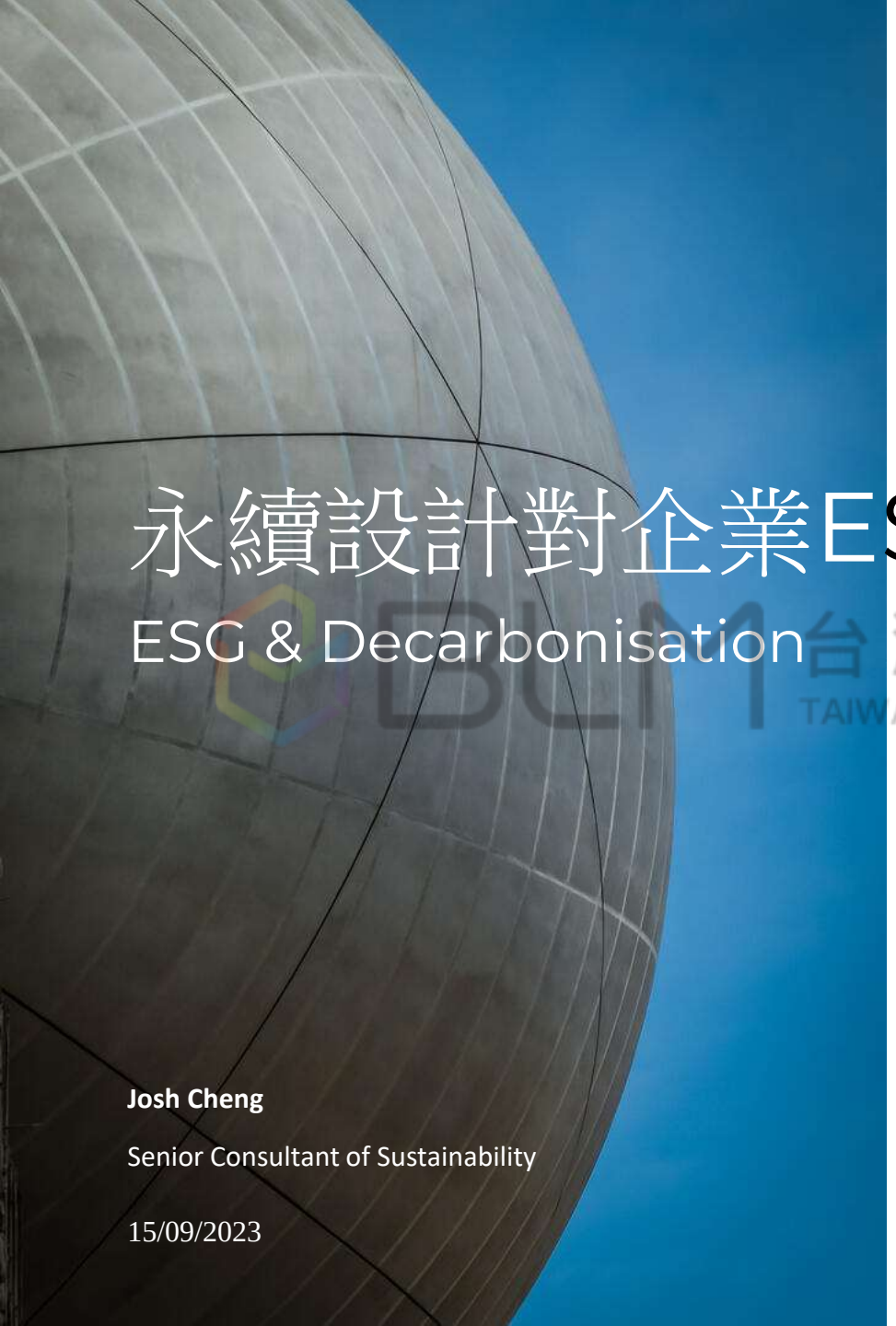
台灣人居環境全生命週期管理學會
TAIWANESE INSTITUTE OF BUILT ENVIRONMENT LIFECYCLE MANAGEMENT

2023 BLM秋季論壇

降低建築物蘊含碳排(EC)與營運碳排(OC)的挑戰

112年9月15日(五)13:00-17:00
台北矽谷國際會議中心2B國際會議廳



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永續設計對企業ESG績效指標的影響

ESG & Decarbonisation

Josh Cheng

Senior Consultant of Sustainability

15/09/2023

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Shared values

Our creative spark and intellectual independence has been there from the very beginning. These shared values, like the firm’s name, are essentially derived from the beliefs and convictions of the firm’s founder, the engineer and philosopher, *Ove Arup*.

