



The Implementation of Urban Planning Orientation Tools in Bamako District

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Abstract

Growing cities across the globe face a number of challenges and problems, which pose a great threat to their citizens. Bamako - the fastest growing city in Africa and the sixth in the world - currently faces huge challenges in the implementation of urban planning tools, which may become increasingly difficult to resolve as the city continues to grow. In an attempt to gain a holistic view of the challenge, 646 questionnaires were given to its common citizens, 32 questionnaires were given to Neighborhood Development Committee (CDQ) members, and 11 interviews were conducted in 32 neighborhoods (quarters) in the 06 Communes of Bamako District. Upon a simple review of percentages, this study discovered that planning orientation tools are not being implemented and plans are not respected in Bamako District. The city continues to progressively demolish, amid plans to convert public facilities into dwellings - much to the concern of local residents.

Keywords: Decentralized Authorities; Implementation; Planning Orientation Tools; Sector Land-Use Plan; Urban Master Plan

Introduction

According to the City Mayors rankings of the world's fastest growing cities and urban areas from 2006 to 2020, Bamako is ranked sixth in the world and first among all African cities (http://www.citymayors.com/statistics/urban_growth1.html) [1]. However, Bamako faces huge problems in the demolition and reconstruction of its buildings. The reason is that the city of Bamako evolves on the margins of its urban planning tools: its urban master plan (SDU) and sector land-use plans (PUS). While these spatial planning tools aim to achieve sustainable development [2], Bamako District had its first Regional Planning and Development Program a long time ago, since 1981. It has been revised twice (1985 and 1995).

Since then, three urban projects have been implemented: the Urban Projects of Mali 1979-1986 and 1986-1994, and the Urban Development and Decentralization project (PDUD-1997-2005). The Sectorial Urban Development Policy was adopted in 1996. The

Cities of Mali Development Strategy (SDVM) was adopted in 2009 and places a particular emphasis on sustainable urban development. Finally, the National Policy of the City (PONAV) was adopted in 2014 with the creation of a follow-up unit of the National Policy of the City (CS-PONAV) and the National Monitoring Observatory Agency of the City [3].

The reorientation of urban governance policies and politics towards sustainable development of cities has been ongoing since the adoption of Agenda 21 by the United Nations (UN) in 1992 [4]. In 2015, the UN endorsed the Sustainable Development Goals (SDGs) to raise legitimate concerns in worldwide sustainable development action [5]. However, despite all these policies and structures, all Malian cities have been facing a plethora of problems, including urban sprawl, difficulties in access to basic social amenities, sanitation problems, environmental degradation, lack of road infrastructure and drainage, improper land management, mobility problems, insecurity, and marginalization of certain social groups [3].

In Bamako District, the mayors are responsible for the design and implementation of development plans for their local territories. It must be known that the SDU cannot be implemented directly - it needs PUS to be detailed and provide operational urban planning actions to be undertaken (article 1st Decree N°185/PG-RM) [6]. However, urban planning operations reports show that these urban guidance documents are not followed. This endangers people's lives and the sustainable development trends in the country [7]. If we are not mistaken, this theme of such importance was not the object of scientific research on our site of study.

The main objective of this research was to assess the implementation of the urban planning orientation tools in Bamako District. Specifically, it looked into the roles played by various stakeholders in the urban planning orientation tool implementation process, and its impacts on the sustainable development in the country.

Method

The questionnaires were used to gain insight into the perceptions of Bamako's residents on two levels (i.e., citizens and leaders of CDQ). Interviews were used to assess institutional actors' opinions (i.e., State's services and decentralized authorities). A population sample calculation gave 599 people (aged 18 and above) to survey on the basis of the General Census of Population and Habitat of Mali 2009 (Recensement Général de la Population et de l'Habitat, RGPH).

The following formula was used to determine the weight of the survey for the administration of the questionnaires

$$n = \frac{t^2 N}{t^2 + (2e)^2(N - 1)}$$

N: size of the parent population (Bamako District's population), n: the sample size, s: confidence level, t: coefficient of margin deducted from the reliable rate, e: margin of error. The sample was calculated on the basis of a margin of error of 5%.

$$n = \frac{(1.96 * 975247)}{(1.96 + 4 * 0.0016)(975247 - 1)} = 599$$

The distribution between the Communes of Bamako District was made on the basis of the demographic weight. Details are provided in the table below.

	Population		Sample	Sample	
	Number	Percentage		Individual	Neighborhood
Commune-I	174988	17.9	107	100	5
Commune-II	90442	9.3	56	80	4
Commune-III	75492	7.7	46	60	3
Commune-IV	166593	17.1	103	100	5
Commune-V	218714	22.4	134	140	7
Commune-VI	249018	25.5	153	160	8
Total	975247	100	599	640	32

Table 1: Sample distribution.

The distribution was made per Commune with a pace of 20 people. The following numbers of neighborhoods have respectively been chosen in Commune-I (5), II (4), III (3), IV (5), (7) V and VI (8). Indeed, Communes II and III, due to the narrowness of their population, saw their number increased to ensure that opinions were representative of more than two neighborhoods. In this way, in Commune II, 4 neighborhoods were chosen instead of 3 and in Commune-III, 3 instead of 2.

The CDQ's questionnaire was administered in 32 neighborhoods, with the choice of neighborhood made in a random manner. Questionnaires were administered by 6 investigators (one investigator per Commune). The data was treated in entry form on the software Cs pro 7.0 and exported to the Statistical Package for Social Sciences (SPSS).

The main constraints that we found during the interviews were the unavailability of the National Administration of Domains and Land Registry and the mayors of six Communes of Bamako District and their technical services (Antennas of Urban Planning and Habitat, and Domains and Land Register); in spite of our insistence, several appointments were missed.

The questionnaire for this paper comprised a set of 14 survey questions, grouped into 5 sections of answers. The questions are as follows: 1) Are you aware of the existence of planning tools in Bamako (SDU) and your Commune (PUS)? 2) Have you heard at least once, of these documents? 3) Is the population consulted during the process of operational urban planning operations? 4) If yes,

at what stage? 5) Do the urban planning operations respect the urban orientation documents (PUS and SDU)? 6) Are you aware of an example of a public place (community facility) or right-of-way that changed use, or a space that has changed to private ownership in your neighborhood? 7) If yes, what was the previous nature of this space? 8) What is the new use of this space? 9) Do these changes of purpose (use) affect the wellbeing of the populations? 10) If yes, how have the populations reacted to these changes? 11) For you, who is responsible for these changes of uses? 12) Are you satisfied that the level of equipment and availability of space in your neighborhood allows basic social services to be carried out? 13) What is your assessment of the management of your space by your elected representatives? 14) According to you, does the current Domain and land management system of Bamako District lead to a sustainable development? Correspondingly, the sections of answers included the following sections: 1) Local actors' awareness of the existence of urban planning orientation tools, 2) Population participation in operational planning, 3) The effectiveness of planning implementation, 4) The extent to which public facilities had reserved spaces in an already urbanized area, 5) The population's level of satisfaction with current land-use patterns.

