SGBC Seminar • 20 April 2023

Retrofitting the Built Environment towards Net Zero - the Decarbonisation Goldmine

Event Insights

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Claiming our stake in the Net Zero future

Nearly 200 leaders of the Singapore property industry gathered on 20 April 2023 for a dynamic seminar exploring the wealth of opportunities in transitioning to a Net Zero future not by developing new buildings, but by renewing the buildings we already know and value.

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"This transition to Net Zero will require ambitious and collective action ... where buildings are concerned, the good news is that there are low cost ways to reduce energy use and increase the performance of our buildings."

Yvonne Soh
Executive Director, Singapore Green Building Council

The ultimate treasure hunt

To meet Singapore's Net Zero emissions target by 2050, eliminating reliance on fossil fuels as an energy source is essential. However, Singapore is challenged by constraints around renewable energy generation capacity, making full electrification of all assets as they currently perform a challenge. Therefore, decarbonising the built environment requires an integrated approach that reduces energy use to as low as reasonably possible.

Speakers at this dynamic discussion highlighted the specific capabilities of three key stakeholder groups – those who develop, own and manage buildings; those who design them and support the operational phase; and the policy-makers and thought leaders who continue to light the path ahead.

Even though our speakers came from different perspectives, the common motherlode of insight was the value of non-competitive collaboration. As an industry, there is a wealth of knowledge and enthusiasm for inventive approaches to the decarbonisation challenge that can be brought together to achieve the step-change we need to reach Net Zero.

Our speakers also explained the major payoffs property owners, building occupants and the wider society gains when energy efficiency becomes the priority. Not only do operational costs go down, but the occupants also enjoy healthier, smarter, and more efficient spaces. And the wider society benefits from reducing the emissions driving climate change.

Speakers:

Joy Gai
Asia Pacific Programmes Head, World Green Building Council

Ted Howland
Vice President, Group Sustainability, CapitaLand Investment

Oliver Grimaldi
Associate Director, Cundall

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Yvonne Soh
Executive Director,
Singapore Green Building Council

"The bottom line is... we have a significant role to play in achieving Singapore's Net Zero goal. It will require the collective action and collaboration from all players in the built environment, as well as the tenants and occupants in our buildings."

Whilst retrofitting may seem a significant challenge, it is also a major opportunity.

- Refurbishments and improved energy efficiency will result in long term cost savings for occupiers. · Early movers on energy efficiency gain an advantage as landlords, owners and investors.
- Energy costs for electricity are expected to continue to trend upwards, so the business case for energy efficiency is becoming even more appealing.
- Singapore's Building Control Act has required building owners to submit building energy consumption data to the BCA since 2013 – this mandatory reporting applies to commercial offices, hotels, retail buildings, health care facilities, education institutions, civic, community and cultural institutions, sports and recreation centres and mixed-use developments. The BCA also publishes an annual report on building energy benchmarking, which will be complemented by the new Mandatory Energy Improvement regime coming into effect in 2024.
- Energy use intensity has generally been trending downward – which shows we are already heading in the right direction.

"The opportunity is closing... we know that we are indeed losing the climate battle. But there is some positive news that we can hear because at least we are able to progress."

– Joy Gai on the IPCC 6th Synthesis Report

"We can't stress enough that we need to work together. We need to hold hands, we need to collaborate."

Towards a Sustainable & Decarbonised Asia Pacific

- In the built environment, we need to move the needle – and we have enormous potential to do so, as the built environment represents 37% of the global emission relating to energy and 50% of the material consumption.
- The weather in Singapore is already showing us what climate change means and feels like.
- We can't just turn off the air conditioning to fix it.
- Some of us in the room already believe total decarbonisation by 2050 is indeed possible.
- There are challenges we need to address including data transparency, clear policy pathways and how to address existing buildings.
- Urbanisation consumes significant resources – and every week the global property industry is building new buildings that collectively occupy as much space as the City of Paris.
- While Singapore only contributes 0.11% of global carbon emissions – there is an opportunity to demonstrate world leadership in showing how a resource-constrained nation can use human ingenuity, collaboration and determination to achieve an impact by example.
- The APAC Net Zero framework being developed by WGBC shows existing building decarbonisation can be the result of multiple drivers: government leadership, technical solutions and approaches, finance data and ultimately, mindset.

