

Case Study of Refurbishment and Green Cost



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GBI Non Residential Existing Building (Provisional Certificate)

Bangunan Perdana Putra



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Menara Citibank



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GBI Non Residential Existing Building (Provisional Certification)

ASR PADU Existing Building Redevelopment



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When and Why...

- * Inefficient, poorly functioning, unhealthy, and uncomfortable buildings.
- * High operating costs
- * High consumption of resources
- * Deterioration of indoor environmental quality
- * Corporate Social Responsibility
- * “Walk the talk”
- * End of life



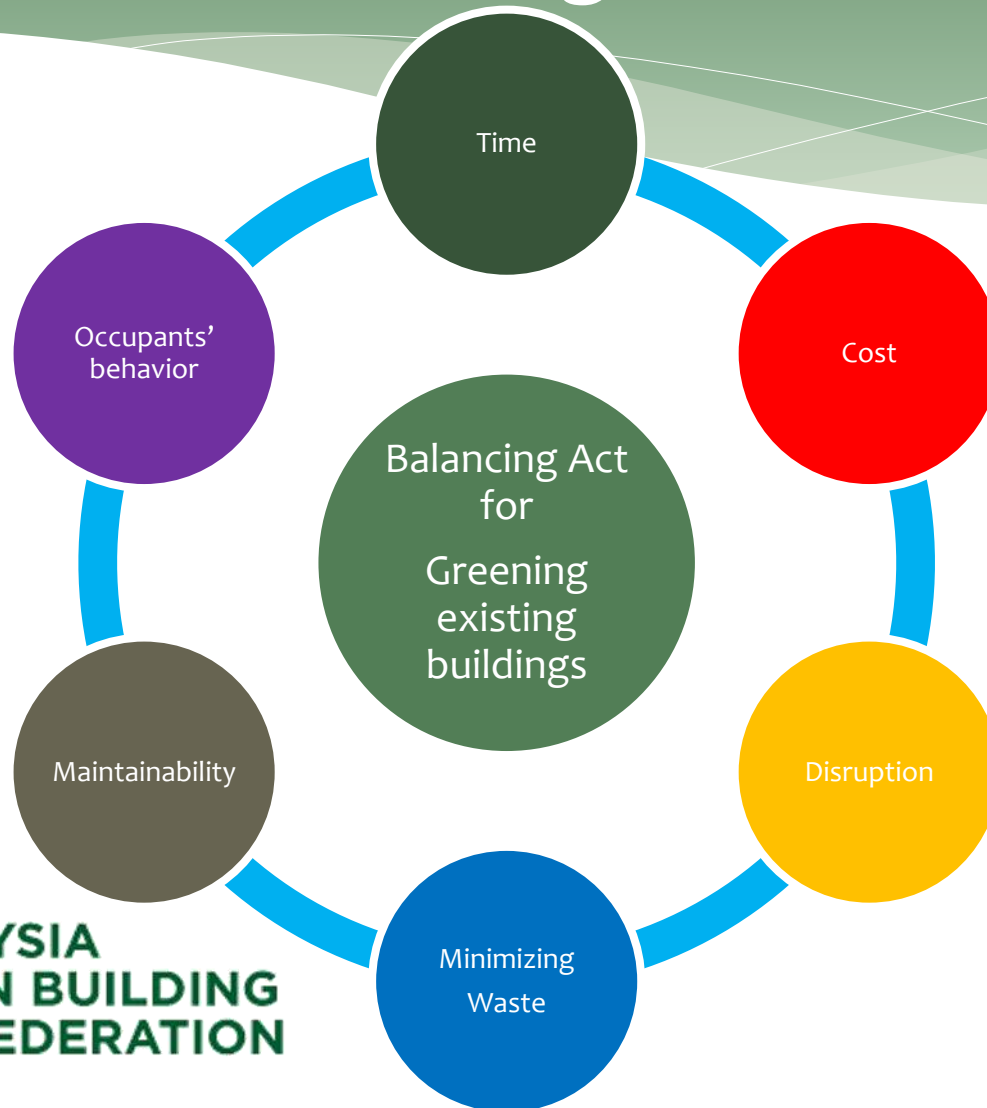
Setting the Target

- * How green ?
- * Use of relevant rating tool
- * Target reduction in use of resources and energy
- * Target increase in productivity
- * Target increase in value



