

Geographical Analysis of Center-Periphery Relations in Mountainous Regions of Northern Algeria: Insights from the City of Médéa and its Periphery

التحليل الجغرافي للعلاقات بين المركز و الضواحي بالمناطق الجبلية شمال الجزائر:
رؤي من مدينة المدية و ضواحيها.

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Abstract:

The demographic weight of peripheral cities surrounding the central city of Médéa in northern Algeria is more significant compared to the central cities of the Tell Atlas Mountains. Therefore, the comparison between the surrounding peripherals cities is typical to highlight the functional link in the economic and service field which are among the essential foundations that contribute to strengthening and improving the functional relationship between the center and the periphery. The field study that we conducted on the three peripheral cities of Draa Essamar, Ouzra, and Berrouaghia surrounding the city of Médéa in 2020 showed that there is a great functional relationship between the residents of peripheral of each Draa Essamar and Ouzra and the central city Médéa. This relationship ranges between 80%-90% for work, health, and shopping, which is considered One of the main reasons for the high percentage of connection of these two peripherals to the central city, in contrast to the periphery of Berrouaghia 17%, which is more independent than its predecessors, a which makes it at present the most fortunate to become an urban pole. The study also showed meaning that the continued rapid development of urban areas in the Atlas Mountains will have a profound impact on the evolution of the ecological environment.

Keywords: Central city, functional links, Peripherals, City of Médéa, Tell Atlas Mountains.

المخلص:

يعتبر الوزن الديموغرافي لمدن الضواحي المحيطة بمدينة المدية المركزية بجبال الأطلس التلي شمال الجزائر ذو أهمية كبيرة لدراسة الروابط الوظيفية في المجال الاقتصادي والخدماتي والتي تعد من بين الأسس الرئيسية التي تساهم في تعزيز وتحسين العلاقة الوظيفية بين المدينة المركزية و محيطها، لذا فإن المقارنة بين مدن الضواحي المحيطة بمدينة المدية نموذجية لإعطاء فهم واسع و أكثر دقة عن هذه العلاقة. أظهرت الدراسة الميدانية التي تم اجرائها على ثلاث ضواحي وهي ذراع السمار، وزرة و البرواقية المحيطة بمدينة المدية في عام 2020 أن هناك علاقة وظيفية كبيرة بين سكان ضواحي كل من ذراع السمار و وزرة بمدينة المدية المركزية، وتتراوح هذه العلاقة بين 80% - 90% للعمل والصحة والتسوق ، وهو ما يعتبر أحد الأسباب الرئيسية لارتفاع نسبة ارتباط هذين الضاحيتين بالمدينة المركزية ، على عكس ضاحية البرواقية 17% ، التي هي أكثر استقلالية من سابقتها ، مما يجعلها في الوقت الحاضر الأكثر حظاً لتصبح قطباً حضرياً. كما أوضحت الدراسة أن التطور السريع المستمر للمناطق الحضرية في جبال الأطلس سيكون له تأثير عميق على تطور البيئة الجبلية ، لذلك يجب توجيه جميع التدابير لجعل المدينة المركزية محركاً للتنمية وإعادة هيكلة مجالها لتحقيق أهداف التنمية الحضرية المستدامة.

الكلمات المفتاحية: المدينة المركزية، العلاقات الوظيفية، مدينة المدية، جبال الأطلس التلي.

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I- Introduction :

Mountains comprise to a tenth of the world's population and cover 25% of the earth's surface (Jörg et al., 2011, p189). Faced with the challenge of urbanization, the exploration, protection, and development of mountainous areas accept become a significant challenge for the sustainable development of all countries (Blyth et al., 2002, p11 ; Ding & Jian, 2018, p765). The Tell Atlas Mountains in northern Algeria are an important economic and social development and important spatial vectors for sustainable population activities, as well as an important space for future economic and social development region. Algeria is one of the most mountainous countries in north Africa. Mountainous regions (including hills and plateaus) represent about 45% of the total area of the country, and the population in mountainous regions represents about 46% of the total population of Algeria (ONS, 2008), more than half of those The population is concentrated in urban agglomerations, and about the spatial development strategy, there is a difference in the style and approach found in the mountainous regions from those in the plain regions, and this is due to the characteristics to the terrain features of the mountainous regions.

