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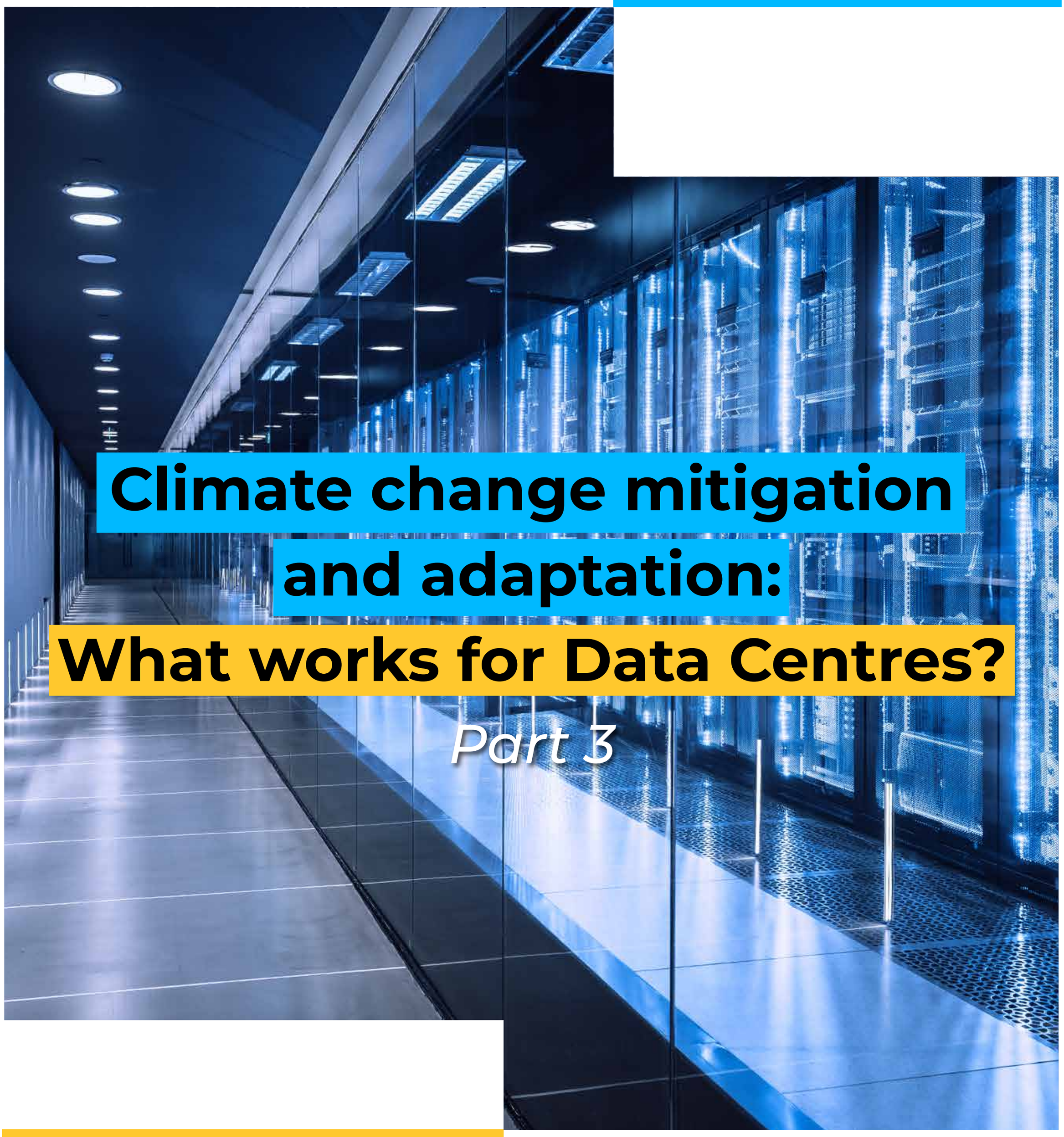

Climate change mitigation and adaptation: What works for Data Centres?

