

Smart Cities and Sustainable Urban Development in Morocco

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ABSTRACT

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In a rapidly changing socio-economic context, urban planning faces several challenges. In fact, population growth, the accentuation of urban issues and the massive use of mobile communication technologies have presented the smart city as a relevant and innovative solution to these various contemporary challenges. At this stage, the opportunities mobilized by Big Data and communication technologies have reiterated the attention on the notion of smart cities. However, how can contemporary urban life be planned in order to determine the conditions for success and the trajectory of a smart city in Morocco? By crossing the reality of urban planning, the state of Moroccan cities with the different trajectories to be taken to support the emergence of smart cities in Morocco, this work seeks to explore the likely interactions between smart planning and the process of implementing a smart city. In addition, it also attempts to retrace the state of urban planning in Morocco. In this paper we will provide a series of concrete recommendations, ready to rectify any widespread deficiencies rooted in the current urban planning framework. Finally, we aim to propose some measures to be taken to ensure the redress of the excesses of the current planning system.

1. INTRODUCTION

Faced with the challenges of urban development and demographic growth specific to emerging countries, the concept of smart city, or intelligent city, is particularly significant in the world as well as in Africa. Morocco is betting on the transformation of six cities into smart cities by 2026 (Ministry of Industry, 2013). The project has already started in Casablanca in 2016, awaiting the cities of Marrakech, Rabat, Tangier, Ifrane and Fez. Morocco wants to create a new model of urban management at a lower cost, improve the efficiency of urban planning and achieve sustainable social development that meets the needs of citizens in terms of transport, energy, green economy, security and housing. In theory, cities engaged in a smart city approach start from the existing, and seek to transform and adapt their systems. This is done through the improvement of public services through the integration of information technology and the digitalization of processes in the management of city projects. This territorial intelligence policy requires the mobilization of stakeholders within the cities, namely the private sector, public bodies, civil society organizations, citizens and others. In this sense, it is recognized that an intelligent transformation of a given public service involves enormous changes in urban infrastructures and especially in the case of major network cabling works and major urban developments that impact the daily lives of citizens [1]. In this article we will try to define the city in the

first place, and secondly, we will analyze the characteristics and some achievements of Moroccan cities to position themselves as smart cities in the future in accordance with the requirements and existing international standards in this area. The rest of the paper is organized as follows Firstly, it discusses the concept of Smart Planning as a new paradigm. Then, it addresses the challenges involved in achieving successful transformation in Moroccan cities. The paper also focuses on Urban Planning in Morocco, exploring its key aspects, it further delves into the concept of Territorial Resilience and the importance of Strategic Territorial Planning. Urban Foresight is discussed as a crucial component for effective city development. The paper also examines Territorial Sustainability and the role of Digital Transformation in shaping territories, additionally, it explores the significance of simplifying procedures and improving the business environment. The support for major structuring projects is analyzed. Lastly, the paper concludes by discussing smart city transformation, urban planning assessment, and measures for territorial competition in Moroccan cities.

2. LITERATURE REVIEW

Smart cities are increasingly present in public debate. Apart from this presence, the terminology of a smart city still raises questions, is this a lasting solution to ecological and urban

challenges or rather a commercial concept. In this perspective, interest in smart cities has prompted many theoretical approaches and technology-driven discussions. At the same time, the concept of smart/sustainable city has become popular throughout the world following three major changes, namely the rise of ICT (Information and communication technologies), the spread of the notion of sustainability, the expansion of urbanization, these cities present themselves as a new techno-urban phenomenon that became widespread in the mid-2010s [2]. At this stage of analysis, smart cities are identified on the basis of six fundamental axes: a smart economy; smart mobility; smart environment; smart life; smart people; and, finally, smart governance [3]. Moreover, on the theoretical level, we are witnessing a pooling of efforts invested in social sciences and computer science, mainly Big Data (Massive data) [4] to compose a set of performance indicators for smart cities. In view of this observation, an average city can be qualified as smart when investments in human and social capital and traditional transport and modern ICT, energy infrastructure and sustainable economic development and a high quality of life, all under intelligent management of natural resources, through participatory governance [5]. On the other hand, and given the importance of the question of resources, the emergence of a smart city depends on the capacity of its population to grasp and mobilize technological innovations to develop their daily lives, this is how the concept of the smart city depends on its creative human capital [6]. For this reason, and in the absence of a single definition, we argue that the notion of the smart city can be defined at least as a common vision or a project shared between all the actors involved in the process of its formation, the objective of which is to create a living environment that intelligently meets the expectations of the population. By way of explanation, the smart city offers opportunities and useful technological solutions to improve the social, economic and ecological efficiency of urban planning action. In the context of a smart city, well-designed urban planning involves monitoring safety, health and social inclusion as the main indicator of success. Certainly, the discourse on smart planning in relation to smart cities remains a very recent theme in the academic sphere. For this reason, it has become as an important theoretical framework not only in urban planning and local policy making, but also in the field of research on new urban practices. In view of this observation, this new paradigm is capturing the attention of the whole world as a powerful strategic framework for the planning of sustainable urban development [7]. At the same time, research in this area is attracting more and more attention from a variety of actors. For this, many theorists and practitioners are involved in the process of smart planning, including among others: planners, architects, geographers, ICT engineers, green technologists and energy efficiency engineers, environmentalists, sociologists and of course economists. In this sense, these actors are constantly seeking to develop new strategies and approaches to dissect the relationship between smart planning and the smart/sustainable city. As a result, widespread reliance on technology to rapidly build smart, efficient and digitally connected cities has grown rapidly over the past decade with important implications for urban forms and future urban governance. Thus, recent studies have shown that smart urbanism and the diversity of its interpretations and applications are closely linked to the economic policies of specific spaces [8]. The economic and political interest given to these new urban configurations has intensified research and theoretical approaches relating to urban scenarios for the

