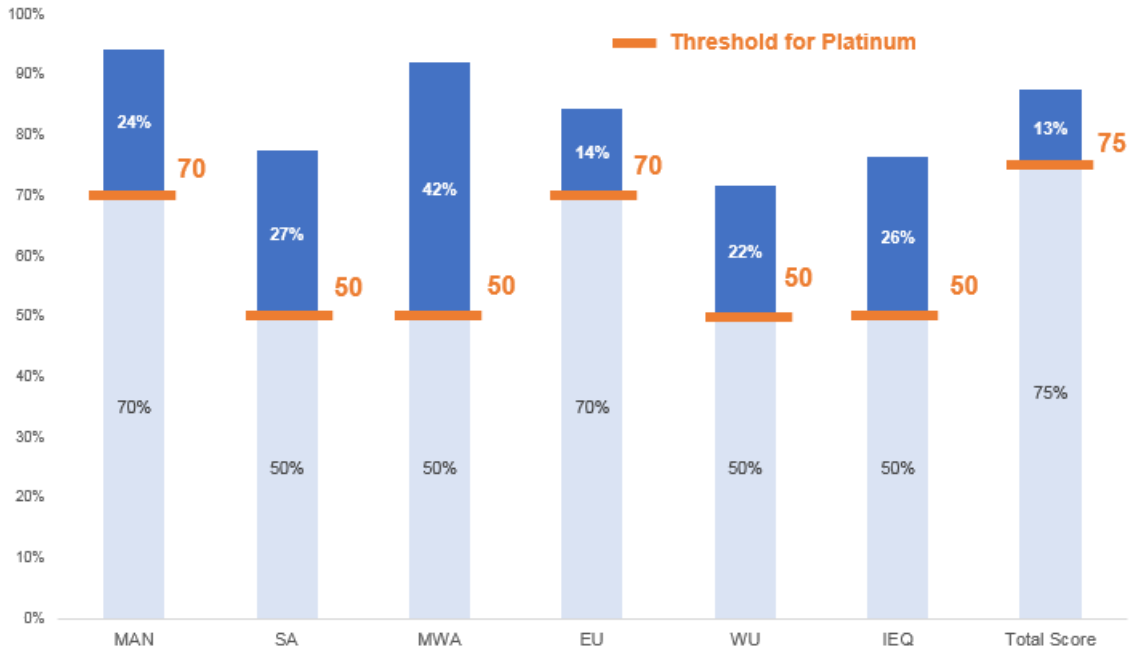
The IA2 (performance enhancement) items include:

- Twin-tank system
- Two-level lighting system
- Multi-sensory map with tactile guide path
- Hard-paved construction site
- EV charging facilities
- BIM
- Internet project communication centre / ePM system
- IAQ excellent class
- Enhancement under MA6 / SA7b / SA8b(ii)
- Food waste decomposer
- Community farm

Existing Buildings

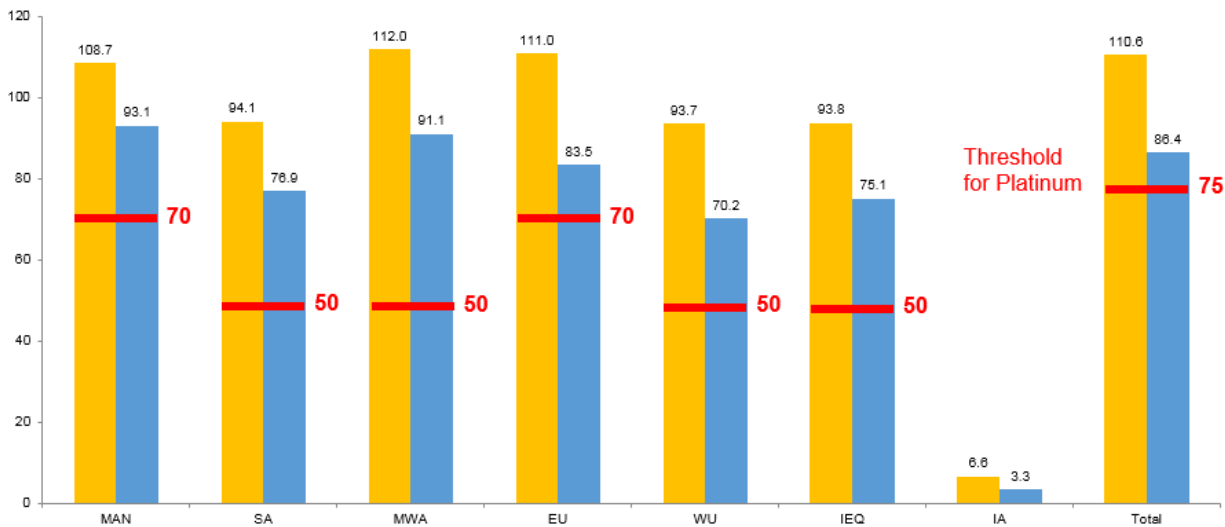
The study also analysed the performance of 27 EB Comprehensive Scheme Platinum projects. Their scoring analyses are given below.