Study area

Bamako is the capital and largest city of the Republic of Mali. Geographically, Bamako is located at latitude 12° 37' North and longitude 8° 1' West. It is situated on both sides of the Niger River. Bamako is made up of a set of six autonomous Communes. The area of the city is 267 km² (26.700 ha) [8]. The population of Bamako City was 2.04 million in 2011, with an annual population growth rate of about 5.4%. In 2009, the population density of Bamako was 7,184 inhabitants/km² [9].



Figure 1: Location of Bamako District.

Bamako is formed of 6 municipalities in addition to the District of Bamako; this makes 7 territorial decentralized entities (Collectivités Territoriales, CT). Each entity is self-governed, with its own responsibilities and no interference from the others. In the franco-phone system, a district means a set of Communes (municipalities).

Moreover, Bamako has the status of administrative Region, with a Governor of the Region appointed and elected mayor of the District. The Governor of the District of Bamako has supervision authority over the six municipalities of the district, while the Minister in charge of decentralization has supervision authority over Bamako District City Council (Conseil du District). Lastly, Communal antennas of the State's decentralized technical services, such as Urban Planning and Habitat, and the State's Domain and Land Registry are located within the town halls of the six Communes. They are responsible for bringing technical support to the mayors in their areas of expertise.

Result and Discussion

The results presented here are taken from the administration of 646 questionnaires to the populations and 32 questionnaires to the CDQ, and 11 interviews held with the various ministries, Central Administrations, the State's regional and local technical services, and local decentralized authorities in Bamako District. Of the respondents, 460 were male and 186 were female. About 163 of the respondents had not attended school, 107 had attended primary school, 156 had reached secondary school level, and 171 had attended higher education level. Of this latter group, 14 were alphabetized, 24 had received Koranic (informal Islamic) education, and 11 were educated at Medersa (formal Islamic school).

On the professions of the respondents, the following information was obtained: employee (105), merchant (188), farmer (14), breeder (41), retiree (10), private operator (67), carrier (21), housewife (88), craftsman (61), other (51). With regard to the communes of the respondents, the research had data from the following communes: Commune-I (103), Commune-II (80), Commune-III (58), Commune-IV (107), Commune-V (178) and Commune-VI (120). It should be noted that the problem of limits(borders) between the neighborhoods of Communes V and VI meant that the quota was exceeded seriously in the first case (140) and not reached in the second case (160) (cf. Table 1).

Concerning the CDQ, out of 32 members surveyed, there were 6 employees, 6 merchants, 1 breeder, 2 retirees, 14 economic operators, 1 craftsman, 1 carrier and 1 other. There were 2 females and 30 males. In terms of the levels of study, 3 had not received education (3), 5 had primary school education, 14 were secondary school educated, and 10 had received a higher education.

Thus, the interview guides were administered to 1 technical adviser (Conseiller Technique, CT) of the Ministry of the Town and Country Planning and the Population (Ministère du Plan et de la Population, MATP), 3 responsible for the National Direction of Town and Country Planning (Direction Nationale de l'Aménagement du Territoire, DNAT), 1 responsible for the Geographical Institute of Mali (Institut Géographique du Mali, IGM), 2 responsible for the Regional office of Sanitation and Control of Pollution and Nuisance (Direction Régionale de l'Assainissement et du Contrôle des pollutions et Nuisances, DRACPN), 1 responsible for the Regional office of Water and Forests (Direction Régionale des Eaux et Forêt, DREF), 1 responsible for Commune-IV (Chef of the Local Antenna of Domains and the Land registry on instruction of the mayor), 1 responsible for Bamako District Governorate, 1 responsible for the Regional Service for Urban Planning and Habitat (Direction Régionale de l'Urbanisme et de l'Habitat, DRUH), 2 responsible for the follow-up committee for the implementation of the CS-PONAV.

Of course, our respondents were assured that their quotes would remain anonymous; the text contains direct quotations paraphrased from our interview assigned not to a recognizable person, but to a function and/or representative of a service of the State, with an assigned code. The selected code is the official abbreviation of the name of the structure. A number was arbitrarily conferred to the two agents of the DNAT (DNAT1 to 2). In addition, according to DNAT, it must be noted that only 2 out of 3 responsible records are used in the following development. For the CS-PONAV and the DRACPN, a group interview was conducted on the initiative of the concerned responsables, so no numbering was necessary at this point.

Section one

Urban planning tools in Bamako District are not known by the mayors and the citizens, which obstructs effective implementation.

The result shows that the mayors and the citizens of Bamako District are ignorant of the basic urban planning documents. This can be seen in the analysis of the following questions:

Question 1: Are you aware of the existence of planning tools in Bamako (SDU) and your Commune (PUS)?

The analysis shows that about 78.3% of respondents among the citizens are not aware of the urban planning guidance documents (SDU and PUS).

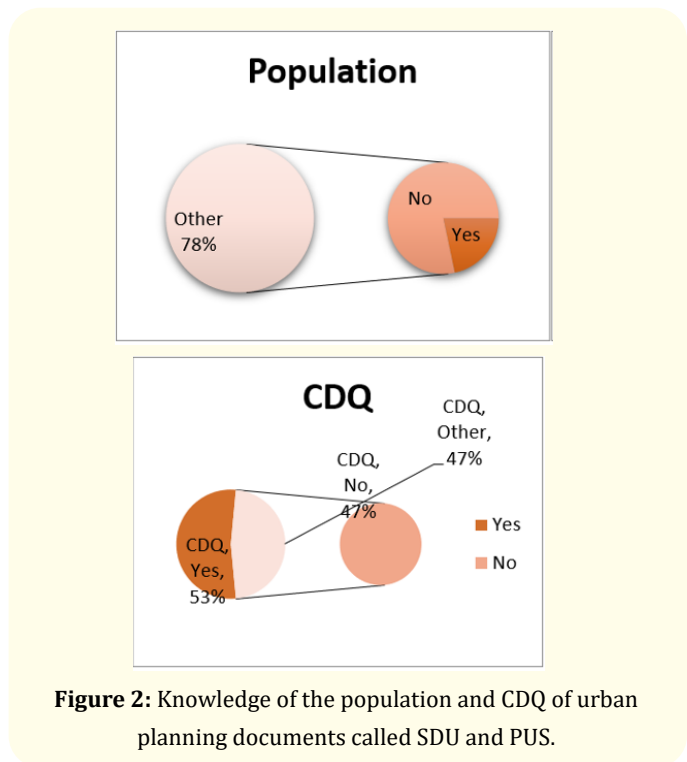


Figure 2: Knowledge of the population and CDQ of urban planning documents called SDU and PUS.