The functional relationship is crucial in generating income, employment, and wealth. However, for various reasons, the importance of this relationship needs to be paid attention to; hence, it is ignored in the national economic and trade policies. Analyzing the functional relationship that is often divided into three categories, represented in the population, economic and service relations (Abdelhak, 2013, p10; Salim et al., 2018, p863; Evans et al., 2018, p2166) between the central city and its peripherals, is of great importance because it allows highlighting the role that these relationships play in the formation and development of peripherals cities surrounding the central city, so that the growth of the central city, which is the center of relations and communication, the gathering place for residents and activities and the place framework for service and cultural exchanges increases thanks to the activities associated with urban agglomerations (Ezzi, 2000, p167). Urban functional relations are expressed as all forms of population movements, daily, weekly, and monthly in the producing goods, consumption, exchange of money, and services, and even social relations between relatives and friends.

The peripheral cities of Draa Essamar, Ouzra and Berrouaghia are now one of the urban sprawl centers of the city of Medea, receiving a large number of residents of the city of Medea, especially after the saturation of the urban fabric of the central city and the depletion of its real estate reserves and the lack of space allocated for construction and reconstruction, especially with the terrain difficulties of the city required by the future increase For its residents, this is what prompted the local authorities of the city to search for spaces for construction and reconstruction to strike a balancé in the requirements of its inhabitants, especially in the field of housing and economic and service projects to transfer many housing projects and development programs to the peripherals of the city of Medea, and primarily to each of the peripheral cities of Draa Essamar, Ouzra and Berrouaghia, where these peripherals attracted in the recent period, starting from the year 2013 AADL (The National Housing Improvement and Development Agency), urban complexes that contain different housing formulas, for example, more than (700, 1300, and 750) dwellings in the form of rental sale AADL in each of Draa Essamar, Ouzra and Berrouaghia, respectively, these are residential projects that will require, during the coming years until the horizons of 2040, more centers of economic and industrial activities, especially art The population increased from 220,818 in 2008 to 256,050 in 2020, and it is estimated to reach 356,032 in the horizons of 2040 (Researchers estimates based on the latest population census in 2008).

Despite the late growth of the city of Médéa towards the peripherals, it is still the preferred and most attractive place for residents from various neighboring regions, especially the residents of the peripherals of each of Draa Essamar, Ouzra and Berrouaghia. The growth and development of these peripherals will contribute to solving the problems of the central city, which suffers from overcrowding, lack of facilities, poor provision of services, and narrow spaces available for urban expansion by creating a more organized and attractive urban environment. This situation produced spatial dynamism in the region in various economic and social domains, it contributed to the growth of the status and dominance of the médéa city over its surroundings, especially the neighboring peripherals. Therefore, it is necessary today to understand the functional relationship that links the central city and the surrounding peripherals in study area in order to find out the problems facing Sustainable development in the study area, and the perspective of developing the functional links therein, and accordingly, the problem of our research was

as follows: **What is the functional relationship that exists between the city of Médéa and the studied peripherals? What is the prospect of developing these links?**

I.1. The value of promoting sustainable and inclusive development

Arguments linking the central city to its periphery have received constant attention in development policy as an important process in the process of social, environmental, and economic sustainability between rural and urban areas in different countries of the world (Milan et al., 2020), one of the apparent aspects. In these studies, it ignores the importance of the field in urban development. The spatial distribution of economic activities is unbalanced, with more than half of global production activities concentrated within large central cities (Harold et al, 2022, p2). To understand the impact of the field on urban economic growth, the question first to be answered is: Why are economical and service activities concentrated within the central cities? For this problem, some researchers try to provide answers based on the perspective of geographical determinism. They believe that the city's seniority, site conditions, climate, and other geographical factors impact on regional economic and service development (Goldstein & Moses, 1975, p71; Kim, 1999, p2; Gabaix, 1999, p740).

Cities are seen as drivers of sustainable and inclusive development and attractive places to live, work and invest. Great attention should be given to local policies for the interconnection between central and peripheral cities through integrated governance and partnership-based planning. The development of the agglomeration economy has allowed cities to form urban agglomerations around some central cities gradually; economic forces drive the formation and development of these urban agglomerations, and this economic force mainly corresponds to the influence of the local market and the influence of overpopulation mentioned in the basic periphery theory of the new economic geography. According to this theory, an increase in the distance between the peripheral cities and the central city of the region will result in the emergence of a central urban system. In other words, as the distance between the peripheral city and the central city increases, the market potential of the central city will first decrease. When the two cities reach a certain distance, the market potential of the peripheral city will gradually increase. As the distance continues to increase, the regional market potential will eventually decrease (Fujita & Krugman, 1995, p16).