Part 3

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ClimaTech is the largest global database on technologies and strategies to...

Mitigate climate change

Identify the most effective solutions to decarbonise infrastructure.

3 scopes of emissions:

1. **Scope 1** → direct emissions from the infrastructure
2. **Scope 2** → emissions linked to energy consumption
3. **Scope 3** → all other indirect emissions (transport, procurement, waste, etc.)

Adapt to its consequences

Understand the physical risks each type of infrastructure faces and assess the best resilience measures.

4 types of risk:

- Flood
- Storm
- Heat
- Wildfire

We can use Data Centres to understand what ClimaTech can do.

Source : ClimaTech

Decarbonisation (1/3)

Type of Infrastructure	 Data Centres
Category	1 Decarbonisation S1
Strategy	Increasing energy efficiency of operations
Key Technologies	• Smart cooling systems • Efficient server hardware for lower power consumption, enhanced workload management • Advanced energy management systems • Waste heat recovery
Effectiveness	Medium 35 %

Source : ClimaTech

Decarbonisation (2/3)

Type of Infrastructure	 **Data Centres**
Category	**2 Decarbonisation S2**
Strategy	Renewable energy generation - off-site purchase agreement
Key Technologies	• Power purchase agreements • Wind, solar, hydro-generated electricity • Blockchain-based energy tracking systems • Digital marketplaces • Renewable energy credits (RECs)
Effectiveness	**Very High** 100 %

Source : ClimaTech

Decarbonisation (3/3)

Type of Infrastructure	 **Data Centres**
Category	**3 Decarbonisation S3**
Strategy	Reducing fuel and energy use by optimising operating procedures
Key Technologies	• AI-driven workload management • Advanced cooling technologies • Smart energy management systems • On-site energy storage
Effectiveness	**Low** 28 %

Source : ClimaTech

Physical risk (1/4)

Type of Infrastructure	 **Data Centres**
Physical Risk	**Flood**
Strategy	Upgrading existing drainage systems
Key Technologies	• Enlarging drainage pipes • Additional pumping stations • Integrating smart drainage • High-capacity stormwater drains • Backflow prevention valves
Level of Protection	**Medium**
Risk Reduction Effectiveness	**Low** 19 %

Source : ClimaTech

Physical risk (2/4)

Type of Infrastructure	 **Data Centres**
Physical Risk	**Storm**
Strategy	Retrofitting or building new structures with wind-resistant design features
Key Technologies	• Reinforcing roof-wall connections • Installing impact-resistant windows and doors • Anchoring equipment or structures to withstand strong winds
Level of Protection	**High**
Risk Reduction Effectiveness	**Medium** 60 %

Source : ClimaTech

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Physical risk (3/4)

Type of Infrastructure	 **Data Centres**
Physical Risk	**Heat**
Strategy	Cooling systems - natural and evaporative
Key Technologies	• Shaded courtyards • Rooftop water features • Natural ventilation systems • AI-driven climate modelling • Evaporative cooling systems
Level of Protection	**Medium**
Risk Reduction Effectiveness	**High** 70 %

Source : ClimaTech

Physical risk (4/4)

Type of Infrastructure	 **Data Centres**
Physical Risk	**Wildfire**
Strategy	Use fire-resistant materials for buildings and storage areas. This increases the facility's resistance to heat and flames.
Key Technologies	• Fire-resistant steel • Concrete • Treated wood • Fire-rated glass • Intumescent coatings
Risk Reduction Effectiveness	**Low to Medium** 8-50 %

Source : ClimaTech

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This independent research center combines scientific expertise, economic analysis, and advanced climate risk modelling. The EDHEC Climate Institute relies on 200+ academic papers, technical documents, and government reports, a team of specialised researchers and engineers, and years of applied research serving sustainable finance.