

Urban sprawl in the metropolitan area of Algiers and the role of new cities in the affirmation of this phenomenon

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Abstract—The purpose of the article will focus on the evaluation of the new city of Sidi Abdellah, which presents a major challenge in terms of urban planning, in an urban context of very strong growth, in territories that continue to be phagocyted by the built.

It is essentially morpho-functional that we will endeavor to develop the subject by examining in the first place the implications of the redeployment of the population of the Algiers agglomeration on Sidi Abdellah and to study later the articulation of different urban groups projected to see if they did not cause a malfunction of the mother city and then try to answer the following questions:

- How does the new city of Sidi Abdellah work and what is its relationship with Algiers?
- What happens to the role of the parent city in relation to the emergence of the new residential polarity?

Thus, to answer the problem of the memory, this research will try to situate the role of the new city of Sidi Abdellah in the bipolarity in which it finds itself, between a regulating factor of the concentration of the populations in the Algiers agglomeration, and a factor spatial malfunction, posing more and more problems in terms of transport, pollution and congestion.

Index Terms— urban sprawl, metropolitan area of Algiers, new cities, concentration of population



—1 INTRODUCTION

Urbanization in the world is an unprecedented phenomenon in the history of mankind in both scale and speed.

The modalities of this universal and complex phenomenon vary according to the demographic, social and economic contexts.

Similarly, Algeria, like other countries in the world, is faced with the problems that result from the explosion of the urban population, simultaneously subject to population pressure and rural exodus. . In 1968, one Algerian out of three was a city dweller. Today, more than 60% of the population is urban, and the number continues to increase; predictions on this point are 75% within the next 20 years.

In view of the observation of this complex situation, the option of new cities is presented as an effective and relevant solution for the equilibrium of the urban framework of metropolises and large Algerian cities.

The new cities policy was originally implemented to absorb the demographic growth of the major cities.

Algiers as a regional metropolis experienced several changes of its territory caused by a hyper human concentration 2 988 145 inhabitants on a 1 190 km² of surface, which is generated various difficulties of urban management (networks, equipment, circulation) and a spreading city, often at the expense of the best

In order to put an end to this concentration, the State has launched under the National Spatial Planning Scheme 2030 a program of five (5) new towns throughout the national territory in order to ensure the rebalancing

of growth, and to be relay poles between all the cities, among these cities, we quote the New City of Sidi Abdellah that is the new attractive urban center of Algiers, its major role is to be a place competitiveness, innovation and excellence, it will ensure the rebalancing of metropolitan growth in Algiers, which should be a complete urban center, likely to accommodate the redeployment of activities, populations and urbanization generated by this metropolis

2 INTEREST

We are trying here to make a quick assessment of the new city of Sidi Abdellah, likely to help regulate the urban expansion of Algiers, We will therefore limit our approach to the main characteristics that we consider essential to define the subject.

It will be for us to read and situate the role of the new city of Sidi Abdellah in the bipolarity in which it finds itself, between a regulating factor of the concentration of the populations in the Algiers agglomeration, and a factor of spreading, posing more and more problems in terms of transport, pollution and congestion.

√ In what context was the new city of Sidi Abdellah created? and why the choice of site of this city?

√ How does the new city of Sidi Abdellah work and what is its relationship with Algiers?

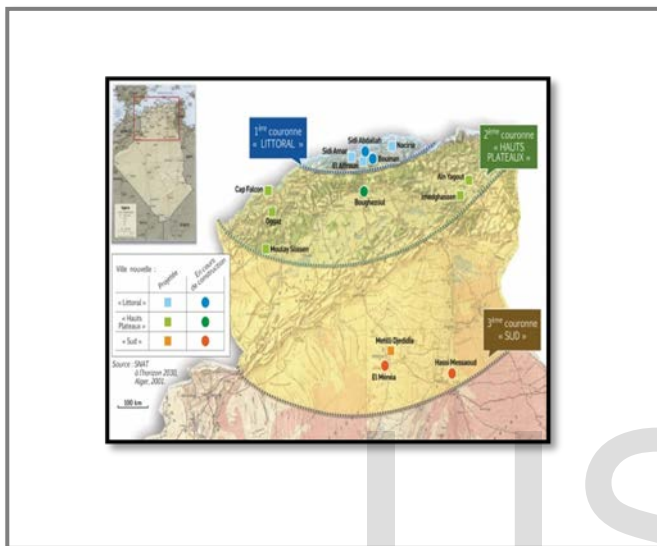
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agricultural lands in the region.

