Guidance to Support Effective Application of the Equator Principles for Data Centre Projects

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CONTENTS

ABBREVIATION LIST

ABBREVIATION	DESCRIPTION
AF	Associated Facility / Associated Facilities
AI	Artificial Intelligence
CAPEX	Capital Expenditure
CDU	Coolant Distribution Unit
CO_2e	Carbon Dioxide Equivalent
COD	Commercial Operations Date
CUE	Carbon Usage Effectiveness
CPU	Central Processing Unit
CRAC	Computer Room Air Conditioning
CRAH	Computer Room Air Handler
DX	Direct Expansion (cooling)
E&S	Environmental and Social
EHS	Environmental, Health and Safety
EPs	Equator Principles (2020), or any subsequent update.
EPFI / EPFIs	Equator Principles Financial Institution(s)
EPC	Engineering, Procurement and Construction
ESDD	Environmental and Social Due Diligence
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
EU CNDCP	Climate Neutral Data Centre Pact of the European Union
GHG	Greenhouse Gas
GPU	Graphics Processing Unit
GWP	Global Warming Potential
H&S	Health and Safety
HPC	High-Performance Computing
HVAC	Heating, Ventilation and Air Conditioning
IEC	International Electrotechnical Commission
IESC	Independent Environmental and Social Consultant
IFC	International Finance Corporation
ISO	International Organization for Standardisation
IT	Information Technology
KPI / KPIs	Key Performance Indicator(s)
KVM	Keyboard-Video-Mouse (control equipment)
LCA	Life Cycle Assessment
MW	Megawatt
NOx	Nitrogen Oxides
O&M	Operations and Maintenance
OEM	Original Equipment Manufacturer
OHL	Overhead Line
OHS	Occupational Health and Safety
pCUE	Partial Carbon Usage Effectiveness
PPA	Power Purchase Agreement
pPUE	Partial Power Usage Effectiveness
PUE	Power Usage Effectiveness
pWUE	Partial Water Usage Effectiveness
PS (PS1, PS3, PS4)	IFC Performance Standards
RICS	Royal Institution of Chartered Surveyors
SLAs	Service Level Agreements
SPV	Special Purpose Vehicle
UPS	Uninterruptible Power Supply
WUE	Water Usage Effectiveness
WLCA	Whole Life Carbon Assessment

GLOSSARY

Adiabatic or evaporative cooling: Cooling system where the energy absorption during phase change of water from liquid to a gas, is utilised. This can reduce the energy requirements of the heat rejection plant but does require a significant amount of water.

Carbon Usage Effectiveness (CUE): Quantifies the carbon emissions associated with the operation of a data centre and measures the ratio of total data-centre-related CO_2 emissions in contrast to IT equipment energy consumption. CO_2 emissions are measured in kilograms of CO_2-equivalent (kgCO_2e) and IT energy is measured in kilowatt-hours (kWh). CUE is therefore expressed in kgCO_2e/kWh.

Embodied carbon impacts: Impacts that arise from sourcing, manufacturing and installing the materials and components that make up a built asset, and also include the lifetime emissions from maintenance, repair, replacement and ultimately their demolition or deconstruction, waste treatment and disposal.

Power Utilisation Effectiveness (PUE): Measures a ratio of total data centre facility power in contrast to IT equipment power; where power is measured in kilowatts (kW). PUE is unitless.

Water Utilisation Effectiveness (WUE): Measures a ratio of annual water consumption (m^3) compared to IT equipment energy consumption (kWh). WUE units are m^3/kWh.

Whole life carbon assessment (WLCA): The calculation and reporting of the quantity of carbon impacts expected throughout all life cycle stages of a data centre, but also includes an assessment of the potential benefits and loads occurring beyond the system boundary.

1 INTRODUCTION

1.1 Overview

In recent years, data centres have emerged as critical infrastructure underpinning the global digital economy, enabling the rapid expansion of cloud computing, artificial intelligence (AI), and interconnected technologies. As demand for data processing and storage accelerates, so too has recognition of the sector's associated environmental and social (E&S) risks, particularly in relation to energy consumption, water use, land acquisition, complex supply chains, and growing exposure to climate-related hazards. Although data centres have typically been developed in advanced and highly regulated settings, their rapid growth, diverse operational structures, and continuous technological advancements are now contributing to widely varying risk profiles across different regions and scales. In many jurisdictions, markets are evolving more quickly than regulatory frameworks, requiring host governments to adapt existing policies to support economic growth associated with the sector.

In this context, this dedicated data centre guidance has been developed to support Equator Principles Financial Institutions (EPFIs), sponsors, and independent consultants in ensuring that financial transactions related to data centres align with the requirements of the fourth iteration of the Equator Principles (EP4, 2020), or any subsequent update to the Equator Principles (EPs). By providing sector specific context, identifying the key E&S risks most relevant to data centres development, and outlining good practice approaches to categorisation and assessment, this guidance aims to promote a consistent, informed, and forward-looking approach to assessing data centre Projects[1]. Its purpose is to offer a practical framework that reflects the distinctive characteristics of the data centre lifecycle and supports EPFIs in making well-grounded decisions as part of their role in responsible Project finance. It is intended to complement, rather than replace or repeat, the wider requirements of the EPs and associated guidance notes, as well as other relevant international frameworks, thereby ensuring alignment while addressing the sector specific challenges.

1 Reference to the term 'Project' is made throughout this guidance as specifically defined in the EPs (refer to Section 4.2).

1.2 Structure

This guidance is structured as follows:

- **Technical Context (Section 2):** Defines data centre typologies, operating models, contractual setups, and associated facilities relevant to E&S assessment.
- **Key E&S Risks and Impacts (Section 3):** Summarises major E&S risks and impacts of data centres, including those related to energy, water, GHG, governance, waste and circularity, among others.
- **Key Considerations for Application of the EPs (Section 4):** Explains how the EPs apply to data centres, including scope, lifecycle considerations, categorisation, assessment, applicable standards, and independent review.
- **Appendices:**
  - **Illustrative Typical Contractual Arrangements / Delivery Strategies (Appendix A):** Describes core contractual models (Core & Shell, EPC Turnkey, Multi Contract) and how E&S responsibilities and risks are allocated.
  - **Case Studies for Categories A, B, C (Appendix B):** Provides examples illustrating EP categorisation, typical risk profiles, and required E&S actions for each category.

2 TECHNICAL CONTEXT

2.1 What is a Data Centre?

Data centres function as the physical backbone of the digital economy and are engineered to meet demanding reliability and availability standards. They are built for continuous, resilient operation[2], and include robust electrical, mechanical, and telecommunications infrastructure. For this guidance, data centres are defined as:

> *"Purpose-built facilities comprising integrated building, power, cooling, security, and connectivity infrastructure designed to ensure the reliable, efficient, and secure operation of information technology (IT) equipment."*

To operate effectively, data centres require several critical inputs. These include substantial electricity to power IT hardware, water for certain cooling technologies, and land and built infrastructure to accommodate equipment and supporting systems. High-capacity fibre connectivity is essential for managing data flows, and a steady supply of IT hardware is needed for regular maintenance and replacement cycles. Skilled personnel are also required to support operations, maintenance, and security.

Data centres generate both physical and intangible outputs (refer to **Figure 1**). Their primary output is the delivery of digital services, data hosting and processing, but their operations also produce significant waste heat, typically expelled through cooling systems, (albeit increasingly captured and reused in some locations through utility reuse). Some data centre cooling systems also require substantial volumes of water, particularly evaporative and adiabatic systems, which increases overall water demand and may generate wastewater streams requiring treatment and discharge. Additional outputs may include electronic waste that could contain trace amounts of certain heavy metals, operational noise from mechanical systems, and greenhouse gas (GHG) emissions. While most emissions are indirect, arising from electricity consumption, data centres can also produce direct emissions from backup power supplies or from refrigerant leakage. Data centres may involve upgrades to transport infrastructure and could also represent a future material bank when considered from a circular economy perspective.