Indeed, the ratios reveal that knowledge of these tools appears to correlate with level of education. For example, out of the 171 residents confirmed as having a higher level of education, 75 were aware of the documents, compared to 38 out of the 156 people with a secondary school education, 8 out of 107 with primary school education, 3 out of 14 alphabetized, 3 out of 24 for the Koranic level, 2 out of 11 for Medersa, and 11 out of 163 for non-educated people. The great majority are ignorant of the tools, with 338 males out of 460, against 168 females out of 186. This shows that the rate of ignorance is higher among the females of Bamako than among the males.

47% of CDQ (15 out of 32) are not aware of the existence of the SDU in Bamako District and the PUS in their Commune. This means that the majority of opinion leaders in each neighborhood are not aware of the tools that are the basis of the territorial structure. Here, again, interviewees' levels of study were linked to their knowledge of the existence of the urban planning orientation tools.

For example, 6 out of 10 members who had a higher level of study were aware, compared with 8 out of 14 for the secondary school level, 3 out of 5 for the primary school level and 0 out of 5 for the non-educated. The link between level of education and awareness of land-use policies has been established in other African countries [10].

Furthermore, all interviews undertaken with the State’s central administration and regional services concluded on the mayors’ lack of awareness of these tools. The following examples confirm this assertion. Mr. DNAT1 argues,

“The tools are developed by the State and implemented by decentralized entities (CT). The CT expresses their need for elaboration of their urban Masterplan. The State develops and the CT executes. There is a need for ownership. The city has plans, often we do not manage to find these plans both at the level of the CT as well as at the level of the State’s Representatives.” (Interview, 7 November 2017)

He adds

“There is a problem of paradox in the mechanism. The SDU is a city, a CT, generally. The development of the zone falls within the CT. It is the State which develops and finances these planning tools. These tools are more a tool for control than management. The CT should develop them.”

DNAT2 affirms

“Mayors know only the Economic, Social and Cultural Development Plan (Plan de Développement Economique, Social et Culture, PDESC). The PDESC should come from the plan [PUS].” (Interview, 7 November 2017)

GDB states

“Once, we were in the City Hall of Commune-IV to revise the PUS, but much to our surprise, we were not able to find the copy of the PUS to be revised in the City Hall. We were forced to cancel and to postpone the meeting for another day so that the Regional office urban planning could find it for us.” (Interview, 26 October 2017)

Question 2: Have you heard at least once, of these documents?

Of the citizens who responded to this question, only 230 out of 646 have heard at least once about SDU and PUS. This highlights a problem in communication between the people in charge of these

documents and the citizens. Of the CDQ members, only 19 out of 32 have heard at least once about SDU and PUS.

The interview with Mr. DNAT1 shows this problem, as seen below

“There is a need for ownership, dissimilation within the population. Their existence and their contents have to be brought to the knowledge of the entire population. By us, the one who represents does not restore the report. The CT has to make reference to these documents.” (Interview, 7 November 2017)

Section two

The populations are not involved in the process of implementation of urban planning tools.

The majority of the answers given by the citizens and the CDQ show that the concerned populations are not consulted during the urban planning operations (Figure 2). Besides that, those who think that the public is consulted say it is at the stage of implementation (Question 5).

Question 3: Is the citizen consulted during the process of operational urban planning operations?

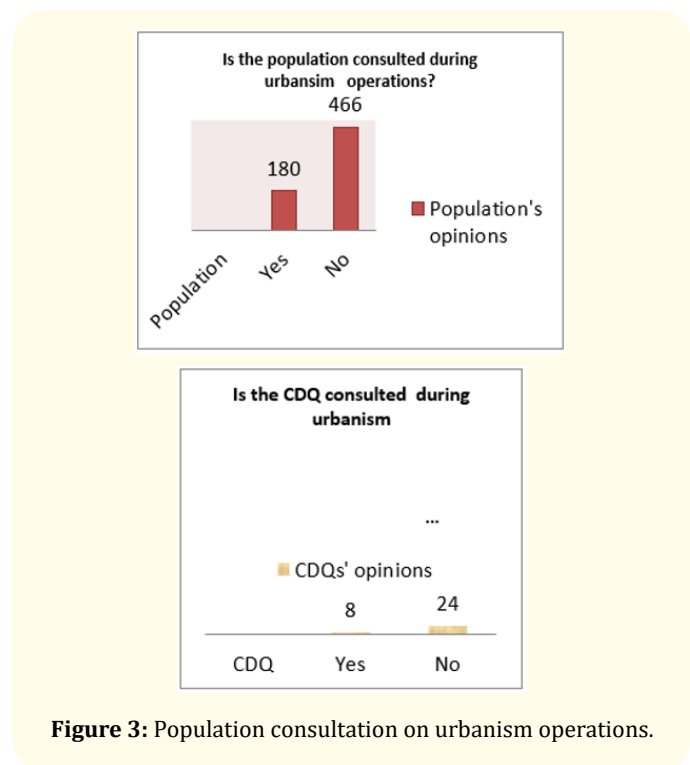


Figure 3: Population consultation on urbanism operations.

From the data collected, 466 out of 646 citizens argue that the public is not consulted; this is against 180 respondents who believe that they are consulted. In this regard, 24 CDQ members out of 32 (75%) assert that the CDQ is not consulted on the operational urban planning actions in their area, while 8 others (25%) claim that the CDQ is consulted. This point must be emphasized, because this statement poses a problem. In reality, it is more here about briefing than about a consultation.

In fact, the consultation process requires opinions, and then takes them into account in the decision-making process. However, the consultation or involvement of the populations is not required at this level by the legislation in force. Nevertheless, the participation of the public is essential for the implementation of such decisions. In reality, the lack of population participation and ownership are among the failures of the implementation of land-use policies [10].

Now, it appears clearly here that it is about the knowledge of the decision-making process regarding these operations. In other words, know that it was decided by the City Council that such operation will take place in the neighborhood. Thus, it is a question of being put in front of accomplished facts and accepting. Otherwise, they have no influence on the decision.

Question 4: If Yes, at which stage?

Of about 180 people who say that the public is consulted, those who think this is at the implementation stage dominate, at 91, followed by 62 who believe this is at the moment of elaboration, and 27 who think the validation stage. It is the same for the CDQ: out of 6 CDQ members who assert that the CDQ is consulted, 4 say that it is at the moment of implementation, compared with 2 for the moment of the validation and 0 at the moment of the elaboration.