√ Now that it is almost completed, do they contribute to maintaining the populations on the spot by responding to the different needs of the population?

3 THE STRATEGY OF CREATION OF NEW CITIES



The implementation of the new cities policy is linked to the control of the growth of the capital (new towns of Sidi Abdallah and Bouinan), the rebalancing of regional development (new city of Boughezoul), the promotion of deprived areas (new city of Menéa), protection against technological risks (new city of Hassi-Messaoud)

Thus, the new cities project is part of an urban and spatial planning policy which aims to limit the hyper-concentration of human capital in the capital and put an end to the permanent expansion of the city. City, often at the expense of the best farmland in the region.

Fig.1 Location of new Algerian cities

3.1 The

The location logic of these cities was done by:

- The preservation of agricultural land.
- The valorization of existing tissues or prospection of virgin sites.
- Availability of urbanized land

- Staffing of economic and social functions

Moreover, Algiers and its first new city crown should function as a set of interdependent and complementary spaces in the organization of activities and populations and in an appropriate management framework.

3.2 New city of Sidi Abdallah, a safe alternative for a deteriorating Algiers metropolitan area

Saturated at the level of its urban setting, the city of Algiers rejects on its periphery much of its growth.

This is affected by the combined effects of migrations of Algerian origin and that of the hinterland.

Trends in the conurbation between Algiers and Blida, on the central Mitidja, integrating small settlements along this axis are almost obvious

Outside the large urban centers, arriving at saturation themselves, there is a proliferation of small settlements located mainly on the plain of Mitidja, which amputate more and more of a large part of its potential agricultural.

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This uncontrolled creeping urbanization began with:

- Compromise balancing city companion threatening the Mitidja.
- Increase the overexploitation of natural resources and particularly the extraction of sand from coastal dunes, which aggravates coastal erosion and contaminates groundwater.
- Increase the influence of infrastructures and networks made necessary resulting in the anarchic spread of urban areas and consequently to the increase in road traffic and the pollution it generates.

For all these reasons, it becomes imperative, in accordance with the national strategy of development and sustainable development of the territory to reorganize the metropolitan area of Algiers (figure2) for:

- Develop the metropolitan territory for a better distribution of development while preserving the agricultural lands of the Mitidja and Algiers sahel
- Fight against the anarchic and uncontrolled expansion of the suburbs of Algiers.

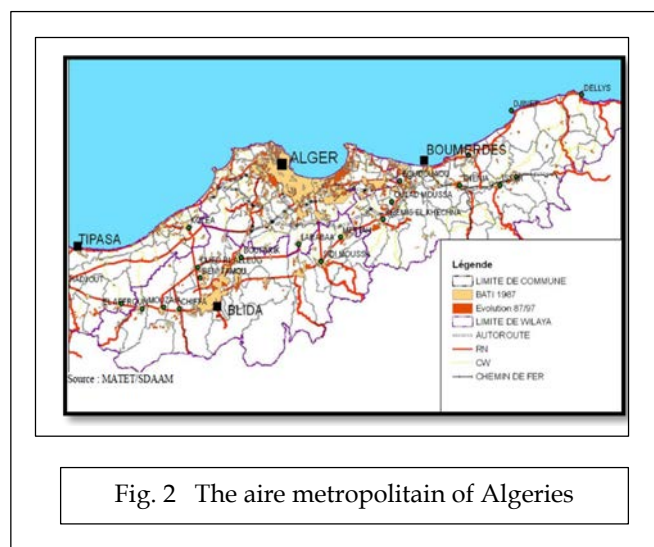


Fig. 2 The aire metropolitain of Algeries

3.3 The choice of location of the new city of Sidi Abdallah

The new city planned in Sidi Abdallah offers a good site which allows to engage the new strategy implied by the coherent and controlled urbanization of the Algéroise region