successful implementation of a smart city [9]. In addition, and taking into account their impacts on the population and on the territories, research on the field of sustainable urban planning and smart cities and related development has been welcomed and advocated by several transnational bodies such as the organization of Cooperation and Economic Development, the United Nations and the European Union. In this context, several technology companies are committed to developing smart cities across the globe, we quote the company IBM, and others. In addition, the evolution of approaches focused on technological solutions based on Big Data [10] has challenged traditional urban practices, this is how the planning system is called upon to mitigate the mismanagement of urban infrastructure and these facilities, unsanitary housing and working conditions, public health and safety, social vulnerability and inequality, and so on [11]. In total, the notion of a smart city is a controversial and evolving notion. For us, it is globally a city in which ICT and traditional infrastructures offer innovative and sustainable solutions to facilitate the daily life of city users.

3. URBAN PLANNING IN MOROCCO

3.1 The challenges of successful transformation of Moroccan cities

To analyze the characteristics of the smart city, we will base ourselves on the characteristics and dimensions that have been defined by the European Union "European Smart City". There are six of these dimensions, namely dimensions related to Population, Mobility, Economy, Lifestyle, Governance and Environment (see Figure 1).

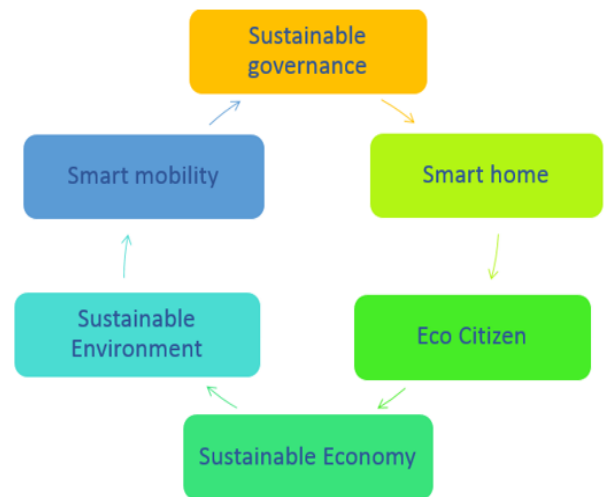


Figure 1. Smart city dimensions

To analyze these dimensions, we will try in this point to present each element and to show the importance to be given to its components within the framework of the Moroccan city:

3.1.1 A smart population

City residents are no longer seen as consumers and users of public services, but have also become actors and territorial partners. The smart city classification adopted by the European Union takes into account certain demographic and human criteria, such as the qualification level of the inhabitants, their learning abilities, their open minds, and respecting intellectual

and ethnic diversity. In a smart city, all components of the population have the same rights of access to public services, it is therefore important to take into consideration all the specifications and needs of the inhabitants when defining the territorial intelligence strategy, "It is particularly important to ensure that vulnerable groups are treated fairly because there is a significant risk that the people who are part of it do not have the necessary skills to use smart city applications or that their livelihoods are most affected by these applications" [12]. Some authors have criticized this designation of an intelligent inhabitant, such as Hill [13] described the situation of users who are not accustomed to the use of technology. and therefore, which are, for him, outside the smart city, thereby creating a kind of "Smart City ghetto" [13]. The inhabitants of the Smart City have multiple choices of healthcare provision, the city must provide solutions that allow city dwellers to have the necessary care and access to information and offers from local medical entities, for example E-Health IT solutions that group together and present information on the professions of the entities and information on the doctors and even which can provide discussion forums, opinions on the quality of these entities. A smart city invests in education and higher education in order to position itself in relation to other cities, the criteria of the European Union assign more than 9 points out of 11 to the criteria related to education and teaching to have its European Smart City label.

3.1.2 Smart mobility and economy

Transport in cities is an essential issue and a major challenge for local actors, to achieve the objective of a smart territory, a city must invest in the necessary infrastructure to meet the mobility needs of its inhabitants. Smart mobility can be defined as "the set of approaches aimed at reducing traffic congestion and encouraging faster, greener and more economical transport options" [14]. In this sense, smart mobility is defined as mobility that optimizes traffic inside the city, if a city finds itself in a traffic jam every day, it is because the latter did not take into account the demographic elements of the neighborhoods during the construction of the roads and transport infrastructure and industrial and commercial platforms. The smart city has all types of public transport and therefore offers a diversified service to the inhabitants, also IT solutions for the management of public car parks to avoid traffic jams, for example: citizens can see the availability of places in a public car park via their phone, and also it must have GPS systems (Global Positioning System) for the redirection of traffic to other accesses if a direction has experienced traffic jams for certain reasons.

A smart economy in a smart city means that all economic and business activities are linked to integrated information systems, and are part of the ecosystems that define the city's professions, this economy is essentially based on information and communication techniques and on technology and innovation. In a Smart City it is assumed that companies are integrated in the process of digitalization of ecosystems, Data Centers are connected with integrated systems of the city, for example, the computer systems of the Tax Department are supplied by professionals and companies via interfaces that link these systems to the computer solutions of these companies. Smart cities are invested in high-tech ecosystems and the digital transformation of the economic activities of its companies [15]. To do this, the decision to transfer to a smart city requires the involvement of professional associations and representatives of employers. In the European Smart City

standards, the economic domain is scored on 15 points divided between six criteria and complementary elements, the most important of which is the development of the spirit of innovation of economic activities and entrepreneurship.