The following reports of experts interviewed in different services of the State are in agreement with this, as seen in the wordings below. DNAT2 said

“Communes are involved in the elaboration. Once adopted, the documents fall into the dungeon to the DNUH. Very often, people are not involved. Normally, the zoning needs to be displayed at City Hall so that people there know where to have plots of land. Only specialists share information like this among them. This is why

people do not integrate into their daily lives. People are unaware that there is a common project on space and they come to settle down and think we want to keep them from moving here.” (Interview, 7 November 2017)

The words of MC-IV are more illustrative. When he was asked, How is a follow-up of the implementation of the urban planning tools made by the populations? he answered: “Populations are permanent supervisors of tools who in turn inform the authorities in the case of suspicious movement against planning.” He means that if the population knows about a plan for, or use of, a public space, they will follow up on its preservation.

To summarize at this point, urban planning tools in the Bamako District are not enough known by the main local actors to allow their effective implementation. This result is supported by previous researchers. For example, [11] found that the willingness of citizens to participate and support any program related to land use/cover change and management is linked to the level of their knowledge. To [12], the engagement of all stakeholders in a city is a key requirement of sustainable urbanization.

Section three

The mayors of the Communes of Bamako District do not make the SDU and PUS tools objective in the operational urban planning decision-making process.

The SDU and PUS are not management tools for the mayors during the operational urban planning operations.

Question 5: Do the mayors respect the urban orientation documents (PUS and SDU) (land subdivision/Adjustment/rehabilitation) in urban planning operations?

Here about 67% of respondents among populations believe that urban planning operations do not respect urban orientation technical tools. This is against 33% of the respondents who think they do. Thirteen of the CDQ leaders interviewed (41%) think that urban planning operations do not respect the guidance of urban planning.

These results need to be analyzed in light of the 11 out of 32 who do not know these documents exist. Also, only 2 out of 32 CDQ leaders think that operations comply totally, against 2 for very often, 12 for often, and 3 for rarely.

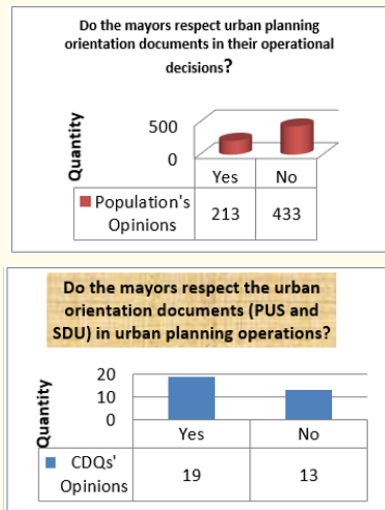


Figure 4: Respect for the SDU and PUS in urban planning operational decisions.

Interviews recorded also confirm this tendency. For instance, Mr. CT/MATP argued

“The general situation is non-implementation of the urban planning tools, automatically the failure to respect the vocations of spaces. The actors are not informed about the existence of these tools; thus, they do not participate. All this leads to the exacerbation of land speculation as a consequence. It is in all of our cities. The town planners say that there is no city in Bamako. It is a big village. All our cities have a rural character. 70% of the neighborhoods of Bamako have the backbone of a spontaneous neighborhood.” (Interview, MATP, 10 November 2017)

IGM said that there is

“No relation between the forecasts of the orientation documents and the operational documents on the ground in Bamako. [...] we set the purpose of zones, but in practice, the mayors overfed, the forecasts are not respected in the practice. They make another thing than what was planned. They change the zones of offices into housing areas. They change the purpose of spaces on the ground contrary to the forecasts. [...] the mayors disregard the vocation; they give because they invested to be mayor. That is why they dash into the land subdivision operations to recover the invested amount.” (Interview, IGM, 1 November 2017)

The responsible person at DRACPN made it clear that

“The problem of purification, is in the space. If you have no space, no action can take place. In 2011, a work of identification of

37 transit deposits planned by the plans had been made in collaboration with the National Direction of Urban Planning and Habitat. Out of 37 planned sites only 1, that of Sénou, had not been occupied; but even there, there are currently problems on this site. Everywhere is occupied. Yet it is small plots of land of 20x20m or 300-400 square meters. Even for one site for sewage sludge discharge, we looked for it around Bamako and the bordering Communes but we did not find.” (Interview, DRACPN, 31 October 2017)

The same service added

“In the Rural Commune of Kalaban-Coro to Kouralé, a space planned for a discharge [dump] is gone. The second to Samanco2 is also gone. That of the Rural Commune of Mountougoula, also. There is a good reason to break to make purification works in Bamako. How to understand, when there are two to three million inhabitants, 2,300 to 3,000 m3 of waste per day, that there is no place there, that it is necessary to evacuate.”

The summary of this point tells us that the mayors of the Commune of Bamako District do not make these tools an objective in their operational urban planning decisions. Many current studies in different socio-political contexts showed the challenge that decentralization represents for land-use planning [13]. Revealed that local governments are more vulnerable to pressures from special interests, rendering the measures accompanying land-use planning and management unpalatable and often unfeasible [14]. Finds that “among residents’ conflicts with different entities of urban governance; only those with local/grassroots governments are significantly associated with more depressive symptoms. Moreover, these subgroups of government-oriented conflicts associated with more depressive symptoms are related to neighborhood planning and communal properties, reflecting a dilemma in the Chinese model of urban governance.” To [15], the absence of trust between local government and villagers is a key barrier to redevelopment [16]. Finds that “Plan violation and planning for violations as practices complete the circle of violations of the process of the architecture of planning system in Bangalore through its own practice.” This situation is similar to Bamako, with the difference being that here there is a legal mechanism for regularization, but in Mali we plan everything knowing that the plans will not be applied but also the anarchic occupations in the already urbanized area These results are consistent with the findings.

Section four: Changing spaces reserved for public facilities to residential lots in already urbanized neighborhoods is transforming neighborhoods of Bamako from habitat to housing.

The respondents’ opinions on questions 6-12 show that changing the purpose or use of spaces reserved for public facilities into housing presents a threat to the living environment in Bamako.

Question 6: Are you aware of a public place (community facilities) or a roadway which has been changed into a privately owned building in your neighborhood?

A total of 39.2% of respondents noted that a public area has been turned into a privately owned building in their neighborhood. In Commune-VI, which holds the majority of the population, 66 people attest to this. This is against 54 who report a different experience. Table 2 below shows the situation:

Know		Awareness of public facilities’ change of use		
		Do not know	Total	
Commune	Commune-I	50	53	103
	Commune-II	42	38	80
	Commune-III	27	31	58
	Commune-IV	9	98	107
	Commune-V	59	119	178
	Commune-VI	66	54	120
	Total	253	393	646

Table 2: Population’s awareness of public facilities’ change of use.

71.9% of the CDQ have knowledge of changes of use in their neighborhood, against 28.1% who do not. The highest ratio is in Commune-VI, where only one neighborhood in this Commune is unaware.