With a location that will allow him to play his role:

- It is 30 km from the capital, ideal distance to become an independent city (fig 3)
- Close to coastal towns.
- 30 kms from the international airport and 25kms from the port of Algiers.
- Vocation of the new city of Sidi Abdellah: City of Science and Technology



Fig.3 site plan of the new city of Sidi Abdellah

3.4 Distribution of the surfaces of the new city

The creation decree of the New Town defines it a total area of 7,000 hectares.

The surfaces are divided into 2 entities:

- 3,000 hectares for the perimeter of urbanization and development.
- 4,000 hectares around developed areas for the protection perimeter

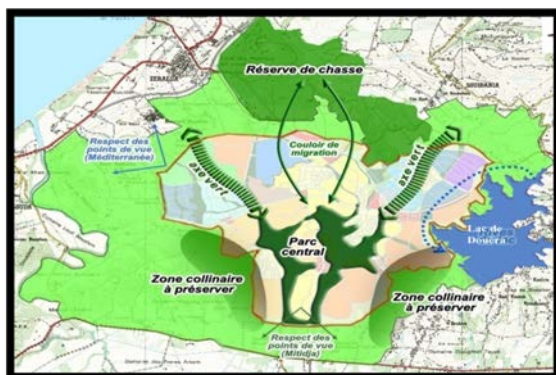


Fig.4 Master plan of the new city

4 RESULTS OF THE SURVEY

4.1 A multiple objective

According to the transport survey that we did with the inhabitants of the new town of Sidi Abdellah exactly at the Boulevard Ahmed Ben Bella to check the travel conditions and the mobility of the households living in the city of Sidi Abdellah between their home and their place of destination thus emphasize the problem of congestion caused by the difficulty of accessing the mother city and assess the social and economic situations of users.

The population questioned (in motion) has diversity in age (ranging from 18 years at age 67) but also in sex (female and male), these are the characteristics of a population that travels to all destinations and daily.

4.2 The social composition of travelers

4.2.1 According to sex

According to the survey results, 57% of travelers move from the new city to the mother city are men, the rest are women.

These results show us that the displacements of the population of the new city are shared between men and women.

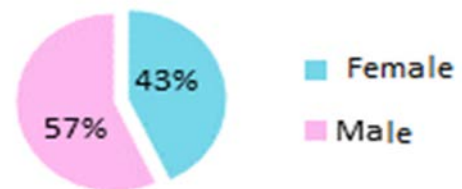
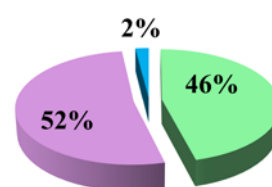


Fig.5 composition by sex

4.2.2 According to the age group

The survey reveals the following results:* Diversity in the age of the population in motion (from 18 to 67 years) .98% of travelers are between 18 and 55 years old, which correspond exactly to the working population (working age).



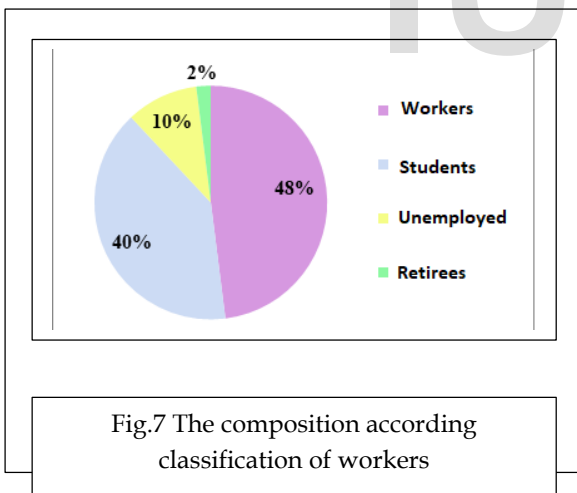
4.3 The economic characteristics

4.3.1 The class of membership

As we have already pointed out, 98% of the surveyed population is active, 48% of whom are employed, 40% students and 10% unemployed. The remaining 2% represent retirees. This confirms once again the hypothesis announced above, that the majority of the population in motion is an active population (occupied or university).