3.1.3 Quality of life

The success of the territorial intelligence policy presupposes the provision of the necessary elements to guarantee a quality of life for residents, this observation has been taken into account for the definition of a smart city, the main purpose of which is to offer a better life to citizens. Quality of life requires the provision of sufficient and quality medical care, a University that offers education for the students of the city, security for the inhabitants and for the visitors, and a favorable environment to attract new residents and new investors [9]. Quality of life is also measured by the provision of comfortable accommodation and a clean environment, and also an administration that meets the needs of residents and users in terms of public services such as certified public lighting and better-quality drinking water and an efficient sanitation network. This area is ranked first by European standards by a score out of 25 points divided between seven criteria, the most significant of which is the criterion of the health offer, this means that for a smart city to have a quality of life is a challenge. This is done through the construction of hospitals, telemedicine centers and the encouragement of private investment in the field of health, as well as the establishment of the human and financial resources necessary for research and development in this sector in order to guarantee a brand image that will serve a sustainable territorial attractiveness.

3.1.4 Smart governance

Governance is a pillar of success for the intelligent transformation of territories, the governance of a smart city consists of new approaches allowing the processing of information and integrating it into the decision-making process. Intelligent administration involves users of public services in administrative processes, data is centralized and all administrations can use it via dedicated Data Centers. For example, the change of address is carried out remotely via the Internet and by a single input operation, the system, consequently, records and modifies this information in all the platforms of the city. A change in the governance model of traditional land management must be integrated to achieve smart transformation, "Governance models need to be reviewed so that data from smart infrastructures can be available and well used in decision-making processes" [7]. To succeed in this change in the mode of governance, it is important for cities and for territorial leaders to integrate new technological mechanisms capable of involving inhabitants in decision-making, and also the use of consolidation centers or Data Centers for the collection and processing of information and data. Among the criteria required by the European standards of the Smart City, we can cite this element linked to the transparency of governance, that is to say that the decisions taken must be communicated via the media, and that access to this information is possible for everyone, the publication of the accounts of an administration or a public company is part of this framework of intelligent territorial governance.

3.1.5 Smart environment

The environment has become more and more a decisive element in the development of territories, several associations

have been founded to encourage sustainable tourism destinations, to fight against pollution and to encourage sustainable development. Cities are also ranked according to pollution and air quality criteria. For example, in Morocco, examinations are carried out each year in coastal towns to obtain blue flag labels. The smart city must invest in respecting the environment by adopting an environmental approach in the decision-making process, control of the quality of the environment and the air, and to ensure regular control of waste management, and the encouragement of actors to use recyclable raw materials. The European standards of the smart city reserve a specific area for the environment which consists of four criteria, the most important of which are the quality of the area and respect for ecology [16]. These elements are therefore required to have the European Smart City label, and also to ensure the attractiveness of the city, knowing that the trend of respect for the environment is becoming more and more a key element in the decision to choose destinations. In 2008, several associations called for a boycott of the Beijing Olympics because of China's environmental policies [17].

3.2 Urban planning in Morocco

In Morocco, since the beginning of the 20th century, the accentuation of the urban phenomenon has not stopped redeploing and generating serious socio-economic inequalities, as well as generating new urban challenges which are proving increasingly difficult to mitigate. By integrating the dimensions of development, the smart city offers a viable and quality living environment, based on technological advances, smart cities seek to maximize internal relationships and interactions that affect all of the city's activities. At the same time, urban planning determines the destiny of a city whether it is smart or not. For this and while focusing our analysis on the Moroccan context, this work seeks to analyze the relationship between urban planning and the smart city. In this regard, a successful smart city depends on a set of increasingly intelligent technological solutions, this is how it would be wise to address the importance of smart planning in the process of setting up a smart city (see Figure 2).



Figure 2. The pillars of sustainable urban development for a fair, equitable, competitive, intelligent and sustainable Moroccan city

Over the past few decades, smart cities have been gaining more ground in the literature. They introduce new practices and services that strongly influence the development and practices of urban planning. We therefore understand why it is urgent to understand the interactions between the process of smart cities and all the actions of urban planning. To justify itself, this work highlights the requirements of smart cities in relation to urban planning. In order to remedy this, aspects of this relationship are addressed in the context of the reality of Moroccan cities. Also, this work also explores the potential links between forms of urban planning and smart cities. However, until now, the current literature pays little attention to this relationship, especially when talking about a Moroccan context. After a brief discussion of these two areas, our work traces the current state of urban planning in Morocco. Nevertheless, and in the light of theoretical work in other contexts, it is legitimate to argue that collaborative smart planning contributes positively to the success of a smart city. On another level, this postulate supposes the satisfaction of several conditions. On the one hand, the design of appropriate institutions, which encourages the inclusion and collaboration of stakeholders [9]. On the other hand, the involvement of the population and the modernization of the mode of planning as well as the mobilization of human and financial resources which will be the keys to the success of smart planning at the service of smart cities in Morocco.

3.3 Territorial resilience

We consider a territory to be resilient when it is capable of anticipating disruptions, crises and risks by implementing monitoring; to mitigate its effects; to return, after the event, to a satisfactory operating state, through learning, adaptation and innovation; and, ultimately, mutate to a new state while preserving its functionality.