Global

18,000+

Employees

94

Global offices

East Asia

3,400+

Employees

15

Regional offices

Taipei

40+

Employees

13

Years

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Approach to Net Zero

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ESG

Decarbonisation

Circular Economy

Modular Integrated Construction

Net Zero

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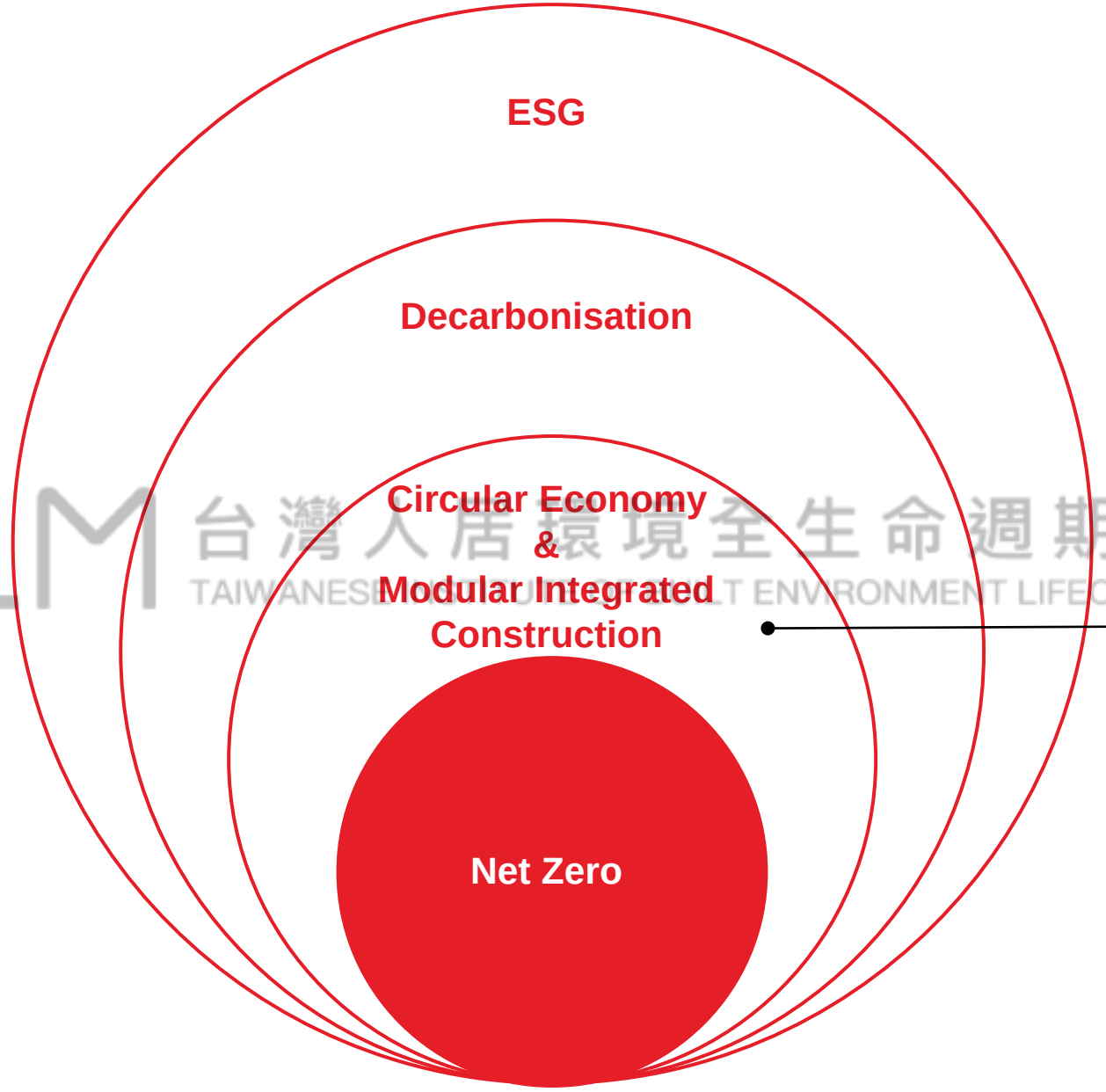

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WHY

ESG

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ESG

Why is ESG's importance growing?

- Unforeseen risks of a **Pandemic** and the **Climate Crisis**
- Decision making in an unprecedented environment

- In the US, ESG focused funds have seen more than a double jump to USD 51.1 billion from USD 21.4 billion, and a nearly **Tenfold Increase** from USD 5.4 billion in 2019. In Asia excluding Japan, managed sustainable fund assets almost **Tripled** to USD 36.7 billion in March 2021 from a year earlier

Trend

我們相信企業對ESG的重視度將會不斷提升，尤其是房地產信託基金及私募基金

JLL

釋放ESG潛力
探索ESG与企业估值的关系

ESG 已成國際趨勢。雖然 ESG 會增加硬體設備升級等支出成本，但仍有利於營業收入增加、碳稅減免、建築維護成本減少等，就長期來看對於公司發展及價值成長有正向助益

Deloitte.

ESG Real Estate Insights 2021 | Article #9
Green Leases – In the ESG context

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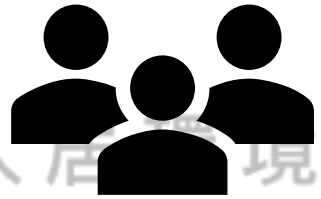
Environmental
Social
Governance

ESG

Basics



Environmental

The impact of **resource consumption** of any business on the environment

Social

Interaction of business with **communities** where it operates. It also looks at internal policies related to labour, diversity and inclusion policies, among others

Governance

Internal practices and policies that lead to **effective decision making** and **legal compliance**

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ESG

Reporting & Rating Organizations

- **Global Reporting Initiative (GRI)**
- Carbon Disclosure Project (CDP)
- Global Real Estate Sustainability Benchmarks (GRESB)
- United Nations Global Compact (UNGC)
- Sustainability Accounting Standards Board (SASB)
- International Integrated Reporting Council (IIRC)
- International Corporate Governance Network (ICGN)
- **MSCI ESG Ratings**
- Institutional Shareholder Services (ISS) ESG
- Sustainalytics
- Vigeo EIRIS
- Climate Disclosure Standards Board (CDSB)
- B Lab / B Corporation
- ...

