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PUBLIC PROJECT OWNERSHIP IN AIN BEIDA: ANALYSIS OF CHALLENGES AND IMPROVEMENT PERSPECTIVES FOR A COHERENT CITY

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ABSTRACT

Urban coherence is a crucial element for the sustainable development of cities. In Algeria, public project ownership plays an essential role in achieving this objective. This article examines the impact of public project ownership on urban coherence in Ain Beida, Algeria, by identifying the challenges it faces and proposing solutions to improve its performance. The study reveals that project ownership practices have a significant impact on the quality of life and urban development in Ain Beida and identifies avenues to enhance urban coherence. The study emphasizes the importance of training, effective communication, stakeholder involvement, and the adoption of agile methods to improve project ownership performance and urban coherence.

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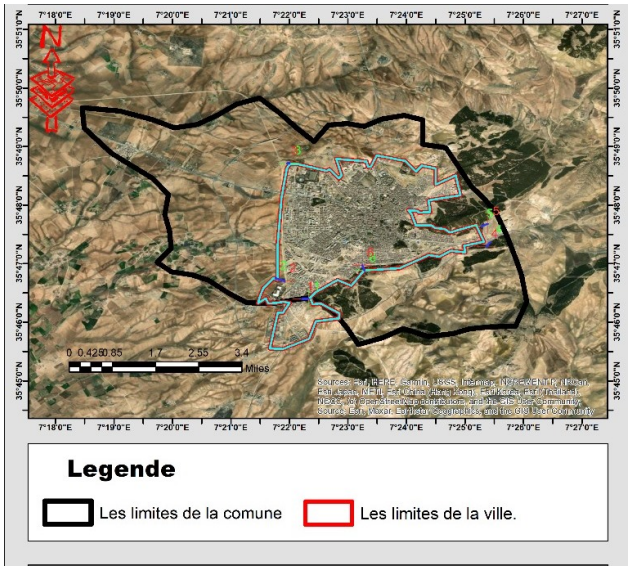
Introduction.

Public project ownership plays a crucial role in the development of infrastructure and the management of urban public works projects. In Algeria, as in many developing countries, the performance of public project ownership often faces challenges related to the complexity of projects, technical and budgetary constraints, coordination among stakeholders, and the evolving urban needs. This article focuses on the situation in Ain Beida, a fast-growing medium-sized town in eastern Algeria. With a population of around 178,684 and a total housing stock of 29,727 units (Housing report to 31-12-2023, Oum El Bouaghi wilaya housing authority), which faces significant challenges in ensuring sustainable, coherent, and harmonious urban development.



Map 1. Delimitation of the town perimeter, Delimitation of the town of Ain Beida, This areacovers an area of 5,200 Hectares (52 km²). Source : ESSRI + Base map + Approaches Author 2024.

According to Lynch (1960), the legibility of urban form relies on five key elements: paths, edges, districts, nodes, and landmarks. The coherent arrangement of these elements allows city dwellers to navigate and appropriate the space. Conversely, a fragmented, disordered, or poorly structured urban form can create a sense of confusion and insecurity, as demonstrated by the works of Cullen (1971) and Rossi (1966).

Spatial coherence is also expressed in the quality of public spaces, which play a central role in the structuring and animation of the city. According to Gehl (2011), public spaces should offer a diversity of uses and atmospheres to promote social interactions and the well-being of residents. The harmonious integration of vegetation, minerals, and activities also contributes to the quality of the urban living environment, as highlighted by Donadieu and Mazas (2002).

Functional coherence involves a well-coordinated relationship between different transport networks (public transport, active modes, cars) to facilitate multimodality and reduce environmental nuisances associated with automobiles, as emphasized by the works of Newman and Kenworthy (1999).

This issue addresses the influence of public project ownership actors on coherent urban development in Ain Beida?

1. Analysis of Public Project Ownership in Ain Beida.

1.1. Institutional and Regulatory Framework.

This section presents the institutional and regulatory framework governing public project ownership in Algeria, drawing on relevant laws and decrees. It highlights the responsibilities of the project owner, the various forms of delegated project ownership, and the procedures for public procurement. The legal framework sets the foundation for the roles and obligations of different stakeholders in the public project ownership process, ensuring that projects are carried out in compliance with national standards and regulations.

1.2. Factors Influencing Performance.

The analysis identifies both organizational and external factors that influence the performance of public project ownership in Ain Beida. Organizational factors include internal structure, staff competencies, organizational culture, and decision-making processes. These elements are crucial in determining how effectively a project owner can manage and execute urban development projects. External factors encompass economic, political, and social conditions, as well as environmental constraints and the needs of the population. These external influences can significantly affect project timelines, budget allocations, and the overall success of urban development initiatives.