Mean Category Scores



27 EB V2.0 Platinum Projects* including assessed projects up to Mid-Apr 2021

Target vs Actual Scores



27 EB V2.0 Platinum Projects

Achievement Rate

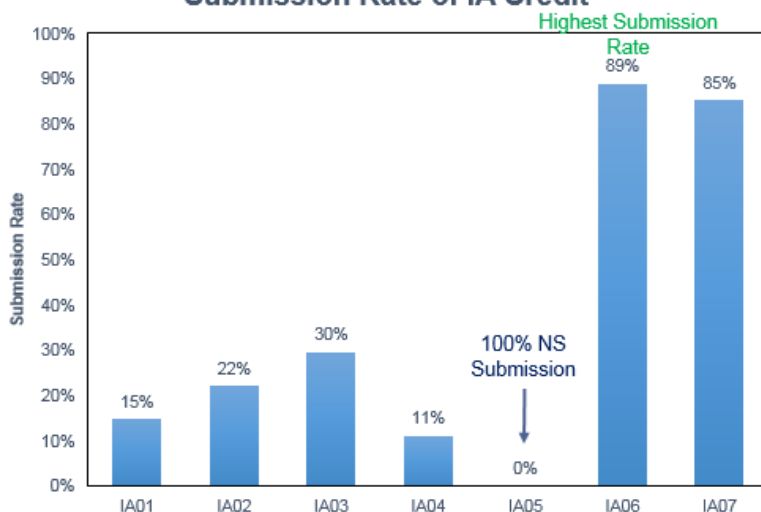
Credit	Description	Achievement Rate (%)	Credit	Description	Achievement Rate (%)
EU01a	Energy Management Policy	100%	EU05B	Enhancement	0%
IEQ08	IAQ Monitoring	100%	IEQ10B	Interior Lighting in Normally Occupied Areas	0%
MWA04	Waste Management Plan	100%	IEQ14B	Noise Isolation	0%
MWA08a	Implementation of the Waste Management Plan	100%	MAN12B	Green Lease	0%
MWA08c	Waste and Recycling Records	100%	MWA02B	Use of Certified Green Products	0%
SA07	Amenities for Operation and Maintenance	100%	IA01B	Innovative Techniques	0%
EU01c	Appointment of Energy Warden	96%	IA02B	Performance Enhancements	0%
MAN02	Environmental, Social and Governance (ESG) Disclosure	96%	IA05B	Provision of Electrical Vehicle Charging Stations	0%
SA06	Corporate Social Responsibility Facilities/ Services	96%			

