# DATA CENTER PROJECT MANAGEMENT PLAN

Building a Sustainable Data Center in North Africa



2025

+212 92 053898 www.datarasov.com Tangier, Morocco Prepared by:
Team Datarasov
Morocco

Prepared for: **DATARASOV Group** 



# **Table of Contents**

Li	st of Figures	2
Li	st of Tables	2
1.	Executive Summary	3
2.	Environmental Study – North Africa:	3
	2.2. Political Analysis	5
	2.3. Social Impact	5
3.	Infrastructure Needs Assessment	5
	3.1. Physical Infrastructure	5
	3.2. Power Infrastructure:	6
	3.3. Security Infrastructure:	6
4.	Project Planning	7
	4.1. Timeline and Phases - Essential Points	7
	4.2. Work Breakdown Structure (WBS)	8
	4.3. WBS Diagram	9
	4.4. Gantt Chart Overview	10
	4.5. PERT Chart Overview	11
	4.6. Cost of Infrastructure	12
5.	Stakeholder Management for the Tangier Data Center Project	13
	5.1. Internal Stakeholders	13
	5.2. External Stakeholders	13
6.	Human Resource Management for the Tangier Data Center Project	15
	6.1. Recruitment Strategy	16
	6.2. Recruitment Process	16
	6.3. Collaboration with Local HR Firms	17



7. Risk Management for the Tangier Data Center Project	17
7.1. Risk Assessment Table	17
7.2. Key Risk Categories	19
8. Regulatory compliance	24
9. Communication Strategy for the Tangier Data Center Project	25
10. Conclusion	31
11. WEBLIOGRAPHY	32
List of Figures	
Figure 1 Work Breakdown Structure (WBS) for the Tangier Data Center Project	
Figure 2 Gantt Chart Overview for the Tangier Data Center Project	
List of Tables	
Table 1 Data Center Risk Assessment Erreur! Sign	ıet non défini.
Table 2 Communication Channels and Frequency	30

CESI\_

# 1. Executive Summary

The Tangier Data Center project aims to establish a Tier 3 data center facility in Tangier, Morocco. This project will create a sustainable, high-performance data center leveraging Morocco's strategic location, renewable energy resources, and growing technology sector. The facility will serve clients across Europe, Africa, and the Middle East while maintaining high standards of security, efficiency, and reliability.

# **Key Project Parameters:**

Facility Size: 50,000 to 100,000 square feet

Initial Capacity: 100-200 server racks

Power Requirement: 200-500 kW (scalable)

Target PUE: 1.2

• Total Budget: €8-10 million

# 2. Environmental Study – North Africa:

The goal of this study is to assess the economic, political, and social conditions of Morocco, Tunisia, and Algeria to determine the most suitable location for the new Tangier Data Center. This analysis will consider various factors such as infrastructure, regulatory environment, labor availability, economic stability, and social impact. Based on this, a detailed recommendation for the best country and town will be provided, along with justification for the choice.

# 2.1. Economic Analysis

Morocco (Selected Location) Why did we choose Morocco - Tangier?

#### **Growth Rate:**

Morocco has experienced steady economic growth in recent years, with a diversified economy ranging from agriculture to industry and services.

**Infrastructure:** Morocco has well-developed infrastructure, especially in urban areas like Tangier, with access to modern highways, ports, and telecommunications.



**Electricity and Energy**: The country has made significant investments in renewable energy, including solar and wind, and is connected to the European energy grid, making it a suitable choice for a data center focused on sustainability.

**Labor Market**: Morocco offers a relatively low-cost labor force with increasing technical skills due to a growing focus on education in STEM fields.

# **Alternative Locations Considered**

#### **Tunisia**

- Economic challenges and slower growth.
- Decent but less developed infrastructure.
- Heavy reliance on imported energy.
- Young educated workforce.

# **Algeria**

- ❖ Growth Rate: Algeria has a resource-driven economy, with a large reliance on oil and gas exports. Its diversification has been slow, but there are efforts to modernize the economy.
- ❖ Infrastructure: While Algeria has made strides in infrastructure, regions outside major cities like Algiers and Oran still face challenges, particularly in rural areas. The infrastructure in these areas may not be as developed as in Morocco or Tunisia.
- ❖ Electricity and Energy: Algeria has abundant natural gas resources, and its electricity sector is relatively stable. However, energy costs may be higher due to inefficiencies in the market and the reliance on fossil fuels.
- ❖ Labor Market: The labor market in Algeria is larger but may be less specialized in IT and technology compared to Morocco. There is a need for substantial investment in education and workforce development.



# 2.2. Political Analysis

**Stability**: Morocco is politically stable, with a long history of consistent government policies and governance.

**Regulations**: The country offers a predictable regulatory environment with a focus on foreign investment, including tax incentives for tech companies.

**Government Support:** Morocco has initiatives to attract foreign investment in technology, including free trade zones and business parks (e.g., Tangier Free Zone).

# 2.3. Social Impact

- ❖ Young, Skilled Workforce: Morocco has a young, tech-savvy population, with a growing pool of skilled IT professionals, driven by strong educational programs in engineering and technology.
- Community Support for Infrastructure: Infrastructure projects are well-supported by local communities, with Morocco's Digital Strategy 2025 and simplified permitting processes creating a favorable environment for tech development.

# **Expansion of the Digital Sector:**

Morocco's digital sector is rapidly growing, supported by government initiatives and agencies like the **Moroccan Digital Development Agency (ADD)**, providing a solid foundation for tech infrastructure.