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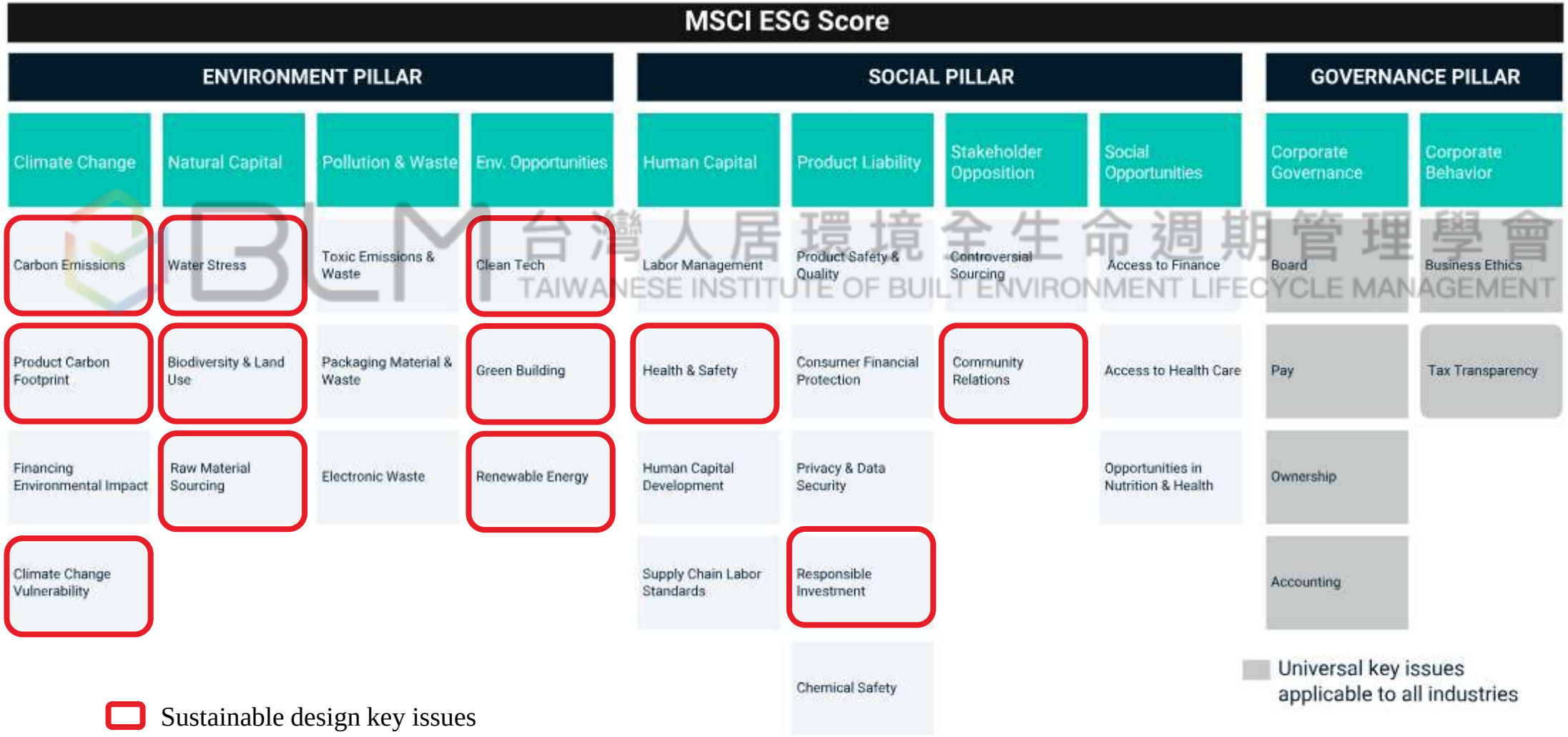
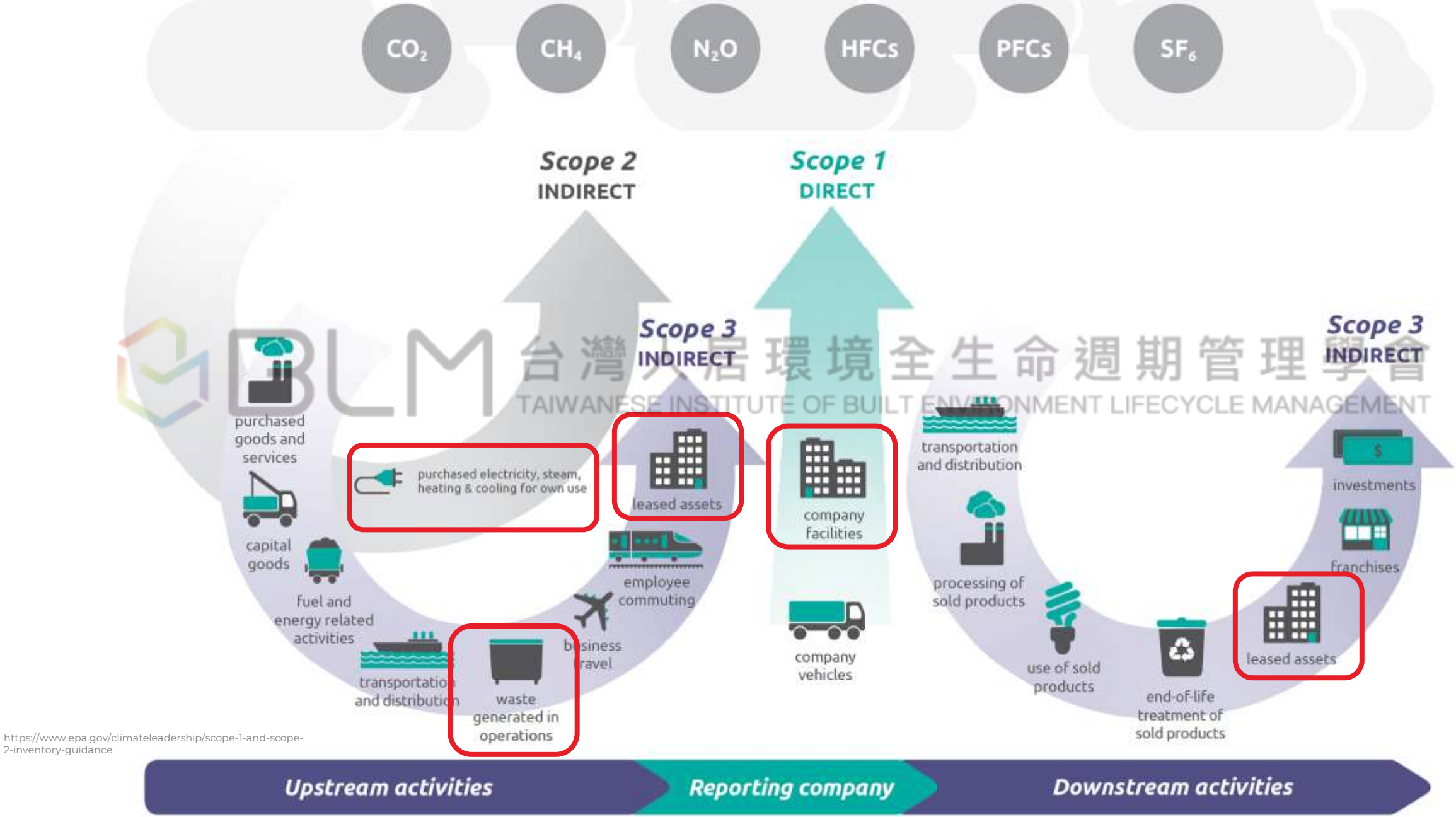
MSCI