The interviews also reveal difficulties in access to information related to the use of public spaces. This highlights the importance of interviews as a means of increasing precision. As Savoie-Zajc stated, interviews pursue aims of explication and in-depth understanding [17]. Furthermore, by collecting the views of the population and of those enacting the changes, we can make our “research an effort that amplifies and connects isolated or unheard voices” [18]. And hence, for instance, to

DREF

“We do not have land subdivision plans of Bamako. We are obliged to go every time to the service of urban planning [DNUH] in case of need. The management of the green spaces is a matter of the service of urban planning. It is this service which always manages the green spaces in Bamako District. At the beginning of the year 2015, we started [...] the evaluation of the green spaces in Bamako. Until now the process continues. We did this work with the service of urban planning which has the plans; we have not. When we began to identify these spaces with them, often they brought us in on places that are entirely built in the villa. Those who sold the green spaces are the ones who are in charge of showing us. They will not do it easily. The list of the green spaces that the service of urban planning gave [us] concerning the green spaces in Bamako was not exact after checking; there are more than this. There also, in one hundred more than 56% were occupied. There are these that have been split and sold.” (Interview, DREF, 14 November, 2017)

The DRACPN admit being confronted with the same problem. They affirm that

“In Bamako, it is difficult to gain access to administrative documents. We were not able to have access to the purpose of the space in the urban planning and Domain services.” (Interview, DRACPN, October 31, 2017)

In addition, for DNAT1

“The problem is the respect for the use. If space is planned for a market at a later time, this space sees itself occupied for a purpose other than the initial one.” (Interview, DNAT, November 7, 2017).

DNAT2 also add that

“That happened to Baco-Djicoroni ACI: there is somebody who built a collector [...]. The same thing happened to Banankabougou. An oxbow lake which has been transformed into a collector of mud in rainy season The oxbow lake has been closed partially [sold and built for housing]. The mayors do not apply the rules of urbanization. All the green areas of Bamako have been sold.”

DNAT2 finish by saying that “Elected officials do not have knowledge of urban planning, but there is also a legal insufficiency.” (Interview, DNAT, 7 November, 2017).

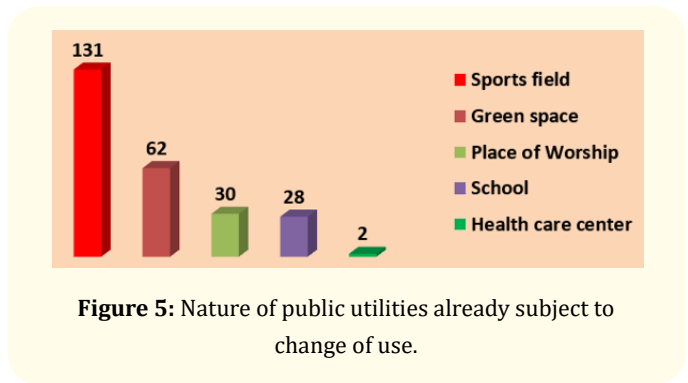
On this point, it appears clear that there are difficulties in preserving spaces for public utilities in Bamako District; indeed, “in cities, land-use decisions made during planning processes determine the availability of ecosystem services fundamental to the wellbeing of the urban population” [19]. The constraints linked to the availability of public space push some technical services of the State, e.g. DRACPN, to make occupy free of occupancy and rights spaces to make waste transit deposits. These spaces free of any tenure right, are afterward sold to private individuals after the putting in a good state by DRACPN. The interview data also made it clear that there is a big issue of public utilities being changed to private areas, which is not reflected in the opinions of the populations.

Furthermore, at this point, we must comment, according to the views of DRACPN and DREF, on the difficulties in accessing information about the statute of public utility spaces in Bamako District. This is a matter that leads to further confusion in this sector. A key concern about the widespread nature of decentralization in Mali has to be pointed out with regard to land management issues. In reality, decentralization through the transfer of responsibilities and resources to mayors in land-use planning matters is bringing confusion to urban sustainable management in Bamako District. The public facilities do not have any responsible owner. The law lays out that they are the responsibilities of central State and local decentralized entities. The decree of 2002 related to the public equipment classification in Bamako between divided the responsibility of their management between central and local decentralized authorities; however, in reality, because the service of urban planning and habitat has up-to-date information on the official use of spaces provided by planning as public utilities (indeed, the only service to hold this information aside from IGM and Domain), this is leading and managing the land-use change affecting these spaces. Some of the State’s key technical services involved in planning implementation, e.g. DREF and DRACPN, have still argued that these places are managed by DNUH and that their services must ask for their transfer to them. This argument is erroneous, and allows urban planning and its attached mayors to change the use of public spaces as they wish, because the majority of the key technical services ignore the status of the land.

Question 7: If yes, what was the previous nature of this space?

According to the respondents, the initial uses of public facilities that had been changed into privately owned buildings are as fol-

lows: youth sports fields - 51.8% (131); green spaces - 24.5% (62); places of worship - 11.9% (30); schools - 11.1% (28); and health-care centers - 0.8% (2).



For the CDQ, these changes have related to green spaces in 41.7% of cases (10 opinions), sports fields in 41.7% of cases (10 opinions), schools in 12.5% of cases (3 opinions) and places of worship in 4.2% of cases (1 opinion). However, analysis by Commune shows that in Commune-I, changes of use are most often seen in the green spaces (23 out of 50) against 20 and 7 respectively for the sports fields and places of worship. In Commune-VI, sports fields were the most commonly affected, with 40 out of 66, followed by schools (14), green spaces (11), and places of worship (1). This trend of replacing sports usage with housing has emerged as a source of daily tension in Bamako.

School		Previous planned public facility space type					Total
		Green space	Health care center	Sport field	Worship place		
Commune	Commune-I	0	23	0	7	20	50
	Commune-II	6	7	0	26	3	42
	Commune-III	3	1	0	23	0	27
	Commune-IV	0	2	0	4	3	9
	Commune-V	5	18	2	31	3	59
	Commune-VI	14	11	0	40	1	66
	Total	28	62	2	131	30	253

Table 3: Opinions of the population on public utilities set to become private ownership spaces, per Commune.

These opinions from the population and the CDQ are evidenced by the words of GDB. He affirms that

“The occupation of sports fields arises every day. Practically every day we hear at the level of all the Communes of Bamako District that people wanted to change the use of such and such a space as people [young people] are opposed. It is every day.” (Interview, GDB, October 2017)

Mr. DNAT2 states

“There is a problem regarding green spaces around Bamako” (Interview, DNAT, November 7, 2017). In addition, the Regional Administration for Sanitation and Control of Pollutions and Nuisances admits that “every day, we receive complaints around air pollution, problems of waste” (Interview, DRACPN, October 31, 2017).

Question 8: What is the new use of this space?

The overwhelming majority of the respondents assert that these spaces were transformed into housing (188 out of 253), followed by business (47), other (14) and industry (4).