1.2.1. Analysis of the Responsibilities of the Public Project Owner in Ain Beida.

This section delves into the challenges faced by the public project owner in Ain Beida when managing urban construction projects. The public project owner is responsible for overseeing the planning, execution, and completion of urban development initiatives, which involves coordinating various stakeholders, managing resources, and ensuring compliance with regulatory standards.

One of the primary challenges is the complexity of managing multiple projects simultaneously, each with its own set of technical, financial, and logistical demands. The public project owner must navigate these complexities while also addressing the evolving needs of a rapidly growing urban population.

The analysis emphasizes the importance of adopting an integrated approach to urban project management. This approach should involve comprehensive planning that considers the interconnections between different urban systems-such as transportation, housing, and public spaces-ensuring that they work together harmoniously to create a cohesive urban environment. Additionally, the public project owner must enhance management practices by improving decision-making processes, fostering collaboration among stakeholders, and leveraging modern project management tools and techniques.

By focusing on these aspects, the public project owner can better address the challenges of urban development in Ain Beida, ultimately contributing to a more coherent and sustainable urban landscape.

1.2.2. Key Points of Infrastructure Project Analysis in Aïn Beida.

Key Point	Description	Impact
Delays and Cost Re-evaluations	Projects experience significant delays and cost re-evaluations.	Decreased project efficiency, increased costs for the state and citizens, negative impact on urban coherence.
Causes of Delays and Cost Re-evaluations	Poor initial assessment, funding issues, insufficient management.	
Lack of Coordination and Monitoring	Absence of designated project managers for some projects, slow progress on others.	Decreased project efficiency, increased costs, negative impact on urban coherence.
Ineffective Housing Policy	The public rental housing policy (LPL) is criticized for its inefficiency and failure to meet local needs.	Negative impact on housing access, increase in slums, social tensions.
Importance of the Legislative and Regulatory Framework		
Definition of Responsibilities and Obligations	The legislative framework clarifies the role of the project owner and their legal obligations.	Improved project management, reduced risk of delays and cost overruns.
Compliance with Technical and Environmental Standards	Legislation imposes technical and environmental standards that the project owner must adhere to.	Improved project quality, environmental protection, compliance with safety standards.
Public Procurement Procedures	Legislation governs public prourement procedures, promoting transparency and competition.	Improved project management, reduced corruption, better resource allocation.
Protection of Stakeholder	The legislative framework protects	Improved governance, strengthened
Rights	The rights of users and citizens.	Trust in public institutions.
Financing Management	Rules governing public finances define how funds should be used and financial controls implemented.	Improved management of public resources, reduced waste.
Risk Management	Legislation may impose requirements for risk assessment and social responsibility.	Improved project management, reduced risk of disasters and accidents.
Time and Cost Management	The regulatory framework may impose specific deadlines and cost controls.	Improved project management, reduced delays and cost overruns.

Conclusion.

The conclusion to be drawn from this analysis is that the success of infrastructure projects in Aïn Beida heavily depends on the establishment of a robust legislative and regulatory framework, its rigorous enforcement, and the ability of public project ownership to ensure urban coherence.

1.2.3. Recommendations.

- **Enhance Project Planning and Evaluation:** Conduct thorough feasibility studies and realistic cost analyses to prevent delays and cost overruns. Proper initial assessments will ensure that projects are based on accurate data, reducing the likelihood of encountering unforeseen challenges during implementation.
- **Strengthen Project Coordination and Monitoring:** Implement a regular monitoring and evaluation system to ensure the progress of projects and identify potential issues early. This will facilitate timely interventions and adjustments, improving overall project efficiency and outcomes.
- **Revise the Housing Policy:** A revision of the public rental housing policy is necessary to better address local needs and ensure equitable access to housing. This should involve re-evaluating housing demands, improving resource allocation, and enhancing the effectiveness of housing programs to reduce social tensions and prevent the proliferation of informal settlements.
- **Reinforce the Legislative and Regulatory Framework:** Strengthen the legislative and regulatory framework to ensure better management of public projects, protection of stakeholder rights, and promotion of transparency and good governance. This includes updating laws to address current challenges, improving enforcement mechanisms, and ensuring that all parties involved in project ownership adhere to established standards and practices.

1.2.4. Conclusion.

The management of urban construction projects in Ain Beida faces significant challenges. An integrated approach, improved project management, effective collaboration among various stakeholders, and a robust legislative and regulatory framework are essential to ensure coherent urban development and to meet the needs of the population. Addressing these challenges will pave the way for sustainable growth and a better quality of life for the residents of Ain Beida.

1.3. Decision-Making Processes and Communication.

This section examines the decision-making processes within public project ownership structures, emphasizing the importance of both upward and downward communication. It analyzes the clarity of roles and responsibilities, the effectiveness of communication channels, and the coordination mechanisms between different departments. Effective decision-making relies on clear and well-defined roles, ensuring that each stakeholder understands their responsibilities and the flow of information. The analysis highlights how streamlined communication and coordination can prevent misunderstandings, reduce delays, and enhance the overall efficiency of urban development projects.