ESG Ratings Key Issue Framework





https://www.epa.gov/climateleadership/scope-1-and-scope-2-inventory-guidance

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WHY

Decarbonisation

New High

CO2 emissions from **Buildings** and **Construction** hit **New High**, leaving sector off track to decarbonize by 2050: UN

2022 global status report for building and construction by UN Environment Programme

Below the Target

Increase in global greenhouse gas emissions **projected** by 2030, compared to 2010, based on available national action plans

Reduction in global greenhouse gas emissions **needed** by 2030, from 2010 levels, to keep warming to no more than 1.5 degrees Celsius

Source: UNFCCC NDC synthesis report (Oct 2022)

Trend

Arup commits to whole lifecycle carbon assessments for all buildings work and withdrawal from fossil fuels from next year

CARBON COMMITMENTS

We're decarbonizing our energy consumption so that by 2030, we'll operate on carbon-free energy, everywhere, 24/7.

Leading at Google →

Apple 承諾要在 2030 年對供應鏈和產品實現 100% 碳中和

Apple 全球範圍的企業碳排放目前已達成碳中和，該公司計畫比 IPCC 的目標提前 20 年要將其全部碳足跡歸零

Net-Zero Carbon by 2040

As part of Amazon's mission to be Earth's most customer-centric company, we are committed to building a sustainable business for our employees, customers, and communities. We are driving toward a net-zero carbon future where the people that support our entire value chain are treated with dignity and respect.

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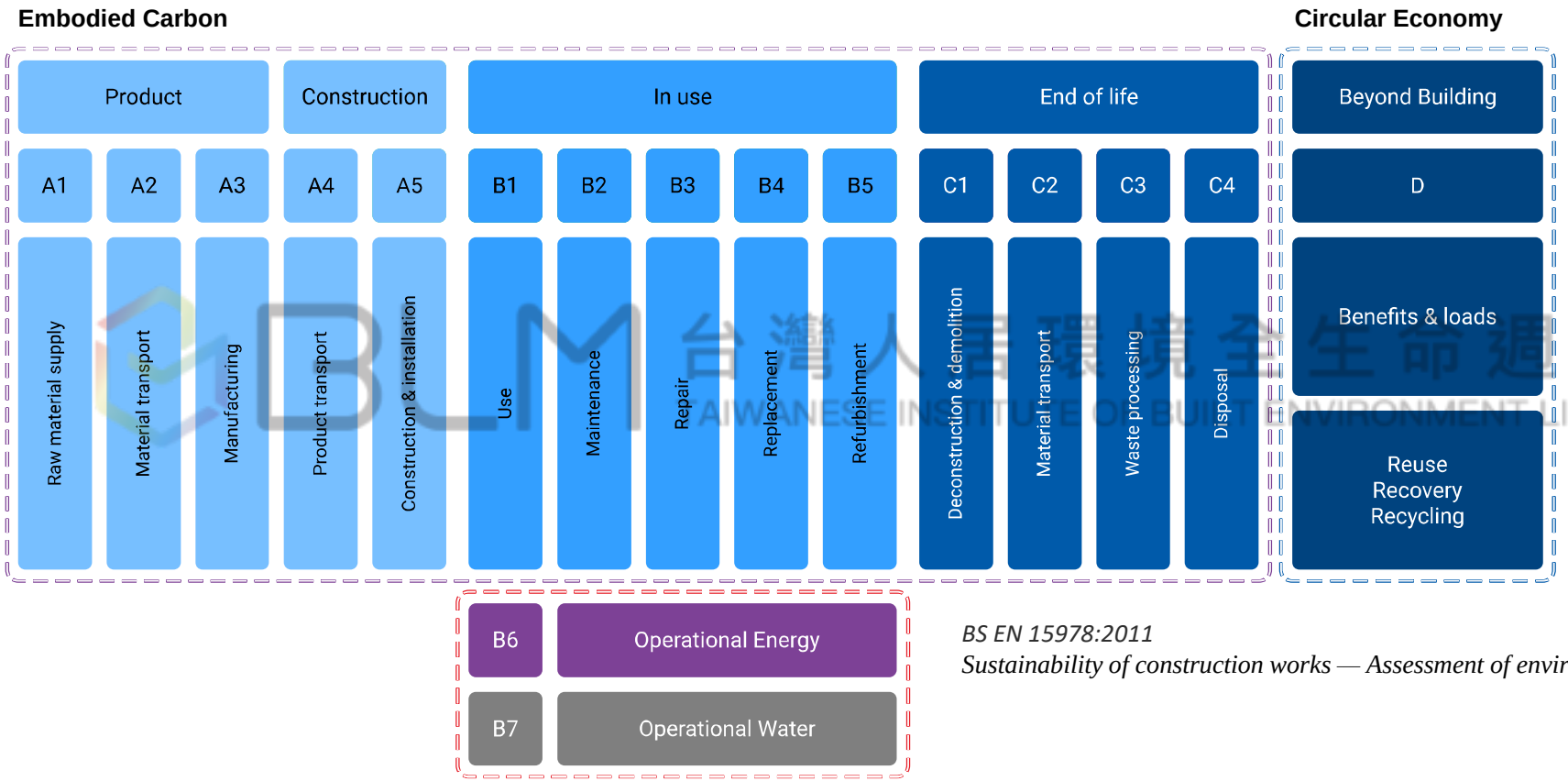
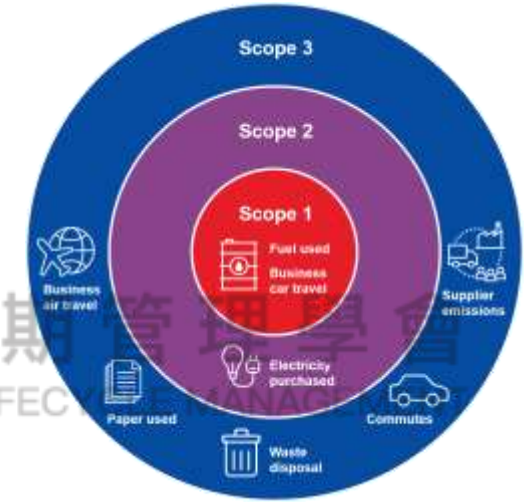
Sustainable Design & Circularity