2 *Otherwise known as "uptime", a critical metric for high-throughput clients.*

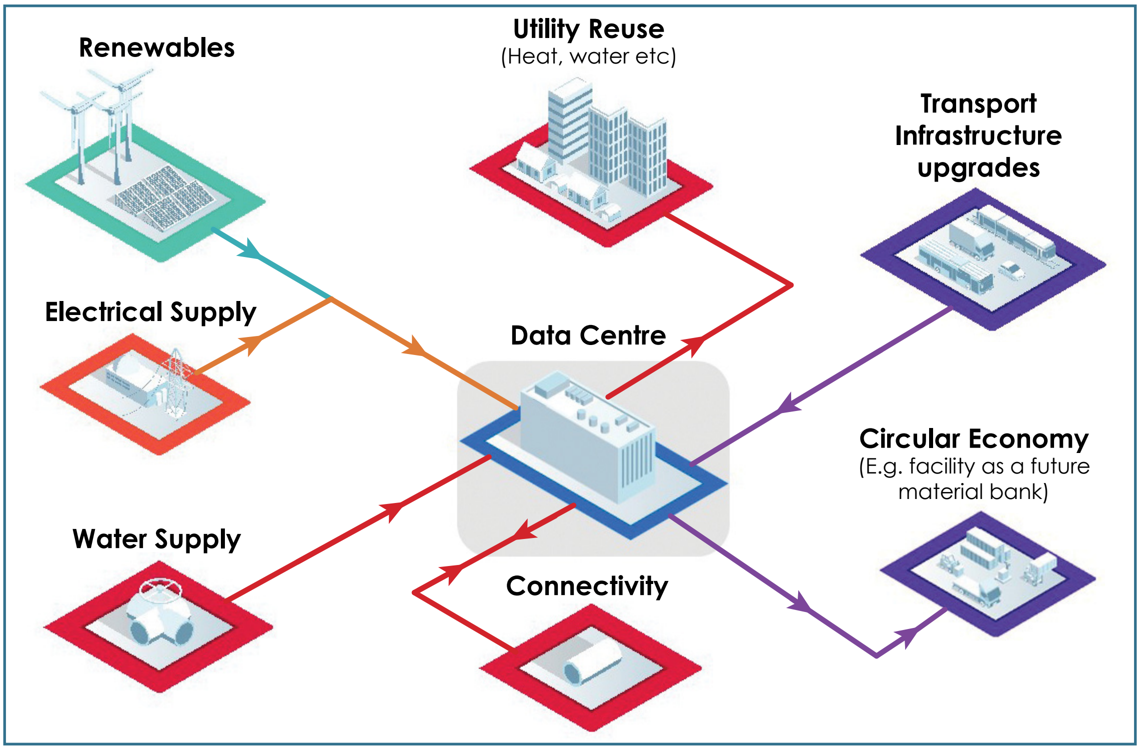

Figure 1: Typical infrastructure associated with data centres

2.2 Typical Operating Models

Data centres vary widely in scale, function, and operational models. The sector encompasses a broad spectrum of facility types, each designed to meet specific performance requirements, ownership structures, and end-user needs, ranging from highly distributed edge nodes to large-scale hyperscale campuses. These typologies shape not only the technical design and capacity of a facility, but also the governance arrangements, stakeholder responsibilities, and ultimately, the E&S risks and impacts.

While industry wide definitions exist, for the purposes of this guidance, **Table 1** provides a high-level overview of the data centres types, outlining their defining characteristics, typical capacities, and the contexts in which they are most deployed. Distinguishing between these categories supports a more nuanced understanding of the data centre configurations and helps inform risk assessment, monitoring, and engagement strategies throughout the Project lifecycle.

Table 1: Data Centre Types and Typical Characteristics

CATEGORY	TYPICAL CHARACTERISTICS
EDGE	• Tend to be smaller, distributed and part of a wider network. • Common in telecommunication infrastructure as key to maintaining reduced distances between data storage and point of use. This is important for low latency, bandwidth use, overcoming physical constraints of the transmissions and data sovereignty etc. • Typical capacity = ~100kW-1MW.
ENTERPRISE	• Typically smaller in both physical and capacity footprints. • Owned and operated by a single organisation for its own internal IT and digital workloads. • Typically associated with specific computing needs (e.g. scientific research) or where sensitive data needs to remain secure (financial and banking institutions or government bodies). • Typical capacity = ~1MW-5MW.
COLOCATION	• Provide shared facilities where (typically) multiple customers lease space, power and cooling for their own IT equipment. In some cases, data halls or even entire facilities are leased wholesale to a single tenant, but the colocation provider will still manage and maintain the facility. • Colocation clients typically sell a branded service so consistent look and feel across the globe is important. • Providers typically guarantee Service Level Agreements (SLAs) with tenants. • Typical capacity = ~5MW-50MW (note these capacities are rapidly increasing and colocation providers build at campus level <100s of MW).
HYPERSCALE	• Very large-scale facilities designed to support massive, centralised cloud computing platforms operated by hyperscale providers. Typically, single tenant and operate their own hardware. • Often developed in campus, repeatable buildings are more industrial than colocation facilities and can have more flexible operating conditions. • Hyperscale clients often lease data hall space, whole halls or entire sites from colocation providers. • Typical capacity = ~50MW-1GW.
NEOCLOUD	• These are a more recent occurrence in the market, design specifically for AI-driven, GPU-intensive, or accelerated computing workloads. • Often serving newer cloud providers, AI platforms and specialist compute customers rather than traditional hyperscaler 'cloud' infrastructure. • Typically offer more bespoke, localised solutions compared with standardised hyperscale provision. • Typical capacity = ~50MW-1GW.

2.3 Contractual Set Ups

Governance of data centres is shaped primarily by the Borrower's contractual model and the degree of control they hold over design, construction, and operations. Different contractual arrangements, ranging from core and shell arrangements to turnkey delivery or owner operated facilities, determine how E&S responsibilities are allocated among developers, tenants, operators, contractors, and utilities. **Appendix A** outlines the typical arrangements and roles of different parties.

2.4 Associated Facilities

2.4.1 Overview

The direct footprint of a data centre is often modest when compared with the extensive external systems required to sustain its operations. Therefore, as data centres grow in capacity and complexity, significant E&S risks increasingly arise in off-site facilities, especially related to power generation, transmission infrastructure, water supply and treatment, and network connectivity. In many cases, these external systems can present more material impacts than the data centre itself, creating additional layers of risk that must be understood and managed. As per requirements of the EPs, these additional assets may be defined as "Associated Facilities" that, under IFC Performance Standard 1, "*are facilities that are not funded as part of the project and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable*".

For data centre developments, the distinction between "Project" and "Associated Facilities" is particularly important, with early and accurate identification of each critical to assess alignment with the EPs. Rigorous due diligence, supported by information on ownership, permitting status, operational relevance, and any existing E&S commitments is required to ensure that these facilities are properly considered within Project categorisation, assessment, mitigation and monitoring systems. Consideration should also be given to the Borrower's level of control or influence over the asset, the degree to which its E&S risks can be effectively managed, and whether responsibility for those risks resides with the Borrower or a third party. Notwithstanding the above, impacts related to Associated Facilities should be assessed in line with the Project's E&S governance arrangements.

Depending on the Project's specific characteristics, some related facilities may classify as part of the transaction or financing perimeter and be considered part of the Project, rather than Associated Facilities under the EPs. This may be the case where the Borrower exercises operational or financial control, subject to the agreed commercial and contractual structure. It is therefore recommended that the EPFIs (along with potential support from the IESC) agree on a clear Project Description to confirm the use of proceeds and determine the appropriate classification on a case-by-case basis.

This section highlights the types of infrastructure assets that, for most data centre Projects and across different typologies, may be classified as Associated Facilities.

2.4.2 Power Generation and Energy Infrastructure

Reliable power supplies are fundamental to data centre operations, with supporting electrical infrastructure often planned or sized around the facility's specific load profile. Because even brief interruptions can disrupt IT services, affect cooling systems, and trigger cascading availability issues, the sector typically incorporates layered power continuity arrangements. Given this dependency, certain elements of the power supply chain may, in some cases, fall within the practical definition of an Associated Facility, particularly where Project specific investments, dedicated infrastructure, or strong functional linkages exist.

THE "RAMP-UP" CHALLENGE

Industry analysis increasingly shows a mismatch between slow grid-connected capacity expansion and the rapid delivery timelines of data centres. This gap is driving greater adoption of customer-sited (behind-the-meter) generation as a faster route to energisation. In this context, gas-fired generation is seen as well suited to meeting near-term power needs.

As a result, new E&S risks and impacts could arise and therefore, where applicable, the assessment of these E&S risks and impacts should include consideration of gas-fired generation. Depending on the ownership structure and development arrangements of the gas fired generation, it could constitute an Associated Facility for the Project, including subsequent assessments on GHG emissions, pollution prevention, H&S, among other relevant challenges.

Many E&S risks and impacts (e.g. climate change, air quality, and community health risks) are likely to primarily driven by these supporting assets rather than by the data centre building itself. Potential cases may include the following:

- New or expanded substations and step-down transformers.
- New transmission or distribution interconnections and dedicated feeders.

- Offsite renewable power generation facilities (associated through PPAs).
- New on-site power generation (temporary or permanent) and microgrids.
- Back-up energy for operations and/or Energy Storage Systems (if not directly owned and controlled by the Borrower).
- New fuel supply logistics for temporary short-term power and/or emergency backup generation (gas lateral, storage, delivery traffic).

2.4.3 Water Supply and Wastewater Infrastructure

Water plays a critical role in many data centre cooling systems. In adiabatic configurations, heat transferred by servers is transferred to water through chillers, cooling towers, heat exchangers, or evaporative cooling units. These evaporative technologies rely on a continuous supply of high-quality water to maintain thermal efficiency and prevent corrosion, scaling, fouling, or equipment degradation. As data centres increase in size, particularly hyperscale and Artificial Intelligence / High-Performance Computing (AI / HPC) facilities, cooling systems may require substantial volumes of makeup water and generate wastewater streams that must be appropriately treated and discharged.

THE "QUALITY" CHALLENGE

Mechanical and IT equipment require water that meets very strict quality standards, in some cases comparable to potable water specifications. As a result, the availability of suitable water quality on site becomes a key variable in data centre site selection. In addition, the Project may require new or expanded water treatment facilities (either developed by the Project itself, delivered through agreements with local utilities, or provided by third parties).

Due to these systems being dependent on reliable, high-capacity water supply and wastewater infrastructure, water related assets can constitute Associated Facilities under the EPs. Offsite facilities may be developed, expanded, or operated specifically to meet the cooling demands of a new data centre, even where they are owned by utilities or municipalities. As such, water infrastructure is integral to the core functioning of many data centres and must be considered within due diligence, categorisation, and impact assessment. Further information on water risks and impacts is provided in **Section 3.5 Water**.

INDICATIVE WATER RELATED ASSOCIATED FACILITIES MAY INCLUDE:	
Water Supply • New or expanded municipal or private water mains and service connections. • Non potable or reclaimed water supply pipelines and associated storage.	**Wastewater and Effluent** • New or upsized sanitary sewer connections and pump stations. • Expansion of municipal wastewater treatment plant capacity. • On site wastewater pretreatment systems (not controlled by the Borrower).