Moroccan territories are faced with significant demographic growth coupled with sustained urbanization leading to the expansion of urban areas, the emergence of metropolises and a significant process of peri-urbanization and littoralization. Without institutional, operational and regulatory support, this growth can lead to social, economic and environmental dysfunctions. It can also increase the vulnerability of urban areas to natural and anthropogenic hazards. These risks are now recognized as an issue that directly challenges knowledge of their mechanisms and their social, economic and spatial effects, but also which challenges planning and urban planning practices as well as the methods of territorial governance [5]. A good knowledge and a good diagnosis of these risks gives rise to a resilience strategy that combines operational and forward-looking approaches and constitutes a powerful angle of attack for reliability and urban sustainability. Strengthening this urban resilience is conditional on regulatory changes and social acceptability. Collective intelligence and innovation should be mobilized to provide actionable solutions. Working to put in place a contextualized, participatory and informed urban policy, with a view to resilience and in line with international agendas and commitments, tangible progress has been made for several years for the generalization of the coverage of the entire national territory by multi-risk mapping, the integration of the risk dimension in the various urban planning documents, general building regulations that professionalize the sector, significant progress in terms of legislative and regulatory production governing planning and construction, a promising introduction of the dematerialization

of administrative procedures and the new bill relating to town planning documents explicitly providing for the integration of risk prevention in town planning documents [15]. The performance of an urban resilience strategy requires in-depth changes in approaches and better arming ourselves in the face of crises that will arise in the future. The essential point is to interconnect the objectives by pooling interventions to prepare the territories of tomorrow to face new challenges: adaptability, anticipation, solidity of systems, innovation and resilience which are the drivers of change and the keywords of an efficient strategy.

4. PATHWAYS FOR SMART CITY TRANSFORMATION

4.1 Strategic territorial planning

Planning is a necessary process, articulated by different elements (economic changes, social changes, etc.) on which it should be based. Also, it necessarily translates to different scales and in different ways. A space may require the development of an Urban Development Master Plans (UDMP), without going to the scale of the development plan (DP), depending on the particularity of the site.

There are planning documents, namely: Referential documents such as the UDMP, the regional land use plan (RLUP), the municipal action plan (MAP); A land cover document which is the AP. Urban planning is mainly reflected in our country by the realization of Urban Development Master Plans (UDMP). A 20-year planning document, the master plan aims to provide a coherent framework for the development and organization of the territory [8]. It defines a strategic, forward-looking and concerted vision for the development of the city articulated around major principles. Operational planning complements urban planning. It clearly defines the implementation of urban plans to achieve certain specific objectives. Urban projects, requalification projects, subdivisions, etc., which may concern the whole territory as a part only, and determine in detail the land use. Urban planning is not an end in itself, it is a process that pursues a set of objectives including improving the functioning of cities, organizing the occupation of space, encouraging investment and responding to social demand in the areas of infrastructure, equipment and accommodation, etc.

Shaken by a multitude of crises and major shocks, Morocco and since the year 2008 has leaned to develop an intersectoral approach to risk management, and this, in order to strengthen its resilience and implement a policy of precaution and prevention. As a result, risk management has evolved from a technical issue to a strategic consideration and governmental awareness. Of course, the Moroccan government through this strategic reflection, and in partnership with the World Bank, has identified three major risks given their very high economic and social consequences, namely: the risks of fluctuating commodity prices, the risks of the agricultural sector and the risks of natural disasters [4]. Examining the risks in an integrated way will allow the country to better anticipate budgetary needs, coordinate the various sectoral actions and avoid duplication to reduce the economic and social impact resulting from a possible event. With regard to the field of town and country planning, and given the importance of risk management in the process of management and urban planning and its impact on the services and goods of society, a

major reflection has been attributed to the risks of natural disasters. Thus, probabilistic estimates indicated that earthquakes, tsunamis. Floods can cost the Kingdom an average of 5.0 billion DH per year, of which the latter constitute the largest part.

Between 2008 and 2012, the Ministry of General Affairs and Governance in collaboration with the World Bank initiated a probabilistic study to assess Morocco's exposure to risks related to natural hazards. This study was prepared by a foreign consultancy firm in close collaboration with the technical Ministries within the framework of a participatory approach, and provided access to the model's input data, namely scientific data, infrastructure and habitat data, and population data. The study resulted in a synthesis report that documents the development of models for drought, earthquakes, tsunamis, floods and landslides; and which could extend to other risks in a subsequent phase; as well as an inventory of the entire Moroccan built environment [7]. This report also mentions the setting up of a computer program in order to analyze all of this data and to be able to simulate the losses in terms of financial cost, of human lives and a return on investment in the event of a natural disaster. The aggregation of these scenarios will allow the government to make choices and prioritize risk mitigation actions. All of these elements together provide decision-makers with the basis for issuing sectoral strategies as well as the national strategy for the prevention and management of natural disaster risks. Furthermore, according to the World Bank's World Development Report, an increase in national resilience to risks increases the stability and security of the country, which attracts more foreign investment as well as the competitiveness of Moroccan companies, which will make it possible to consider sharing the costs of risks with the private sector in a public-private partnership framework. Also, short, medium- and long-term actions have emerged from the dialogue between Morocco and the World Bank. They could be summarized in the following recommendations:

- Cancellation of the mode of operation focused on "the fight against crises" to move to "anticipatory and systematic risk management".
- Establishment of a national risk management office at the level of the head of government (horizontal integration) and institutionalized within each line ministry in partnership with local actors (vertical integration).
- Basis of an integrated strategy for managing the chosen risks, allowing the triggering of warning signals.

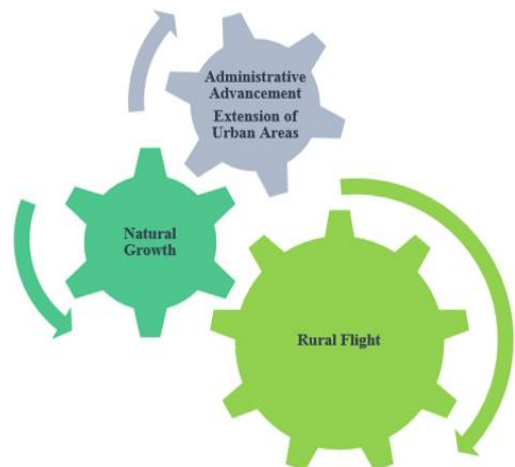


Figure 3. Urbanization mechanisms

Finally, with a view to developing a better strategy for the prevention of natural risks and sheltering people and property, a project to draw up maps of aptitude for urbanization will be among the future actions (see Figure 3).