4.3.2 Classification of workers

It turns out that 33.33% of the working population works in the private sector, and 66.66% exercise in the public sector. This shows us that the population residing in the new city originates from the mother city because the inhabitants work there and / or own property there.



4.3.3 Expenses for public transportation per week / taxis or other

Households in the new town of Sidi Abdallah spend on average less than 1000DA per week for their travel by existing public transport (Etusa or train) and other households that spend 1000DA and more are those who use personal cars.

4.4 displacements

According to the results, we note that the most used means of transport in this new city to go to Algiers is the bus (Etusa) with

47% of the total households, and then in second position we find the train with 55 % of total households. The main motivation for choosing the mode of transport used and the total journey time which is on average between 45 minutes and 90 minutes for all modes combined.

4.4.1 The reasons for displacements

These displacements are linked mainly to work, this is explained by the fact that Sidi Abdallah is considered a dormitory town, still deficient in terms of jobs, but also that this population is from the mother city Algiers where it still works . This does not exclude that Sidi Abdallah can provide work for a number of its inhabitants, but also those of Algiers, given its characteristic of "city under construction" it offers temporary jobs in the building sector (masons, plasterers, construction site guards ...). With regard to health services and recreation, the new city remains dependent on a large part of Algiers. We note that in this new city, the displacement of households for work represents 47% of all trips, so we have 20% of trips for leisure and trade (19%) and 14% for other reasons.

4.4.2 Frequency of travel New city →mother city

The reasons for displacement fully justify their frequencies. If the inhabitants move for the most part for work, this explains the fact that their movements are daily, and mainly to Algiers center. As for the weekly trips, those are made for various reasons: family, leisure and sport ... the rest of the population's movements are occasional, because in relation to services or health or other things.

56% of households use transport every day, followed by 21% who use it several times a week and finally 06% use less often and this is explained by the need to go to Algiers and its surroundings.

4.4.3 Concerns about modes of transport used

The concerns of households in the study area mainly concern their dissatisfaction with the budget consumed, which is considered high; the importance of this budget is generally due to the absence of a tariff integration policy, which obliges TC users to pay for each trip made as well as that of time and to examine travel times, it appears that the longest average duration is observed among them who use public transport (bus and / or train)

	Bus	Car	Train
Number of persons	71	24	55
Pourcentage	47%	16%	37

In addition, 26% of people complain and suffer from the state of disrepair of the road network



Fig.8 defective road network

The difficulty of access to the center reflects the importance of the solicitation of the current road infrastructure, by the use of the car in the daily movements of the population of the entire metropolitan area of Algiers

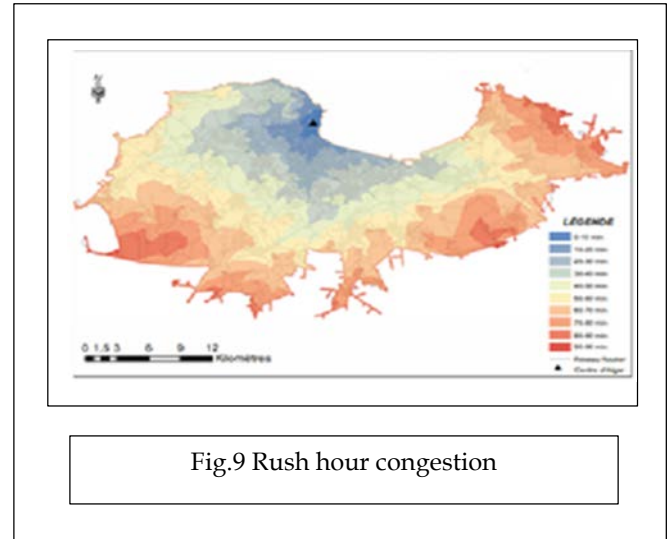


Fig.9 Rush hour congestion

Concerning the time issue, we took the opportunity to borrow the results of the survey conducted by Med BAKOUR, Tahar BAOUNI, Thomas THEVENIN on accessibility to the center from the 2nd peripheral ring depending on the network distance (in kilometers) and this in the only concern to have a clear vision on the difficulty of access to the center.