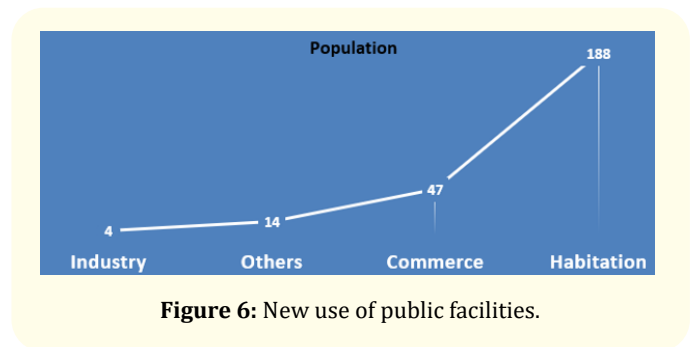


Figure 6: New use of public facilities.

The partition by Commune indicates a change to residential use is high in all 32 neighborhoods. However, the difference gets narrower in Commune-VI, with 33 places for habitation and 28 for commerce.

Out of the CDQ members’ opinions, 22 out of 24 were converted to habitation, 01one to commerce, and one to another use.

		Current private land-use type of planned public facilities				
		Habitation	Commerce	Industry	Others	Total
Commune	Commune-I	47	2	0	1	50
	Commune-II	33	8	0	1	42
	Commune-III	22	0	4	1	27
	Commune-IV	7	1	0	1	9
	Commune-V	46	8	0	5	59
	Commune-VI	33	28	0	5	66
	Total	188	47	4	14	253

Table 4: New uses of public facilities per Commune, based on opinions of the population.

Question 9: Do these changes of use affect the wellbeing of the populations?

About 75.1% of respondents are aware of the change of use of public places in the already urbanized neighborhoods, and believe that this affects the wellbeing of local residents. This feeling is highest among respondents in Commune-V (50 out of 59), and differs from the views of the DRUH and the GDB of Bamako, who assert that the administration respects the views of the population by limiting changes to remain within the sphere of public utilities (for example, exchanging sports grounds for schools, or green spaces for sports fields).

22 (95.7%) out of 23 CDQ who know of a case of change of use say that it negatively affects the wellbeing of the populations, compared to one (4.3%) who did not see a negative impact. This result shows that the change of purpose of public places represents a fundamental issue in the urban planning of Bamako District.

Question 10: If yes, how have the populations reacted to these changes?

84.2% of those interviewed say that the changes have led to popular protests. This is contrary to 7.4% of respondents who argue that people resort to the traditional authorities, 6.3% who

If yes, how have the populations reacted to these changes?	Population		CDQ	
	Frequency	%	Frequency	%
Popular protest	160	84.2	22	95.7
Resort to the traditional authorities	14	7.4	1	4.3
Administrative appeal	12	6.3	-	-
Judicial appeal	3	1.6	-	-
Other	1	0.5	-	-
Total	190	100	23	100

Table 5: The reactions of people against the occupation of their collective space.

say that they use administrative appeal, 1.6% who believe this is done by judicial appeal and 0.5% who cite some other means of solving the issues. In the view of the CDQ, respondents in the 22 cases (95.7%) agreed that the populations have reacted by means of popular protests, against 4.3% who believe they resort to traditional authorities. However, the views appear at odds with the DRUH, who say that urban planning awaits the decisions of the justice department on enforcement against offenders or occupiers of spaces and public domains.

Indeed, recourse to popular protest is the method chosen most often in all the Communes of Bamako District, except Commune-IV, where 2 out of 4 have recourse to administrative appeal. Frequent recourse to popular protests (84.2%) leads to violence, which represents a real threat to stability and social peace in Bamako. Some policies and technicians’ opinions confirm this analysis. For instance, security and social cohesion are threatened by conflicts around the land [7].

Question 11: For you, who is responsible for these changes of use?

For you, who is responsible for these changes of vocations (use)?	Population		CDQ	
	Frequency	%	Frequency	%
Mayors of Communes	158	83.2	20	90.90
Mayor of Bamako District	16	8.4	-	-
Regional Office of Urban Planning and Habitat	5	2.6	1	4.54
Regional Office of Town and Country Planning	4	2.1	-	-
Citizens (population)	1	0.5	-	-
Regional Office of State’s Domain and Land Registry	4	2.1	-	-
Bamako District Governorate	2	1.1	1	4.54
Total	190	100	22	100

Table 6: The person considered responsible for utilities use change.

Among the respondents, 174 out of 190 citizens express their opinions on this question thinking that the mayors (those of the Communes and of Bamako District) are responsible for these use changes. This is followed by the Regional Office of Urban Planning and the Habitat (5), the provincial services of State’s Domain and Land Registry (4), the Regional Office of Town and Country Planning (4), and the citizen/population (1).

20 out of 22 leaders of CDQ judged that the mayors of Communes (with the District Mayor excluded) are the most responsible for these changes and anti-planning actions, against 1 each for the Bamako District Governorate and Regional Office of Urban Planning and Habitat.

The information gathered through the interviews confirms and give more details on this phenomenon. For instance, to CT/MATP

“The problem is the irresponsibility of the State. The rural concessions are transformed into housing zones, since the SDU plans it as such, first aspect. Second aspect, villages around Bamako through the tenure system, split. That is the foundation of the spontaneous neighborhoods. The first consequence is the ruralized city. The second consequence is the shift of the populations towards farm labor or unemployment. A third is the exacerbation of the speculation in the land [...]. In already urbanized neighborhoods, the changes of use consist of the transformation of all the land planned for community facilities into housing. Changes of use are a common currency in Bamako. They are illicit actions of the Mayors and lack the follow-up of the State.” (Interview, MATP, November 10, 2017)

The respondent of Commune-IV City Hall acknowledges this in answering the following question

What do you answer to people who think that the failure of the effectiveness of urban planning tools in Bamako is attributable to the mayors?

In response, he said, “Everyone has his share in it.” (Interview, MC-IV, 2 December 2017)

GDB responded with

“Difficulties exist because the mayors do not use them as a tool. Once the PUS is developed, generally, it sleeps in drawers. Generally, on paper everything is OK, but it is the realization which causes a problem.” (Interview, GDB, October 26, 2017)

It is necessary to specify here that the rural concessions, according to law, have an agricultural purpose. It is granted by the representatives of the State who are the authorities of allocation. The substantive law forbids the allocation of rural concessions in Bamako District, but in reality, in the urbanization perimeter of Bamako, these rural concessions are granted with real purpose of residential development for the beneficiary.

In addition to this, the SDU’s 2015 draft report states that the absence of final discharge in Bamako District creates an unsafe situation and a very difficult problem in terms of waste collection. Farms and building material extraction places are used as final dis-

charge. This practice poses serious environmental and sanitation problems [8].

This last point shows the crisis of space for utilities, especially sanitation. That has a negative impact on living conditions of the populations. These actions contribute to the deterioration of the living environment. We are gradually seeing the demolition of the city, with the daily removal of spaces reserved for public utilities. The worst is that these public utilities are mostly classified as such via a decree adopted by the Ministers’ Council since 2002 for their preservation [20].