"There's no silver bullet. There's no one single technology that will do absolutely everything for us. So, we shouldn't focus on that. We should be focusing on individual small steps. Whichever ones we can."

- Ted Howland

"We believe in innovation and collaboration - particularly through our CapitaLand Sustainability X Challenge - to find the means to address the climate change crisis."

Moving the Needle on Net Zero Building Retrofits

- 60% to 80% of the buildings that exist now will be around in 2050, so you can't simply focus on new construction and new opportunities - we must deal with the buildings we currently have.
- Currently the industry is retrofitting around 1% of buildings globally a year – this is not enough.
- So many people focus only on the challenges and obstacles – not the benefits and opportunities.
- Retrofitting existing buildings and existing structures is generally cheaper and faster than trying to build something brand new or tear down something existing, then rebuild something new.
- Retrofits means re-using existing embodied carbon and gaining lower operational energy costs – but it does require extensive collaboration and effort.
- An essential step is to establish a credible ESG strategy – not a check-box exercise but a flexible approach that identifies the decarbonisation hierarchy, is appropriate for the local context and considers the asset lifecycle.
- Experiment with multiple solutions and encourage innovation and the trialling of new technologies that can be retrofitted to existing buildings – they are emerging all over the world, and ready to be discovered.
- Build strong partnerships with like-minded companies throughout the value chain – because unless we ALL meet our sustainability targets, we do not achieve the collective Net Zero.

"With ... lack of retrofit and improvements to buildings, property value actually can decrease - and that's what's called a Browning of the asset. But when you start seeing money going into (improving) the building, you can actually make that money back, you can start applying for green bonds and you can actually start increasing the value."

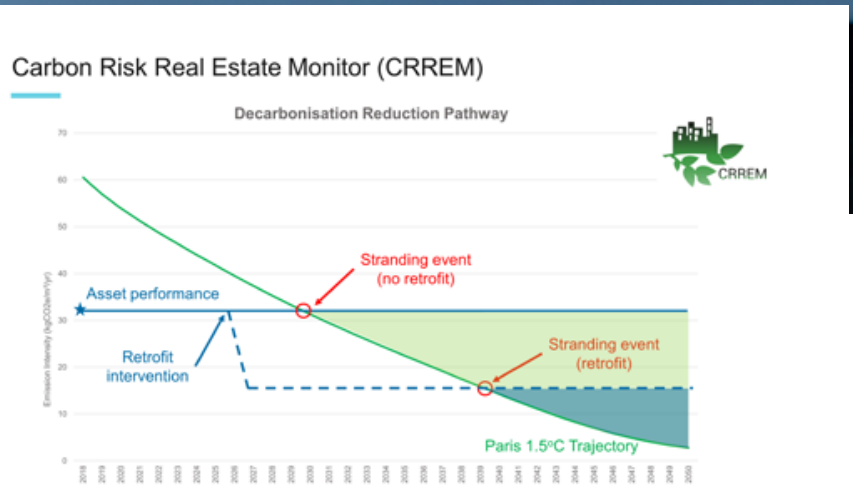
- Oliver Grimaldi

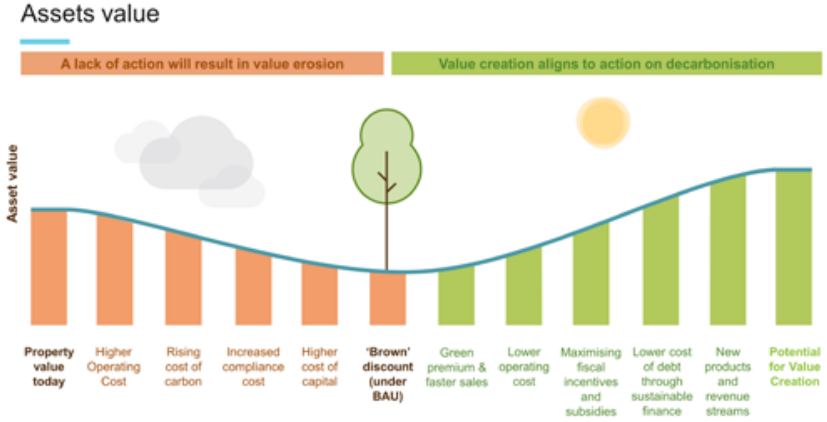
"Each small step – that's the goldmine."