2. Challenges Related to Urban Coherence.

2.1. Lack of Coordination Among Stakeholders. The article highlights the difficulties encountered in coordinating the various stakeholders (administrations, businesses, citizens), who may have divergent objectives. It underscores the importance of a shared vision and effective collaboration to ensure the coherence of urban projects. The lack of coordination can lead to fragmented development, reducing the effectiveness and efficiency of urban planning efforts.

2.2. Insufficient Financial Resources. Budgetary constraints often limit the ability to implement coherent and sustainable infrastructure projects. The article explores available financing options and strategies to optimize the use of existing resources. Addressing financial limitations is crucial to ensure that projects are not only completed but are also aligned with long-term urban development goals.

2.3. Evolving Urban Needs. Rapid changes in demographics and the needs of residents can render certain projects obsolete, necessitating constant adaptations. The article analyses methods to

anticipate and respond to the evolving needs of the population. It stresses the importance of flexible planning that can accommodate growth and shifts in urban demands.

2.4. Communication Issues. Ineffective communication among stakeholders can lead to misunderstandings and delays in project implementation. The article proposes solutions to improve communication and transparency in the planning and execution of projects. Clear and open communication channels are essential to align expectations and facilitate smooth project progress.

2.5. Resistance to Change. Local actors may be reluctant to adopt new approaches or change the use of urban spaces, complicating the implementation of innovative solutions. The article explores strategies to overcome resistance to change and promote acceptance of urban development projects. Managing change effectively is key to ensuring that new initiatives are embraced and integrated into the urban fabric.

2.6. Conflicts of Interest. Private interests may sometimes take precedence over the collective good, compromising the coherence of urban projects. The article analyzes mechanisms to prevent and manage conflicts of interest and ensure transparency in decision-making processes. Ensuring that all stakeholders are working towards common goals is essential for maintaining the integrity of urban development.

2.7. Changing Regulations and Policies. Frequent changes in laws and regulations can create uncertainty and complicate the planning process. The article proposes solutions to adapt to regulatory changes and ensure the stability of the legal framework. Stability in the regulatory environment is necessary to provide confidence in long-term urban planning efforts.

2.8. Lack of Reliable Data. The absence of accurate data on urban planning and citizen needs can affect decision-making and planning. The article emphasizes the importance of collecting and analysing reliable data to inform decisions and improve the effectiveness of projects. Reliable data serves as the foundation for sound urban planning and ensures that projects are responsive to actual needs.

3. Case Studies and Results.

Analysis of the Implementation of Public Infrastructure Projects in Ain Beida.

This section analyses the experience of public project ownership in the execution of public infrastructure projects in Ain Beida, focusing on three case studies.

3.1. Construction of a 1000-Student High School in Ain Beida.

This case study examines the construction of the 1000-student high school, also known as Lycée Hihi El Yamine, located on the Meskiana road in Ain Beida. The project faced several challenges related to public project ownership, revealing shortcomings in management and planning (Boudia, 2020; Ziani, 2021).

3.1.1. Context and Design.

The project was initially entrusted to the Education Directorate of the Wilaya of Oum El Bouaghi, which appointed an architectural design firm from Algiers. However, the design study did not consider the results of a soil survey, leading to two successive changes in the construction site. This lack of diligence during the design phase had significant consequences on the project's progress (Benali, 2019).

3.1.2. Transfer of Project Ownership.

After the final site was selected, the Education Directorate awarded the construction to a private company from Oum El Bouaghi. However, delays in starting the work led the Wali to transfer project ownership to the Directorate of Housing and Public Facilities. This transfer highlighted administrative issues, including the lack of financial commitment for the study and monitoring agreement, leading to contractual complications with the design firm and the construction company (Khalil, 2022).

3.1.3. Project Abandonment and Technical Difficulties.

The designated company abandoned the project after receiving two formal warnings, failing to comply with the instructions of the new project owner. The technical difficulties, not anticipated by the initial design firm, forced the second project owner to regularize the contractual situation and terminate the contract with the company (Mebarki, 2023).

3.1.4. Re-launch and Adjustment.

To meet the deadlines set by the Ministry of National Education, the new project owner had to re-launch all regulatory procedures. This involved subdividing the project into several lots and engaging multiple companies to expedite the work. A geotechnical study finally revealed the presence of groundwater, requiring additional work to ensure the infrastructure's stability (Haddad, 2022).

3.1.5. Additional Costs and Outcomes.

Four addenda were concluded to cover the additional work, resulting in an increase of more than 10% over the initial cost. Despite these challenges, the high school is now operational and stable. This experience highlights the negative consequences of changing project ownership mid-project, leading to delays, additional costs, and unanticipated technical challenges (Boudia, 2020).