Table n° 2 shows a comparison of access times from the center of Algiers to a number of commune administrative centers (ACL) (in 2014, the start of major worksites), revealing a difficulty of access to the example of the displacement from Algiers Center to the municipality Mahelma located at 24 Km, is 21.82 min with an empty speed, goes to 66.12 min in a situation of congestion, a difference of 44.03 min . Rahmania, too, from the center goes from 23.57 min in a fluent situation to almost 71.42 min in a congestion situation.

5 DISTINCTION BETWEEN A NEW CITY AND SATELLITE CITY

To return to the verification of our hypotheses of departure, we should return to the object of our study and the key questions that are intended to be clear answers: what is a new satellite city? Are new cities satellite cities? And what differentiates a new city from a satellite city.

According to J. P. Lacaze of the series "What do I know? » On the methods of town planning, gives expresses on the new cities:

"Creating a new city means creating an urban body that is physically separate from the mother cities, and playing a more autonomous role in the regional urban framework".

Two inadequacies can be noted first, what does the author mean by physically distinct? If it is only a question of spatial remoteness, the author then illustrates nothing that is particular to the new city, especially since the term "urban organization" remains vague. Finally, this idea of greater autonomy is necessarily expressed in relation to a specific function, but the author remains unclear

The Petit Larousse dictionary defines the satellite city as: "A city separated from a larger urban center but which has close relations with it, although administratively it is autonomous".

If we consider that the definition of the satellite city given by the Petit Larousse is valid on the scientific level, we can affirm that there is an analogy between the definitions of the new cities and that of the satellite cities, nevertheless the notion of autonomy characterizes many more new cities than satellite cities, although the latter are generally administratively autonomous.

Table2 Comparison of access time at the center between a fluid period and

Origine	Destination	Distance (Km)	Temps d'accès vitesse théorique (Min)	Temps d'accès vitesse de congestion (Min)	Écart (Min)
SOUIDANIA	Centre	18,26	19,09	57,84	38,75
EUCALYPTUS	Centre	19,16	19,39	58,77	39,38
BIRFOUTA	Centre	19,43	17,98	54,49	36,5
DOUERA	Centre	19,62	20,6	62,42	41,82
RAHMANIA	Centre	21,03	23,57	71,42	47,85
SIDI MOUSSA	Centre	22,28	23,39	70,89	47,5
ZERALDA	Centre	22,42	18,4	55,77	37,37
ROUBA	Centre	22,75	19,42	58,85	39,43
BORDJ EL BAHRI	Centre	23,34	21,41	64,88	43,47
MEHELMA	Centre	24,4	21,82	66,12	44,3
TESSALA EL MERDIA	Centre	24,89	20,82	63,08	42,26
EL MARSA	Centre	25,31	23,36	70,78	47,42
OUED CHEBEL	Centre	25,39	25,43	77,05	51,62
AIN TAYA	Centre	27,34	26,61	80,64	54,03
HARAOUA	Centre	28,14	28	84,85	56,85
REGHAIA	Centre	28,54	23,27	70,53	47,25
Total (Min)		785		2289	1533
Maximum (Min)		28		84,85	56,85

An assessment test of qualification of the new city Sidi Abdellah, is necessary, following the analysis carried out, it is a question of checking some indicators which are the following ones:

Table3 Criteria for defining a new city				
criteria	Density hab./km2	Density houses/km2	HOR	Repport jobs / inhabitants
New city of Sidi Abdellah	2857	714	04	04

5.1 Density

The density of the new town of Sidi Abdellah is 2857 inhab./km2 although it is a high density when compared to the average density of the North Center region which is close to 301.18 hab./km2, on the other hand it is 7 times less densely populated, compared to Algiers center which has a density of 20 416 hab./km2

The mother city is supposed to be very congested, the objective is to have a new city with a better quality of life having a relatively high density to polarize the mother region and a high density supposed to give it a weight to allow it a on the one hand, to keep the populations of neighboring regions and on the other hand to capture the populations of the other regions of the country, particularly those of the North.