Since ancient times, rural and urban areas' economic and territorial development has been considered separate topics in research and policy. This view has been reinforced by the feeling that differences in economic, cultural, and spatial conditions lead to economic, social, etc. differences. However, urban and rural areas are increasingly complementary both physically and functionally, and because of their distinct and complementary riches, close integration can bring benefits to both (Milan et al., 2020, p51). According to Czischke (2015) for sustainable urban development, there are 3 important "themes", of which one is the rural-urban link. Together, these "themes" aim to contribute to the overarching goals of a more sustainable development, which entails strengthening the connections between the central city and its periphery in the future.

I. 2. Objectives of the study

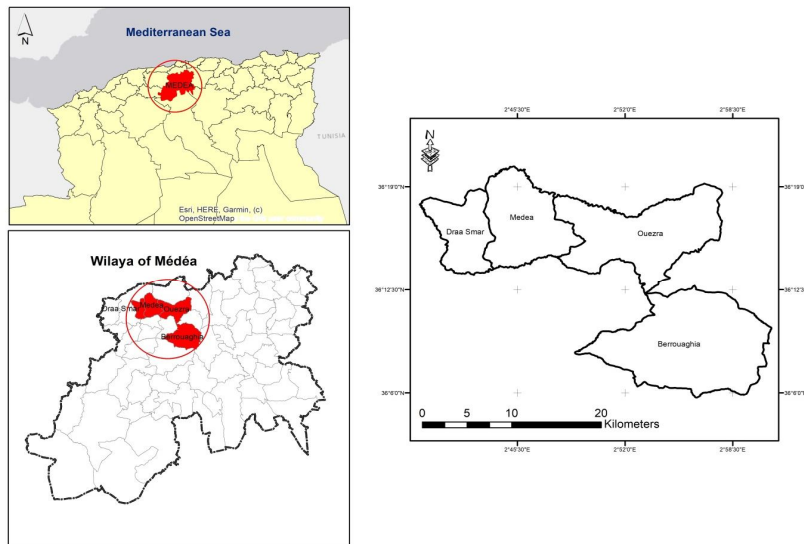
In the present study, our goals were to: (1) analyze and interpret the centrality of the city of Médéa to its periphery to understand the urban dynamics in these peripheries, and thus to better understand the urban development in the Tell Atlas Mountains region of Algeria, (2) evaluate the functional relationship between the central city and its periphery, and through which to identify and evaluate the functional and spatial differentiation of the mountainous region; and (3) provide perception or perspective of the development of functional linkages in the region to improve the social and economic development strategy.

II– Methods and Materials:

II. 1. Study Area

To understand the spatial relationship between city centers and their peripheries in the Tell Atlas Mountains in northern Algeria, the city of Médéa and the surrounding peripheral cities of Draa Essamar, Ouzra, and Berrouaghia were selected for study and analysis. The study area is located in the middle of the Atlas Mountains between latitudes N °36'6"00&°36'20"21 and longitudes °2'30"60& °2'43"38 east of Greenwich meridian (Fig.1). Its height ranges between (500-1500m). This is what makes the topography of the study area composed of complex mountain ranges, plateaus, and valleys, as its surface is generally characterized by height and steepness.

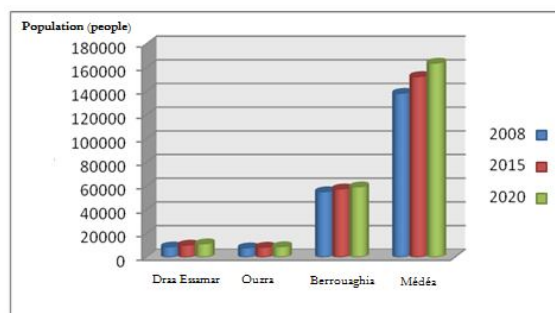
Figure (1): Location of the Study Area.



Source: Authors.

The peripheral cities studied have experienced significant spatial transformations in the economic and real estate sector, as the peripheral cities of Draa Essamar, Ouzra have attracted large segments of the population to reside there from various neighboring municipalities, especially the villages as a result of housing projects that have been programmed in multiple forms (Fig. 2). This population growth has contributed to the increase in the urbanization rate which has doubled during the same period, ranging between (61.77% & 94.26%) (PDAU, 2021), urban growth has become faster than population growth, which has contributed to the development of the proportion of the urban population in the main agglomerations of these peripheral cities.