2.4.4 Telecommunications and Network Connectivity

In some cases, the development of data centres requires the expansion of fibre and network infrastructure. While these expansions may not be directly managed or owned by the Borrower, they are essential to the viability of a data centre. Common examples of connectivity infrastructure considered Associated Facilities include dedicated fibre routes, network access buildings, repeater stations, and cable landing stations – particularly for hyperscale facilities or data centres linked to subsea cable systems.

2.4.5 Other

Beyond typical associated facilities during construction (e.g. access roads or construction camps), other permanent Associated Facilities that data centres may typically require for operations could include energy storage systems, associated e-waste re-use and recycling centres and heat recovery interconnects to district networks.

3 KEY E&S RISKS AND IMPACTS

3.1 Overview

This section provides an overview of the key E&S risks and impacts that may arise during the design, construction, operation and decommissioning of data centres, along with high-level guiding questions that EPFIs may wish to explore during early transaction screening and engagement. The list is not intended to be exhaustive; rather, reflects the most common and material E&S considerations that should inform decision making for EPFIs throughout the financing process. Which questions are relevant depends on the project's scale, typology, location, risk profile, and contractual arrangements, and the absence of an answer at a given point does not in itself imply misalignment with the EPs, provided information gaps are recognised and addressed through appropriate due diligence, conditions, or monitoring.

3.2 Governance Aspects

The governance structure of a data centre Project is fundamental to the effective management of E&S risks and impacts throughout its lifecycle. For EPFIs, developing an early understanding of these governance pathways is essential, as they clarify how roles and responsibilities are allocated, how E&S risks are assessed, managed, mitigated, and monitored and which levers are available to support effective oversight and performance management. E&S responsibilities are typically distributed across key stakeholders in a data centre Project, including the Project Company (Borrower), Tenant, EPC Contractor, Utilities, and Regulators, with distinct contractual and operational roles. As a result, EPFIs require a clear understanding of who holds primary accountability, where responsibilities are shared, and where contributions are indirect or not applicable.

Figure 2 illustrates a possible contractual structure governing E&S management for data centres, along with the relationships between the parties involved. It should be noted that this representation may not be applicable to the governance structure for all data centre Projects. In practice, E&S responsibilities are often shared across multiple parties and may not be as clearly delineated as depicted in the figure. Accordingly, EPFIs should give particular attention to governance arrangements for different types of data centre Projects.

During due diligence it is essential for EPFIs to identify potential control gaps, ensure appropriate flow-down of E&S requirements, and seeks assurance that the

Borrower maintains effective oversight of material risks arising from third parties. This governance can be supported by well-structured responsibility matrix that supports compliance with E&S covenants, facilitates focused monitoring and reporting, and reduces the risk that E&S impacts fall between contractual interfaces.

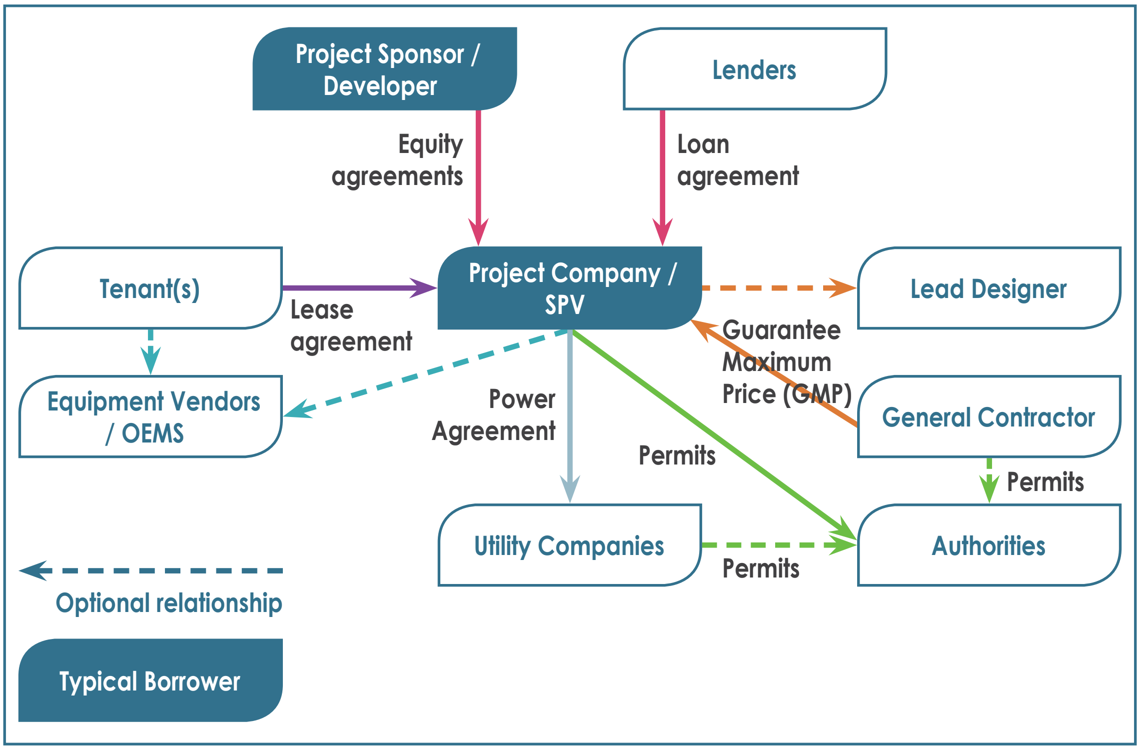

Figure 2: Possible contractual or commercial structure conditioning E&S management for data centres

While ultimate responsibility for E&S management rests with the Borrower, within the limits of their control and influence, EPFIs should recognise that a wider network of parties may also hold important responsibilities: for data centres, there are likely to be more when compared to other asset classes. Regular parties or stakeholders involved include contractors, subcontractors, tenants, specialist service providers, and entities within the Project's supply chain, all of whom may contribute to the Project's E&S footprint and influence its overall compliance with the EPs. Clear identification and coordination of these parties, and an understanding of how they interface with the Borrower's governance systems, are therefore critical considerations during due diligence and ongoing monitoring.

Where E&S obligations are shared among multiple parties, the Borrower remains responsible for establishing robust governance mechanisms to ensure that risks and impacts across the full Project lifecycle are properly identified, assessed, and managed. This includes influencing other Project parties to align their practices with international E&S standards, to the extent possible.

THE "OPERATIONAL CONTROL" CHALLENGE

Depending on the contractual model, the Borrower may not have direct control over certain operational activities within the Project's physical boundaries that are central to its business value (e.g. IT equipment). However, these operational activities may also be material sources of E&S risks and impacts (e.g. energy required to power IT equipment). Where management of all E&S risks and impacts does not sit directly with the Borrower (e.g. responsibility of tenants using IT equipment), it is important for EPFIs to understand and assess the effectiveness of any E&S-related governance mechanisms in place.

GUIDING QUESTIONS FOR EPFIs TO UNDERSTAND THE RISKS AND IMPACTS

Governance structure and control • What is the Borrower's contractual role (e.g., owner operator, developer, core and shell landlord, tenant operator), and what level of control do they hold over design, construction, and operations? • How are E&S responsibilities distributed across the Borrower, tenants, operators, contractors, and utilities? • Which activities fall outside the Borrower's control, and how material are these to the Project's overall E&S footprint? • Does the Borrower have the ability to influence third parties to meet international E&S standards?	**Contractual pathways & allocation of responsibilities** • Are E&S obligations clearly embedded in contracts with contractors, O&M providers, tenants, and relevant utilities? • What mechanisms ensure that subcontractors and external service providers comply with E&S requirements? • Are there performance guarantees, KPIs, or penalties relating to E&S outcomes? • Does the contractual model allow for independent monitoring, corrective actions, and escalation?
Oversight, monitoring and accountability • What governance mechanisms (committees, reporting lines, management systems) ensure E&S oversight across the lifecycle? • How frequently does the Borrower review E&S performance, and who is accountable for sign off? • Does the Borrower operate an ESMS aligned with the EPs, and does it apply across all relevant parties?	**Coordination across multiple parties** • Where responsibility is shared (e.g., between landlord and tenant), how is coordination ensured? • Are governance arrangements in place to manage disputes or misalignments between different parties' E&S policies? • How will governance adapt during different phases, including design, construction, commissioning, steady state operations?

3.3 Energy

Data centres typically have very high energy demands, driven by both their IT load and the associated cooling systems necessary to maintain stable operating conditions. These requirements can place pressure on local grids, necessitating upgrades or new infrastructure where existing capacity is insufficient. In such cases, substations, transmission lines, or generation assets built or expanded to meet data centre demand may be considered Associated Facilities under the EPs.

From an environmental perspective, the energy profile of a data centre is a major driver of its climate impact. The carbon intensity of the grid, access to renewable energy, and the efficiency of cooling and power systems all shape the overall E&S footprint. Backup generation, onsite energy systems, and rapid load growth, especially in AI/HPC facilities, add further complexity. Understanding these energy dynamics is therefore essential for EPFIs when assessing risks, determining categorisation, and evaluating long term E&S performance. Sustainable alternatives for the ramp-up challenges should be considered on a case-by-case basis, based on the Project's context. For example, gas powered fuel cells could offer a more sustainable alternative to gas powered reciprocating engines. Furthermore, if Battery Energy Storage Systems (BESS) are used as an energy supply source, their E&S risks and impacts should also be assessed as part of the Project assessment.