3.1.6. Conclusion.

The analysis of the construction of the 1000-student high school in Ain Beida illustrates the critical importance of thorough planning and effective communication among the various stakeholders involved in public project ownership. The lack of a preliminary geotechnical study significantly impacted the suitability of the infrastructure to the soil characteristics, underscoring the need to consider all technical factors from the earliest stages of design. This case study serves as a clear example of the challenges encountered in managing construction projects while highlighting valuable lessons for future undertakings (Ziani, 2021; Mebarki, 2023).

As a result, four addenda were required to cover the additional work, leading to a cost increase of more than 10% over the initial budget. Despite the difficulties faced, the high school is now operational and stable. This experience emphasizes the negative consequences of changing project ownership mid-project, resulting in delays, increased costs, and unanticipated technical challenges. The absence of a preliminary geotechnical study, in particular, affected the project's alignment with the site's soil characteristics, highlighting the crucial need for rigorous planning in construction project management.

3.2. Construction of an 800-Student High School in Ain Beida.

This project involved the construction of an 800-student high school, replacing the old SNET located in the colonial core of Ain Beida. Similar to other projects, this one also experienced a transfer of project ownership, from the Education Directorate of the Wilaya of Oum El Bouaghi to the Directorate of Housing and Public Facilities (Khalil, 2022). The project entailed the demolition of an old educational structure, which included technical workshops with metal frameworks and prefabricated blocks used for teaching and housing.

3.2.1. Challenges of Demolition.

Before constructing the new buildings, it was imperative to demolish the old structures. However, this operation required specific demolition specifications, an aspect that had not been anticipated (Benali, 2019). A company was designated to carry out the demolition, but complications quickly arose. It was discovered that the workshops contained expensive educational equipment, and the housing block was occupied by families of education employees. This led to significant delays in the demolition process, necessitating solutions for relocating the equipment and housing the families (Mebarki, 2023).

3.2.2. Coordination of Interventions.

The nature of the operation, described as "drawer-like," required waiting for the completion of one block before starting the next. This made it difficult to coordinate the interventions of the construction companies. The project owner had to exert considerable effort to convince local authorities

of the necessity of this approach, as decisions were often made without considering the practical realities on the ground (Ziani, 2021).

3.2.3. Administrative and Financial Issues.

Problems inherited from the former project owner, including the lack of financial commitment for agreements at the financial control level, also negatively impacted the project's progress (Boudia, 2020). Managing service orders and contracts with the various companies was complicated by the impossibility of simultaneous interventions on-site, which increased the administrative difficulties encountered (Haddad, 2022).

3.2.4. Outcomes and Costs.

Although the project was eventually completed, it incurred costs well beyond the initial forecasts, not only financially but also due to the lack of thoroughness in the study phase, which requires adequate time to avoid future issues (Khalil, 2022). This experience highlights the importance of rigorous planning and informed decisions based on thorough field explorations (Mebarki, 2023). The consequences of these shortcomings will inevitably affect the coherent and harmonious development of the city of Ain Beida in the future.

3.2.5. Conclusion.

The analysis of the construction of the 800-student high school in Ain Beida highlights the challenges encountered during the demolition and construction of new educational infrastructures. The consequences of shortcomings in planning and coordinating interventions will inevitably impact the coherent and harmonious development of Ain Beida in the future. This case study illustrates the necessity of a proactive and integrated approach in managing public construction projects to avoid delays, additional costs, and administrative complications (Ziani, 2021; Boudia, 2020). Ensuring thorough planning and effective coordination from the outset is crucial for the successful execution of such projects.

3.3. Construction of the Faculty of Engineering Sciences in Ain Beida.

The project for constructing the Faculty of Engineering Sciences in Ain Beida was marked by a premature start, leaving little time for the maturation of the study and design phase. This rush led to unforeseen additional work, particularly regarding earthworks on rocky terrain, which had not been anticipated in the initial studies or in the contracts' specifications with the construction companies (Haddad, 2022).

3.3.1 Additional Work and Amendments.

As a result, the project generated substantial additional work amendments, exceeding 20% of the initial amount. This situation made their financial and regulatory handling problematic, forcing the companies to resort to administrative courts to resolve these disputes (Boudia, 2020).

3.3.2 Constraints and Delays.

Several constraints affected the infrastructure and the necessary development work to accommodate the various structures of the faculty. These complications resulted in further delays in completing the project. It can be argued that these issues stemmed from an inappropriate choice of designer and insufficient time allocated to the maturation of the study phase, leading to problematic situations during project ownership (Ziani, 2021).

3.3.3 Land Ownership Issue.

Another aggravating factor was the selection of the land for the project's site. It was discovered that the desired land belonged to a private owner, which stalled the start of the work. An executive meeting, chaired by the Wali (the primary manager and project owner), was necessary to find a solution and establish access to the site, allowing the work to continue (Khalil, 2022).