#### **❖** Job Creation and Economic Growth:

The data center will create local employment opportunities during construction and for long-term operations, positively impacting the region's economy and job market.

# 3. Infrastructure Needs Assessment

# 3.1. Physical Infrastructure

# **Building Specifications:**

The Tangier Data Center is envisioned to be a Tier 3 facility, focusing on scalability, energy efficiency, and redundancy. The building will need to accommodate various components, including server racks, cooling systems, power distribution, and office space for operations and administration.



# **Building Size:**

The facility is expected to be 50,000 to 100,000 square feet in total, distributed across 2–3 floors. Each floor will be dedicated to specific functions: server rooms on the ground floor, cooling and power systems on the upper floors, and administrative spaces on the top floor

**Capacity**: The center will house approximately 180 server racks initially, with the ability to scale up in the future. This aligns with industry standards for a medium-sized Tier 3 data center, which typically supports 5 kW per rack

**Cooling Systems:** Due to **Tangier's coastal climate**, the data center can leverage **Free Cooling** and **adiabatic systems** to maintain temperature control efficiently. These systems will reduce energy consumption, as ambient air can be used for cooling, particularly during cooler months.

- Energy Efficiency: The goal is to achieve a PUE (Power Usage Effectiveness) as low as 1.2, which is typical for energy-efficient data centers
- Backup Systems: As part of the redundancy, modular cooling units and backup chillers will be installed to handle peak demand.

# 3.2. Power Infrastructure:

The **Tangier Data Center** will require a substantial and reliable power supply.

- Power Load: The center is expected to initially require 200–500 kW of power, with scalable capacity for future growth
- Energy Sourcing: The data center will integrate renewable energy from Morocco's Noor Solar Plant, ensuring long-term sustainability. Backup power will be provided by diesel generators and uninterruptible power supplies (UPS) to ensure continuous operations during outages

# 3.3. Security Infrastructure:

Security is a critical aspect of the data center, both **physically** and **digitally**.

 Physical Security: This will include biometric access controls, 24/7 surveillance, and guard stations. The facility will be designed with multi-layered security to prevent CESI\_

unauthorized access, including perimeter fencing and restricted access zones for

sensitive areas.

Cybersecurity: The center will implement firewalls, intrusion detection systems (IDS),

and data encryption for all data in transit and rest

Additionally, the network will be segmented to prevent unauthorized access to internal systems.

**Network Connectivity** 

The Tangier Data Center will serve as a hub for cloud services and data hosting, requiring robust and

reliable network connectivity.

Connectivity Infrastructure: The center will be equipped with high-speed fiber optic

connections to ensure low-latency, high-throughput network performance

• Redundant Network Paths: To prevent single points of failure, the center will implement

dual-network pathways and multiple ISPs for network redundancy

Peering: The facility will establish peering agreements with major ISPs and telecom providers

to ensure seamless connectivity with Europe, Africa, and the Middle East, taking advantage

of Tangier's strategic location near the **Strait of Gibraltar** 

4. Project Planning

4.1. Timeline and Phases - Essential Points

Planning and Design Phase

**Duration**: 50 days (compressed timeline)

**Key Tasks:** 

Finalize architectural design and technical specifications (cooling, power, security).

> Create floor plans, network infrastructure, and IT equipment layout.

Stakeholder reviews and approvals.

Permitting and Approvals

**Duration:** 1.5 months



# **Key Tasks:**

- Obtain construction, environmental, and utility permits.
- Engage with local utility companies for power grid and water connections.
- Construction Phase

**Duration**: 4 months

# **Key Tasks:**

- > Site preparation, foundation work, structural framing, and building construction.
- Installation of temporary utilities and security measures.
- Equipment Installation

**Duration**: 2 months

# **Key Tasks:**

- Installation of IT infrastructure (servers, racks, networking).
- Setup of cooling and power systems (UPS, backup generators, renewable energy systems).
- Security system and network connectivity integration.
- Testing and Commissioning

**Duration**: 1 month

# **Key Tasks:**

- Perform system testing: IT infrastructure, cooling, power, and backup generators.
- > Test network connectivity and validate security systems.
- > Environmental testing for cooling systems.
- Operational Handover

**Duration**: 2 weeks

# **Key Tasks:**

- Finalize operational documentation (user manuals, maintenance guides).
- Provide training to the operations team.
- Set up monitoring systems for ongoing performance and security.

# 4.2. Work Breakdown Structure (WBS)

The **Work Breakdown Structure (WBS)** breaks the project into manageable tasks and sub-tasks. It provides a hierarchical view of all major project activities, helping ensure that every component of the data center project is captured, we decided to work on it on Draw.io and here's an overview of it:



# 4.3. WBS Diagram

This diagram illustrates the hierarchical breakdown of all major project tasks and sub-tasks, ensuring that every phase and deliverable is accounted for in the overall project execution.

Note: We have attached the complete WBS diagram as a PNG file to our email for reference.

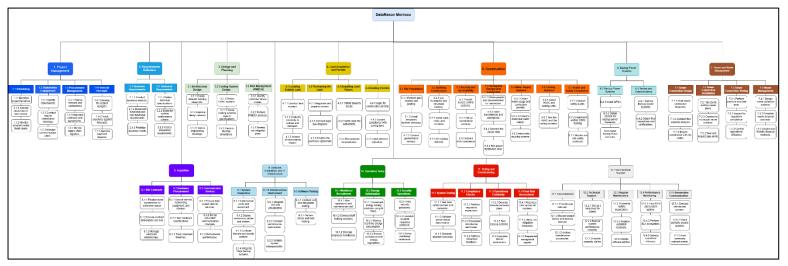


Figure 1 Work Breakdown Structure (WBS) for the Tangier Data Center Project

# WBS Key Breakdown:

# 1. Project Management (PM)

Project kickoff and initial scheduling.