GUIDING QUESTIONS FOR EPFIs TO UNDERSTAND THE RISKS AND IMPACTS

Renewables / Supply

- Does the Project have an estimated annualised and peak Power Usage Effectiveness (PUE) calculation?
- Are the PUE, and WUE considered holistically?
- If renewable energy is being utilised, is this matched on an annual or hourly basis?
- Does the facility have significant energy storage potential that could feed back into local grids?
- What is the carbon intensity of the grid supplying the Project (market and location based emissions should be considered).
- Does the Project require additional sources of energy beyond those supplied by the local or national grid?
- What is the form of backup power generation?

INDUSTRY BEST PRACTICES ARE:

- Matching renewable electricity consumption on an hourly basis.
- Considering sustainable alternatives for the ramp-up phase and backup power generation.
- Assessing and managing E&S impacts of associated facilities.
- Link PUE with international standards such as the EU Climate Neutral Data Centre Pact (CNDCP).
- Where available, CUE may be considered alongside PUE and WUE.

3.4 GHG Emissions

GHG emissions associated with data centres arise from both construction activities and operational processes. For Scope 1 emissions during construction, these are primarily related to activities such as the use of machinery and equipment land preparation, and other construction works. During operation, Scope 1 emissions may include direct emissions from back-up generators and refrigerant leakages (where applicable).

Scope 2 indirect energy related emissions are largely driven by electricity consumption and therefore depend on the carbon intensity of the grid supplying the Project. Data centre operational energy consumption is significantly higher than for a typical building, hence, these emissions can account for up to 80% of a Project's total whole life emissions before applying renewables or offsets.

Scope 3 emissions in data centres vary depending on the organisation, but for the physical assets they are associated with embodied carbon emissions linked to construction materials, MEP equipment and IT hardware, including servers. Given that MEP equipment and servers are typically replaced at defined intervals, and that servers have high embodied carbon due to their precious metal content and complex manufacturing processes, best practice is to include these emission sources within the Project's GHG inventory.

Due to the range of contractual and operating models under which data centre Projects are developed, Project-related GHG emissions may fall across Scope 1, Scope 2 and, in certain cases, Scope 3 for the Borrower (e.g. Core and Shell where energy and IT load resource demand is in the control of the Tenant). As a result, reliance on Scope 1 and Scope 2 emissions alone may not fully capture the Project's total emissions profile when considering transition risks under the Equator Principles.

Emissions arising from activities outside the Borrower's operational control (such as those of Tenants or contractors) are typically classified as Scope 3, even where those emissions constitute Scope 1 or Scope 2 for the counterparty controlling the activity. For data centre Projects, relevant Scope 3 sources may therefore include contractors' Scope 1 and 2 emissions during construction and, where applicable, Tenants' operational Scope 1 and 2 emissions associated with the Project, among others. While the EPs do not require the inclusion of Scope 3 emissions for compliance purposes, recognition of these allocation principles provides EPFIs with additional clarity on how contractual arrangements can influence the overall GHG risk profile of a transaction and may support a more informed assessment of transition risks.

In line with EP requirements, Borrowers are expected to prepare GHG inventories covering Scope 1 and Scope 2 emissions as a minimum; hence, the inclusion of Scope 3 emissions is not mandatory for EP compliance. While voluntary, the consideration of such Scope 3 emissions reflects good practice and may provide additional transparency for EPFIs, particularly in assessing the influence of contractual arrangements on overall emissions exposure and transition risk (see also **Section 3.7.3**). In this scenario, the operational phase of the data centre may fall under other voluntary or mandatory ESG or GHG reporting and disclosures, depending on the operator.

GUIDING QUESTIONS FOR EPFIs TO UNDERSTAND THE RISKS AND IMPACTS

GHG Emissions

- Does the Project have a GHG inventory aligned with the GHG Protocol as per the EPs?
- If so, does the GHG inventory cover the most significant emissions associated with the Project?
- Are there governance arrangements in place for Project parties to report their GHG emissions and implement measures to reduce them?
- What measures are in place or envisaged to reduce the Project's GHG emissions over its lifecycle (e.g., energy efficiency, low carbon electricity procurement, and management of refrigerants and embodied carbon)?
- Are refrigerants used on site, and if so, what type and quantities are anticipated? Are low Global Warming Potential (GWP) refrigerants (<675 GWP) specified?
- Are any future changes anticipated that could materially alter the Project's emissions profile (e.g. expansion phases, technology changes, grid decarbonisation)?
- Has a transition risk assessment been conducted?

INDUSTRY BEST PRACTICES ARE:

- Ensure credible decarbonisation ambitions been set by the developer / Project.
- Project Whole Life Carbon Analysis studies.
- Assessing and managing impacts of associated facilities.

3.5 Water

Where evaporative or adiabatic cooling systems are used, data centres may have associated water requirements that can be material in scale. In water-stressed contexts, these requirements could contribute to site-specific E&S risks for surrounding communities, such as competition for water resources. Moreover, depending on local conditions, including effluent characteristics and the capacity of receiving infrastructure, wastewater discharges could be relevant to the Project's E&S assessment. In this context, water-related considerations may include water needs, potential supply sources, local water availability, and wastewater characteristics and potential impacts.

GUIDING QUESTIONS FOR EPFIs TO UNDERSTAND THE RISKS AND IMPACTS

Water

- Does the data centre utilise evaporative / adiabatic cooling? If so, has the water scarcity within the region and local catchment area been assessed?
- Does the facility have an estimated annualised and peak Water Usage Effectiveness (WUE) calculation. Are these in line with industry and regional expectations or targets?
- Are the PUE and WUE considered holistically?
- If utilising significant amount of water for cooling purposes, have alternative sources to a potable supply been reviewed?
- If utilising significant amount of water for cooling purposes, have the downstream impacts of wastewater been evaluated?

INDUSTRY BEST PRACTICES ARE:

- Include in the wastewater assessment: increased peak and average flow, increased discharge temperature on the local environment etc.
- Before finalising the site location, assess local water availability, potential supply sources, and any relevant constraints.
- Link WUE with international standards such as the EU CNDCP.
- Assessing and managing E&S impacts of associated facilities.
- Where available, CUE may be considered alongside PUE and WUE.

3.6 Waste and Circularity

Waste and circularity[3] considerations are relevant during all phases of a data centre Project's lifecycle. Construction waste may include excavated materials, packaging, and general building waste, while operational waste

3 "Circularity denotes the operational and measurable expression of circular economy principles, referring to the extent to which materials, products, and resources are retained within economic loops through practices such as reuse, remanufacturing, recycling, and sharing". *As quoted from D. Anteneh, Y. Boulakshil and P. Pisano, "Circular economy, circularity, and sustainability: A systematic review and conceptual framework,"* Cleaner Environmental Systems*, vol. 20, 2026.*

is often driven by periodic replacement of IT hardware and MEP systems, including e-waste, spent UPS batteries, filters, and potentially hazardous wastes (e.g., oils, chemicals, refrigerants and heavy metals, depending on the Project). Heat rejected by the cooling systems should be considered an asset and not a waste product. This can create an additional revenue stream as well as provide low carbon heat. During the decommissioning stage, special attention should be paid to the management of e-waste, given the large volume of servers, cooling systems and electronic equipment involved.

Given the replacement cycles and material intensity of these assets, the Project should define waste management controls and circularity strategies that focus on keeping assets in use at their highest value for longer and reducing waste and embodied carbon through strategies such as considering retrofit or reuse opportunities ("build nothing"), designing for adaptability and standardisation ("build for long term use"), improving material efficiency (e.g., prefabrication) ("build efficiently"), and selecting lower carbon and/or reused resources ("build with the right resources"), supported by takeback / refurbishment and high value recycling pathways where feasible.

GUIDING QUESTIONS FOR EPFIs TO UNDERSTAND THE RISKS AND IMPACTS	
General	**Waste heat**
• If on a brownfield site, have any deconstruction surveys been undertaken to assess the viability of reusing existing materials already on site? These could include building components or materials. • Does the Project have zero waste to landfill and appropriate recycling policies throughout construction and operation? • Are there plans in place to deal with e-waste? Potentially on-site circular centres? • Has a circular economy strategy been developed for the Project? Does this cover both the facility and the e-hardware? • Will the Project utilise waste heat on or off site? Have studies been undertaken to test the viability of these options?	• Is the facility capable of utilising or exporting waste heat? • Has the feasibility of exporting waste heat offsite been assessed? • Has this been shared with the local municipality for inclusion into long term development plans?

INDUSTRY BEST PRACTICES ARE:

- Waste heat export ready facility.
- Targets to reuse, repair or recycle 100% of server equipment.
- Product passports specified and used within the facility to facilitate reuse in later life.

3.7 Community

Community risks during construction are likely to be related air pollution, noise, and occupational and community health and safety risks. During the operational phase, potential impacts may be primarily related to operational noise generated by equipment such as cooling systems (e.g. chillers and fans), backup generators, HVAC systems, and electrical infrastructure (e.g. transformers), as well as potential pressure on social service and burden on utilities, e.g. municipal systems, water supply, energy system. Considering this, early and ongoing stakeholder engagement is essential to appropriately identify, manage, and mitigate potential community impacts throughout a Project's lifecycle.

While data centres typically have limited direct community interface, they may exert indirect and cumulative pressures on land, energy, and water systems, particularly in regions with constrained capacity or existing affordability challenges. In line with the EPs, such considerations should be assessed on a context-specific basis and informed by an understanding of local market conditions, infrastructure capacity, and stakeholder sensitivities. Ultimately, impacts on communities are highly dependent on the data centre type and scale, as well as proximity to sensitive receptors, and should therefore be assessed on a Project-specific basis.

Public opposition to data centre projects may be experienced. Therefore, EPFIs should pay particular attention to contextual risks that could affect project development. It is important for EPFIs to understand whether public opposition has occurred (or is likely to occur), how it has been managed, and what mechanisms are in place to address such concerns throughout the project lifecycle.