3.3.4 Conclusion.

All these challenges had a negative impact on project ownership and, by extension, on the coherent and harmonious development of Ain Beida. This situation highlights the importance of proper planning, thorough site investigation, and informed decision-making to avoid delays and future complications. The experience gained from this project underscores the necessity of a rigorous approach in managing public construction projects to ensure their success and long-term viability (Mebarki, 2023).

3.4. Analysis of Case Study 1: 1000-Student High School in Ain Beida.

3.4.1. Strengths.

- **Objective Achieved:** Despite numerous obstacles, the high school is now operational and meets the educational needs of the region.
- **Resilience:** The project successfully overcame significant challenges, such as the change of project ownership and issues related to the terrain.

3.4.2. Weaknesses:

- **Lack of Planning:** The absence of a preliminary geotechnical study led to inappropriate design choices and costly additional work.
- **Chaotic Management:** The transfer of project ownership highlighted a lack of preparation and coordination, resulting in delays and additional costs.
- **Lack of Communication:** Insufficient communication among the various project stakeholders contributed to coordination issues and the abandonment of the project by the initially designated company.

3.4.3. Overall Evaluation.

The 1000-student high school project in Ain Beida serves as an example of success despite considerable challenges. However, the various issues encountered underscore the importance of rigorous planning, proactive management, and effective communication to ensure the success of construction projects.

3.4.4. Recommendations:

- **Preliminary Geotechnical Study:** It is essential to conduct a thorough geotechnical study before starting any construction project to avoid terrain-related problems and ensure the infrastructure's stability.
- **Rigorous Planning:** Detailed planning, including budgets, timelines, and necessary resources, is crucial to prevent delays and additional costs.
- **Effective Coordination:** Optimal communication and coordination among all project stakeholders, including design firms, construction companies, and local authorities, are fundamental for smooth project management.
- **Clear Contractual Engagement:** Ensuring that all study and monitoring agreements are properly established and documented is important to avoid issues related to changes in project ownership.
- **Proactive Change Management:** Being prepared to manage changes in project ownership smoothly, with clear procedures in place, is vital to ensuring project continuity.

3.4.5. Link to the Mission of the Public Project Owner.

The mission of the public project owner is to ensure coherent and sustainable urban development. The difficulties encountered in this project highlight the critical importance of rigorous planning and management to avoid negative impacts on timelines, budgets, and the quality of projects. The project owner must align all actions and decisions with this mission to achieve successful and sustainable outcomes.

3.4.6. Conclusion.

The experience of the 1000-student high school in Ain Beida provides valuable lessons for improving the management of construction projects. By implementing the recommendations outlined, it is possible to ensure the success of future projects and contribute to the harmonious development of

the city. Ensuring that public project ownership adheres to its mission will be crucial in overcoming challenges and achieving long-term urban development goals.

3.5. Analysis of Case Study 2: 800-Student High School.

3.5.1. Strengths.

- **Objective Achieved:** The project was successfully completed despite the challenges encountered.
- **Learning Opportunity:** The delays and additional costs highlighted the importance of better anticipation and effective management.

3.5.2. Weaknesses:

- **Demolition:** Unforeseen issues during the demolition process led to delays and additional costs.
- **Didactic Material:** Problems with the supply of educational materials also contributed to the delays.
- **Relocation of Families:** The relocation of families posed an additional challenge.
- **"Drawer" Construction Method:** This approach complicated the coordination of the work and created management difficulties.

3.5.3. Lessons Learned.

- **Planning:** Rigorous planning, accompanied by detailed preliminary studies, is essential to anticipate potential complications, particularly in demolition processes.
- **Change Management:** It is crucial to establish clear procedures for managing changes and to ensure effective communication among all stakeholders to maintain project continuity.
- **Coordination and Communication:** Effective coordination between construction companies and local authorities is necessary to avoid misunderstandings and delays.
- **Financial Commitment:** A solid financial commitment from the outset is indispensable to prevent interruptions and delays related to funding issues.

These lessons highlight the importance of thorough preparation, clear communication, and proactive management in ensuring the smooth execution of construction projects, particularly when dealing with complex scenarios like demolition and stakeholder coordination.

3.5.4 Conclusion of Case Study No. 02: 800-Student High School.

The analysis of the 800-student high school project highlights the critical importance of meticulous planning and proactive management in overcoming the challenges encountered. Although the project was successfully completed, the delays and additional costs emphasize the need to anticipate complications, particularly in demolition processes and material procurement.

The lessons learned from this experience underscore the importance of effective communication and close coordination among all stakeholders to ensure smooth operations. Additionally, a solid financial commitment from the outset is crucial to avoiding interruptions. By incorporating these lessons into future projects, it is possible to improve the management of school construction and ensure more efficient and harmonious implementation.