5.2 Housing occupancy rate:

Concerning the Occupancy Rate by Housing (ORH), we can say that the efforts made by the public authorities during the 2000s, there was indeed a significant decrease of the ORH in Algeria which went from 7.1 in 1983 at 6.4 per unit in 2008.

It can be deduced that the new city in formation does not seem to be in keeping with the promise of a framework life of excellence that is better than that of the rest of the national territory. (ORH) of SidiAbdelah will be estimated at 04.

5.3 Employment / inhabitants report

Sidi Abdellah is the city that will create the least number of jobs with only one job per 4 inhabitants. Considering the average size of an Algerian household of 6, this implies that Sidi Abdellah will offer less than two jobs per household while more than 40% of Algerian households have at least two working members.

The situation of this city may therefore have the opposite effect as that expected by its creation. Indeed, Sidi Abdellah is scheduled to stop the anarchic expansion of Algiers and to decongest and relieve the heart of the capital. However, by creating only one job for 4 people, it is feared that this VN strengthens the links with the mother city and increases congestion through the daily shuttles of its inhabitants for work.

5.4 Distance

The distance between the new city and the mother city determines the goal assigned to the new city, when the distance is relatively close to the old urban center is 35Km and more; we are in logic of decongestion, when the distance is 100Km and more, and we are in logic of settlement.

In our case, Sidi Abdellah, 25 km from Algiers, necessarily, a conurbation will be released between these two main cities of the metropolitan area's urban network through the polarization impacts and the attraction that will be exerted by all of them. The region in the short term.

CONCLUSION

The incessant and growing demand for housing and the small size of the Algerian space have forced public authorities to impose new life choices, by displacing populations outside Algiers.

This upheaval was to bring the voluntarist practice into line with what is being done elsewhere, by adopting the notion of new cities to decongest the center and transform the urban landscape so that we could live in coherence and harmony between the living environments and the aspirations of the modern citizen.

What we have learned from our analysis of the current situation of the displacement of the local population towards Algiers reveals that:

- The majority of the moving population is active or even busy.
- The main reason people move is work.
- This reason explains the fact that the initial contribution of this mobility is of an economic nature, and cultural.
- The population complains about the failure of the dilapidated infrastructure and the number insufficient and unsuitable type of rolling stock.

The analysis of the potentialities of the new city Sidi Abdellah also revealed that:

- Sidi Abdellah is still dependent on the mother city Algiers has a large part in the sanitary sector, services and education.

The new city came as a solution to the congestion of the mother city Algiers.

The perspectives presented at the launch of this great project are completely the opposite of the current situation.

Sidi Abdellah with its 40,000 inhabitants, had for first mission to house and fix the inhabitants, while it itself had difficulties to meet the socio-economic needs of its local population, is now dependent on Algiers on a large scale. It completes the list of transport, traffic, employment and service problems already posed by other satellite cities in Algeria.

Given a quick visit of 10 days on the ground for the survey, it seems difficult to give a reliable diagnosis of this area and this, despite what we have seen and appreciate on the ground all the pressures that can live this everyday life, expressed by the proliferation of housing located as mushrooms in the middle of the desert, the absence of primary networks, and waste

treatment, could lead to an irreparable diversion of the quality approach that was originally of this New Town project. The lack of management and regulation services would lead to this area being "messed up".

In conclusion, it seems urgent to us to have a much more coherent approach and especially closer to the notion of "quality label" defined by the "New Cities project" approach, before any opening to the public of the programs envisaged by the City. News of Sidi Abdellah. In this case, the notion of urgency is likely, if it is answered, to leave behind irreparable sequels and gaps, while the Ville Nouvelle approach is committed to a process of "sustainable development". If the question is to respond to a priority housing need, it would be better to abandon the "New Town" approach and move towards a classic extension of urbanization.

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