# 2. Requirements Definition (RD)

Business and technical requirements.

# 3. Design and Planning (DP)

o Architectural and system design.

# 4. Land Acquisition and Permits (LP)

o Land Location, Purchase, Legal Papers, Building Permits.

# 5. Construction (CN)

o Site Prep, Building Construction, Cooling & Power, Security, Safety Compliance.



# 6. Sewer and Waste Management (SWM)

o Sewer Design, Installation, Testing, Waste Disposal.

# 7. Acquisition (ACQ)

Hardware procurement and contracts.

# 8. Software Design, Installation, and IT Infrastructure (SDIT)

o Software development and system integration.

# 9. Operations Setup (OS)

o Recruitment, training, and security setup.

# 10. Testing and Commissioning (TC)

o System testing and compliance checks.

# 11. Post-Handover Support (PHS)

o Documentation, maintenance setup, and handover.

# 4.4. Gantt Chart Overview

The **Gantt chart** visualizes the entire project timeline, helping stakeholders understand the project's schedule, key milestones, and dependencies.

**Note**: The Gantt chart shown below accounts for **working days only** (Monday to Friday) and **excludes weekends** (Saturday and Sunday).



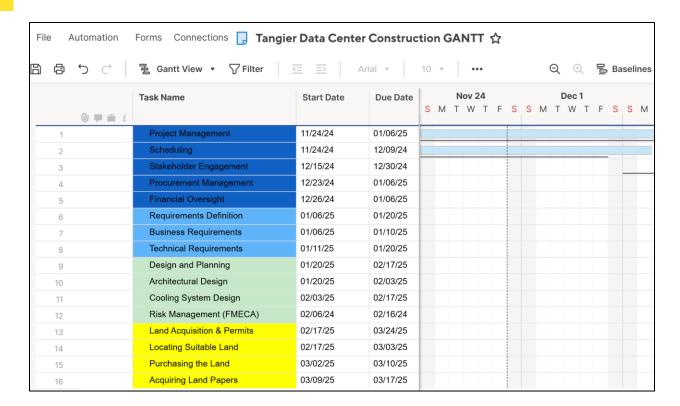


Figure 2 Gantt Chart Overview for the Tangier Data Center Project

# 4.5. PERT Chart Overview

The **PERT** (**Program Evaluation and Review Technique**) chart is used to illustrate the task dependencies and identify the **critical path** in the project. This chart helps to ensure that the most critical tasks are monitored closely to avoid delays.

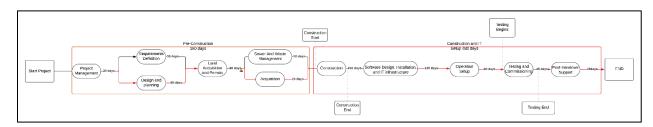


Figure 3: PERT Chart for the Tangier Data Center Project



# 4.6. Cost of Infrastructure

# **Budget Breakdown for Tangier Data Center:**

# Land Acquisition

Cost: €184 per square meter.

Area: 5,000 m².
 Total: €920,000.

# Construction:

Estimated cost: €800 per square meter.

• Total area:  $5,000 \text{ m}^2$ .

■ Total: €4 million.

# Cooling and Power Systems:

- Leveraging energy-efficient solutions (e.g., Free Cooling) and renewable energy integration.
- Includes backup generators and UPS systems.
- Estimated Cost: €1.5 million.

# Security Systems:

- Advanced security infrastructure, such as surveillance cameras and biometric access controls.
- **Estimated Cost:** €750,000.

# IT Infrastructure:

- Server Racks: StarTech 42U Rackmount €77,758.20.
- Rack Shelves: NavePoint 1U €16,020.
- Rack Mount Kits: APC 19" Rackmount Kit €5,400.
- **Total Hardware: €99,178.20.**

# Network Connectivity:

- High-speed fiber optic connections, dual ISPs, and peering arrangements for redundancy.
- **Estimated Cost:** €800,000.



# **Total Estimated Infrastructure Cost:**

- **€8 million to €10 million**, depending on specific scalability and redundancy features.
- Tailored for a medium-sized Tier 3 data center, leveraging the cost advantages of the local market.

# 5. Stakeholder Management for the Tangier Data Center Project

Effective **stakeholder management** is crucial to the success of the **Tangier Data Center** project. Identifying key stakeholders and establishing clear communication mechanisms ensures that all parties are involved, informed, and aligned with the project's goals. This includes both **internal** and **external** stakeholders.

# 5.1. Internal Stakeholders

# 1. Project Team:

- Roles: Engineers, architects, IT specialists, project managers, construction workers.
- Communication: Regular project meetings, progress reports, and collaboration tools (e.g., Slack, Microsoft Teams) will ensure the project stays on track. Weekly meetings and updates will be crucial for addressing any technical or operational challenges in real-time

# 2. Executive Leadership:

- o Roles: CEO, CFO, other C-suite executives of DATARASOV.
- Communication: Monthly status presentations, budget updates, and strategic alignment meetings. Regular feedback loops are essential to ensure the project aligns with broader company goals and financial expectations

# 5.2. External Stakeholders

# 1. Regulatory Authorities:

Roles: Local government, Moroccan Ministry of Energy, Mines and the Environment,
 National Commission for the Protection of Personal Data (CNDP).