Changes of use in spaces reserved for public infrastructures and equipment in already urbanized areas is transforming these neighborhoods from habitats to housings in Bamako District. This result is in line with some recent research outcomes. Studying the case of Kaduna in Nigeria, [21] find out that the concept of land-use planning has been reduced to “land subdivision” and control by illegal multiple services or offices. The lack of coordination and proper monitoring of growth have affected the infrastructure base of the city; this raises conflicts. To [1], the frequent processes of partial or total suspension, amendment, and revision of spatial plans only serve to destroy their coherence, contribute to their inefficiency and heighten the tensions between stakeholders.

Section five

Those living in Bamako are not satisfied with the impact of the physical results of urban planning on their living environment.

Neither the populations nor the CDQ are satisfied with the existence of spaces for the realization of community facilities in their neighborhoods (Figure 7). The local elected representatives’ space management behavior is not satisfactory. The majority of respondents believe that the State’s domain and land management in Bamako is not sustainable (Figure 8).

Question 12: Are you satisfied with the level of equipment and availability of space for the realization of the basic social services (schools, sports, health, deposit of transit, final landfill for wastewater, gutter, collector, and place of worship) in your neighborhood?

Based on the data analyzed, 74.5% (481 out of 646) of the people are not satisfied with the level of equipment and avail-

What is your assessment of the management of your space by your elected representatives?									
Answer per Actor		Results par Commune							
		C-I	C-II	C-III	C-IV	C-V	C-VI	Total	
		Frequency	Frequency	Frequency	Frequency	Frequency	Frequency	Frequency	%
Populations	Very satisfied	1	7	-	9	3	8	28	4
	Satisfied	90	40	26	68	73	57	354	55
	Not at all	12	33	32	30	102	55	264	41
	Total	103	80	58	107	178	120	646	100
CDQ	Very satisfied	-	-	-	-	-	2	2	6
	Satisfied	5	3	0	1	3	0	12	38
	Not at all satisfied	0	1	3	4	5	5	18	56
	Total	5	4	3	5	8	7	32	100

Table 7: Populations’ opinions on the management of their space by their elected representatives.

ability of spaces used for basic social services. Here, it is not even about the functioning of these services but rather about the existence of space to make it. The level of dissatisfaction is highest in Commune-III, with 55 dissatisfied people out of 58, or 94.8%, compared to 3 who are satisfied, followed by Commune-VI (98 out of 120, or 81.6%), Commune-V (75.2%) and Commune-IV (72.8%). Commune-I has the highest level of satisfaction compared with the other Communes (42.7% satisfied, compared to 57.2% dissatisfied). As regards the CDQ members, 100% of these are not satisfied.

The opinions of citizens and CDQ leaders are comforted by the results of the interviews on this precise point. The only word from the DRACPN on this matter reflects the difficulties associated with it, and firmly supports the opinions of the people. He asserts that,

“With the African Development Bank (BAD) the financing was acquired for two projects (Wastewater sludge treatment center but until now there has been no space. An NGO had come with money to build a sewage treatment plant, but no site has been found. In 2014-2015, we were confronted with a problem of the wastewater sludge treatment system place no site was found. There is no m². There is no deposit of transit in Bamako. In Commune-I, there are only unplanned deposits of transit. In Commune-II, there is a single deposit of transit, CFP. In Commune-VI the transit deposit of Djanéguéla was lost. In Commune-V, a center of transfer exists, but not a functional one [...]. A deposit of transit is inside the Cemetery in Yirimadio. One is inside the Market in Niamakoro. In Commune-

IV there were 2 (1 in Lafiabougou and 1 called Luxembourg); Commune-V, 1 in Baco-Djicoroni. In Commune-VI, there were 2 (1 in Sénou and 1 in Yirimadjo). At Sénou, somebody surrounded it. Also, the SDU planned four final discharges in Bamako but only one was found to Noumoubougou [35 km outside Bamako].” (Interview, DRACPN, October 31, 2017)

This last point proves the level of insecurity to which community facilities are subjected in Bamako District, in spite of a very protective legal framework. SDU’s report on the project noted that the absence of a final discharge point in Bamako District creates an unhealthy situation and a very thorny problem in the channel of waste collection. The farms and building material extraction places are used as final discharge points; such practices pose serious problems in terms of sanitation and the environment [8]. In fact, a recent study showed that even though this has been classified by Decree of the President of the Republic, it has failed to preserve these public spaces [22]. Recently, however, the Ministries Council has declared by decree that the construction of a purification dump in Missabougou (Commune-VI) is a matter of public interest, as well as providing planning for this. This also is beside the planning. The decree mentions clearly that an area of 25 hectares, 89 acres, 41 centiares (partly comprising private farmland is to be expropriated.

In addition to this, a recent study pointed out the issue of sanitation equipment in Bamako District. To the authors, sanitation is

one of the major difficulties faced by the city. As well as insufficient sanitation facilities and equipment, Bamako does not have a faecal sludge treatment plant [23].

Question 13: What is your assessment of the management of your space by your elected representatives?

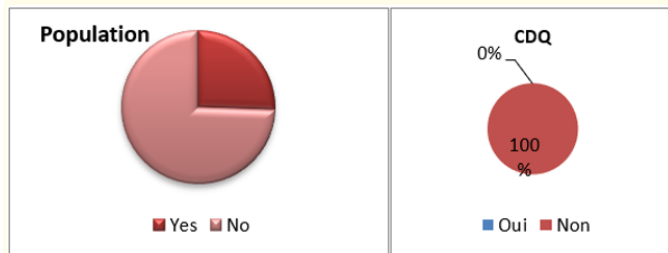


Figure 7: Dissatisfaction of the populations with the level of equipment and availability of space for realizing basic social services in their neighbourhoods.

A total of 264 (41%) respondents out of 646 subjects are not satisfied with the behavior of their elected officials in managing local spaces in their Commune, while 382 of the subjects show their satisfaction (very satisfied and satisfied). This may seem inconsistent with the previous opinions. However, a comparison with the various results (awareness of planning tools) allows us to moderate this point, because a system of land management is measured through the respect for urban planning tools, about which 78.3% ignore the existence (SDU and PUS).

We can review an illustrative example of the insecurity of green spaces: The masterplan of Bamako of 2015, not yet approved, indicates that the situation of the green spaces is insecure. Indeed, during the period 1998 to 2003, green spaces were the object of intense change of use. For example, in Commune-I 2 green spaces out of 4 changed use, while in Commune-III it was 2 out of 3, in Commune-IV it was 3 out of 8, in Commune-V 6 out of 11, and in Commune-VI 4 out of 15, and all this in only 7 years [8].

On the other hand, 18 out of 32 (56%) CDQ members are not at all satisfied by the management of their Commune’s space, against, respectively, 12 who are satisfied and 2 who are very satisfied. In addition, the views of the State’s experts support this.

