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GLOBAL CONFERENCE 2026

FROM CHAOS TO COMMAND: RISK LEADERSHIP IN INDUSTRY 6.0

TRANSITIONING TO AN AI WORLD – WHAT'S THE REAL IMPACT ON SUSTAINABILITY?

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Who We Are

We believe that a **catalyst** is needed for organisations to pursue a low-carbon and climate-ready pathway within planetary limits

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Climant Impact was formed to address this need – to support organisations on their climate journey

We are a **strategic advisory firm** based in the APAC region, with extensive global delivery expertise for clients with complex portfolios

Our founding members originate from a **leading sustainability consulting firm** serving the APAC region*, owned by a global energy transition utility

We are a diverse team of **strategic, commercial, and technical experts** across climate and clean energy topics

- * ENGIE Impact, which is no longer operational in APAC after over 5 years of global delivery, is a subsidiary under parent company ENGIE

Session Highlights

01

The Acceleration of AI and Data Centre Capacity

AI adoption turns compute growth into a resource risk that directly impacts the environment and communities it operates in but also potentially an opportunity to capitalize on

02

Impact on Environment and Communities

The impact by AI infrastructure (i.e. DCs) can be measured and governed across a holistic set of parameters which include: Energy, Water, Carbon and others including land-use and communities

03

Expectations for Sustainable DC Performance

Expectations from standards are converging, with governments increasingly expecting new DC development to showcase how their project strengthens the systems it draws from in a sustainable manner

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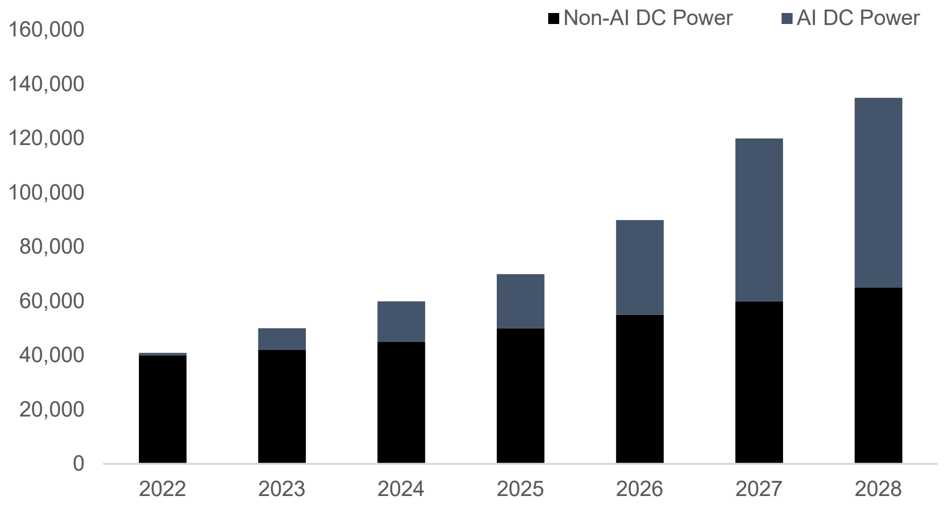
The Acceleration of AI and Data Centre Capacity

Increased AI adoption requires corresponding AI infrastructure, Data Centre (DC) demand is expected to double to meet such demands and in tandem raise trust, labour and resource concerns

Increased **AI adoption** has surged DC demand – **Global DC Capacity is expected to double by 2028, with more than half of all new capacity dedicated to AI infrastructure…**[1]

Global Data Center Power (MW)[1]



… of which the culmination of AI usage and infrastructure has led to emerging **societal**, **workplace** and **environmental** challenges

Breakdown of Social Trust From AI Abuse

- **Informational harm:** synthetic media, misinformation and AI-enabled fraud undermine confidence in what people see and hear
- **Accountability gap:** opaque model behaviour and unclear data use weaken trust in the institutions deploying AI

Job Displacement Concerns

- **Task substitution**: automation of routine work shifts the mix of roles and skills demanded across sectors
- **Transition burden:** reskilling impacts unevenly across markets and workforce segments