Retrofitting Asia Pacific's Built Environment towards Net Zero

There are key steps to achieving Net Zero for an existing building:

- Audit the energy performance – get a clear picture of where energy is being used in the building, and identify where efficiency gains can be made - building services improvement, improving the fabric, improving how people use the building.
- Eliminating on-site gas combustion – planning for retrofits of all-electric equipment to replace any plant that currently relies on gas such as boilers or catering equipment.
- Install renewables on-site or procure renewable energy from off-site.
- Reduce new embodied carbon – existing buildings strike gold in this respect as they retain as much embodied carbon as possible through smart retrofits as an alternative to knock-down-rebuild.
- Offset any remaining operational emissions.





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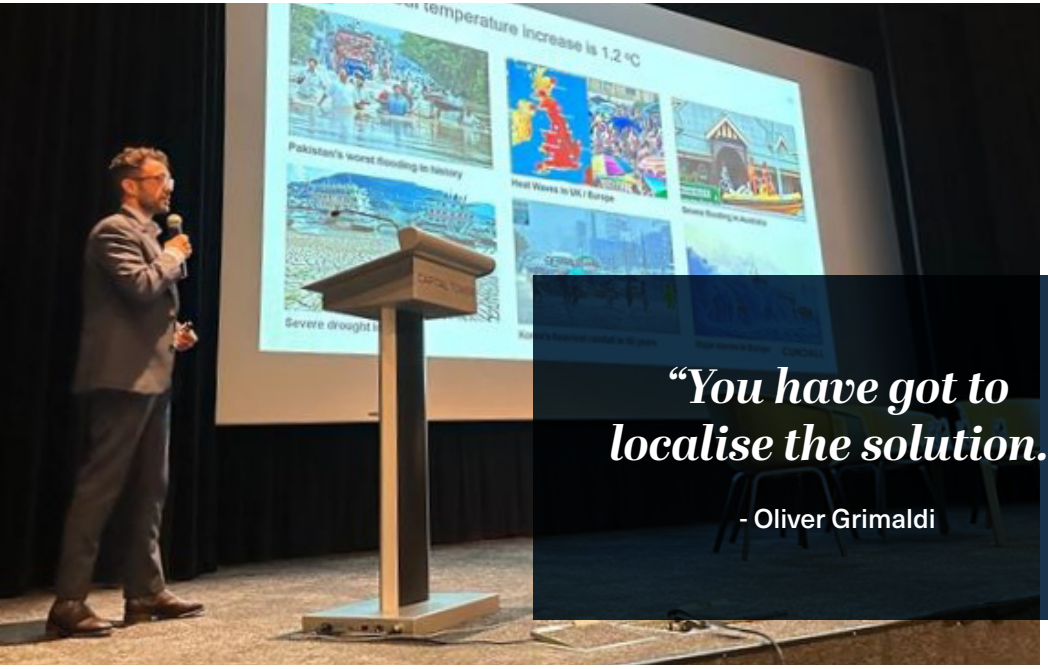
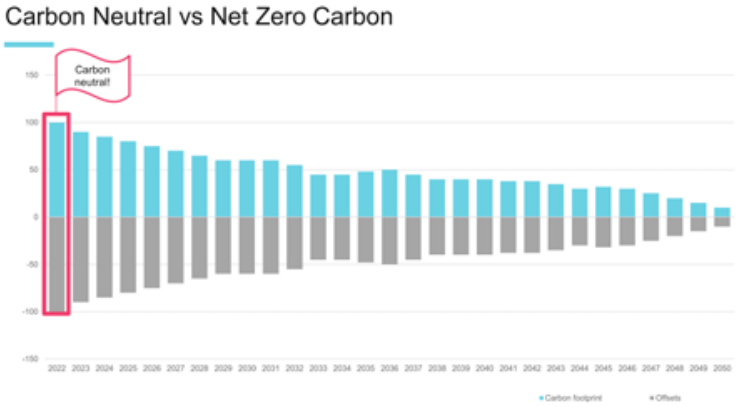
Making your map