CESI\_

 Communication: Formal meetings to secure permits (e.g., building permits, environmental impact assessments), and provide compliance reports. Submitting detailed environmental assessments and regular compliance documentation will maintain good standing with regulatory bodies

# 2. Clients:

 Roles: International and local companies using the data center for cloud services, hosting, and data storage.

Communication: Client engagement through newsletters, quarterly progress updates, and tailored reports on sustainability efforts (such as renewable energy integration). Regular communication will keep clients informed about the project timeline, ensuring their expectations are managed and met

# 3. Local Community:

Roles: Residents of **Tangier** and surrounding areas.

Communication: Community engagement is key for reducing resistance to construction and operation. This can be achieved through public forums, information sessions, and social media updates that highlight the project's benefits to the local economy (job creation, infrastructure improvements)

# 4. Partners and Suppliers:

o **Roles**: Suppliers, contractors, telecom providers (e.g., for network connectivity).

Communication: Clear contractual agreements, project timelines, and coordination meetings with suppliers will ensure smooth operation of the supply chain. Regular check-ins will be held to address any supply chain disruptions and ensure all materials and services are delivered on time

# 5. **Media**:

o **Roles**: Journalists, bloggers, and industry influencers.



Communication: Press releases, media tours, and social media engagement.
 Promoting the sustainability and innovation of the project through media channels will generate public interest and enhance the project's reputation

# **Establishing Communication Mechanisms**

# 1. Regular Updates:

- Internal: Weekly or bi-weekly updates, depending on project phase (construction, commissioning, etc.). This helps keep the team and leadership aligned on objectives, milestones, and risks
- External: Monthly or quarterly updates for clients, media, and regulatory authorities,
   ensuring transparency in the progress and compliance of the data center.

# 2. Feedback Loops:

 Create mechanisms for real-time feedback from stakeholders, such as surveys, social media comments, and one-on-one meetings. This ensures concerns are addressed promptly, and adjustments are made as necessary

# 3. Project Management Software:

 Utilize tools like Asana, Trello, or Microsoft Project for tracking project milestones, managing tasks, and ensuring all stakeholders have access to the latest developments in the project.

# 6. Human Resource Management for the Tangier Data Center Project

For the successful deployment of the **Tangier Data Center**, effective **human resource management** (HRM) is crucial. This involves recruiting a **competent**, **multidisciplinary team** and ensuring their skills are continuously developed throughout the project lifecycle. Here's a breakdown of the key aspects to consider:



# 6.1. Recruitment Strategy

To ensure the **Tangier Data Center** has the right talent, recruitment should focus on a **diverse skill set**. This includes IT specialists (network engineers, system administrators), construction workers, security personnel, and operations managers.

- Local Talent: Leverage Morocco's growing pool of skilled professionals, particularly in IT infrastructure, given the country's focus on education and technology
- External Expertise: For highly specialized roles (e.g., data center architects, energy optimization engineers), consider recruiting from outside Morocco, particularly from Europe where expertise in Tier 3 data centers is prevalent.

# 6.2. Recruitment Process

- Use a combination of local HR agencies and international recruitment platforms to attract top talent
- Build an employer brand that emphasizes the sustainable and cutting-edge nature of the Tangier Data Center to attract high-quality candidates 2. Training and Development

Training is essential to ensure that the team can operate the data center efficiently.

- Technical Training: Offer hands-on training in data center management, networking, and cybersecurity. Partner with local training centers or universities that specialize in technology and IT infrastructure
- Security Protocols: Ensure all employees are trained in physical security measures, including biometric access systems, and data protection laws such as GDPR for compliance
- Ongoing Education: Engage with Moroccan HR consultants and training firms to offer continuous learning opportunities in sustainable energy and Al-driven operations for staff involved in energy management3. Key HR Roles for the Data Center:
- Project Manager: Responsible for overseeing the entire development and operational setup.
   This role will require strong project management skills and experience in large infrastructure projects.



- IT and Network Engineers: These experts will manage the server infrastructure, network
  connectivity, and data security. They need to be familiar with Tier 3 design and cloud
  services.
- Energy Managers: These specialists will focus on energy efficiency systems, particularly integrating renewable energy sources like the Noor Solar Plant.
- Security Personnel: Given the critical nature of the facility, a dedicated security team will be required to monitor physical and cyber threats.

# 6.3. Collaboration with Local HR Firms

To streamline the recruitment and training process, collaboration with **local HR consulting firms** in Morocco, such as **Tingis Group** and **MEDAF HR**, will be beneficial. These firms specialize in **staffing** and **training**, providing a reliable pipeline for skilled workers

# 7. Risk Management for the Tangier Data Center Project

Risk management is a critical component of the **Tangier Data Center** project, especially given its international scope and the complexity of deploying a large-scale, high-tech infrastructure. To ensure the success of the project, potential risks related to **international deployment**, **local challenges**, and **technical operations** need to be identified, along with effective **mitigation strategies**.

# 7.1. Risk Assessment Table

To further assess and manage potential risks, we have compiled a Risk Assessment Table that categorizes each identified risk according to its likelihood, impact, and overall criticality. This table provides a comprehensive summary of the risks associated with the Tangier Data Center project and outlines the corresponding mitigation strategies to ensure the project's success. The table includes both qualitative and quantitative analyses, offering a clear view of potential challenges and the measures in place to address them.