Resource Impact on Environment and Communities – *Focus*

- **Physical footprint:** AI infrastructure consumes energy, water, and impacts the communities it operates in that compounds with AI growth
- **Local externalities:** grid constraints, water stress and community impacts are exacerberated where capacity is built

Notes: 1. Semianalysis

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Resource Impact on Environment and Communities

The resource impact on environment and communities by DCs covers various dimensions, most notably on Energy, Water, Carbon amongst other local externalities such as land-use and communities

Energy: DC growth **strains power supply**; new solutions and clean energy needed **to reduce strain, costs and emissions**

Grid: New DC load is faster than networks can be built, requiring operators to **co-fund upgrades and add capacity beyond their own needs**

Water: DC water consumption may **double by 2030[1],** driving need for innovative cooling and on-site water recycling

Carbon: DCs can materially increase emissions which can disrupt is a **budgeted resource** under Nationally Determined Contributions; carbon markets required to offset residual emissions beyond renewable energy

Land: DC expansion **competes with industrial and residential uses for scarce land,** requiring efficient design to maximise output per hectare

Communities: Physical infrastructure inevitably impacts the communities around it; **employment and resource competition** shape whether new capacity is welcomed or resisted, requiring **long-term partnerships** rather than one-off consultation

Legend Energy Water Carbon Others

Resource Impact – Energy

AI-driven demand can outpace grid build cycles which needs to be carefully managed; as anchor buyers of firm renewable energy (RE), DCs can fund additional capacity and deployment of emerging low-carbon technologies

	Risks	How it needs to be managed and potential opportunities
Energy & Emissions	• Competition for **limited firm capacity can lift power and utility costs** for households, industry and other commercial users • **Absolute emissions can rise** even as efficiency improves if DCs are **not powered by renewables**	• **Support Clean Energy Investment:** *Deliberate trade-off between brown and green power; DCs need to fund new clean supply rather than draw on existing or just solely building brown supply* • **Assess Capacity Requirements Upfront:** *DC operators need to plan with utilities, regulators and policymakers on capacity requirements* • **Manage Expectations with Customers:** *Agree requirements, including energy pathways and cost allocation up front to bring certainty* • **Pilot Emerging Technologies:** *Accelerates emerging low-carbon energy solutions at scale such as green hydrogen, biomethane, fuel-cells*
Grid & System Stability	• **AI infrastructure can outpace grid build cycles**, creating connection queues and local constraints	• **Invest on Systems Including Connection:** *Need to find ways to co-develop (including financing allocation) the network upgrades DC sites require, with added capacity strengthening supply for other users* • **DCs Become a Flexible Load:** *DCs can be used as demand flexibility and behind-the-meter solutions (e.g., on-site power generation, energy storage) to lower peak draw and support stability*

Legend: *Mitigation* | *Ecosystem Enablement*

Resource Impact – Water

Cooling can put data centres in direct competition for water in the communities they operate in; a reduce, replace and replenish framework helps ensure new DCs can grow without deepening local water scarcity

Risks	How it needs to be managed and potential opportunities

Water

- **AI workloads** are pushing more sites toward **water-based cooling** due to increased cooling demands, raising demand for water in the communities around them
- **Lowering water-usage can come at the cost of less efficient cooling** methods (e.g., air cooling), resulting in a **water-energy trade-off**
- **Reliance on potable supply** competes with municipal needs in water-stressed markets

Design DC Cooling Technology based on Operating Context: *Choose air, hybrid or liquid cooling based on the local water-energy trade-off, i.e. based on water stress levels*

Reduce Water Consumption: *Lower consumption through efficient design, higher operating temperatures and closed-loop systems*

Replace Potable Sourcing: *Operators can work with utilities, and regulators to support infrastructure development that benefits both the facility and the local water system*

Replenish Local Water Systems: *Support catchment projects that benefit communities, going beyond minimising their own footprint*

Legend: *Mitigation* | *Ecosystem Enablement*

Resource Impact – Carbon and Others (Land, Community)