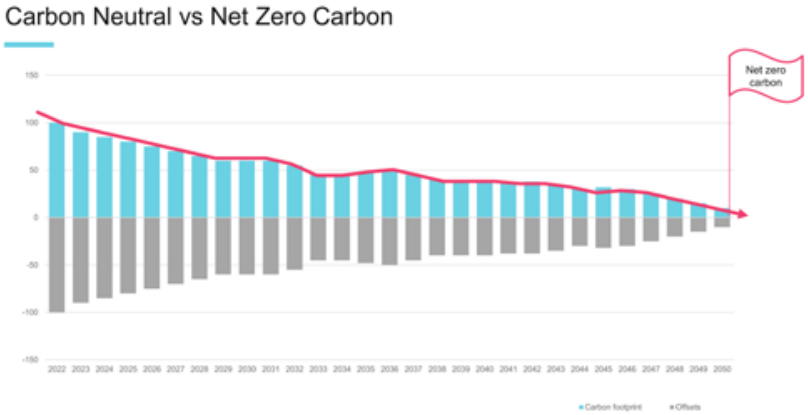
- There is a difference between carbon neutral and Net Zero: carbon neutral simply means offsetting all emissions; Net Zero means reducing/eliminating emissions to as low as possible and then offsetting whatever emissions could not be eliminated.
- Retrofits can be as drastic as a whole façade replacement, or a relatively straightforward intervention such as LED lighting and lighting control – this is a huge energy efficiency measure, and one of those small gold nuggets people ignore too often.
- Other opportunities include chiller replacement, lift upgrades and working with occupants to fine-tune how they use the building.
- Singapore has limited opportunities for large-scale PV, wind power, tidal or geothermal – there are opportunities for building integrated photovoltaics and entering into agreements for offshore generated renewable energy.
- Energy efficiency has an extremely rapid pay-back period – which can help fund further improvements as part of a multi-year pathway to optimise efficiency and strike the Net Zero jackpot.

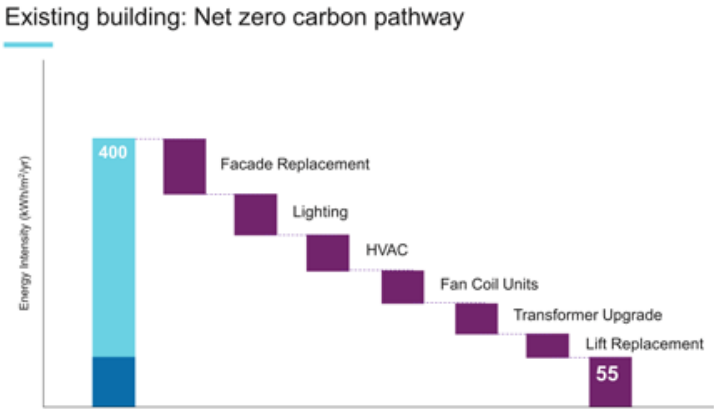


"You have got to localise the solution."

- Oliver Grimaldi







How do we strike gold?

- We need time. We need the money, and it requires a very multi-disciplinary approach.
- There are two drivers to consider - one is increasing regulations and the other is market expectations.
- A building can be beautiful but utterly non-functional – we need to be looking underneath at the technology and building systems and engaging the subject matter experts to find the real gold in that building.
- When managing existing buildings, engaging tenants is crucial. Not only do they pay considerable rents, their emissions are the landlord's scope 3 emissions – and the landlord-controlled energy emissions contribute to the tenant emissions footprint also. Working in partnership with tenants on the sustainability journey means everyone gets to reap the benefits.
- Localisation is one thing, but knowledge sharing is the biggest thing – we can learn from each other.

Should we be optimistic?

"I'm optimistic that we can achieve Net Zero by 2050 - we have the technical capabilities, we have the resources, we have the knowledge - do we have the willpower and discipline to do it?" - Ted

"When the wind is strong, even the people will fly." - Joy

"It gives me a bit of hope for the future that the next generation - the younger generation - is already by default fairly passionate about this, which will hopefully apply pressure to their seniors to clean up their act." - Oliver

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