27 EB V2.0 Platinum Projects

Achievement means full marks

Listed IA Techniques

Submission Rate of IA Credit



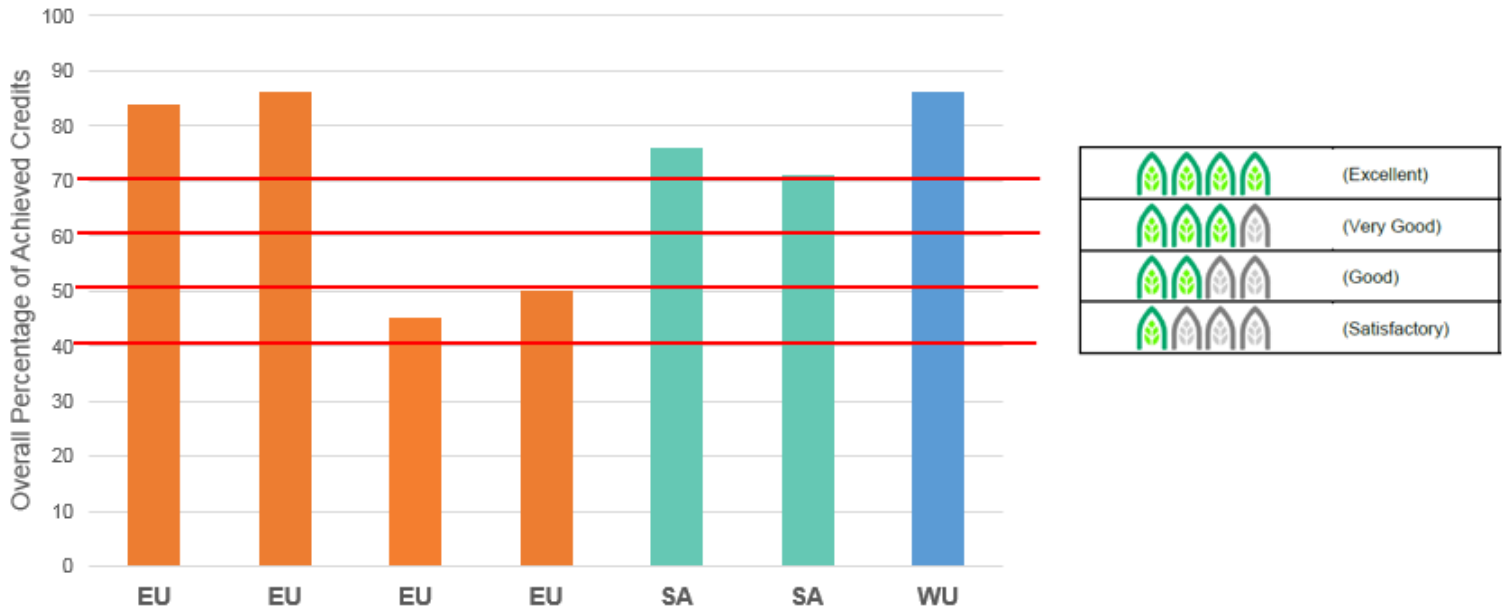
- IA 1 Innovative Techniques
- IA 2 Performance Enhancement
- IA 3 Provision of Venues or Public Spaces for Environmental Programme
- IA 4 Engagement with Neighbourhoods
- IA 5 Provision of Electrical Vehicle Charging Stations
- IA 6 Recognition and Appreciation Awarded from Other Organisations
- IA 7 Achievement of Hong Kong Green Organisation Certification

Within IA1, the adopted innovations include:

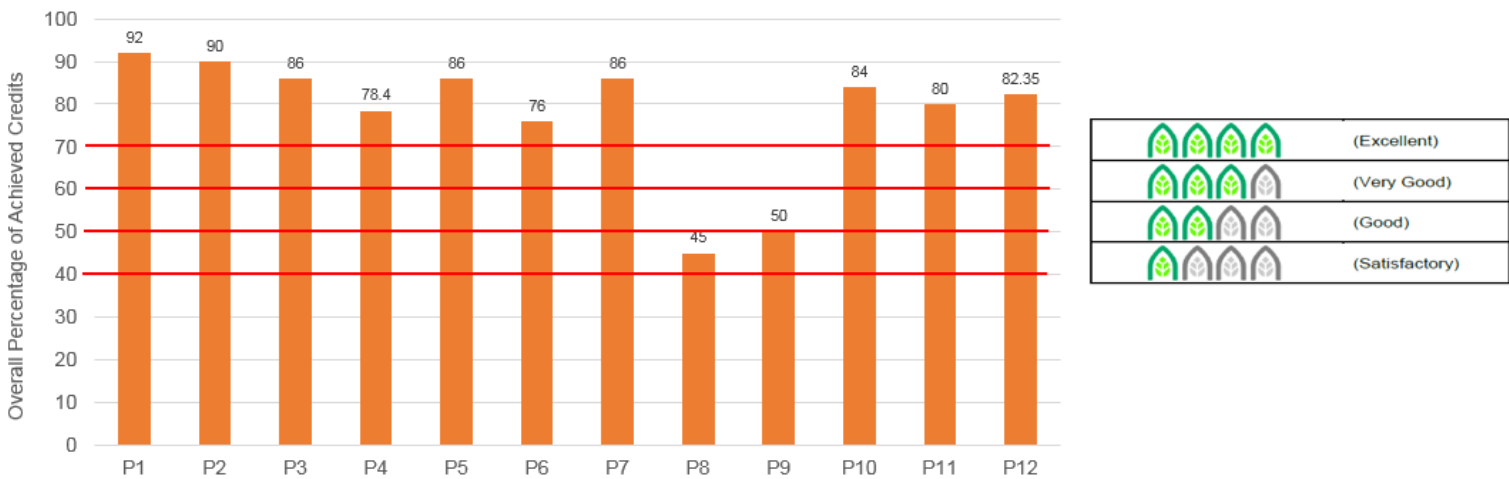
- “Comfy” workplace temperature optimisation control system.

For EB Selective Scheme, the study has included 7 recent projects, as well as an analysis of all the 12 projects within the EU category. Their scores are as follows:

Scores of 7 Recent Selective Scheme Projects



All EU Selective Scheme Projects



Averaged overall percentage of Excellent rating projects:
84.0% ± 5.0%

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	92%
EU2b	Data Collection Record	92%
EU3a	Energy Efficient Practices	92%
EU1b	Appointment of Energy Warden	83%
EU 6	Educational and Promotional Programmes	83%

Not Applicable (NA) Rate

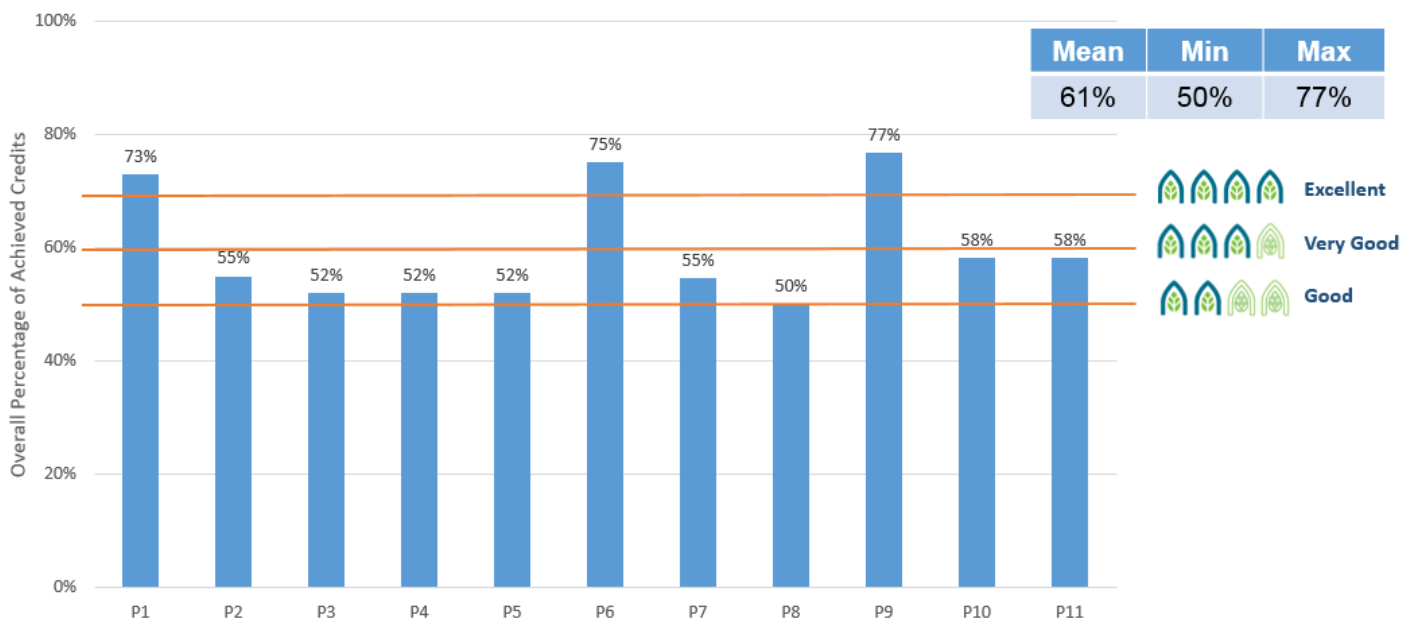
Credit head / subhead	Description	NA Rate
EU4a	Benchmarking	25%
EU4b	Self-Improvement	8%