Emissions (especially embodied), land, community tend to be set early in a project's life; siting, local reinvestment and supplier choices can decide whether DC contributes back to the markets they operate in

	Risks	How it needs to be managed and opps.
Carbon (especially embodied)	• **Emissions come primarily from energy consumption** *(addressed in Energy topic)* • **Upfront emissions for AI infrastructure are fixed at design and procurement** - once built, they cannot be improved away through efficient operations	**Develop a Low-Carbon Supply Chain:** *Establish understanding of emissions impacts (current and projected); work with suppliers to invest and procure low-carbon materials and equipment, from cement and steel to servers and cabling*
Land	• DCs can **compete with industrial, residential land uses**	**Design for Best-in-class Efficiency:** *Ensure new DCs are designed to utilise water, energy, and land efficiently – Case study in **next slide***
Communities	• **Visible resource use**, can erode local support and delay approvals • Data centres may **create fewer permanent local jobs** than their capital footprint implies, raising **"what do we get from it"** scrutiny	**Reinvest Locally:** *Understand and manage community impacts so there are can be correctly directed skills, jobs and community projects into the neighbourhoods hosting the site*

Legend: *Mitigation* *Ecosystem Enablement*

Resource Impact – Land: Case Study

New DCs can be significantly more efficient than older DCs; by consolidating 5 legacy data centres[1] into a single facility, Singtel (Singapore) has managed to greatly reduce energy and land intensity

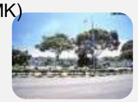
Legacy facilities can lock up scarce land at low output - *Land is a contested resource; every hectare taken for a data centre competes with other uses*

5 small Legacy DCs (combined ~15MW) Singapore closed…


NCS Hub (AMK)


Comcentre 3


Kim Chuan 1


Bedok DC


Telepark DC

Portfolio Design PUE[1]: >2
Total land area:>10.5Ha

Newer next-generation DCs feature superior efficiency - *purposefully built to support artificial intelligence (AI) inference workloads, a capability older facilities lack*

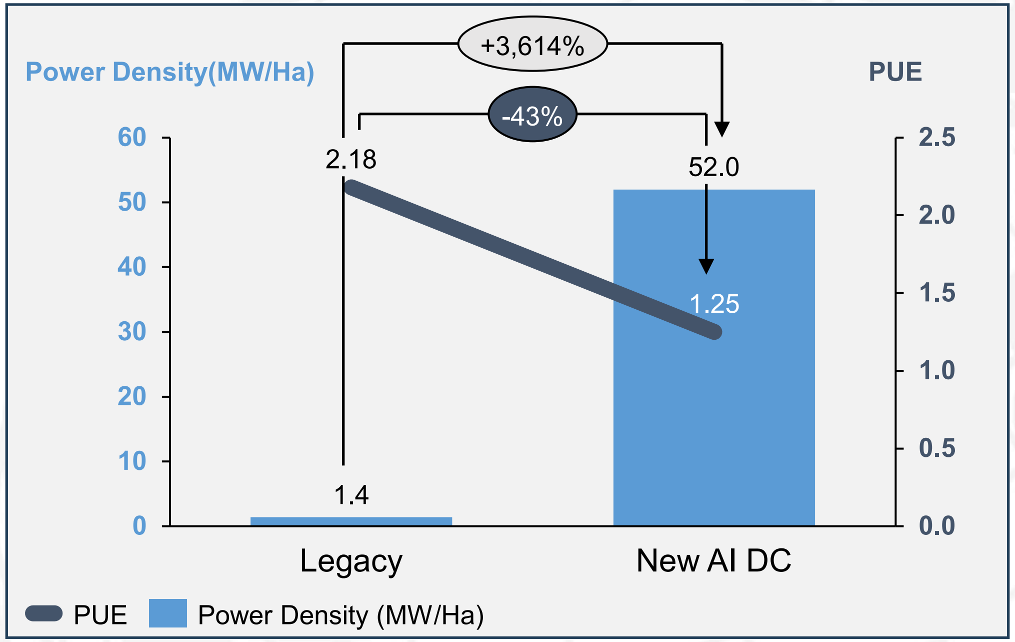
…and integrated into a higher capacity (58MW) occupying a smaller land footprint with significant energy efficiency gains