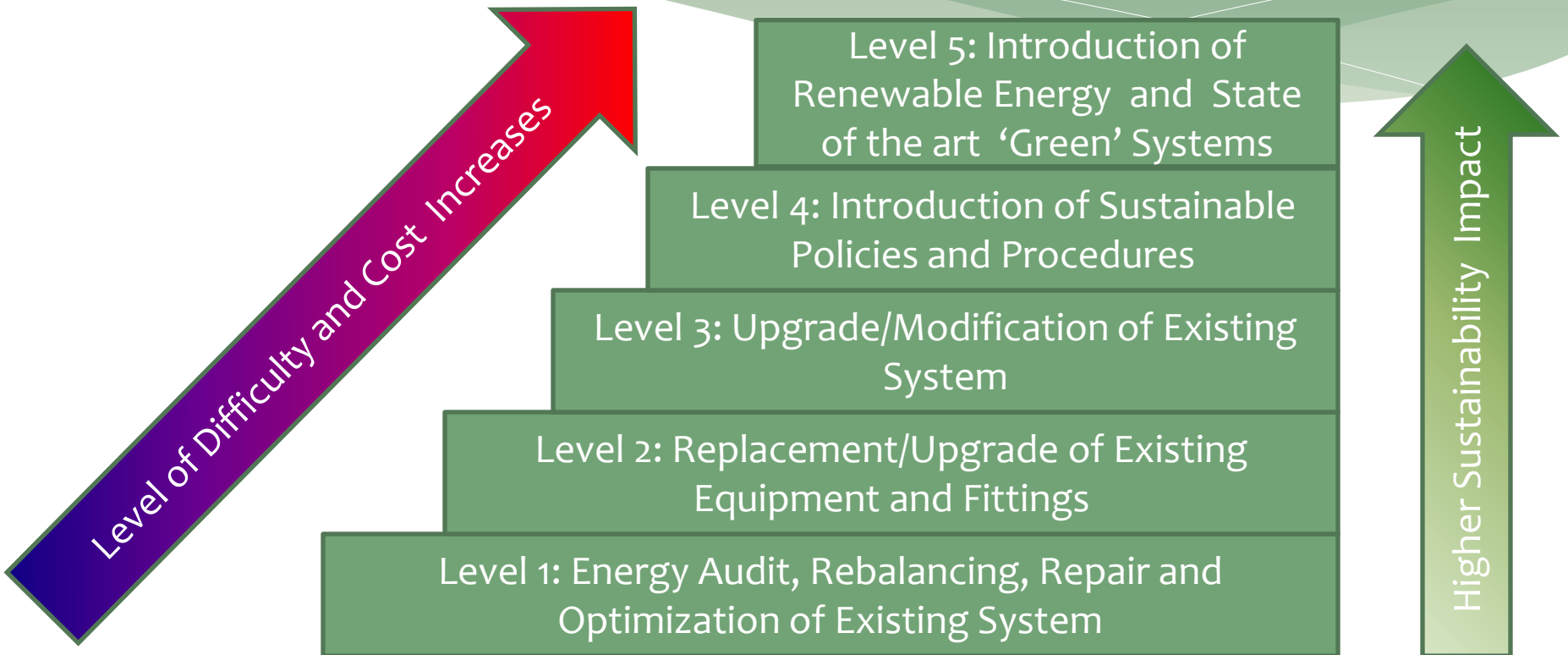
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Refurbishing and Retrofitting Balancing Act