4.2 Urban foresight

Sustained urbanization is obviously a strong and inevitable trend. It is therefore easily understandable that prospective research on urban dynamics should be devoted to the future of cities, to their size, their form, their functions, to the roles that could be assigned to them in the era of globalization, changes that may arise from the development of information technology and communication, to the challenges they may face in terms of identity, social cohesion, resilience and collective dynamics... The territory must put itself in a position to "think about its future", i.e. it must equip itself with a set of tools allowing the elaboration of a "vision", a representation of his situation and position. The actors of the territory must not only give themselves the conceptual and technical means for this elaboration but also be able to share their analyzes and build a "shared vision". In a rapidly changing context, the traditional tools of planning, forecasting and collective action are outdated [6]. The Urban Planning Department considers urban forecasting as an imperative for sustainability for urbanization which makes it possible to give credibility to territorial planning, a privileged instrument which helps to understand the transformation of our territories by addressing the problems in their entirety, through anticipation and collective debate on future challenges and the resulting choices to engage stakeholders towards ambitious and pre- or proactive strategies, and from there, guarantee better governance of the territories. What the urban planning department aspires to through these forward-looking reflections is to develop visions, perspectives and orientations concerning the future of our territories turned towards possible futures linked to certain issues put forward, especially: mobility and displacement flows, urban sprawl and the future of peri-urban agriculture, the densities and urban forms in relation to the evolution of lifestyles and demographic evolution and to clarify and allow well-founded positions and strategic options, making it possible to respond to the following concerns:

- What territorial project for tomorrow and what organization of the city to put in place to ensure sustainable development and the well-being of the inhabitants?
- How to translate the exercise of foresight and local governance into the territorial organization?
- How can local actors develop a forward-looking vision of their territory?
- How to integrate, in the reflection and the decision, the singular richness and the local specificities?

Considered in this way, the development of a qualitative urban prospective requires a new balance that is emerging between "knowledge" and "power" thus favoring a reorganization of the system of actors which results in a redistribution of capacities for action and legitimacies related to urban planning and management. This qualitative shift in urban foresight is also manifested by the production of new representations and images of the city aimed at reducing conflicts of interest (social and territorial) related to the use of urban space. And thus, to contain the resulting social tensions and to meet the challenges of urbanization and sustainability.

4.3 Territorial sustainability

Morocco has been committed for more than a decade to a proactive policy of sustainable development through numerous reforms and operational programs with a view to laying solid foundations for economic development, improving the social and environmental resilience of the country and promote efficient and sustainable production models. Faced with the sustained urbanization experienced by our country in recent decades and its impact on the development of territories, the question of urban planning and in particular its transition towards sustainable urban planning is today at the heart of our country's urban policy. It is indeed a question of designing a framework for the conditions and methods of organization, planning and development of future urbanization while ensuring that the use of space is structured. in such a way as to meet present and future needs in terms of housing, activities, collective facilities and urban services and to include the territory in a process of sustainable development. As part of this framework, the urban planning department has set itself the major objective of promoting the principles of sustainable urban planning through renovated models of urban development, new sustainable urban practices and new technical guidelines for guiding sustainable urban planning [13]. In general, sustainability is at the heart of smart cities being that it is among the ecological criteria of smart cities index in addition to other criteria such as technological criteria, main industries, transport efficiency, etc. (see Figure 4).

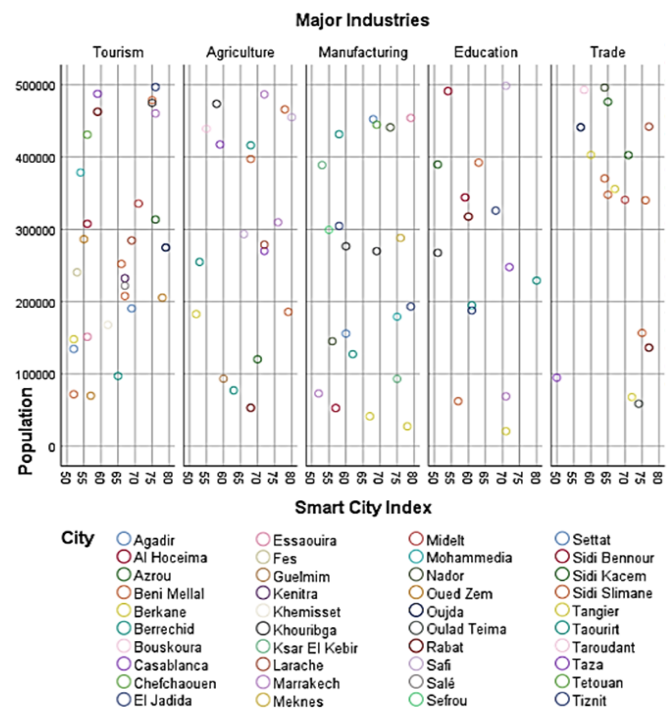


Figure 4. Smart city index based on technological and ecological criteria by Moroccan cities and major industries

Thus, in the perspective of the co-construction of the sustainable city, innovative approaches are initiated at the level of the territories in particular, those of eco-districts and eco-cities, urban agriculture, development of the densification potential of cities, land recycling, etc. Similarly, and in order to support the overhaul of our urban planning system, guidelines have been drawn up relating to the programming of public and private facilities of general interest, urban densities

and forms, sustainable urban planning, development methods in rural areas and on the operationalization of areas open to urbanization through urban planning documents.