3.8 Additional E&S Impacts to be Considered

Beyond the impacts discussed above, additional E&S impacts may be relevant to the assessment. These may occur across different phases of the Project. The impacts outlined below relate to air quality and noise, physical and economic displacement, biodiversity, climate resilience, community, and supply chain considerations. Depending on the context, these impacts may be limited or, in some cases, potentially significant, and should be considered alongside the other E&S risks identified for the Project.

3.8.1 Air Quality and Noise

Air quality and noise impacts associated with data centres can be applicable to construction and operation phases. During operation, noise from chillers and/or cooling towers may occur. In addition, where diesel-fired back-up generators are used, air quality impacts associated with generator testing and emergency operation. During decommissioning, if demolition activities take place, air quality and noise may be impacted; therefore, appropriate mitigation measures should be implemented. Impacts on communities are highly dependent on the data centre type and scale, as well as proximity to sensitive receptors, and should therefore be assessed on a Project-specific basis. Accordingly, sensitive receptors should be identified, and appropriate mitigation and monitoring measures should be defined and implemented as part of the environmental and social assessment. Depending on the scale and context of the Project, these impacts may be moderate and, in some cases, potentially significant.

3.8.2 Biodiversity, Physical and Economic Displacement, Cultural Heritage and Indigenous Peoples

Potential impacts on biodiversity, physical and economic displacement, cultural heritage and Indigenous Peoples are intrinsically linked to the Project's location and, in the case of the first three, to whether it is developed on a greenfield or brownfield site. Accordingly, these impacts should be understood in the context of site selection, including whether the location screening has considered environmentally and socially sensitive areas (as referenced under the EPs). In addition, appropriate mechanisms should be in place to identify, manage, and monitor potential impacts on cultural heritage, particularly during the construction phase.

3.8.3 Climate Change Risks

Climate risks for data centres can be analysed by distinguishing between physical and transition risks. The most material risks are typically associated with natural hazards such as heatwaves, increased temperatures, water scarcity, and flooding. While most data centres are in urban or semi-urban areas, where certain hazards (e.g. landslides) may be less likely depending on site conditions, other climate hazards remain highly location-specific. Therefore, as per the EPs, a Climate Change Risk Assessment (CCRA), proportionate to the scale and characteristics of the Project, should be conducted to identify and understand the physical climate risks that could affect the Project.

In accordance with EP4, where data centre operational emissions exceed 100,000 tonnes of CO_2e, a transition risk assessment is recommended.

3.8.4 Supply Chain

Considering that multiple materials are used in data centre equipment (including servers potentially containing rare earth minerals), it is important to understand whether a Supply Chain Risk Assessment and a Human Rights Risk Assessment have been undertaken, including potential risks related to labour conditions and sourcing practices upstream, as well as the mitigation measures proposed to address those risks.

3.8.5 Emerging data centres-specific Challenge: Use of Data

Data centres may present discrete, context-dependent social risks linked to data governance, privacy, and freedom of expression, particularly where the enabling digital infrastructure could be subject to lawful interception requirements, content restrictions, network shutdowns, or location-based data access under applicable legal regimes. However, data centre operators typically do not control the downstream use of digital services or content hosted by third parties.

In alignment with Equator Principles 2 and 5, EPFIs should consider potential risks relating to data use through a contextual and proportionate lens, informed by the regulatory environment, governance conditions, and the nature of the Borrower's clients and intended uses. Ultimately, matters related to data privacy, data use and the intended purpose of the data centre should be considered by each EPFI on a case-by-case basis, in accordance with their own funding exclusion and/or sensitive industry lists.

4 KEY CONSIDERATIONS FOR APPLICATION OF THE EPs

4.1 Overview

The EPs apply globally across all industry sectors, including to data centre Projects. This section provides tailored guidance to application of certain specific Principles within the EPs, to ensure appropriate identification and management of the data centre sector's unique E&S impacts and risks. Accordingly, this section provides guidance relating to early lifecycle engagement, categorisation based on data centres-specific risk factors, alignment of host-country requirements with EP expectations, and the information and documentation likely needed to support assessment and independent review.

4.2 Scope of the EPs for Data Centre Projects

When assessing a data centre-related transaction, EPFIs should first determine whether the proposed financial product meets the EPs scope and threshold criteria[4]. This assessment also applies to expansions or upgrades of existing data centres where changes in scale or function may introduce material E&S risks or impacts. Most data centre developments are likely to qualify as a "Project" under the EPs, however considerations should also be given to the potentially extensive Associated Facilities that may also be present (refer to **Section 2.4**).

4.3 Lifecycle Considerations

The EPs emphasise the importance of considering E&S matters throughout the Project development lifecycle, recognising that the greatest opportunities for avoiding or minimising impacts arise at the earliest stages of Project definition. At initial concept and design stages, key technical and operational decisions for data centres, including site selection, cooling strategies, redundancy configuration, building form, and utility connections, are still being established, allowing potential E&S impacts to be prevented or reduced at source rather than mitigated later through more resource-intensive measures (**Figure 3**). Consistent with this, early engagement by EPFIs with Project implementers is strongly encouraged. This approach supports a more efficient, better-aligned E&S assessment process for Lenders, Borrowers and the IESC, reduces duplication of effort, and ensures early visibility of issues that may materially influence Project design, permitting, or implementation.

4 *Project Finance, Project-Related Corporate Loans, Project-Related Refinance or Acquisition Finance, and Bridge Loans.*

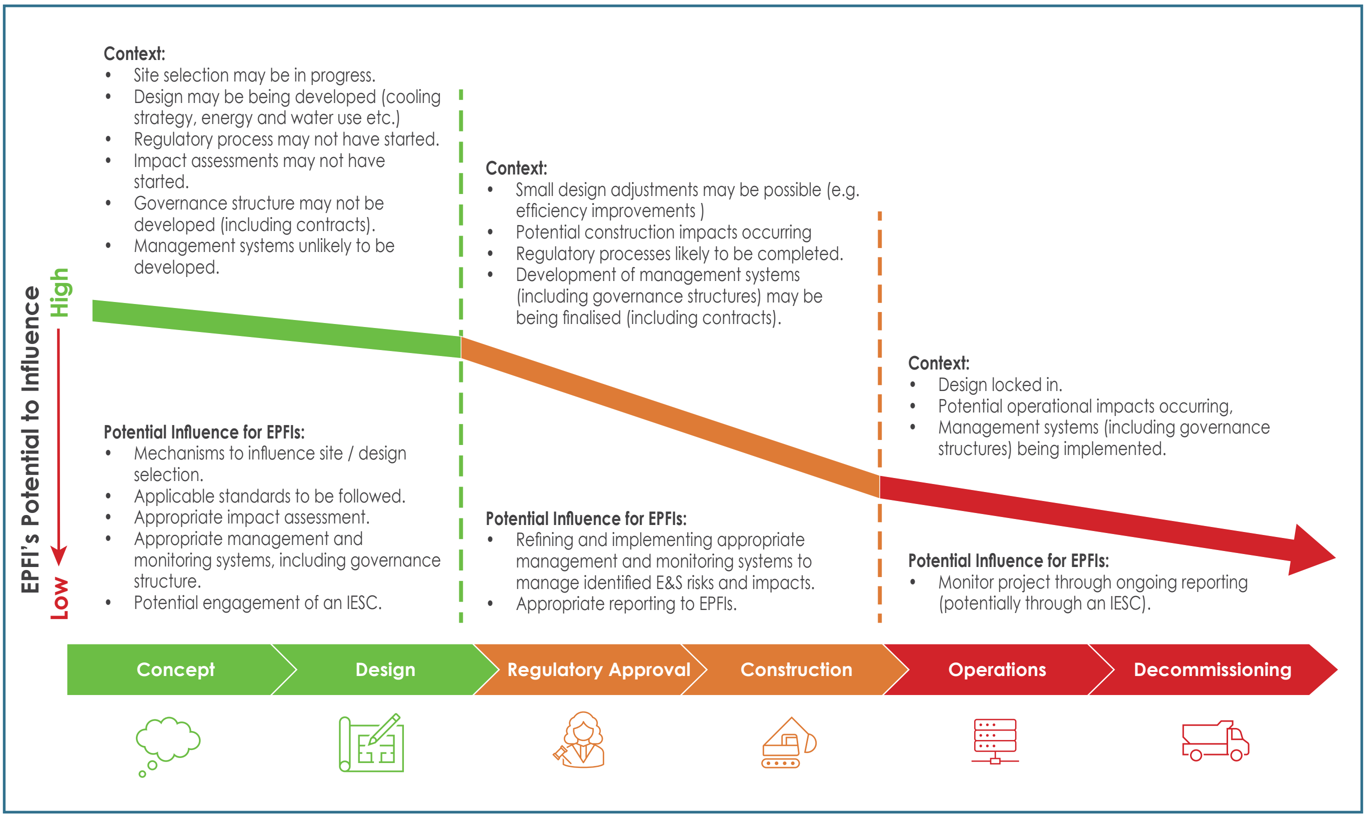

Figure 3: EPFI's Influence over the Management of E&S Risks and Impacts throughout the data centres Project Lifecycle

This illustrates how the ability of an EPFI to influence a data centre Project decreases as the Project progresses from early concept and design, where key decisions such as site selection, design and governance structures are still flexible, through to regulatory approval and construction, and ultimately into operations and decommissioning where design is fixed and EPFIs primarily monitor performance through reporting.