DC Tuas

Portfolio Design PUE[2]: 1.25
Total land area: 1.1Ha

Singtel Case Study: Power Density and PUE[1] improvements

Significant improvement in energy intensity ***(43%)*** **and power density** *(+3614%)* to better optimise for Singapore's scare land space[3]



1. Data Center Dynamics; 2. Power Usage Effectiveness; 3. Climant Impact analysis

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Energy | Water | Carbon | Others

DC Sustainability Expectations: Standards – Energy, Water & Carbon

The sector has started setting expectations across Energy, Water, Carbon and other environmental indicators, with most standards converging on firm requirements on RE adoption and Water Usage Efficiency (WUE)

Metrics featured by standards evaluating DC sustainability performance *(non-exhaustive)*

	Energy	Water		Carbon		Others
	RE %	WUE	% non-potable water	Scope 1-2-3	Embodied Carbon	Land, Community, Nature & Waste
SG GMDC[1]	Points for on-site RE	≤ 2.0 m³/MWh		Points for tracking	Points for low-carbon materials	*Not an explicit focus area by standards*
MY GBI[2]	Points for >90% RE	Max-min: ≤ 1.45 - ≤ 2.4	> 10% recycled	No explicit target	Declaration requirement	
JP METI[3]	Non-fossil energy plan			Non-fossil plan (subset S1&2)		
CNDCP[4]	100% RE by 2030	0.4 L/kWh high stress	Factored in WUE calc			
SDIA[5]	100% RE by 2030	1.8–2.0 new & existing			Life-cycle assessment required for new builds	
ASEAN[6]		≤ 2.0 (Green) ≤ 2.3 (Amber)				
AU Taxonomy [7]	100% RE required to qualify			S1+2 intensity; Net Zero 2050		

Legend: Target/Requirement set by the standard | No explicit target/requirement set

Metric	Market Expectations
RE%	***Most standards set RE minimums***; *typically expecting 100% RE utilisation by 2030*
WUE[8]	***Most standards converge on WUE ≤2.0,*** *with some adjusting requirements based on local water stress context*
Non-potable water	***Few set requirements,*** *focused on disclosure rather than firm targets*
Scope 1,2,3	***Few set requirements,*** *focused on disclosure rather than firm Net-zero targets*
Embodied Carbon	***Some standards cover embodied carbon*** *but are oriented towards disclosure rather than firm targets*
Others (Land, Community, Nature & Waste)	***Not highlighted by standards*** *- but is increasingly emphasized by local regulators/governments – deep dive in next slide*

1. Singapore Green Mark Data Centre; 2. Malaysia Green Building Index; 3. Japan Agency for Natural Resources and Energy; 4. Climate Neutral Data Center Pact 5. Sustainable Digital Infrastructure Accord; 6. Singapore-Asia Taxonomy for Sustainable Finance; 7. Australian Sustainable Finance Taxonomy; 8. Water Usage Efficiency

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DC Sustainability Expectations: Governments

Likewise, governments are converging on the same expectations that standards set - resource efficiency and transition support; but are also stressing economic and community value to the markets DCs operate in

Australia	Malaysia	Singapore

• Set through **national expectations and priorities**
 	
• Released formal expectations[1] for DCs
 	
• DCs prioritised for approval based on:
  • Sustainable resource usage[2]
  • Support for energy transition[3]
  • Investments in local work force[4]
	• Approval through **stringent gating mechanisms**
	
	• **Informal restriction**[5] on DCs that do not lead to benefits in terms of high-technology and AI development
	
	• Johor **rejected 30% of applications**[5] not meeting sustainability standards[6]
		• Set through **stringent application criteria**
		
		• The DC-CFA[7] vets and selects DCs for **tendered capacity** – *More details in next slide*
		