Not Submitted (NS) Rate

Credit head / subhead	Description	NS Rate
EU2a	Data Collection Facilities	50%
EU7aB	Innovative Techniques	83%
EU7bB	Performance Enhancements	83%

For EB Selective Scheme – Portfolio Volume Certification, below are the Mean Scores of 11 MAN projects:

All EB Portfolios pursuing Selective Scheme in MAN Aspect



The credit achievement rates of credits among these 11 volume cert projects are:

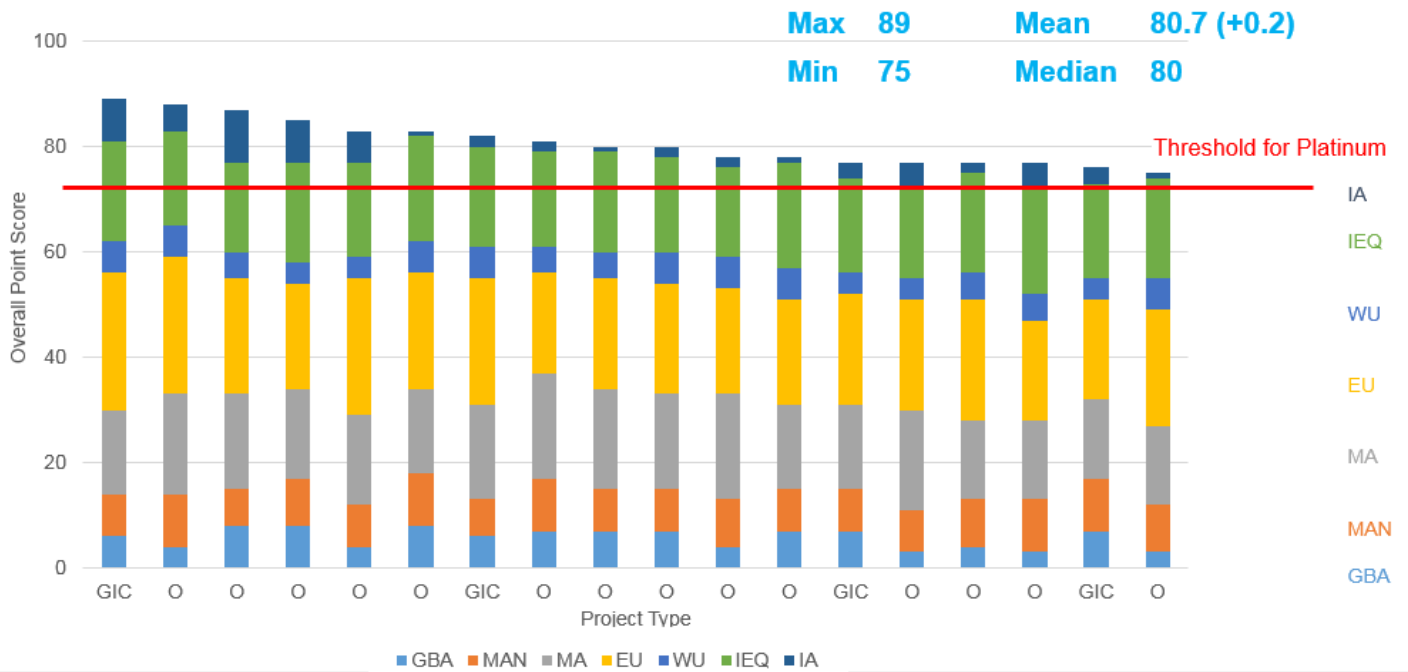
MAN Credit Achievement Rates

	Credit	Achievement Rate
MAN 1a	Green Purchasing Policy	100% (0%)
MAN 3a	Disclosure of Sustainability Policy and Targets	91% (+11%)
MAN 5a	Staff and Technical Resources	91% (+11%)
MAN 10a	Renovation Management Plan	91% (+11%)