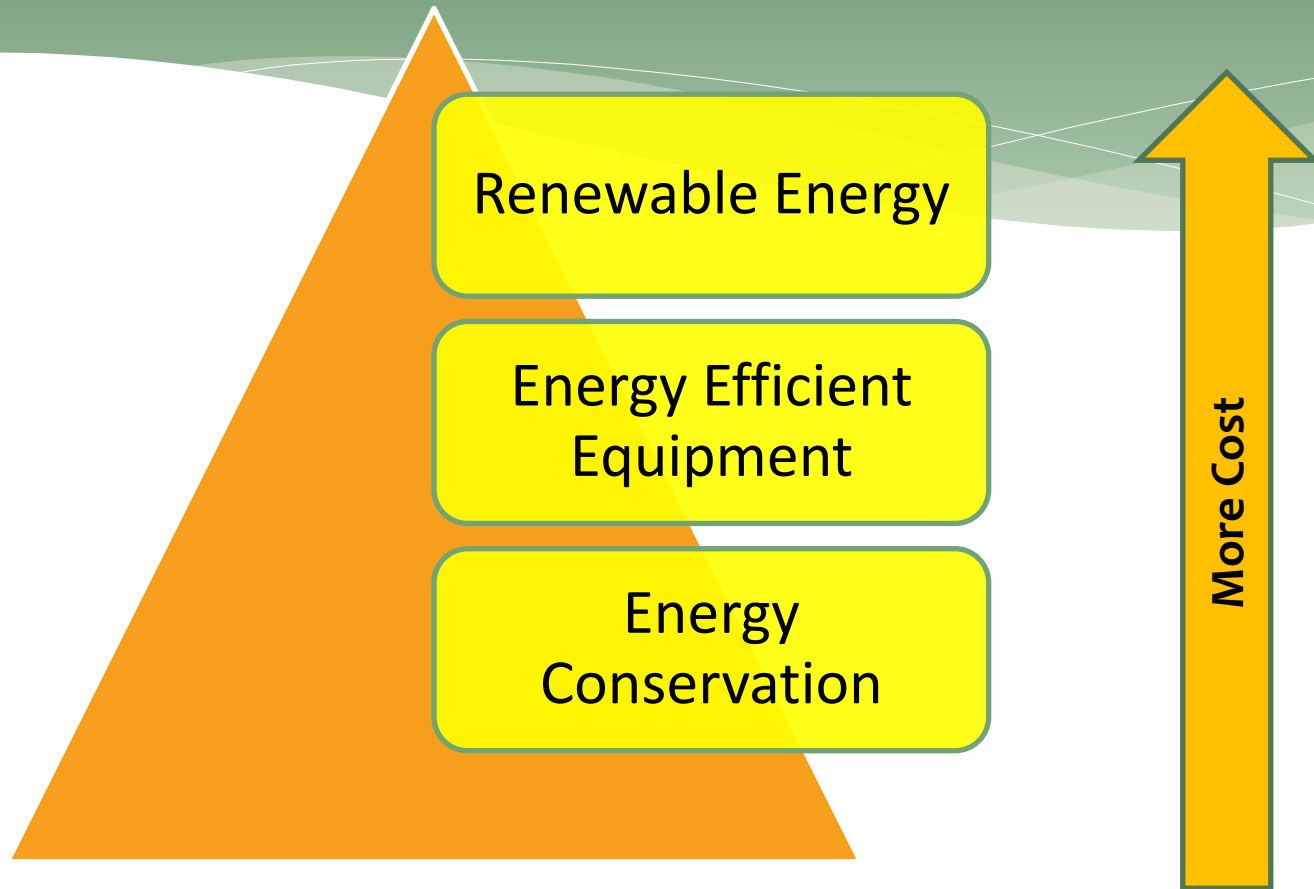


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Green Strategy Stages...



Example : The Energy Pyramid



The Composition of Cost

Capital Cost

- * Repair / Refurbish
- * Façade treatment / redesign
- * Equipment / Controls / Services upgrade
- * Reprogramming and Retro-commissioning
- * Introduction of Renewables
- * Policy Changes

Execution Cost

- * Losses Due to Disruption
- * Losses Due to Rental



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Green Cost

- * Cost from base state of building to green building
- * Includes all works including ID and landscape
- * What is the base?
 - * Compliance to Code and By Laws i.e Building By Law
 - * Compliance/Reference to Standard i.e MS 1525 : 2007



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Auditing for Base Reference

- * Establishing Base Energy Consumption and Trend
- * Establishing Use of Other Resources (i.e Water)
- * Establishing State of Indoor Environmental Quality



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The Number Game

- * Statistics are not yet available.
- * Pool of Retrofit buildings with certification and green cost will only be available within next few years
- * Retrofitting buildings prior to the implementation of UBBL :1984 is anticipated to be more costly.
- * Green Cost for retrofitting from **Base building*** is expected to follow the trend for Newly constructed building



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The Number Game

Green Building Index Rating	Average M'sian Bldg	Meets MS1525	GBI Certified	GBI Silver	GBI Gold	GBI Platinum
BEI kWh/m ² .year	250	200 - 220	150 - 180	120 - 150	100 - 120	<100
Energy Savings %	Base	10 - 20	30 - 40	40 - 50	50 - 60	> 60
Incremental construction cost %	Base	1 - 3 <i>(0 - 3)*</i>	5 - 8 <i>(1 - 5)*</i>	8 - 12 <i>(3 - 8)*</i>	12 - 15 <i>(5 - 10)*</i>	>15 <i>(6 - 13)*</i>

* Denotes revised projection in 2011



The Conclusion

- * No definitive cost guide for retrofitting and greening for various types of building
- * Require more retrofit building green cost for analysis
- * Green cost depends on the base condition / state of a building and the target to achieve



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The End



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