When approaching a data centre-related transaction, the EPFIs should seek to understand which design and operational parameters are fixed and which remain open for adjustment, enabling dialogue on alternatives that may reduce E&S risks. As many Borrowers may be encountering EP requirements for the first time at the outset of due diligence, EPFIs, together with an IESC if required, should also prepare an initial comparison of host-country environmental and social requirements against EP terminology and expectations. This comparison should be undertaken prior to commissioning any additional or supplemental studies, helping to identify whether existing regulatory instruments adequately address EP requirements or whether gaps exist that must be assessed through targeted technical work, depending on the category of the Project. This can then be used to inform actions to meet other requirements of the EPs (**Section 4.4-4.7**).

As a Project advances, the ability of the EPFIs to influence Project design and key decision-making to avoid E&S impacts may diminish. However, during the construction phase, and depending on the Project's contractual arrangements, there may still be opportunities to influence certain operational parameters. At this stage, EPFIs influence is typically more focused on refining and overseeing the implementation of management and monitoring systems, as well as on strengthening reporting mechanisms to the EPFIs to ensure their effective application during construction and next stages.

Once the Project enters the operations and decommissioning phases, the ability of the EPFIs to significantly influence the Project is generally limited. At these stages, the role of the EPFIs is primarily to monitor E&S performance and, together with the IESC, identify, discuss, and recommend incremental and feasible improvements, based on observed performance, to support alignment with the EPs.

4.4 Review and Categorisation (Principle 1)

In accordance with Principle 1 of the EPs, data centre Projects should be categorised based on the magnitude of potential E&S risks and impacts, including those relating to climate change, human rights, and biodiversity, and whether such risks may be significant, limited, or minimal. Projects should be assigned to Category A, B, or C, consistent with the definitions set out in the EPs.

For data centre Projects, given their inherent characteristics such as high energy demand, water use, backup power systems, and construction-related risks, it is anticipated that the potential for adverse E&S risks and impacts may be significant, and as such, the categorisation process should be undertaken with a risk-averse initial approach, unless and until adequate information is provided by the client demonstrating otherwise.

To support an efficient and well informed review and categorisation process, EPFIs should request clear, early stage information that enables a full understanding of the data centre Project's design, risks and management approach. For Category A Projects and, as appropriate, Category B Projects, the involvement of an Independent Environmental and Social Consultant (IESC) is required. Accordingly, the IESC's report should be prepared in alignment with the "*Guidance Note for Consultants on the Content of an Independent Environmental and Social Due Diligence (ESDD) Review*"[5]. For data centre Projects, in addition to the information required under the Guidance Note, it is recommended that the project description includes, as relevant, layout plans, details of the proposed cooling technology, back-up energy strategy, and information on the carbon intensity of the electricity grid supplying the Project.

In relation to understanding the E&S risks, typical documents to request include an Environmental and Social Impact Assessment (ESIA) describing key risks

5 https://equator-principles.com/app/uploads/Independent_ESDD_Review_Oct2020.pdf and impacts, the Borrower's ESMS outlining how risks are identified, managed and monitored, relevant stakeholder engagement and social documentation, including consultation records and land or access-rights information, an Environmental and Social Management Plan setting out mitigation measures for construction and operations, and, for Category A and applicable Category B Projects, a Climate Change Risk Assessment addressing relevant physical climate risks in line with EP climate guidance.

The typical characteristics presented below in Table 2 are provided for illustrative purposes and are not intended to be exhaustive for the purposes of Project categorisation. In practice, certain Projects may display characteristics associated with more than one category. The categorisation must be undertaken on a holistic and case-by-case basis, recognising that each data centre project may present a distinct risk profile depending on its scale, design, location, and operational characteristics. The following guiding considerations are intended to support EPFIs in applying Principle 1 to data centre Projects and should be read as supplementary to the categorisation criteria set out in the EPs.

Refer to **Appendix B** for illustrative examples of how data centre Projects may be categorised under the EPs, and demonstrating the typical characteristics, E&S considerations, and due-diligence requirements associated with Category A, B, and C Projects.

Table 2: Categories and Typical Characteristics

CATEGORY	POTENTIAL TYPICAL CHARACTERISTICS
Category A Projects with the potential to generate significant adverse environmental and social risks or impacts, which may be diverse, irreversible or unprecedented.	• Located on greenfield sites, resulting in substantial land transformation or disturbance of previously undeveloped areas. • Requiring extensive associated facilities, such as substations, transmission lines, water supply or on site treatment systems – to meet energy and water demand. • Employing water intensive cooling technologies in regions experiencing water scarcity or seasonal water stress conditions. • Relying on grid electricity with high carbon intensity, leading to potentially significant operational greenhouse gas emissions. • Involving land acquisition that may result in physical or economic displacement depending on siting and development footprint. • Demonstrating PUE, WUE or CUE performance levels that may indicate elevated resource consumption or inefficiencies with material energy, water, or carbon impacts. • Situated in proximity to, or overlapping with, environmentally or socially sensitive areas, including those considered sensitive under the EPs. • Requiring a sizable construction or operational workforce, potentially necessitating temporary workforce accommodation and increasing pressures on local services or community wellbeing. • Presenting heightened supply chain risks, including those associated with labour rights, Human Rights, or E&S suppliers performance. • New on-site baseload (fossil-fuel) power generation, either as part of the Project or as associated facilities.

CATEGORY	POTENTIAL TYPICAL CHARACTERISTICS
Category B Projects with potential limited adverse E&S risks and impacts that are generally site-specific, largely reversible, and can be addressed through well-established mitigation measures.	• Located on greenfield land within established industrial or commercial zones, where environmental sensitivity is relatively low. • Comprising a small to mid scale facility, or a phased development where early phases are of moderate size and complexity. • Relying primarily on existing off site energy and water infrastructure, with only limited new or upgraded associated facilities. • Situated at some distance from highly sensitive receptors, including critical habitats, protected areas, dense residential areas, or Indigenous Peoples' territories, depending on site context. • Employing a workforce sourced largely from the local or regional labour market, without the need for large scale temporary workforce accommodation. • Requiring limited land take relative to the surrounding context, with low potential for significant land disturbance.
Category C Projects with minimal or no adverse environmental and social risks or impacts.	• Involving retrofits or upgrades within an existing building, without expansion of the footprint or introduction of new significant impacts. • Located within an established industrial area with no sensitive environmental or social receptors nearby. • Having energy and water demand that can be fully met through existing national grid or utility infrastructure, without requiring new associated facilities and therefore, not creating additional water demand pressures on users. • Data centres operations do not create additional pressure or risk on the grid (capacity, reliability, and congestion) and do not exacerbate existing grid-linked emissions. Local grid electricity likely to be predominantly supplied by lower-carbon generation sources, such as solar, hydropower, wind, or geothermal, and/or supported by recognised mechanisms to mitigate associated carbon emissions. • Drawing its workforce from the local labour market, without labour-influx or accommodation-related impacts.

4.5 Environmental and Social Assessment (Principle 2)

Under Principle 2, the Borrower must conduct an appropriate E&S Assessment that is adequate, accurate and objective, and proportionate to the Project Category. Category A and higher risk Category B data centres will typically require a comprehensive ESIA and specialised studies such as climate risk analysis, or water stress assessments. Details of key E&S risks are provided above in Key E&S Risks and Impacts section.

4.6 Applicable E&S Standards (Principle 3)

The data centre sector is expanding rapidly, prompting many host countries to adjust their regulatory frameworks in response. In practice, however, market demand is often advancing faster than regulatory capacity, resulting in transition periods during which regulatory frameworks in many jurisdictions remain at an early stage of development. Consequently, authorities frequently rely on existing industrial or commercial regulatory regimes, applied by analogy, rather than on data centre-specific requirements.

Regulatory approaches may also vary significantly across national, state or provincial, and sub-national levels, with sub-national authorities often exhibiting differing levels of regulatory maturity and experience in managing data centre developments.

Under Principle 3, the EPs Assessment process must reference host-country laws and regulations, as well as the internationally recognised standards applicable to the Project category. Where gaps exist, the standards referenced in the EPs, particularly the IFC Performance Standards, should be applied.

Under the EPs, the distinction between Designated and Non-Designated Countries is intended to indicate where host-country laws, regulations and institutional capacity generally provide a higher degree of alignment with the objectives of the EPs and the IFC Performance Standards. However, given the emerging and highly technical nature of larger-scale data centre developments, this distinction alone may not ensure that host-country regulatory frameworks provide a sufficient basis for identifying and managing all relevant E&S risks and impacts, in alignment with the EPs.

Accordingly, for data centre Projects located in Designated Countries, it is recommended that EPFIs place particular emphasis on the Equator Principles requirement to assess the specific risks of the Project including any Associated Facilities, and to consider *"whether one or more of the IFC Performance Standards could be used as guidance to address those risks, in addition to host country laws"*.

4.7 Independent Review (Principle 7)

For Category A and, as appropriate, Category B data centre Projects, the EPFI must require an independent review by an IESC of the assessment process including the ESMPs, the ESMS, and the Stakeholder Engagement process documentation. While the due diligence stage may take place at different phases of the Project lifecycle, and the documentation available will therefore vary accordingly, it is recommended that, to the extent feasible, the Borrower's documentation addresses the key E&S topics outlined in **Section 3**, to support an adequate understanding of the Project and the assessment and management of its E&S impacts.

KEY CONSIDERATION

In several jurisdictions, certain elements requiring independent review are already covered by existing monitoring and reporting requirements imposed by the relevant authorities. As a result, some documents may already be available under different terminology to those defined in the EPs and could be leveraged for the independent assessment.