MAN 1b	Green Purchasing Plan	82% (+1%)
MAN 3bB	ESG Reporting	82% (+2%)
MAN 4b	Professionally Qualified Building Manager	82% (+2%)
MAN 15	Educational and Promotional <u>Programmes</u>	73% (-7%)
MAN04a	BEAM Accredited Personnel for Each Individual Building	73% (-27%)
MAN 6a	Essential Records	0% (0%)
MAN 2gB	Energy Management System Certification	0%
MAN 10b	Implementation of Renovation Management Plan	0%
MAN 11b	Use of Green Cleaning Detergent	0%
MAN 14b	Implementation of Green Lease	0%
MAN 16a	BEAM / BEAM Plus Certified Building	0%

BEAM Plus Interiors (BI)

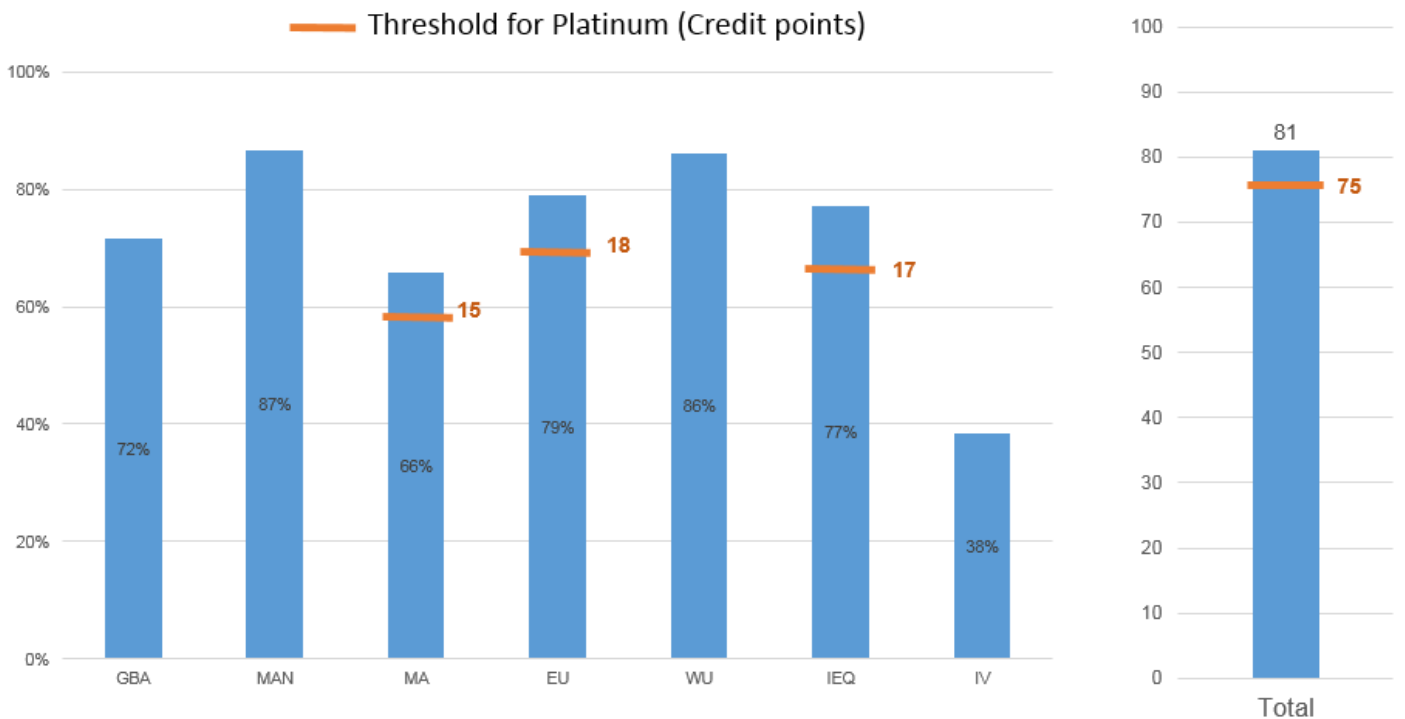
For BEAM Plus Interiors (BI), the scores of 18 Platinum projects are:

Scores of All Platinum Projects



Their aspect mean percentage-score achievement is as follows:

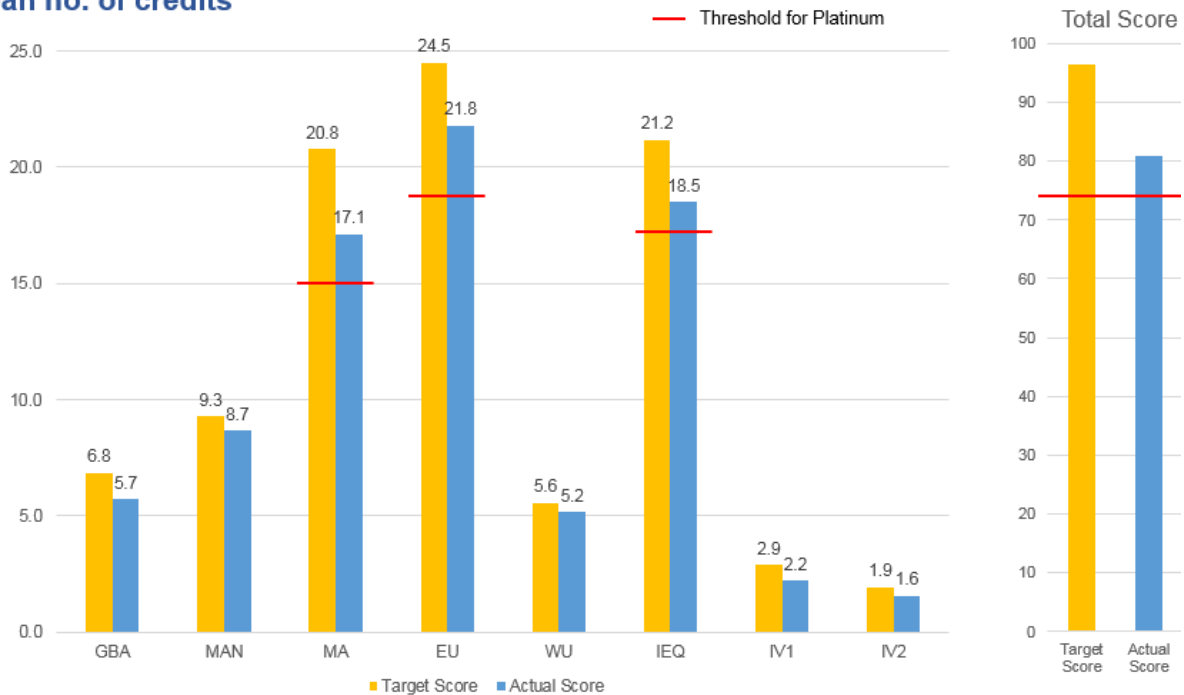
Aspect Mean Achievement



Their target vs actual scores are as follows:

Target vs Actual

Mean no. of credits



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	92%
MA1 Waste Recycling Facilities	92%
MAN1 BEAM Professional	92%
MAN2 Construction IAQ Management	92%
EU3a Commissioning Plans	88%
EU3b Commissioning Reports	88%
IEQ7a Temperature	88%
WU1 Water Quality Survey	88%
WU4 No Bottled Water	88%
EU1b Energy Performance – Prescriptive-based Approach	19%
GBA1 Green Building Attributes	15%
IEQ11 Acoustics	8%
MA8a Sustainable Wall and Door Products - Rapidly Renewable Materials / Recycled Materials / Sustainable Timber	8%
MA9 Zero PVC	8%
IEQ6 Uncontrolled Ventilation	4%

Listed Innovations

Appendix 9.4

	No. of Projects
1. IAQ Excellent Class	10
2. Real Time Energy Monitoring Display	8
3. Partition System	3
4. Renewable Energy Systems	3
5. Temporary Protection Made From Recycled Materials Waste Recycle Facilities For Business Specific	3
6. 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

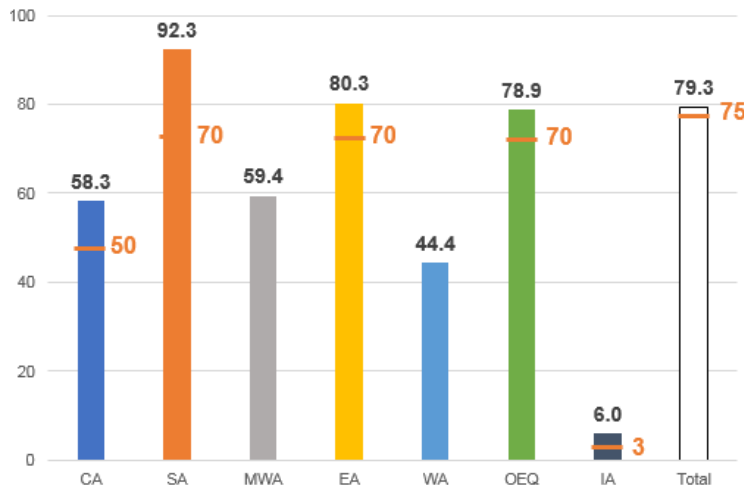
Other un-listed innovations adopted by BI projects include:

- Curtain wall window opening: use of temporary window cover panel for connecting exhaust air duct at times of office renovation
- 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)

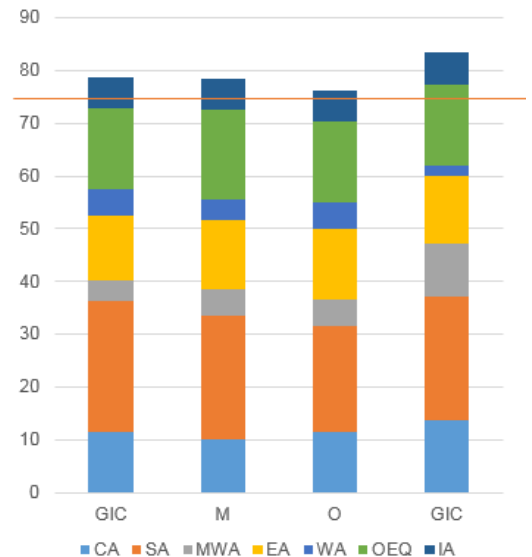
The study also analysed the performance of 4 latest ND Platinum projects. Their scoring analyses are given below.

Category Mean Scores



— Threshold for Platinum

Max 83.4 (+4.6) Mean 77.9
Min 76.3 Median 78.5



Their credit achievement rates are as follows:

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 5	Existing Community and Economy
CA 7b	Retaining the Original Use(s) or Introducing an Adaptive Re-use(s)
SA 5bB	Enhancement of Ecological Value
MWA 1&1B	Building Reuse
MWA 2	Minimised Cut and Fill
WA 2b	Stormwater Management through Temporary Storage
OEQ 2a	Tree Coverage

Achievement means full marks

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 for new buildings, they are advised to watch the training video 'Cream of BEAM Plus (New Buildings) 2021' which is available on the following On-line Training Portal:

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

-End-