4.4 Digital transformation of territories

Nowadays, digital technology is a universal tool and a real strategic development challenge, which transforms economies and societies and allows territories to be more and more competitive and attractive in terms of improving the business climate, simplification of procedures, promotion of investment and improvement of the conditions and lifestyles of citizens by offering connectivity and digital E-inclusion. Faced with galloping urbanization, our cities are moving and transforming and therefore imbalances can be accentuated. Also, for Morocco, the change is profound, the stakes are high and the territorial challenges are urgently needed. Nevertheless, the opportunity to use digital technology is widely requested and presents itself as a solution to better rethink territories (from design to use). Digital is now considered a lever for the global transformation of society and public action [14]. In short, it is a question of setting up dematerialized services and platforms for the benefit of citizens and territorial managers. On the urban level, digital technology helps stimulate innovative approaches in order to think about and build smart/connected, efficient and inclusive cities. The reflections carried out on their implementation suppose the design and the control in the first place of the digital infrastructure and the process of dematerialization. Urban and digital development must now be thought of in a linked and integrated way under a participatory approach involving ministerial departments, local authorities and citizens. Also, the royal orientations and the new government policies in this area revolve around the acceleration of Morocco's digital transformation and therefore, the strengthening of the Kingdom's place as a regional digital hub. It is in view of all this that this Department aims, within the framework of its strategic vision of sustainable urban planning of territories by 2040 [2], to establish digital urban planning through a global program of digital transformation of territories.

Thus, the main initiatives undertaken relate to:

Digital Transformation Master Plans for Cities (DTMPC): through the construction of a pragmatic and operational vision of the process of digitizing territories in coherence with all the means and resources of cities; The national Geoportal of urban planning documents: through the establishment of a digital, homogeneous interactive and cartographic platform of all approved town planning documents accessible to citizens and offering free town planning information; The dematerialization of town planning procedures: through the implementation of technological platforms and online services mainly related to the Urban Agencies business lines (The information note, pre-instruction and online instruction, e-payment, e-consultation, online appointment booking, E deposit, requests, etc.). The shared territorial monitoring system: through the exhaustive knowledge of the territories, the development of a business GIS with urban performance indicators for the purposes of management, monitoring, analysis, synthesis and decision-making in terms of urban policy [16]. In short, the final perspective of this reflection, by 2021, is to establish Digital Urban Agencies capable of supporting territorial actors, to offer innovative and intelligent services and thus respond - in the best conditions and in a timely manner - to the various requests and requests from

citizens/users.

4.5 Simplification of procedures and improvement of the business environment

In a context marked more by the competitiveness of the territories and their real capacities to drain capital and to promote economic and social development and in the face of demographic and urban challenges [18], supervising the act of building through the adoption of technical reference systems and procedures for granting authorizations and simplified town planning permits constitute a major priority for the public authorities. This is manifested by the integration of indicators relating to the ease of granting authorizations and permits in the various rankings relating to business regulation at the international level. Aware of the added value that such reforms can generate, the Ministry of National Territorial Planning, Urban Planning, Housing and City Policy has embarked on a process in favor of investment promotion and improving the business climate by simplifying procedures. The efforts made have thus enabled the adoption of five general construction regulations, as shown in Table 1.

Table 1. General construction regulations adopted

Decree Number	Date	Description
No. 2-13-424	May 24, 2013	approving the General Construction Regulations setting the form and conditions for issuing permits and all other documents required in application of the legislation relating to town planning and subdivisions, groups of dwellings and subdivisions as well as the texts adopted for their application.
No. 2-14-499	Oct. 14, 2014	approving the General Construction Regulations setting the safety rules against fire risks and panic in buildings and establishing the national committee for the prevention of fire and panic risks in buildings.
No. 2-13-874	Oct. 14, 2014	approving the General Building Regulations setting the rules for energy performance in buildings and establishing the national committee for energy performance in buildings.
No. 2-12-666	May 28, 2013	approving the parasismic regulations for earthen constructions and establishing the national committee for earthen constructions.
No. 2-12-682	May 28, 2013	amending Decree No. 2-02-177 of February 22, 2002 approving the PSR 2000 parasismic construction regulations and establishing the national committee for parasismic engineering.

These repositories have thus made it possible to have unified regulations and procedures, to formalize and set up technical rules and standards for safety and energy performance, to establish the rules of good governance, to establish the principle of one-stop shops, to determine the responsibilities of stakeholders, to control deadlines, to enhance the intervention of professionals, to set the terms of dematerialized procedures and to include the sector in a process of sustainability and resilience.

Furthermore, considering investment as a determining

factor in promoting sustainable and sustained economic growth, Morocco continues to make efforts to make the investment environment even more attractive by unifying and simplifying procedures, putting in place incentives and strengthening assistance to investors. Thus, the urban planning department is positioned as an active partner in this major project to promote investment and support for urbanization and urban development through technical and urban planning support for major structuring projects: new urban centers, urban projects, tourist resorts, major industrial and commercial projects, etc. Also, and with a view to producing socially acceptable, economically viable and ecologically responsible living spaces, these structuring projects are part of an integrated vision of urban planning. and are the subject of preliminary studies of positioning and definition of vocations, impact assessment and multi-partner development strategy.