APPENDICES

Appendix A: Typical Contractual Arrangements / Delivery Strategies

A.1 Typical Contractual Arrangements / Delivery Strategies

There are numerous contractual arrangements for financing and delivering data centre developments, with a growing range of models currently being implemented across the market. While the specific structure varies by delivery strategy, data centre Projects typically involve the following **key roles**:

- Developer / Owner – initiates and finances the Project; may include hyperscalers, colocation providers, or financial investors;
- Design Team – architects and engineers (civil, structural, MEP, and IT / critical systems);
- Construction or General Contractors – responsible for construction and delivery of the facility;
- Equipment Vendors and/or Original Equipment Manufacturers (OEMs) – suppliers of generators, UPS systems, cooling equipment, and electrical infrastructure;
- Operator – responsible for operating the data centre post-construction;
- Tenants / Customers – hyperscalers, colocation clients, or enterprise users; and
- Utilities and Authorities – power and water utilities, as well as permitting and regulatory agencies.

Data centre Projects can be delivered under a range of contractual models, each of which results in different allocations of E&S risk, responsibility, and influence among Project stakeholders. The most common models include Core and Shell (including Powered Shell), EPC Turnkey (Design-Build-Turnkey), and Multi-Contract or Owner-Managed approaches. **Green** denotes typical Borrower under each contractual model.

- **Core and Shell / Powered Shell Model:** The Project is typically delivered by both a **Developer** and a Tenant. The **Developer** is responsible for land acquisition, site preparation, construction of the building structure, base building systems, and planning and construction permitting. The Tenant subsequently completes the internal fit-out, including IT halls and racks, additional cooling systems, power infrastructure such as UPS and generators (where not provided), and operational staffing and maintenance. This model results in a clear division between base-building delivery and tenant-specific operational infrastructure.

- **EPC Turnkey (Design-Build-Turnkey) Model:** Usually a single **General Contractor** is responsible for the end-to-end delivery of the facility, including design, procurement, construction, and commissioning. This often includes the building shell, mechanical and electrical systems, and in some cases the data halls themselves. The Owner receives a "ready-to-operate" facility, with key systems such as energy supply, cooling, backup generation, and water infrastructure designed and installed upfront. This model centralises delivery responsibility under one contractual counterparty.

- **Multi-Contract / Owner-Managed Model:** The **Owner** retains overall control of the Project and contracts separately with designers, civil contractors, MEP contractors, and specialist IT or systems vendors. Each contractor is responsible for its defined scope of work, while the **Owner** manages coordination across interfaces. This approach provides the Owner with greater direct oversight of design and delivery decisions but requires more intensive management of contractor interfaces and Project governance.

Depending on the contractual and delivery model, responsibility for E&S impacts is distributed differently across various stakeholders. In some cases, certain actors can influence or mitigate E&S impacts, while others may hold legal responsibility for those impacts or face potential reputational exposure. The illustrative contractual arrangements described below in **Table 3** demonstrate how E&S responsibilities and risks may be allocated among different parties, under various delivery strategies.

The commercial arrangements governing the operation and occupation of data centre Projects also play a critical role in determining how E&S risks and impacts are allocated over the operational life of the asset. These arrangements typically define the respective roles of the Owner, Operator, and Tenant, and influence which party has control and responsibility over operational performance. While most operational models involve an Owner–Tenant relationship, the identity of each party and the degree of E&S control vary significantly by Project type. While commercial arrangements continue to evolve, the models presented in **Table 4** below illustrate common approaches and the typical allocation of E&S risks and implications associated with each.

Table 3: Illustrative Contractual Models for Development

MODEL	E&S RISK TYPE	PARTY WITH ABILITY TO INFLUENCE OUTCOMES*	PARTY WITH LEGAL RESPONSIBILITY*	PARTY WITH REPUTATIONAL EXPOSURE*	E&S IMPLICATIONS
Core and Shell (some subcategories known as Powered Shell)	Construction-phase E&S risks (land use, noise, dust, traffic, waste, contractor H&S)	**Developer** controls design, contractors, construction method	**Developer** via GC contracts and permits	**Developer**	Developers may treat operational E&S impacts as downstream risks and place less emphasis on their active management. While Developers may choose to incorporate more sustainable utility design at the outset - often at higher upfront cost - operational performance is largely influenced by Tenant activities. Developers may seek to manage residual exposure through requirements for monitoring and reporting of resource efficiency and pollution prevention by Tenants. Given the shared reputational exposure, incentives for Developers are typically strongest during the construction phase, highlighting the need for additional mechanisms to support effective operational E&S management.
	Operational E&S risks (energy use, GHG emissions, water use, backup generation, e-waste)	Tenant controls IT load, cooling demand, equipment choice	Tenant for operational systems (GHG emissions, water usage) Developer / Owner for site-level permits	**Developer** / Tenant	
	Residual / cumulative impacts (water stress, community opposition, cumulative emissions)	Shared – **Developer** limited once leased; Tenant controls demand	**Developer** / Owner where permits are issued to landowner	**Developer**	
EPC Turnkey (Design-Build-Turnkey)	Design & construction E&S risks (waste, pollution prevention, labour standards, H&S)	**Contractor** has full control over design and construction execution	**Contractor** contractually Owner statutory / permitting backstop	Owner / **Contractor**	E&S requirements can be embedded contractually between the Owner and the Contractor. Strong E&S performance is achievable where environmental specifications are clearly defined, and robust monitoring and reporting obligations are enforced. However, without contractually binding E&S KPIs there is a risk that contractors may prioritise cost and schedule considerations over E&S outcomes.
	Operational performance (energy efficiency, cooling technology, water systems)	**Contractor** during design	Owner post-handover compliance	Owner	
Multi-Contract / Owner-Managed Model	Construction-phase E&S risks (interface risks, inconsistent practices, H&S)	**Owner** controls coordination and standards	**Owner** with multiple direct contracts	**Owner**	Responsibility for E&S performance rests with the Owner. While ensuring consistent E&S practices across multiple contractors can be challenging, this can be effectively managed through clear contractual requirements, unified site-wide H&S rules, training programmes, and centralized monitoring and reporting systems. Given the Owner's direct reputational exposure, there is a strong incentive to implement and maintain robust E&S management throughout the Project lifecycle.
	Operational readiness & compliance	**Owner**	**Owner**	**Owner**	

**Bold* denotes typical Borrower under each contractual model.*

Table 4: Illustrative Contractual Models for O&M / Tenant and Commercial Arrangements

MODEL	E&S RISK TYPE	PARTY WITH ABILITY TO INFLUENCE OUTCOMES*	PARTY WITH LEGAL RESPONSIBILITY*	PARTY WITH REPUTATIONAL EXPOSURE*	E&S IMPLICATIONS
Owner-Operated Data Centre	Design, construction and operational E&S risks (energy use, emissions, water, H&S, compliance)	**Owner** controls design, construction contracts and operations	**Owner** via permits, GC contracts and operational compliance obligations	**Owner**	This model provides the highest degree of E&S control and accountability, as the Owner directly manages design, construction and operations. This facilitates alignment with corporate net-zero, water stewardship and social commitments, but requires strong internal E&S capability to manage risks effectively across the full asset lifecycle.
Colocation	Shared operational E&S risks (energy use, water, PUE, e-waste, emissions)	**Operator** influences facility-level systems; Tenants control IT load and equipment	**Operator** for site-level permits and infrastructure; Tenants for IT-related impacts	**Operator /** Tenants	E&S responsibilities are distributed between the **Operator** and Tenants, but the Operator bears the majority of E&S risks and impacts, including permitting, resource management and stakeholder engagement. While the Operator handles the utility bills and manages the infrastructure, they usually "pass through" the costs to Tenants. Therefore, there are incentives for the Tenants as well (and sometimes contractually obligated) to meet efficiency standards. Mitigation of impact on sensitive receptors (e.g. noise / vibration over communities) is almost exclusively the **Operator's** duty, as individual Tenants do not have control over the heavy machinery (chillers / generators) that causes these challenges. Effective performance depends on clear contractual allocation of responsibilities, robust metering and data sharing, and inclusion of sustainability requirements in lease agreements.
Hyperscale / Built-to-Suit Lease	Construction-phase E&S risks and post-handover operational impacts	**Developer** during design and construction; Hyperscale Tenant post-handover	**Developer** during construction; Tenant for operational compliance	Hyperscale Tenant	Hyperscale Tenants (usually big tech companies) impose stringent E&S requirements that the Developer is required to implement during the design and construction phases. These requirements commonly include high energy-efficiency standards, renewable energy procurement strategies, water-use constraints, and biodiversity considerations, supported by detailed reporting and audit rights. Reputational risks associated with E&S performance, particularly in relation to noise, water use, and power generation sources, typically sit with the Tenant given their public profile and sustainability commitments. This approach enables clear E&S accountability across the development lifecycle but may result in higher upfront costs and increased design and delivery complexity for the **Developer**.

****Bold** denotes typical Borrower under each contractual model.*

Appendix B: Case Studies

B.1 Overview

The following tables present illustrative examples of how data centre Projects may be categorised under the EPs, and demonstrating the typical characteristics, E&S considerations, and due-diligence requirements associated with Category A, B, and C Projects. These tables are intended to guide EPFIs in understanding how different project types, ranging from large greenfield hyperscale campuses to brownfield colocation facilities and small-scale retrofits, can present varying levels of E&S risk, and how this translates into appropriate assessment, management, and monitoring expectations throughout the Project lifecycle.