		• Selection based on **strategic, economic, and sustainability benefits**
		
		• Singapore represents the **most stringent market** in DC development in APAC

Notes:1. Australian Government: DISR, 2026; 2. DCs should use innovative, efficient and sustainable solutions to minimise water use; 3. New DCs and AI infrastructure should not place upward pressure on energy prices and should make a positive contribution to Australia's energy transition; 4. DC operators should support Australia's economy by creating fair, safe, secure and well-paid jobs for Australian workers; 5. Data Center Dynamics, 2026; 6. Includes: Power Usage Effectiveness, Renewable Energy, Embodied Carbon, Water Usage Effectiveness, Non-potable water, and Social; 7. IMDA: Data Centre Call for Application, 2025

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Case Study – Singapore Data Centre Call for Application (DC CFA)

Singapore's DC CFA ties new AI capacity directly to demonstrated sustainability and ecosystem impact rather than compliance thresholds which can serve as principles to leverage on rather than a blueprint to emulate

Singapore's DC-CFA

- Singapore's DC-CFA was introduced in 2022, with the second round initiated in 2025
- It emphasises **strong value propositions** such as:
  - Innovative technological and operational solutions
  - Cross-sector partnerships
  - Contributions beyond capital investment
  - Scalable impacts extending into public utility infrastructure

DC-CFA 2 requirements *(non-exhaustive)*

Environmental	**Energy Efficiency** *≤ 1.25 PUE[1] at 100% IT load*
Environmental	**Renewable Energy** *≥50% green energy from eligible pathways (biomethane, ammonia, hydrogen, BIPV/BAPV[2])*
Environmental	**Water Efficiency** *≤ 2.0 WUE m^3/MWh IT load[3]*
Economic	**Improve International Connectivity** *Investments in international submarine cable(s)*
Economic	**Deployment of AI Inference Workload** *Plans to bring in advanced and high-performance APAs[4]*
Economic	**Quantitative Economic Contributions** *Including Fixed Asset Investments (FAI), Total Business Expenditure (TBE)*
Community	**Number of Jobs and Type of Jobs Created** *In support of Singapore's Smart Nation and Digital Economy*
Community	**Elevate Singapore's Reputation as Trusted Business & Tech Hub** *Efforts/initiatives in developing & uplifting local DC ecosystem*

Land scarcity forces innovation:
With limited room for utility-scale renewables, Singapore uses DC demand to create early offtake pathways critical to its energy transition

DCs as first movers, not just buyers:
operators must act as pathfinders and commercialise novel energy solutions at scale, benefiting both their own sites and national objectives

Notes: 1. PUE: Power Usage Effectiveness; 2. BIPV/BAPV: Building Integrated/Applied Photovoltaics; 3. WUE: Water Usage Efficiency; 4. Auxiliary Processing Accelerators ("APAs"), which includes Graphics Processor Units ("GPUs") and Application-Specific Integrated Circuits ("ASICs")

Key Takeaways

Resource risks from AI infrastructure development need to be managed but can also drive opportunities; governance, infrastructure and technology will determine whether growth strains or strengthens shared systems

01.	02	03
AI Growth Carries Resource Risks	**Managing Each Risk Can Be an Opportunity to Bring a Net-Positive Impact**	**Governance, Infrastructure and Technology Determine AI's Long-Term Impact**
• **AI growth is a physical build-out:** *drawing on energy, water, carbon and other resources in the markets that host it* • **The strain falls on shared systems:** *raising costs for other users and impacting local support*	• **Resource demand becomes system investment:** *With large, long-term demand and capital to commit, DCs can fund new clean energy, water and grid capacity* • **Local impact becomes local value:** *efficient siting, skills and community reinvestment can ensure DCs are significant economic and social contribution*	• **Governance**: *Regulators are moving from permissive growth to conditional access: tying new capacity to sustainability, high-value- AI use-cases and wider economic contribution* • **Infrastructure**: *Operators must show how their project strengthens the systems it draws from - not just how efficiently it uses them (e.g., accelerating green energy pathways, circular resource systems, connectivity)* • **Technology**: *Optimise DC operations by capturing efficiency gains early including - right-sized models, efficient IT hardware and cooling systems*

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Thank You

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