3.6. Analysis of Case Study 3: Faculty of Technology and Engineering Sciences.

3.6.1. Strengths.

- **Objective Achieved:** The faculty was designed to provide modern learning and research spaces, effectively meeting contemporary educational needs.
- **Learning Opportunity:** This project highlighted the importance of proactive resource management and strong stakeholder engagement.

3.6.2. Weaknesses:

- **Resource Management:** Delays in material delivery and insufficient coordination hindered the progress of the work.
- **Stakeholder Engagement:** A lack of communication between project teams and educational authorities led to misunderstandings regarding requirements.

3.6.3. Lessons Learned.

- **Planning and Design:** Conducting a thorough study of the end-users' needs is essential to ensure the relevance of the infrastructure.
- **Resource and Time Management:** A precise schedule and rigorous deadline tracking are necessary to optimize resource management and minimize delays.
- **Stakeholder Engagement:** Involving stakeholders from the beginning of the project helps identify expectations and improves project acceptance.
- **Monitoring and Evaluation:** Implementing performance indicators and effective monitoring mechanisms is crucial for quickly identifying problems and implementing solutions.

These lessons emphasize the importance of early and continuous engagement with stakeholders, meticulous planning, and proactive management to ensure the successful execution of complex educational infrastructure projects.

4. General Conclusion.

These three case studies illustrate the complexity of public project ownership and highlight the necessity of an integrated and thoughtful approach to ensure their success. The lessons learned emphasize the importance of:

- **Rigorous Planning:** Anticipating potential challenges and complications.
- **Proactive Change Management:** Adapting projects to unforeseen circumstances and evolving needs.
- **Coordination and Communication:** Ensuring effective collaboration among all stakeholders.
- **Solid Financial Commitment:** Securing adequate and stable funding for the project.
- **Stakeholder Engagement:** Involving end-users and local authorities from the outset of the project.
- **Monitoring and Evaluation:** Measuring performance and identifying areas for improvement.

By incorporating these lessons into future urban development initiatives, it is possible to ensure a positive impact on the coherent and harmonious development of Ain Beida. This approach will contribute to more successful and sustainable outcomes in the management of public construction projects.

5. Conclusion and Recommendations.

The analysis of these three case studies reveals a diversity of approaches and outcomes in public project ownership in Ain Beida. By identifying both best practices and failures, it is possible to draw conclusions about the key success factors. Rigorous planning, proactive change management, effective coordination, solid financial commitment, and stakeholder involvement are all essential elements to ensure the success of urban projects.

5.1 Recommendations.

- **Strengthen Planning Processes:** Ensure that all projects are underpinned by comprehensive planning that anticipates potential challenges and integrates detailed studies from the outset.
- **Enhance Change Management:** Develop flexible strategies that allow for quick adaptation to unforeseen circumstances and evolving needs without compromising project timelines or quality.
- **Improve Coordination and Communication:** Foster a collaborative environment among all stakeholders, ensuring that roles and responsibilities are clear and that communication is continuous and effective throughout the project lifecycle.
- **Secure Financial Resources:** Establish strong financial foundations for each project, ensuring that adequate and stable funding is available to prevent interruptions and delays.
- **Engage Stakeholders Early:** Involve end-users, local authorities, and other relevant parties from the early stages of the project to align expectations and enhance project acceptance.
- **Implement Robust Monitoring and Evaluation:** Set up performance indicators and regular evaluation mechanisms to monitor progress, identify issues early, and apply corrective measures as needed.

By applying these recommendations, future urban development initiatives in Ain Beida can achieve more successful, sustainable, and harmonious outcomes.

6. Recommendations.

6.1. Strengthen Planning.

Implement rigorous planning procedures, including soil studies, precise needs assessments, and detailed preliminary studies to anticipate potential complications. This should be in accordance with Law No. 90-21 of August 15, 1990, related to public accounting.

6.2. Improve Change Management.

Establish clear procedures for managing changes in project ownership and contracts, along with effective communication among stakeholders, based on Executive Decree No. 14-320 of November 20, 2014, related to project ownership and delegated project ownership.

6.3. Promote Coordination and Communication.

Encourage coordination between construction companies and local authorities, organize regular meetings, and implement effective communication systems, as recommended by Presidential Decree No. 15-247 of September 16, 2015, regulating public procurement and public service delegations.

6.4. Ensure Solid Financial Commitment.

Secure financial commitment from the beginning of the project and establish mechanisms for monitoring and controlling expenditures, in line with the provisions of Law No. 23-12 of August 5, 2023, setting out the general rules for public procurement.

6.5. Involve Stakeholders.

Engage end-users, local authorities, and other stakeholders from the start of the project to identify their needs and enhance project acceptance. This can be supported by studies like those of Samia Henni (2015) on urban dynamics in Algeria.

6.6. Implement a Monitoring and Evaluation System.

Establish performance indicators to assess project progress, end-user satisfaction, and identify areas for improvement, drawing on the recommendations of Gatignon (2013) on public project ownership. By following these recommendations, future projects can be better planned, managed, and executed, ensuring successful outcomes and positive impacts on urban development in Ain Beida.