B.2 Example Category A Project

<table>
<tr><th>ASPECT</th><th>DESCRIPTION</th></tr>
<tr><td colspan="2">Information provided to EPFI</td></tr>
<tr><td>Type of data centre and Associated facilities</td><td>Project Description:
• The Project consists of a hyperscale data centre campus with an IT capacity of approximately 1 GW.
• The development comprises 10 data centre buildings and associated infrastructure, with a total site footprint of at least 300,000 m².
• The Project will be predominantly self-supplied through a dedicated onshore renewable generation farm, that will not be built by the Borrower, but for which the Project will be the primary off taker (over 60% of forecasted generation).
• Renewable onshore will not be available until year 3 of operations. Until achieving renewable onshore connection, the Developer agreed temporary power generation and power purchase agreements (PPA) via gas power plants to be developed by a local utility company to be ready at commercial operations date (COD) year 1 and until year 3, including a New 220 kV substation and ~10 km overhead line (OHL) will provide a grid connection to ensure security of supply.
• The Project will use an adiabatic cooling technology.
Associated facilities (as per Section 2.4 of this document):
• Gas power plant (Year 1-3 near-term operations), new 220 kV substation, renewable generation farm.
Commercial Arrangement (as per <u>Appendix A</u> definitions):
• Core and shell. The Contractor is the Borrower and will lease the facilities to a technology company acting as Tenant for operations.</td></tr>
<tr><td>Setting and Context</td><td>• The Project is proposed as a greenfield development located in a water-stressed, semi-arid region, within a peri-urban or rural setting adjacent to small communities.
• No stakeholder consultation or engagement activities have been undertaken to date.
• The Project is currently under construction and is being delivered under a contractual structure whereby the Borrower does not have direct control over data centre operations.
• The Project is in a Designated country. The host country operates under a centralised governance framework, with national environmental regulations uniformly applicable across all jurisdictions. However, the regulatory framework specific to data centre developments remains under review.</td></tr>
<tr><td colspan="2">EPFI Assessment and Further Actions</td></tr>
<tr><td>Review and Categorisation</td><td>Under the EPs, the Project is classified as Category A as it is a greenfield large-scale data centre Project with Associated Facilities, located in a water-stressed adjacent to local communities. The Project has the potential to result in significant adverse E&S risks and impacts, particularly in relation to land use change, water resource consumption, biodiversity, and communities.</td></tr>
<tr><td>Environmental and Social Assessment</td><td>No Environmental and Social Impact Assessment (ESIA) has been undertaken by the Borrower, as it is not required under applicable national regulations. However, several studies are required at the host-country and sub-national levels, including assessments of air quality and noise, biodiversity, cultural heritage, and the presence of Indigenous Peoples. EPFIs and IESC determine the following key E&S risks:
• Permanent land-use change (potential physical and economic displacements) due to the data centre campus, renewable energy farm, and transmission infrastructure.
• Potential loss and fragmentation of habitats associated with greenfield development and overhead transmission line corridors.
• High operational water demand for cooling in a water-stressed region. Pressure on local surface and groundwater resources, potentially competing with agricultural and community uses.
• Stakeholder opposition or reduced social licence to operate.
• Borrower's limited control over operations.</td></tr>
</table>

B.2 Example Category A Project (continued)

ASPECT	DESCRIPTION
Applicable E&S Standards	Since the Project is in a Designated Country, in accordance with the EPs, the Applicable Standards are the host-country laws. However, these are not deemed enough to meet the specific risks of the Project and therefore assessment against the IFC Performance Standards is required. Based on the EPFI assessment of the Project risks, the following IFC Performance Standards are considered applicable, reflecting the scale and magnitude of the potential impacts. • PS1: Applicable due to the requirement for an ESIA under the EPs and the need for a robust ESMS to manage and monitor the E&S performance during operations. • PS3 and PS4: Applicable given the proposed water-intensive cooling system and the Project's location in a water-scarce area, requiring further assessment of potential impacts on water consumption, communities and ecosystem services (water supply).
Key Actions	Since this is a Category A Project, an ESIA needs to be conducted as per the EPs. • Particular attention should be given to water resource use, including whether the Project has developed a defined water strategy, identified measures to mitigate potential water related impacts on local communities, and assessed options for securing its own water supply. • The Borrower's ESMS and contractual mechanisms (lease / O&M requirements, monitoring KPIs, audit rights and reporting) must be assessed to ensure E&S impacts are effectively managed, monitored and reported throughout the operational phase. • Stakeholder engagement must be prioritised as a key risk area, analysing evidence of meaningful, ongoing consultation and a robust grievance mechanism, specifically addressing water use in a water-stressed area. • An Associated Facilities Management Plan should be developed to ensure coordination among Project parties in managing impacts, monitoring, and reporting requirements related to associated facilities.

B.3 Example Category B Project

ASPECT	DESCRIPTION
Information provided to EPFI	
Type of data centre and Associated facilities	**Project Description:** • The facility will act as a colocation data centre up to approximately 80 MW of IT capacity, delivered across two buildings on a previously developed (brownfield) site with previous uses as industrial warehouse, and an estimated physical footprint of approximately 75,000 m². The Owner Operator has a power purchase agreement (PPA) in place with a local utility company which controls both power generation and distribution. The utility company confirms no expansions in terms of capacity will be needed for the PPA. **Associated facilities (as per Section 2.4 of this document):** • Associated facilities include a new municipal wastewater network upgrade to accommodate cooling blowdown and site domestic flows. **Commercial Arrangement (as per Appendix A definitions):** • Owner-Managed Model where the Owner Operator is the Borrower, with multiple tenants / costumers. The construction and fit-out is sole responsibility of the Owner Operator, including the installation and maintenance of IT equipment.
Setting and Context	• The Borrower is also the acting Developer / landlord. • The Project is located on a brownfield industrial site within an established industrial / logistics area at the urban – peri-urban interface, with nearby communities in the wider area. • There has not been a comprehensive ESIA conducted, as it is not required under applicable national screening criteria for this type and scale of development. However, the Owner / Borrower is following existing environmental regulations suggested by the local agencies for industrial land use, including requirements in terms of air emissions, water management, and a full 24-h cycle of operations. • Industrial land use does not require a full public consultation or proactive community engagement, as responsibility for public notice rests with the local development authority that issues the permits. • The Project is in a Non-Designated country.
EPFI Assessment and Further Actions	
Review and Categorisation	The Project is classified as Category B under the Equator Principles, given the Project's location on a brownfield industrial site and the owner's accountability for E&S impacts across the full Project lifecycle. The potential adverse impacts are expected to be limited, site-specific, largely reversible, and manageable through standard mitigation measures.
Environmental and Social Assessment	The EPFI identifies the following key E&S risks requiring assessment and management proportionate to Category B: • Operational noise exceedance risk at nearby residential receptors due to continuous operation of cooling systems (chillers, dry coolers) and periodic testing of backup diesel generators. • E&S impacts associated with the new wastewater network upgrade. • Local air quality impacts from diesel generator testing and emergency operation, including NOx and particulate matter emissions affecting nearby communities.
Applicable E&S Standards	• Since the Project is located in a non-Designated Country, the Applicable Standards, in accordance with the EPs, are the IFC Performance Standards.
Key Actions	• Assessment of the existing Project documentation to determine its compliance with the IFC Performance Standards and to identify whether additional assessments are required, thereby establishing the need for a Supplementary ESIA package. • Careful consideration of air quality and noise impacts, given the use of diesel backup generators, continuous operational noise from cooling and electrical equipment, and the proximity of nearby communities. • Prioritise review of stakeholder engagement due to the Project's proximity to communities, ensuring meaningful engagement from early stages and a functioning grievance mechanism across construction and operations.

B.4 Example Category C Project

ASPECT	DESCRIPTION
Information provided to EPFI	
Type of data centre and Associated facilities	**Project Description:** • The Project consists of a retrofit and equipment replacement within an existing operational commercial building, converting an existing IT / server depot into a small enterprise data centre supporting internal corporate systems. The expected capacity will be around 5 MW IT using around 2,000m^2 built area. • The upgrade includes replacement of UPS and batteries, installation of new cooling units, minor electrical reconfiguration within existing switch rooms, and updates to fire detection / suppression and monitoring controls. **Associated Facilities:** • The Project relies on existing grid supply, existing municipal water and sewer, and existing telecoms connectivity. **Commercial Agreement:** • Enterprise-type of data centre where the owner has hired a General Contractor for a Turnkey-type of engagement. The Borrower is the General Contractor who is requesting the loan to cover capital expenses (CAPEX).
Setting and Context	• The Project is located entirely within a previously developed, occupied building in an established urban / commercial area. • Under national regulations, the works fall under standard building / electrical / fire safety permitting and do not trigger a full ESIA. • Stakeholder engagement is limited and proportionate, focused on building occupants and facility staff. • The Project uses a Direct Cooling System. • The Project is in a Non-Designated country.
EPFI Assessment and Further Actions	
Review and Categorisation	Under the EPs, the Project is classified as Category C because it involves a minor retrofit within an existing facility, with minimal or no adverse E&S risks or impacts, no land take, and no material associated facilities. Impacts are expected to be localised, temporary, and readily manageable through standard mitigation measures.
Environmental and Social Assessment	An ESIA is not required as per the EPs, however the EPFIs defined the following potential E&S impacts: • Noise impact on building occupants. • Potential refrigerant leakages. • Generation of e-waste. • Typical Occupational Health and Safety (OHS) Impacts.
Applicable E&S Standards	Since the Project is located in a non-Designated Country, the Applicable Standards, in accordance with the EPs, are the IFC Performance Standards.
Key Actions	• Potential opportunity to influence water and energy efficiency of the new equipment. • Consideration may be given to the management of electronic waste (e-waste), particularly in relation to the replacement and disposal of former IT equipment. • There may be an opportunity to influence the selection of the new equipment to be installed (particularly related to water and energy efficiency performance). • A refrigerant management plan should be required, including procedures for the prevention, detection, and management of refrigerant leaks.

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The Equator Principles are intended to serve as a common baseline and risk management framework for financial institutions to identify, assess and manage environmental and social risks when financing Projects.

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EQUATOR PRINCIPLES

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