This table serves as a key component of our **Risk Management Plan**, which is available in the attached PDF, and ensures that we proactively address risks in all phases of the project.



Risk ID	Risk Description	Category	Root Cause	Likeliho od	Severi ty	Crit icity	Mitigation Plan	Owner	Status
R01	Cooling inefficiency	Technical	Humidity and coastal climate	Likely (2)	High (3)	6	Use Free Cooling and adiabatic systems and install Al-based energy optimization tools.	IT Team	Planned
R02	Permit delays	Regulatory	Complex Moroccan regulatory process	Very Likely (3)	High (3)	9	Pre-engage local regulators; assign a dedicated permit management team.	Project Manager	Active
R03	Supply chain disruptions	External	Reliance on international suppliers	Likely (2)	Mediu m (2)	4	Use local suppliers where possible and maintain buffer stocks for critical equipment.	Procureme nt Team	Active
R04	Skilled labor shortage	Human	Lack of specialized workforce in Tangier	Likely (2)	High (3)	6	Partner with universities for training programs and recruit regionally.	HR Departmen t	In Progress



R05	Power outages during setup	Operational	Unreliable power grid connections	Likely (2)	Seriou s (2)	4	Secure agreements with Noor Solar Plant and deploy backup generators.	IT Team	Planned
R06	Constructio n material delays	Supply Chain	Long lead times for prefabricated materials	Likely (2)	Mediu m (2)	4	Identify alternate suppliers and maintain safety stock for key materials.	Procureme nt Team	Planned
R07	Environmen tal compliance issues	Regulatory/Exter nal	Non-compliance with Moroccan environmental laws	Likely (2)	High (3)	6	Conduct an Environmental Impact Assessment (EIA) and adhere to ISO 14001 standards.	Project Manager	Active
R08	Budget overruns	Financial	Unexpected costs in equipment or labor	Likely (2)	High (3)	6	Implement financial tracking systems and allocate contingency funds.	Finance Team	Active
R09	Cybersecuri ty breaches	Technical	Insufficient security measures	Unlikely (1)	High (3)	3	Deploy robust firewalls, encryption, and conduct	IT Security Team	Planned



							regular security audits.		
R10	Delayed hardware procuremen t	Supply Chain	Vendor delays or logistical issues	Likely (2)	Seriou s (2)	4	Diversify suppliers and negotiate priority shipping terms.	Procureme nt Team	Active
R11	Workforce safety incidents	Human/Operatio nal	Lack of safety protocols during construction	Unlikely (1)	High (3)	3	Develop safety plans and train workers on construction site protocols.	Safety Manager	In Progress
R12	Cooling system failure post- launch	Technical	Design flaws or maintenance issues	Likely (2)	Very High (3)	6	Perform stress testing and implement predictive maintenance using AI tools.	IT Operations	Planned
R13	Negative community perception	Reputational	Noise or traffic disruptions during construction	Likely (2)	Mediu m (2)	4	Communicate with the community and implement measures to minimize disturbances.	Communit y Liaison	Active





R14	Geopolitical instability	External	Sudden political changes in Morocco	Likely (2)	High (3)	6	Maintain flexible contracts and engage with legal advisors to adapt quickly to changing regulations.	Project Manager	Planned
R15	Natural disasters	Environmental	Coastal flooding or earthquakes	Likely (2)	Very High (3)	6	Elevate foundational designs, include disaster recovery plans, and secure insurance coverage.	Constructio n Team	Planned
R16	Market dynamics	External	Increases in global material costs	Very Likely (3)	High (3)	9	Build long-term supplier agreements and allocate buffer funds for price surges.	Finance Team	Active
R17	Cultural misalignment	Internal	Misunderstandings in a multilingual team	Likely (2)	Medi um (2)	4	Provide cultural training and hire bilingual coordinators for smoother communication.	HR Department	In Progress
R18	Quality control lapses	Internal	Poor inspections of materials or contractor work	Likely (2)	Serio us (2)	4	Implement stringent QA processes and conduct frequent audits.	QA Team	Active
R1G	Integration challenges	Operational	Compatibility issues between old and new systems	Likely (2)	Serio us (2)	4	Schedule extensive testing and engage experienced system integrators early in the process.	IT Team	Planned



R20	Cybersecurity breaches	Technological	Vulnerabilities in Al- based maintenance systems	Likely (2)	High (3)	6	Use advanced security tools, conduct regular audits, and implement robust incident response plans.	IT Security Team	Active
R21	Reputational backlash	Reputational	Media criticism due to delays or environmental issues	Likely (2)	High (3)	6	Appoint a PR team to manage communication and proactively share project updates with stakeholders.	PR Team	Active
R22	Occupational hazards	Health C Safety	Heat stress or lack of PPE	Likely (2)	Serio us (2)	4	Conduct safety training, ensure PPE availability, and provide breaks in shaded areas for workers.	Safety Manager	In Progress
R23	Data sovereignty issues	Regulatory	Misalignment of local and international data laws	Likely (2)	High (3)	6	Consult with legal experts to ensure compliance and implement localized data storage solutions.	Legal Team	Active
R24	Exchange rate fluctuations	Financial	Adverse currency changes increasing costs	Likely (2)	Serio us (2)	4	Hedge against currency risks and negotiate cost adjustments with international suppliers.	Finance Team	Planned
R25	Funding shortfalls	Financial	Withdrawal of funding due to economic downturns	Likely (2)	High (3)	6	Diversify funding sources and maintain contingency reserves.	Finance Team	Active
R26	Coastal corrosion	Environmental	Salty air damaging construction materials	Likely (2)	High (3)	6	Use corrosion-resistant materials and apply protective coatings to vulnerable structures.	Constructio n Team	Planned