7. Recommendations to Improve Performance.

7.1. Strengthening Training and Skills:

Invest in continuous training for project teams to enhance their technical and managerial skills, particularly in digital tools and project management methods, as emphasized by Bendjemil (2008) and Biau (2000). It is crucial to develop training programs tailored to the specific needs of public project ownership in Ain Beida.

7.2. Improving Internal Communication.

Implement effective communication systems to facilitate the flow of information across different hierarchical levels, using regular meetings, collaborative platforms, and digital communication tools to ensure all stakeholders are informed and aligned.

7.3. Adopting Agile Methods.

Integrate agile approaches into project management to better adapt to changes and respond quickly to unforeseen events, drawing on the work of Bresnen and Marshall (2000) on motivation and engagement in partnerships. This approach can lead to more flexible and efficient project execution.

7.4. Stakeholder Engagement.

Encourage the participation of citizens and local actors from the project design phase to better understand their needs and foster project acceptance, in line with the recommendations of Nacira Guénif-Souilamas (2003) regarding the Algerian city. This engagement can help align projects with community expectations and enhance their overall impact.

7.5. Systematic Monitoring and Evaluation.

Establish mechanisms for monitoring and evaluation to measure the performance of ongoing projects, allowing for the analysis of results and the extraction of valuable lessons for future projects. It is essential to define relevant performance indicators in compliance with Executive Decree No. 16-224 of August 22, 2016, regarding the remuneration of building project management.

By adopting these recommendations, Ain Beida can improve the performance of its public project ownership initiatives, ensuring sustainable and efficient urban development while adhering to existing regulations. This proactive approach will contribute to the successful realization of projects that meet the needs of the community and support the city's long-term growth.

8. Conclusion

In conclusion, it is essential to significantly enhance the performance of public project ownership in Ain Beida to ensure sustainable and coherent urban development. The key recommendations for improving the efficiency of infrastructure projects include continuous training for teams, improving internal communication, active stakeholder engagement, and the adoption of agile methods.

Moreover, the success of public project ownership in Ain Beida relies on a strategic and collaborative approach. This approach must consider the specific challenges of the local urban context, integrating the needs and expectations of citizens while adhering to current regulations. By implementing these recommendations, Ain Beida can not only improve the quality of its infrastructure projects but also foster a more inclusive and resilient urban environment.

9. The Lack of Energy Sustainability in Public Facilities and Its Impact on Urban Development in Ain Beida.

The lack of access to electricity and natural gas represents a significant obstacle to the coherent and harmonious urban development of Ain Beida. Bendjemil (2008) asserts that energy supply is a critical determinant of the viability of public infrastructure. The insufficiency of energy supply compromises efforts to rehabilitate and develop infrastructure, particularly in the education sector. Despite efforts to modernize the city's infrastructure, Ain Beida continues to face urban development challenges that have a direct impact on the quality of life of its residents.

This situation underscores the necessity of an integrated approach that considers energy needs in urban planning projects, as highlighted by Henni (2015) in her work on contemporary urban dynamics in Algeria. It is evident that access to reliable energy is crucial not only for maintaining existing infrastructure but also for advancing sustainable and inclusive urban development. Addressing these energy challenges is essential to ensuring that Ain Beida can achieve its development goals and improve the living conditions of its inhabitants.

9.1. Public Infrastructure and Lack of Energy Sustainability.

The insufficiency of energy supply significantly affects the functioning of public infrastructure in Ain Beida. This energy deficit is particularly evident in several critical sectors:

- **Educational Institutions:** Primary and secondary schools in urban expansion areas suffer from a lack of electricity, impacting the quality of education and student comfort. Despite rehabilitation and school improvement efforts between 2019 and 2021, this issue persists.
- **Healthcare Centers:** Health infrastructures, including dispensaries and clinics, experience regular power outages, compromising the provision of adequate medical care and endangering patient health.
- **Administrative Buildings:** Local government offices are also affected by frequent power interruptions, hindering the efficiency of public service management and slowing administrative processes.
- **Public Spaces:** Parks and community spaces lack adequate lighting and necessary infrastructure to optimally serve citizens, reducing their appeal and usage.
- **Sports Facilities:** Sports complexes, such as the semi-Olympic swimming pool, often lack proper lighting and heating systems, limiting their public use and hindering sports activities.
- **Sanitation Systems:** The lack of energy also affects the optimal functioning of water supply and sanitation systems, compromising public health.

- **Transportation:** Public transport stations, particularly those connecting Tébessa, Meskiana, and Ain Beida, suffer from insufficient lighting and essential services, degrading the user experience and affecting transport schedules.
- **Industrial Zone:** The industrial zone is impacted by a lack of lighting and essential services, impairing the functionality of businesses and artisans. Power outages during the July 2024 heat-wave caused significant material damage in some industrial units.