5. ANALYSIS OF FACTORS FOR SMART CITY SUCCESS

While focusing our analysis on the Moroccan context, we sought to understand the key factors and urban obstacles that can impact the development of a smart city. In addition, the choice of the Moroccan case is justified by the fact that Moroccan cities are called upon to mitigate new socio-economic and ecological challenges in a context of increasing urbanization which will reach more than 75% of the population by 2030. Moreover, our choice is also justified by the scarcity of theoretical literature on the links between urban planning and smart cities in the case of Morocco. During this article, the following key elements have been studied: urban planning in Morocco, smart cities, mechanisms for implementing smart planning.

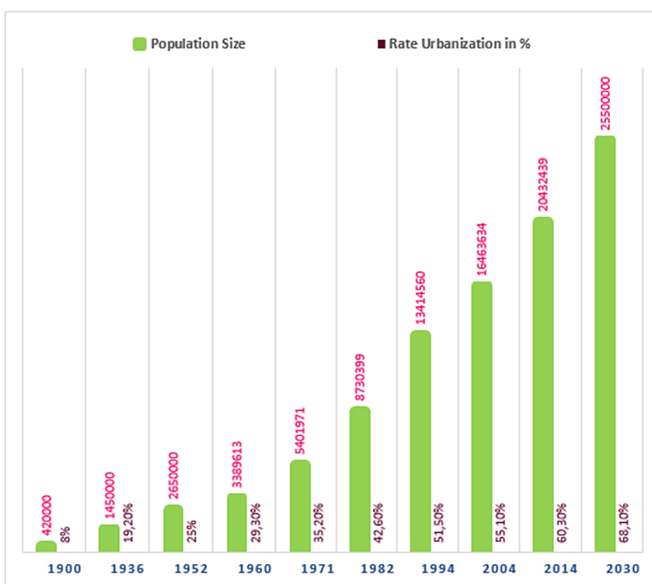


Figure 5. Evolution of the urban population and the rate of urbanization

For two centuries, massive urban expansion has been one of the key results of economic development in Morocco. On this level of analysis, this intensive urbanization has a negative impact on the ecological balance of the country. It is therefore understandable why contemporary cities are faced with several urban challenges such as air pollution, treatment and reuse of

wastewater, recycling of solid waste, as well as the preservation of resources and biodiversity (see Figure 5). In this sense, and since 1994, Morocco has undergone an urban upheaval. By way of explanation, for the first time the urban population exceeds the rural one. As a result, urbanization proliferates through migration, but also results from the growth of the urban population. For this reason, the rate of urbanization has increased from 9.8 in 1900 to 60.4% in 2014 with forecasts to reach over 70% by 2025. For the same occasion, the number of cities has increased from 27 at the beginning of the last century to more than 365 in 2014. On another level, urban planning is one of the major development challenges. Indeed, its massive expansion is accentuated by the lack of a clear and determined land policy. Thus, the urban challenge in Morocco is a key factor of development, this is how it sums up the different forms of deficiency and stands as a real obstacle to urban development [19]. Despite this, the question of planning such a smart city, but also making it a safer and more user-friendly living space, is one of the major concerns of urban actors. Nevertheless, the public actor is called upon to react intelligently, but with fatal urgency, to the challenge of converting our cities towards intelligence. In doing so, the Moroccan city is increasingly overwhelmed by problems of different nature and weight that it is not able to liquidate at the same time, and in the short term [19]. The results also demonstrate that the urban reality of Moroccan cities is complex enough to plan the scenario of a smart city in Morocco. At this level, the notion of smart planning is not yet present in urban planning practices. For this, the planning is always anarchic and controversial by a reality scattered by the conflict of interests. In view of this observation, and despite its presence in the public debate materialized by the organization of several annual meetings on smart cities, the smart cities process is seen as a new wave of urban planning rather than a path and a process to be taken to improve the urban framework. the notion of smart planning is not yet present in urban planning practices. In addition, and since the colonial era, urban planning has remained anarchic and controversial due to a reality scattered by the conflict of interests. Despite the legal provisions, each stakeholder in this process seeks to protect its own interests, which is how they maintained the same behaviors of the current situation beneficial for all actors. At this stage of analysis. On another level, we also revealed the dominance of a standardization of urbanization methods which are dictated by the supervisory Ministry (Department of Urban Planning). In addition, the technical committees responsible for drawing up urban planning documents do not take into account the ecological and socioeconomic dimensions of future urban agglomerations. In fact, these committees are composed mainly of architects and technicians specialized in urban planning and architecture. On the other hand, the failure and obsolescence of regulations worsen the mission of urban planning. In practice, the legal arsenal is overtaken by the urban reality of cities, as well as it is not scalable in relation to the aspirations of the population and socio-economic changes. In addition, the new modes of urban planning are far from being adopted in the case of this country. In view of these findings, it is clear today that the development of a smart city depends on the use of new methods of urban planning to mitigate the challenges related to the urban hazards of the smart city in Morocco. Smart cities in Morocco is a major project. For this, Moroccan cities seem blocked by the accumulation of an anarchic and failing urban practice. Beyond smart solutions, a smart city in Morocco would first