R27	Subcontractor disputes	Internal	Misaligned expectations or payment delays	Likely (2)	Serio us (2)	4	Draft clear contracts with dispute resolution clauses and monitor payment schedules closely.	Procuremen t Team	Active
R28	Skills mismatch	Human	Workers hired lacking specific technical skills	Likely (2)	Serio us (2)	4	Conduct rigorous skills assessments during recruitment and provide on-site training programs.	HR Department	Active
R2G	Supply chain fraud	External	Vendors delivering counterfeit or substandard equipment	Unlikely (1)	High (3)	3	Vet suppliers rigorously and conduct third-party quality checks on deliveries.	Procuremen t Team	Planned
R30	Water scarcity	Environmental	Shortages impacting cooling systems or construction	Likely (2)	Medi um (2)	4	Use water-efficient cooling technologies and plan water storage facilities for construction needs.	Operations Team	Planned
R31	Overlapping projects	Internal	Simultaneous construction projects overburdening resources	Likely (2)	Serio us (2)	4	Coordinate schedules across projects and allocate resources based on priority.	Project Manager	In Progress
R32	Inflation	Financial	Sudden rise in operational costs	Very Likely (3)	Serio us (2)	6	Include inflation projections in budgets and renegotiate longterm fixed-price contracts if possible.	Finance Team	Active
R33	Equipment obsolescence	Technological	Newer, more efficient systems becoming available	Likely (2)	Medi um (2)	4	Perform market analyses before procurement and	IT Team	Planned



							design infrastructure to accommodate upgrades.		
R34	Communication breakdown	Internal	Poor communication between teams or stakeholders	Likely (2)	Serio us (2)	4	Use collaboration tools, schedule regular meetings, and appoint project coordinators.	HR Department	Active
R35	Vandalism or theft	Security	Construction site not secured adequately	Unlikely (1)	High (3)	3	Deploy 24/7 security personnel, install surveillance cameras, and restrict site access.	Security Team	Active
R36	Weather delays	Environmental	Heavy rainfall or storms halting construction	Very Likely (3)	Serio us (2)	6	Plan for weather contingencies and adjust project schedules during rainy seasons.	Project Manager	Active
R37	Dependency on key personnel	Human	Critical team members leaving the project	Likely (2)	High (3)	6	Develop a succession plan and cross-train team members to cover critical roles.	HR Department	In Progress
R38	Legal disputes	Regulatory/Leg al	Breaches in contracts or local regulations	Likely (2)	High (3)	6	Engage legal advisors early in the project and maintain clear documentation for all agreements.	Legal Team	Active
R3G	Technological redundancy	Technological	Systems being quickly outdated by technological advances	Likely (2)	Medi um (2)	4	Design scalable systems and adopt modular technology to facilitate upgrades.	IT Team	Planned
R40	Stakeholder disengagement	Organizational	Lack of interest or involvement from stakeholders	Likely (2)	Medi um (2)	4	Organize stakeholder engagement sessions and provide regular	Project Manager	Active

							updates to maintain interest.	
R41	Unexpected legal requirements	Regulatory	Changes in local or international laws affecting project	Likely (2)	Seri o us (2)	4	Monitor legal developments and consult regulatory experts to adapt quickly.	Legal Tear
R42	Underground infrastructure issues	Environmenta l	Unmapped utilities or unstable soil during excavation	Unlikely (1)	Hig h (3)	3	Conduct comprehensive site surveys and engage geotechnical experts before excavation begins.	Construct o n Team
R43	Energy price volatility	Financial	Unpredicta ble energy costs affecting budgets	Likely (2)	Hig h (3)	6	Negotiate fixed- price energy contracts and explore renewable energy options.	Finance Team

Tableau 1: Table 1 Data Center Risk Assessment



# 7.2. Key Risk Categories

# 1. Regulatory and Compliance Risks

# Risk:

Navigating the Moroccan regulatory environment could involve delays or challenges in obtaining the necessary construction permits, environmental clearances, and data protection approvals.

# Mitigation:

- Engage with local legal advisors and government contacts early to ensure compliance with local laws,
   including environmental impact assessments and data protection regulations (Law 09-08)
- Proactive communication with Moroccan regulatory bodies like the Ministry of Energy and CNDP (National Commission for the Protection of Personal Data) to streamline the permitting process

# 2. Supply Chain and Logistics Risks

# Risk:

Potential delays in the supply chain for critical equipment, such as IT hardware, servers, and cooling systems, especially given global shipping disruptions and trade barriers.

19

# Mitigation:

- Establish relationships with multiple suppliers to ensure redundant supply chains.
- Local saving of non-critical equipment (e.g., construction materials) will reduce reliance on international suppliers.
- Leverage Tangier's strategic location (with its deepwater harbor and free trade zones) to facilitate the import of specialized equipment.



#### 3. Environmental and Weather-Related Risks

#### Risk:

Though Tangier has a mild coastal climate, risks from **severe weather**, such as **flooding** or **earthquakes**, could disrupt construction and operations.

# Mitigation:

- Conduct a **detailed environmental risk assessment** (EIA) to identify any vulnerabilities in the local environment and ensure **resilient building designs**
- Integrate earthquake-resistant materials and flood mitigation systems into the construction phase.
- Design energy-efficient cooling systems and modular infrastructure to ensure the data center can maintain operations even during extreme weather events

# 4. Political and Economic Risks

#### Risk:

Shifts in the political or economic landscape could affect the **stability of the project**—for instance, **policy changes**, **trade restrictions**, or **political unrest** might impact the project timeline or financing.