These deficiencies underscore the urgent need for targeted interventions to improve energy access and ensure the proper functioning of these essential infrastructures, in order to promote sustainable and inclusive urban development in Ain Beida. Addressing these energy challenges is vital for enhancing the quality of life for residents and supporting the city's growth and resilience.

9.2. Consequences on the Daily Life of Inhabitants

The infrastructure challenges related to the lack of energy have significant repercussions on the daily lives of Ain Beida's inhabitants, manifesting in various areas:

- **Impact on Education:** The energy insufficiency in schools disrupts the flow of classes, limits the integration of educational technologies, and creates an uncomfortable learning environment for students. According to the World Bank (2019), access to energy is crucial for the proper functioning of schools, as it allows the use of modern educational resources and enhances the learning environment. Without reliable electricity, students are deprived of optimal learning opportunities.
- **Difficulties in Accessing Healthcare:** Power outages in health centers compromise the quality of medical care, leading to treatment delays and increasing health risks for patients. The WHO (2020) emphasizes that access to energy is essential for maintaining effective healthcare services, as electricity interruptions can delay critical medical interventions and jeopardize patient safety.
- **Disruption of Administrative Services:** Power interruptions in administrative offices slow down service operations, complicating citizens' access to essential documents and services. This creates an atmosphere of inefficiency that can frustrate citizens and hinder the smooth functioning of public administration.
- **Insecurity in Public Spaces:** The lack of adequate lighting in parks and urban collective spaces creates an unsafe environment, deterring residents from enjoying recreational areas, especially in the evening. The UN-Habitat report (2021) indicates that public lighting plays a key role in urban safety, and its absence can exacerbate issues of crime and security.
- **Limitations on Sports Activities:** Sports facilities, often poorly lit or lacking heating systems, limit opportunities for youth and adults to engage in physical activities. This impacts not only physical health but also the mental well-being of the residents.
- **Sanitation Issues:** The lack of energy for sanitation systems can lead to hygiene problems, increasing the risk of diseases and harming public health. Studies in the Journal of Environmental Management (2021) show that access to energy is essential for the proper functioning of sanitation infrastructure, and its absence can lead to health crises.
- **Inconveniences in Transportation:** The lack of lighting and essential services in public transport stations compromises the safety and comfort of users, making travel difficult and unreliable, especially at night. This reduces residents' mobility and limits their access to essential services.
- **Economic Disruptions:** Power outages in the industrial zone affect the productivity of businesses, leading to economic losses and restricting employment opportunities for residents. The IMF (2022) has demonstrated that electricity interruptions have a direct impact on business performance, which can lead to job losses and economic slowdown.

These cumulative consequences, resulting from the shortcomings of project ownership in Ain Beida, negatively affect the quality of life of its inhabitants. They highlight the urgent need for interventions to improve infrastructure and ensure a healthy and functional living environment, as well as coherent urban development. Addressing these issues is vital for creating a sustainable and resilient community that can thrive in the face of future challenges.

9.3. Conclusion.

The lack of access to electricity and natural gas is a major obstacle to the development of Ain Beida, significantly affecting the quality of life for its residents. As highlighted by reports from the WHO (2020) and the World Bank (2019), energy is essential for ensuring fundamental services such as

education, healthcare, and security. It is crucial to implement sustainable solutions to improve access to energy and ensure the proper functioning of public infrastructure, allowing the city to progress towards harmonious and sustainable urban development. Addressing these energy challenges is key to enhancing the well-being of the community and supporting Ain Beida's growth and resilience.

9.4. Recommendations

- **Invest in Renewable Energy Sources:** Leverage the region's solar and wind potential to provide clean and sustainable energy. This approach could reduce dependence on non-renewable energy sources while enhancing the city's energy resilience.
- **Improve Energy Efficiency in Buildings:** Implement programs for thermal insulation and the use of low-consumption appliances. According to the UN-Habitat report (2021), these measures can reduce energy consumption and improve residents' comfort.
- **Strengthen Electrical Networks:** Invest in the modernization and expansion of electrical grids to ensure reliable supply. The IMF (2022) emphasizes that robust electrical infrastructure is essential for supporting economic development and productivity.
- **Promote the Use of Natural Gas:** Encourage the use of natural gas in households and industries to reduce dependence on electricity. This can also contribute to a cleaner and more efficient energy transition.
- **Raise Awareness on Energy Conservation:** Promote awareness campaigns to encourage eco-responsible behaviours. Education on energy conservation can play a key role in reducing demand and improving energy efficiency.

Access to energy is a crucial factor for the socio-economic urban development of Ain Beida. Implementing these recommendations will help ensure a healthier and more sustainable living environment for the city's residents, while also promoting consistent, sustainable, and inclusive urban economic growth.

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