Carbon Scope in Buildings





BS EN 15978:2011
Sustainability of construction works — Assessment of environmental performance of buildings — Calculation method

cradle to gate

cradle to practical completion

cradle to grave

cradle to cradle

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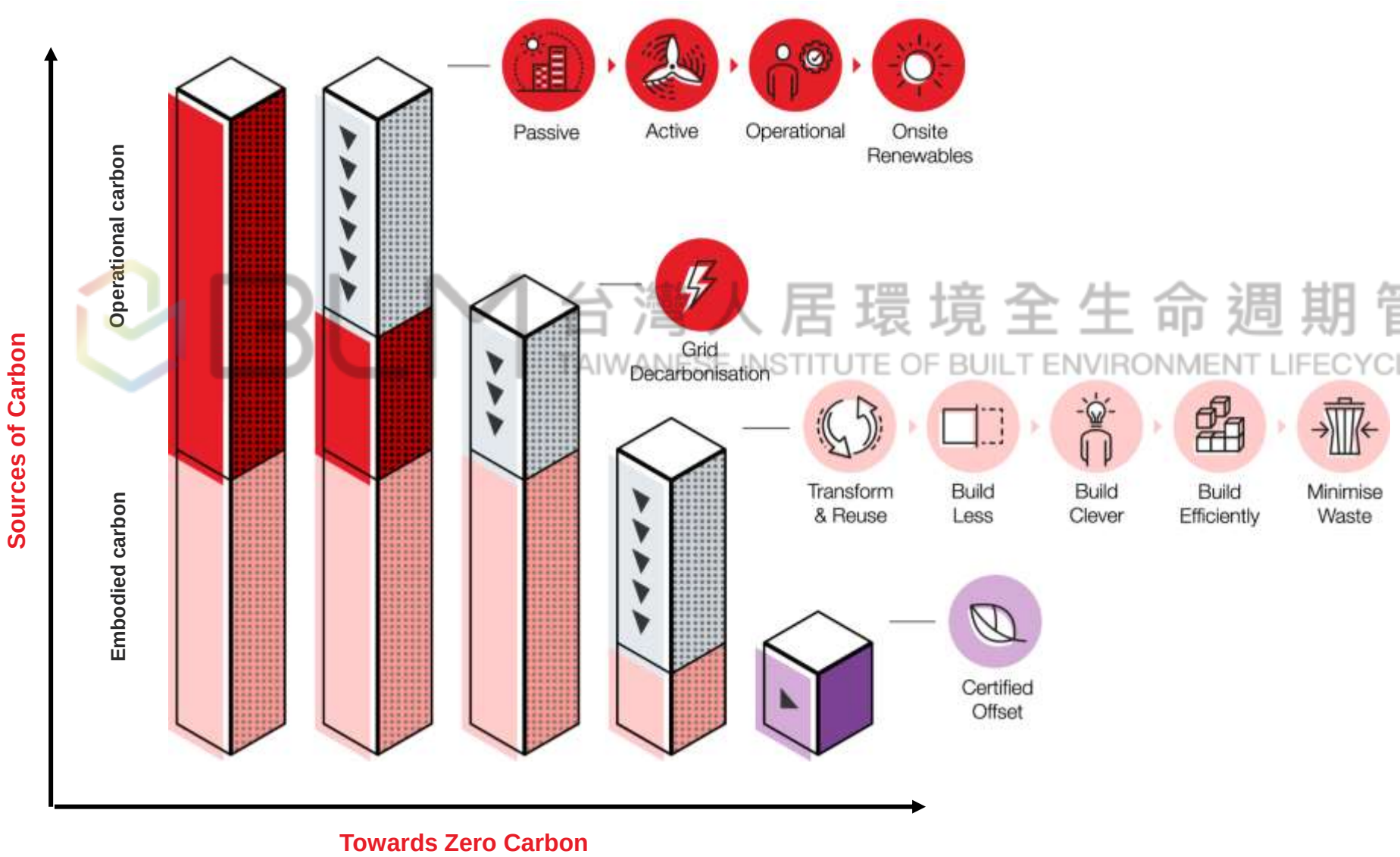
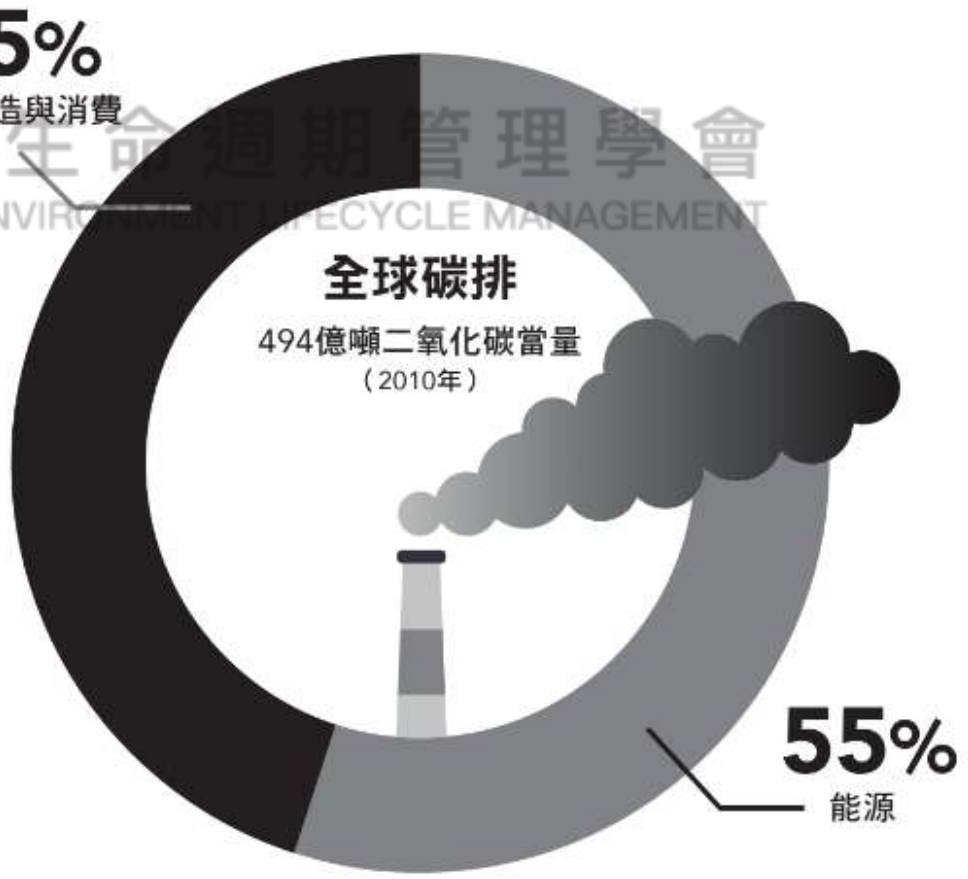
Carbon Breakdown