GDB states

“The land issues have a negative impact on the implementation of the planning documents in Bamako District.” (Interview, Bamako District Governorate, October 26, 2017)

Mr. DNAT1 says

“In all cases, the urban planning tools are not respected; the impression is that planning tools are not enforceable.” (Interview, DNAT, November 2017)

This analysis signals a warning about sustainability in Bamako District’s land management system. Moreover, some scientific results find an important connection between the number of green spaces in the living environment and the wellbeing of inhabitants [24]. In addition, urban green space offers a wide variety of ecosystem services that could help fight many urban sicknesses and increase life expectancies for city residents [25].

With regard to Bamako District, it is now evident that the public spaces that are changing to housing were judged necessary for the functioning of the city and the wellbeing of surrounding populations during the planning and even implementation phases. The subsequent change of use represents a failure in planning goal achievements and negatively impacts on residents’ daily lives in concerned neighborhoods. In fact, utilities are vital to the culture of a city and to urban sustainable management. Green spaces in particular are crucial; as [26] acknowledged, the ecosystem services are indispensable for human wellbeing, but are severely affected by land use/cover change (LUCC).

Question 14: According to you, does the current domain and land management system of Bamako District lead to a sustainable development?

From the analysis, about 53.4% of respondents of Bamako consider that the domain and land management of the district are not sustainable. That is in line with the overall result that it is the failure to respect planning tools which affects sustainable development in the District. However, 15 (47%) CDQ members think that the land management system in Bamako District is not sustainable, while 17 (53%) indicate the opposite.

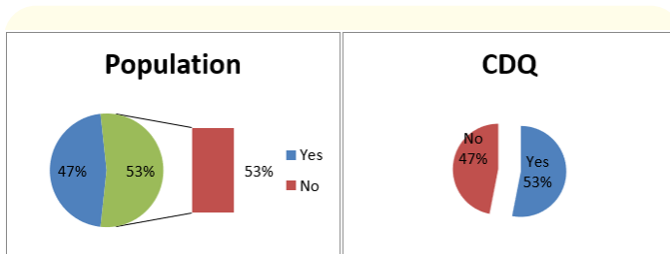


Figure 8: Appreciation of Bamako District residents of the durability of the domain and land management system in their city.

On this issue, the opinions of interviewed technicians give a clearer picture of the situation. The opinions of interviewed technicians are sharper, and help us to understand the differences between the opinions of the population and the CDQ members. For instance, for the Regional Office for Water and Forest of Bamako District, “It is not the case [sustainable development]. Mayors are fighting to split the green spaces; we cannot talk about sustainability there” (Interview, DREF, November 14, 2017). Mr. DNAT1 gives another understanding of this hopeless fact; for him,

“The planning is not Malian. It can be bound up with our society. We do not make maximum efforts to increase the use of planning tools, and, if they exist, we do not benefit from them. People must know that we do not develop randomly, even when it is thought that the results are often more undesirable than if it was thoughtless.” (Interview, DNAT, 7 November 2017)

IGM thinks there is no sustainability (Interview, 1 November 2017). GDB says that “Without planning tools, it cannot have territorial development.” The recent law on the domain and land policy clearly alerted us to the difficulties of development posed by the operational actors’ disregard of planning tools [7]. The view of MC-IV is a good concluding point here. In answering the question: Is the current management system of the space in Bamako District sustainable? He said, “the current management of the space in the District of Bamako is not even mastered a fortiori talk about durability” (Interview, MC-IV, December 2, 2017).

To sum up, at this point, the populations are not satisfied with the impact of the physical results of urban planning on their living environment. Through a simple calculation, we can understand the

disturbing trend of changes in the use of spaces reserved for populations’ basic social services in many residential tenancies.

The trend is read in the following way: A specialist, of experience, highly positioned in the administrative superstructure, said with much bitterness that the balance of the land subdivision (land development) is 58% for housing and 42% for equipment in Mali, compared to 32% for housing and the rest for equipment in China (Interview, MATP, November 10, 2017). An analysis of a recent policy found that 87% of realized land subdivision areas are housing, compared to 13% for infrastructure (Ministère de l’Urbanisme et de la Politique de la Ville, 2014). The same analysis showed that 30% of the collective spaces in the already developed area have changed use in Bamako District. A researcher using GIS for georeferencing public facilities in Bamako District found that 10 to 50% of the public facilities of Bamako have already changed use, despite their explicit classification by decree taken in the Ministers’ Council [22].

This analysis shows at which threshold life is threatened in the city of Bamako, because each change of use eats away at the 13% dedicated to public facilities. Recently, the mass media and some activists have reported the change of one public space reserved for a police station to private use by one provincial official for her daughter.

The main lesson learned from our results, the failure of urban planning tools to guide operational urban planning actions, is consistent with several research results in the field we accessed. For instance, [27] find that the planning is not currently effective in guiding urban development in China. Attahi., *et al.* (2009) discover that one of the essential features of urban development in Sub-Saharan francophone Africa is the absence of matching between provisional urban planning documents and operational urban planning documents.

Urban planning is of huge concern, particularly the availability of public facilities in Africa. To NJOH* currently, the infrastructure in urban areas in francophone Africa is overloaded to a point that many now acknowledge as a crisis [21,28] suggested a failure to synchronize between the land-use plan and development has shaped an extensive challenge for Kaduna city. Finally, Tzoulas., *et al.* argued the reason for citizens’ dissatisfaction with uncoordi-

nated urban growth of the kind found in Bamako. The authors conclude that, "Urban growth, by altering cities and the surrounding countryside, presents numerous challenges for the maintenance of urban green space, and consequently also for human health and wellbeing" [29].

Conclusion

As we can see from the above discussion, the implementation of planning from 1981 to the present day has failed to drive urban development. Bamako has become a strange city, and its utilities are at risk. The SDU no longer exists as of 2015. The PUS and SDU are involved in urban planning operations in the city. This leads to running without guidance, by contrast, evaluating of the degree of planning effectiveness required to which it influences decision making and finally growth shapes [30]. Also, the study shows that respondents are not satisfied with the impact of the physical results of urban planning on the improvement of their living environment.

However, in our current study, we were not able to go into the uncertainties and difficulties compromising planning efforts in Bamako and leading to the city's current unsustainable pattern of physical land use. Meanwhile, these results have important scholarly values in terms of bringing awareness to the ineffectiveness of urban planning in the world's fastest-growing cities in developing countries, where data are rare and literature is very limited. They also have developmental value, in indicating to decision makers the urgent action needed to counter Bamako's urban planning crisis.

Further Research and Suggestions

Research is needed into how to make decentralized authorities plan more sensitively in Mali, and focus should be given to clearly understanding the uncertainty factors linked to local officials in achieving planning goals.

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