have to make up for these shortcomings and create new viable living environments. In a country like Morocco, several factors hinder the adoption of the solutions proposed by the smart city, first, the scaling up of more recent technologies is a challenge for all actors. In addition, technology cannot be generalized to all urban activities. Nevertheless, the greatest obstacle to the implementation of these approaches is the uncertainty of how these cities are managed, financed, controlled and designed. Moreover, the city's activities are multidimensional and involve multiple stakeholders whose interactions directly affect the implementation of a smart city. On this level, we argue that smart cities are solicited for several reasons, first their efficient urban model, second, they are renowned for their technological advantages which catalyze creativity and innovation among their inhabitants. Thus, they offer a high quality of life in a space that is not harmful to the environment [20]. On another level, it is argued that these cities could mitigate different urban challenges. For this reason, government officials around the world are seduced by the possibility of a high-tech future and actively advancing smart urban development visions and regulatory adaptation to facilitate technology-enabled urban planning [21]. In summary, smart planning and urban planning are complex challenges for urban actors of the smart city. For this reason, the question of the high cost of its design and implementation weighs heavily on these choices. In addition, the challenge related to the involvement of the private sector, the support of the population in this process and finally the need for a strong commitment on the part of the State to encourage technological innovation and PPP partnerships. Then, an overhaul of existing legislation is urgently needed to provide more flexibility to develop these smart cities. As a result, local actors must increasingly involve the entire local population to establish urban governance [22]. However, and in the absence of the knowledge and expertise required by this process, a strong intelligent collaboration between the private and public sector is essential to make this process successful [23]. In addition, we also believe that smart planning faces several obstacles [24]. The first is the issue of financial resources, which requires greater buy-in from companies. In order to remedy this, economic advantages must be offered to attract the attention of these companies, especially information technology companies. In this sense, and given that the urban project requires broader consultation with all stakeholders, these cities also support the conversion of urban planning as an experiment in sustainable development strategies and technological innovation which consist in improving the quality of life of the urban population in Morocco. Ultimately, the smart city must offer a living environment that meets both the primary needs of the population as well as the needs for new smart services. Morocco has made excellent progress in the field of Smart Cities, and thus becomes the pioneer in Africa, considering the fact that Casablanca is since October 2015, the first African city to be part of the network of 25 smart cities selected by the IEEE (Institute of Electrical and Electronic Engineers). As a result, the economic capital of the kingdom will be supported by this great global institution, to develop Casablanca as a smart, social and frugal city, using new cutting-edge technologies. Still in the same vein, we saw the establishment of the E-Madina Cluster in 2015 as a think tank around this transformation. On the other hand, and for several years, we have also had the Casablanca Smart City Forum, which is an annual meeting around the theme and the work in progress. All this is certainly fantastic to imagine. But

it requires a lot of work, adaptation and infrastructure. This can complicate the piloting and implementation of a certain number of these futuristic solutions in large dense cities such as Casablanca. However, all of this may be possible in developing cities, such as the experiment conducted by OCP and UM6P, in the smart city of Benguerir, with its Living Labs and Green Energy Park concepts, as well as the largest Data Center in Africa. In any case, let's bet that the future of Smart Cities in Morocco seems to be on the right track.

6. CONCLUSION AND FUTURE WORK

The desire to meet the requirements of territorial competition forces cities to adopt new modes of urban management. In this sense, the global trend is the use of smart city standards by investing in the digital transformation of the various public services in cities. In recent years, many efforts have been put forward in many Moroccan cities to improve their attractiveness by being part of a promotion process. And enhancement of their territories through the implementation of major infrastructure projects and the digitization of urban management. In order to examine this orientation, this paper presents:

- The existing factors to be implemented to succeed in the potential smart transformation of cities in Morocco ;
- Retrace the state of urban planning in Morocco ;
- Propose some measures to be taken to ensure the rectification of the excesses of the current planning system.

The imperative to fulfill the demands of territorial competition is propelling cities towards the adoption of innovative urban management strategies. In this rapidly evolving landscape, a prevailing global phenomenon involves the adoption of smart city standards, characterized by substantial investments in the digital overhaul of various public services within urban areas. Notably, across a span of recent years, numerous Moroccan cities have earnestly embarked on endeavors aimed at enhancing their allure, aligning with promotional initiatives designed to elevate and illuminate their respective domains. This transformative process is primarily facilitated through the execution of ambitious infrastructure projects and the digitization of administrative and operational functions within these urban centers.

This paper takes upon itself the task of dissecting and exploring this transformative trajectory. It sets out to elucidate the critical components necessary for the triumphant realization of the potential smart metamorphosis across Moroccan cities. In addition, it endeavors to paint an accurate picture of the prevailing state of urban planning within the Moroccan context. Ultimately, the paper aspires to furnish a series of actionable recommendations, poised to rectify any prevalent deficiencies ingrained within the current urban planning framework.

In conclusion, the roadmap to smart urban transformation in Morocco involves a synthesis of strategic foresight, technological integration, and adaptive planning. By harnessing the power of digital innovation and aligning it with a vision of sustainable, inclusive urban growth, Moroccan cities can not only navigate the complexities of territorial competition but also establish themselves as exemplars of

modern urban living. Through considered measures, collaborative efforts, and a commitment to rectify the shortcomings of existing planning practices, these cities can pave the way for a future where technology and urbanity harmoniously coexist.

Going beyond the theoretical framework, we propose these future avenues for research.

Stakeholder Engagement and Public Participation: Explore the role of stakeholder engagement and public participation in the smart city planning process. Investigate how involving the community in decision-making can contribute to the success and sustainability of smart city initiatives.

Policy Analysis: Analyze existing urban planning policies in Morocco and assess their alignment with the principles of smart cities. Propose policy recommendations that could better facilitate the integration of smart technologies into urban planning processes.

Technological Infrastructure and Data Governance: Delve into the technological infrastructure required for smart city implementation and discuss issues related to data governance, privacy, and security. Examine how these factors impact the effectiveness and acceptance of smart city initiatives.

International Comparative Analysis: Compare the experiences of other countries that have successfully implemented smart city initiatives. Identify common challenges and innovative solutions that can inform the Moroccan context.

By addressing these aspects, we aim to not only rectify deficiencies in the current urban planning framework but also contribute to the sustainable and successful implementation of smart cities in Morocco.

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