Missing Link in the Race to Net Zero

The transition away from fossil fuels to renewables can only account for 55% of greenhouse gas emissions, whereas the remaining **45%** is “**Embodied in Everyday Products**” from food and buildings to clothes and cars.



https://www.un.org/en/climatechange/net-zero-coalition
https://www.ft.com/partnercontent/university-of-exeter/why-circular-economy-is-the-missing-link-in-the-race-to-net-zero.html

THE US$ 4.5 TRILLION GLOBAL ECONOMIC OPPORTUNITY

Americas

US$ 240 billion

potential by value retention processes in industry (current US$ 11.7 billion)

Europe

€ 1.8 trillion

annual total benefits by 2030

China

CNY 70 trillion

savings for businesses and households by 2040

India

US$ 218 billion

additional economic value by 2030

WEF Platform for Accelerating the Circular Economy
UN Environment & International Resource Panel, 2018
Ellen MacArthur Foundation, SUN Foundation, McKinsey Center for Business and Environment, 2015
Arup & Ellen MacArthur Foundation, 2018
Ellen MacArthur Foundation & the United Nations Conference for Trade and Development, 2016

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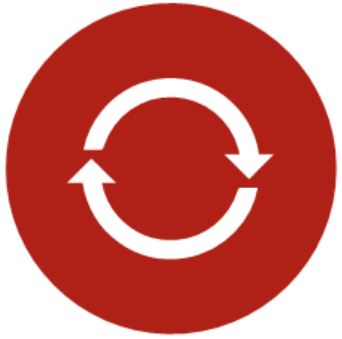
3 Principles

A circular economy favours activities that preserve value in the form of energy, labour, and materials. This means designing for **Durability**, **Reuse**, **Remanufacturing**, and **Recycling** to keep products, components, and materials circulating in the economy.

Eliminate waste and pollution



Circulate products and materials

Regenerate nature

Circular Buildings Toolkit

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Design for Disassembly

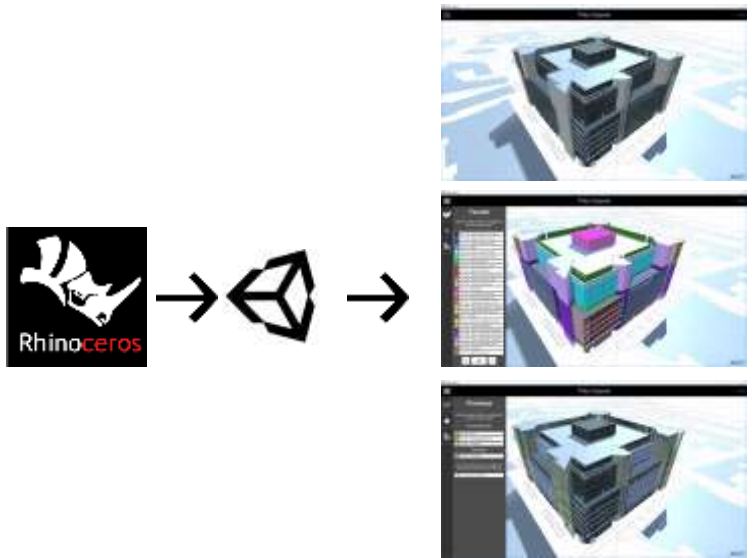
需求	價值	效率	材料
1. 避免新的建造 Refuse new construction	2. 增加建築使用率 Increase building utilisation	6. 避免非必要構件 Refuse unnecessary components	8. 減少使用原生和非再生料 Reduce the use of virgin and non-renewable materials
	3. 延壽設計 Design for Longevity	7. 增加材料效率 Increase material efficiency	9. 減少使用高排放材料 Reduce the use of carbon-intensive materials
	4. 適應性設計 Design for Adaptability		
	5. 易拆解設計 Design for Disassembly		10. 消除有毒/汙染材料 Design out hazardous/pollutant materials