# Mitigation:

- Monitor political developments closely and engage in long-term strategic partnerships
   with local government and business leaders to ensure stability.
- **Diversify investments** by collaborating with **multiple international partners** to share risks and reduce dependency on a single economic system

# 5. Technical and Operational Risks

#### Risk:

Challenges related to scalability and systems integration, especially with complex Al-driven energy management systems, could affect the long-term performance of the data center.



# Mitigation:

- Hire specialized technical consultants for system integration and energy management during the planning and setup stages.
- Implement extensive testing and simulation procedures to ensure that systems perform under various operational conditions before the official launch
- Ensure redundancy in network connectivity and cooling systems to minimize the risk of downtime

# 6. Workforce and Talent Availability

# Risk:

Challenges in hiring and training the **local workforce**, particularly in highly specialized roles (e.g., **data center engineers, cybersecurity professionals**).

# Mitigation:

- Partner with local universities and training institutions to build a pipeline for talent,
   particularly in IT and engineering fields
- Offer local internships and on-the-job training programs, collaborating with Moroccan HR agencies to recruit the right skill sets

# 7. Cybersecurity Risks

# Risk:

23

The **cybersecurity** of the data center is a high priority, given the sensitivity of the data stored and processed. Risks include **data breaches**, **DDoS attacks**, or **internal threats**.

# Mitigation:

Implement multi-layered security systems, including firewalls, intrusion detection,
 encryption of data, and monitoring systems to ensure continuous protection.



 Regular security audits and employee training to recognize potential threats and vulnerabilities.

# 8. Financial Risks

#### Risk:

Overruns on **budget** or **delays in financing** could strain the project's cash flow and hinder its timely completion.

# Mitigation:

- Establish contingency funds in the project budget to cover unexpected costs or delays.
- Maintain close communication with investors and financial institutions to ensure funding
  is available when needed
- Use **project management software** to track costs and ensure financial transparency across all stakeholders

# 8. Regulatory compliance

1. Construction and Building Permits

The data center will require several **constructions permits** from local and national authorities. These include:

- Building Permits: Required by local municipalities to ensure compliance with zoning laws and building codes
- Environmental Impact Assessment (EIA): Given the sca@4and potential environmental
  impact of the project, an EIA is necessary, particularly due to the sustainability goals of
  project
- 2. Data Protection and Cybersecurity Compliance

Since the **Tangier Data Center** will store and process personal data, it must comply with Morocco's **Data Protection Law (Law 09-08)**. This law mandates:



- Authorization from the CNDP (National Commission for the Protection of Personal Data)
   before processing personal data
- Data Minimization and Transparency: Personal data should only be processed for legitimate purposes, and data subjects must be informed about how their data is being processed

# 3. Environmental Compliance

Morocco enforces strict environmental regulations. For the data center:

- An Environmental Impact Assessment (EIA) must be submitted to the Ministry of Energy,
   Mines, and Environment.
- The data center must ensure compliance with Morocco's **environmental laws** on waste management, emissions, and sustainability practices

# 4. Tax and Financial Compliance

The "Direction Générale des Impôts (DGI)" oversees tax compliance and ensures that businesses adhere to financial regulations. The data center must:

- Register for tax identification with the DGI.
- Submit regular financial reports to maintain compliance

# 5. Compliance with Local and International Standards

Morocco's regulatory framework is increasingly aligned with international standards. The data center will need to comply with not only national laws but also international standards for data center operations and sustainability, such as the ISO 27001 for information security and ISO 50001 for energy management

# 9. Communication Strategy for the Tangier Data Center Project

Effective communication is essential for the success of the **Tangier Data Center** project. To ensure all stakeholders are well-informed and aligned with the project's goals, an **adapted communication plan** is needed. The plan should be tailored to meet the specific needs of each stakeholder group,



ensuring the right messages are conveyed through the appropriate channels and at the right frequency.

# 1. Stakeholder Groups and Communication Objectives

# **Internal Stakeholders**

- Project Team: The internal team responsible for the technical, operational, and construction aspects of the data center.
- **Executive Leadership:** Senior management overseeing the strategic goals and budgetary constraints of the project.

# **External Stakeholders**

- Regulatory Authorities: Local and national government agencies ensuring compliance with permits, environmental regulations, and data protection laws.
- Clients: Businesses relying on the data center for cloud services, storage, and infrastructure.
- Local Community: Residents and local organizations in Tangier and surrounding areas affected by construction and operational activities.
- Partners and Suppliers: Local contractors, equipment providers, and energy suppliers involved in the data center's construction and maintenance.
- Media: Journalists, industry influencers, and bloggers covering technology, sustainability, and business news.

# 2. Tailored Communication Approaches

# For the Project Team:

26

• **Objective**: Ensure continuous alignment with the project's timeline, budget, and operational goals.

# Methods:

- Weekly status meetings: Progress updates, challenges, and milestones.
- Project management software (e.g., Asana, Trello): Track tasks, deadlines, and deliverables



 Real-time communication tools (e.g., Slack, Microsoft Teams) for urgent updates and discussions

# For Executive Leadership:

• **Objective**: Provide regular updates on project progress, financial status, and strategic alignment.

#### Methods:

- Monthly executive reports: Highlight major milestones, risks, and financial updates.
- Quarterly review meetings: In-depth discussions on project adjustments, market conditions, and future planning.