影響力

新建

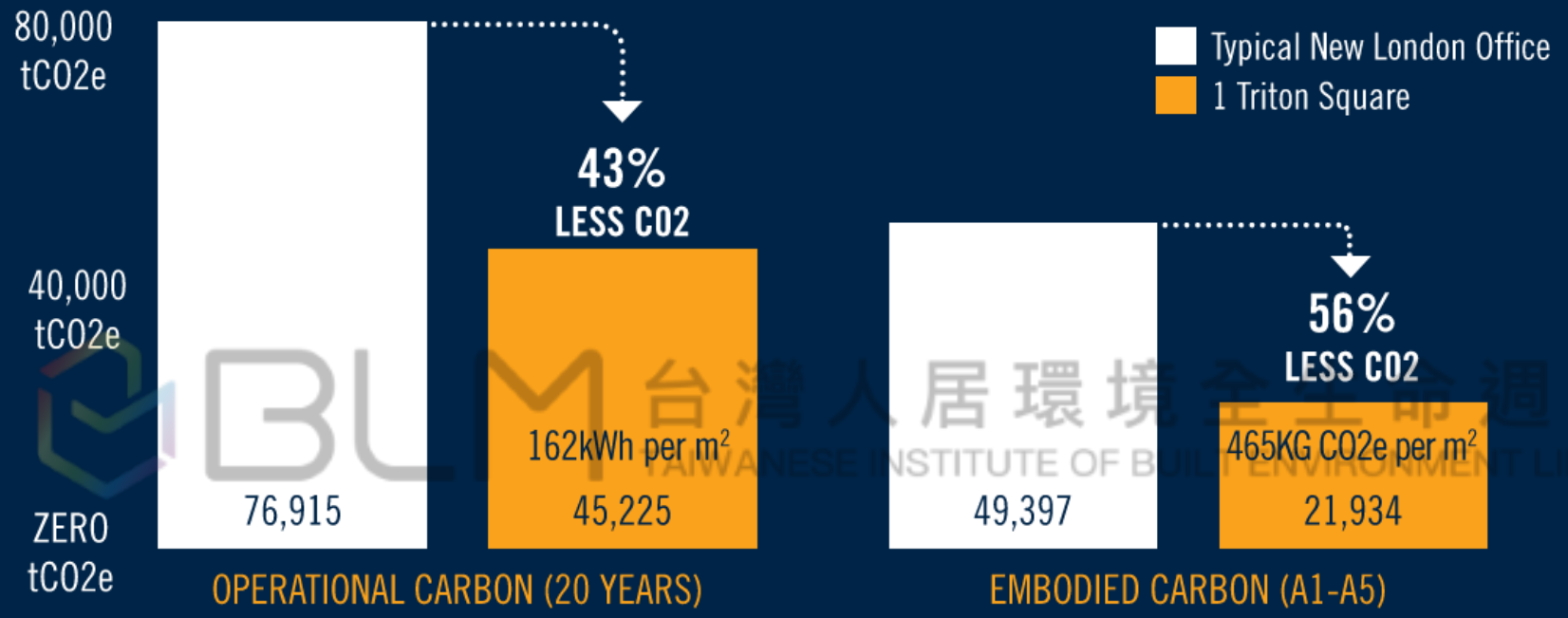
1 Triton Square

- Project includes refurbishment of existing **double skin facades** and **stone facades**, and the construction of **new facades**
- **Arup Street** was used to demonstrate the façade types, and the locations of the fire stops and cavity barriers



58,000 TONNES OF CARBON SAVED

EQUIVALENT TO THE ANNUAL ENERGY CONSUMPTION IN 14,100 HOMES



BREEAM
Outstanding
93.5%

NIA Doubled
No Extra Plant Space.
3 New Floors

Circular Economy
3000sqm Facade Removed,
Refurbished & Reinstalled

20
Biggest West End
Pre-let for 20 years
313,000 sqft net

4000
Healthy, Happy People

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1 Triton Square

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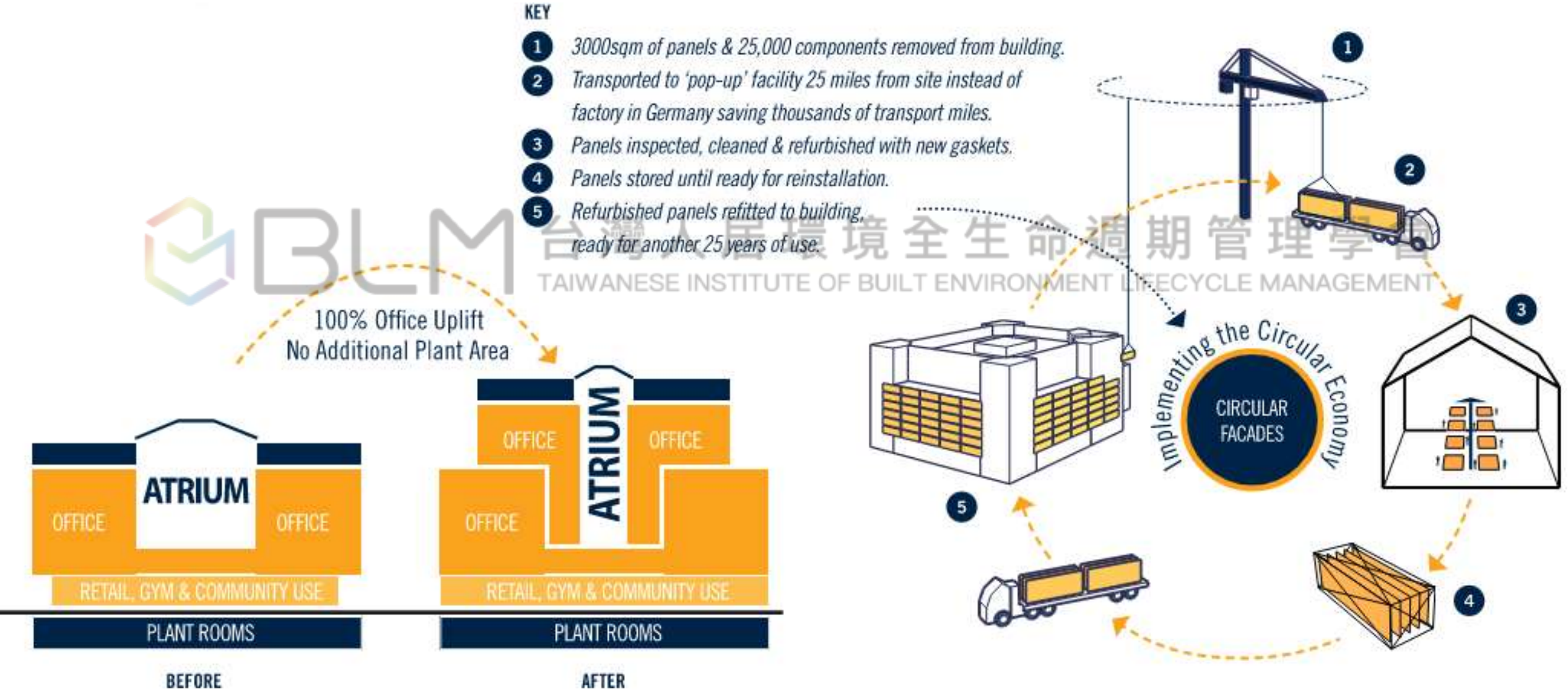

1 Triton Square

Circular Facades

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Modular Integrated Construction

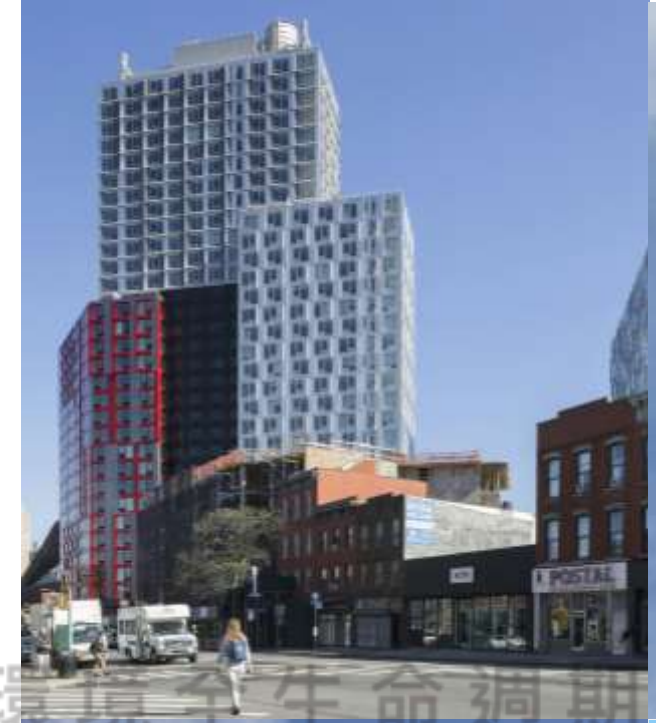
Atlantic Yards B2

32-storey

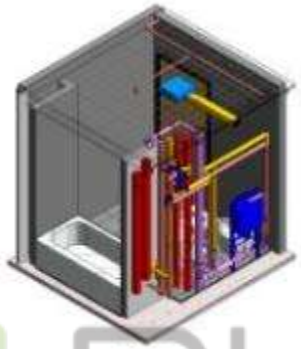
Step 1- Structural Steel

Step 2- Pod Assembly

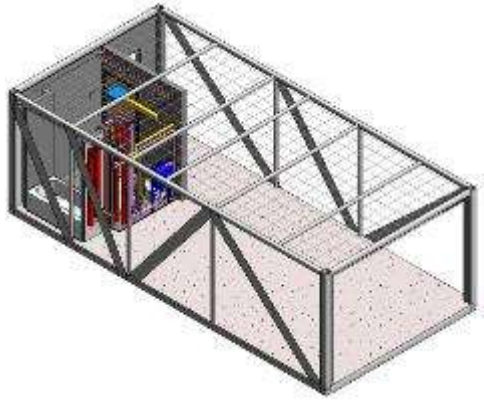
Step 3- Framing/MEP



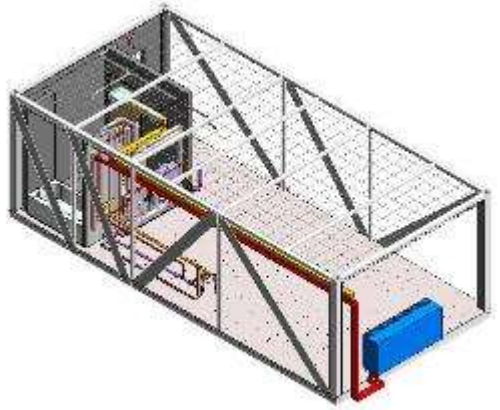
4D Production Sequencing



Phase 1. Bathroom Pod Fabrication

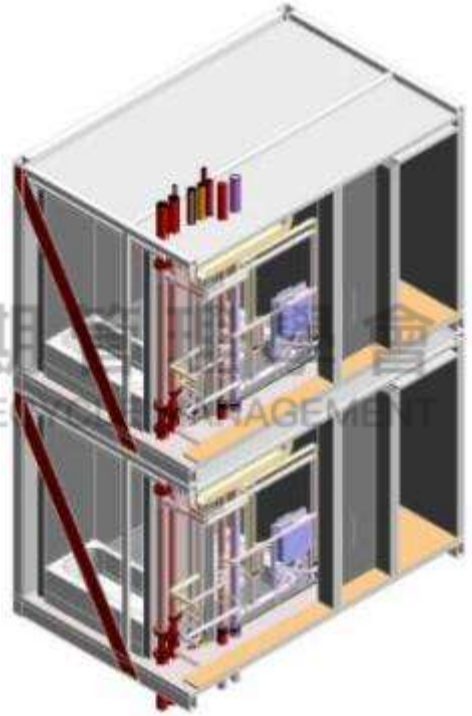


Phase 2. Factory installation of Pod into Module



Phase 3. Factory Module MEP Work

Phase 4. Module Factory Finish Work



Phase 5. Mateline Connections in Field

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