# For Regulatory Authorities:

• **Objective**: Ensure timely compliance with Moroccan laws and regulations regarding construction, environmental impact, and data protection.

# Methods:

- Formal submissions: Environmental impact assessments (EIA), data protection compliance documents, and building permit applications.
- Bi-weekly compliance meetings: Provide updates on the project's adherence to local laws and regulations, addressing any concerns from regulatory bodies.

# For Clients:

• **Objective**: Keep clients informed about the data center's capabilities, uptime, sustainability efforts, and operational changes.

#### Methods:

- Quarterly newsletters: Updates on operational improvements, security enhancements, and new services.
- Dedicated client portal: Real-time monitoring of the data center's status, power usage, and maintenance schedules



 Tailored presentations: For major clients, focusing on specific benefits like energy efficiency and service reliability

# For the Local Community:

• **Objective**: Maintain transparency and engage the local population regarding the project's social and economic benefits.

#### Methods:

- Public forums and community meetings: Updates on the project's status, job creation opportunities, and community support efforts.
- Social media campaigns: Highlight the benefits to the local community (e.g., job creation, eco-friendly design) and foster a positive relationship with residents
- Regular informational leaflets and local radio ads to ensure residents are informed and engaged

# For Partners and Suppliers:

• **Objective**: Ensure timely delivery of equipment and services while maintaining strong collaboration.

# Methods:

- Monthly coordination calls: Discuss timelines, potential delays, and changes in requirements.
- Clear contractual agreements: Outline expectations for delivery times, quality standards, and payment terms
- Shared digital platforms for project documentation, schedules, and technical specifications.

# For the Media:



• **Objective**: Generate positive publicity and position the Tangier Data Center as a leader in sustainable, innovative infrastructure.

# Methods:

- Press releases: Announce key milestones such as the start of construction, energy integration, and official openings
- Media tours and events: Invite journalists to see the data center's progress, emphasizing sustainability and innovation.
- Social media engagement: Share real-time updates on Twitter, LinkedIn, and Instagram, focusing on key themes like renewable energy, community impact, and cutting-edge technology



# 3. Communication Channels and Frequency

Stakeholder	Channel	Frequency	Purpose			
Group						
Project Team	Weekly meetings, project management software	Weekly	Update on tasks, deadlines, and risks			
Executive Leadership	Monthly reports, quarterly meetings	Monthly/Quarterly	Strategic alignment and financial health			
Regulatory Authorities	Formal submissions, bi-weekly meetings	Bi-weekly	Compliance updates and regulatory communication Client engagement, service updates			
Clients	Quarterly newsletters, client portal updates	Quarterly				
Local Community	Public forums, community meetings, social media	Monthly/Quarterly	Transparency, job opportunities, community benefits			
Partners & Suppliers	Coordination calls, digital collaboration platforms	Monthly	Project coordination and supply chain management			
Media	Press releases, media tours, social media posts cation Channels and Freq	As needed, quarterly updates	Public relations and positive exposure			

Table 1 Communication Channels and Frequency



# 10. Conclusion

The Tangier Data Center Project addresses the growing demand for cuttingedge digital infrastructure in Morocco and North Africa. This plan provides a structured approach, incorporating the project phases, work breakdown structure (WBS), Gantt chart, and PERT diagram to effectively manage resources, timelines, and risks.

In addition, we have linked the CSR/EMS and Interculturality documents to this report, based on our previous assessments, and will send the full versions of these documents in our final email. These documents ensure that the project is executed with social responsibility and cultural sensitivity in mind.

Thank you for trusting us with this project. We look forward to the successful completion of the Tangier Data Center and its contribution to Morocco's digital growth.



# 11. WEBLIOGRAPHY

Data Center Costs:

How Much Does It Cost to Build a Data Center?

Provides a comprehensive breakdown of costs associated with building a data center, including construction, equipment, and operational expenses.

Example of Data Center Building:

US AI Startup Plans Massive 386MW Data Center in Morocco

https://www.datacenterdynamics.com/en/news/oracle-cloud-to-launch-cloud-region-in-morocco/

Discusses an example of an AI startup planning a large-scale data center project in Morocco, including capacity and location specifics.

Business Permits and Licenses in Morocco:

Comprehensive Guide to Business Permits and Licenses in Morocco

A guide detailing the business permit and license requirements for establishing operations in Morocco, including construction and operational permits for data centers.

Regulations and Compliance:

Understanding Environmental Regulations and Compliance Obligations in Morocco

Outlines the legal requirements for compliance with environmental regulations, including those that affect the construction and operation of data centers in Morocco.

Compliance and Reporting 32 Requirements: Understanding Compliance and Reporting Requirements for Companies in Morocco Discusses the compliance and reporting obligations for businesses operating in Morocco, including requirements related to data centers.

Data Protection and Cybersecurity Laws: <a href="https://www.legal500.com/guides/wp-content/uploads/sites/1/2022/05/morocco-1.pdf">https://www.legal500.com/guides/wp-content/uploads/sites/1/2022/05/morocco-1.pdf</a>



Provides insights into Morocco's data protection and cybersecurity regulations, which are crucial for data center operations handling sensitive information.

# **Cost of Renewable Energy for Data Centers:**

https://www.moroccoworldnews.com/2024/09/365463/the-shocking-potential-energy-needs-of-moroccos-ai-data-centers

Research the role of renewable energy in data center operations in Morocco, with a focus on the country's growing solar and wind energy markets.