Figure (2) : The evolution of population growth in the study area between 2008-2020.



Source: Researcher estimates based on the last population census in 2008.

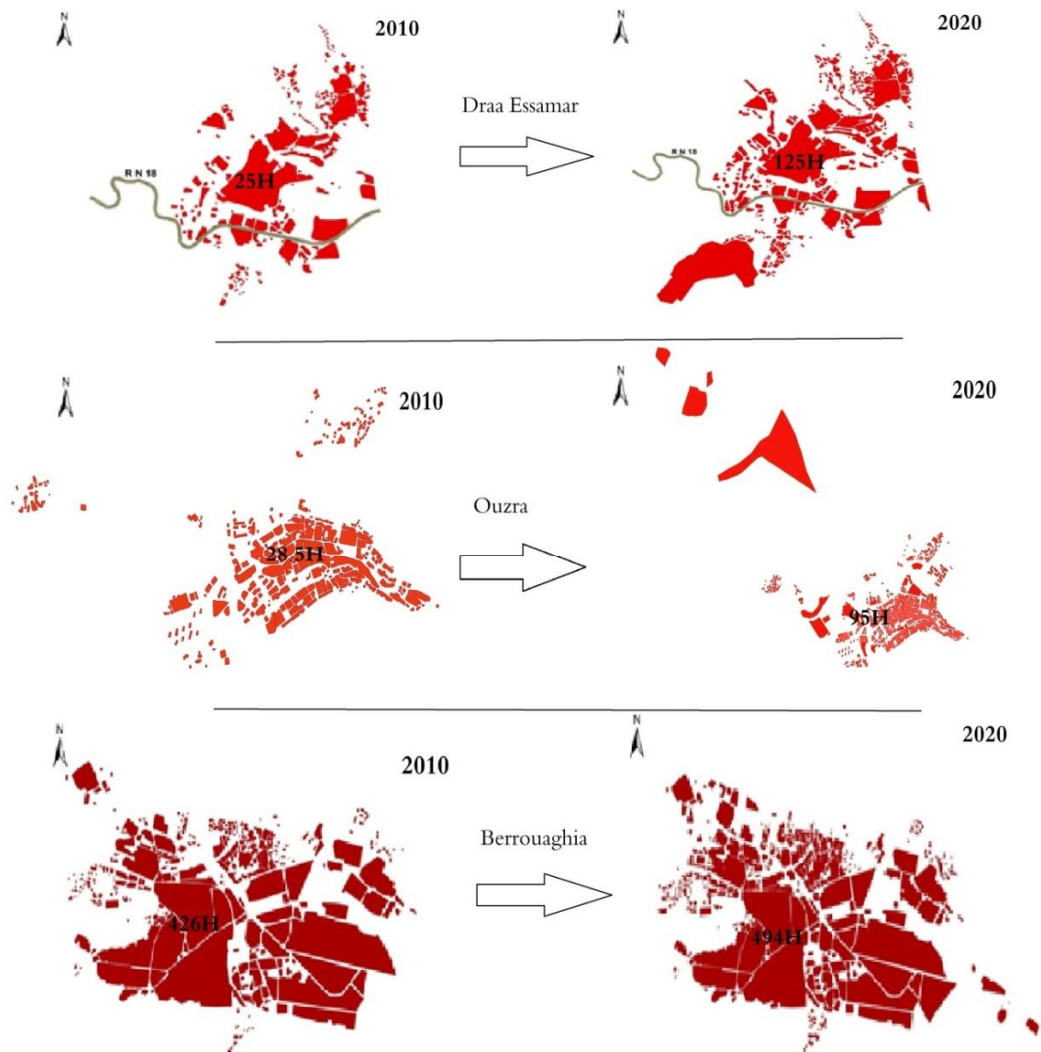
The population growth of peripheral cities contributed significantly to the significant development of the total urban area of these peripheries over 30 years, as it increased from 34.5 Hectares in 1990 to 714 Hectares in 2020, and this indicates the urban transformation and spatial dynamism that these peripheral in this period as it is shown in Table 1 and Fig 3.

Table (1) : Development of the peripheral urban area during the period (1990-2020).

Peripheral Cities	Area (Ha)		
	1990	2010	2020
Draa Essamar	4	75	125
Ouzra	2	28.5	95
Berrouaghia	28.5	426	494
Total	34.5	529.5	714

Source: Satellite data (1990-2010-2020).

Figure (3): Urban development of the studied peripheral cities between 2010-2020.

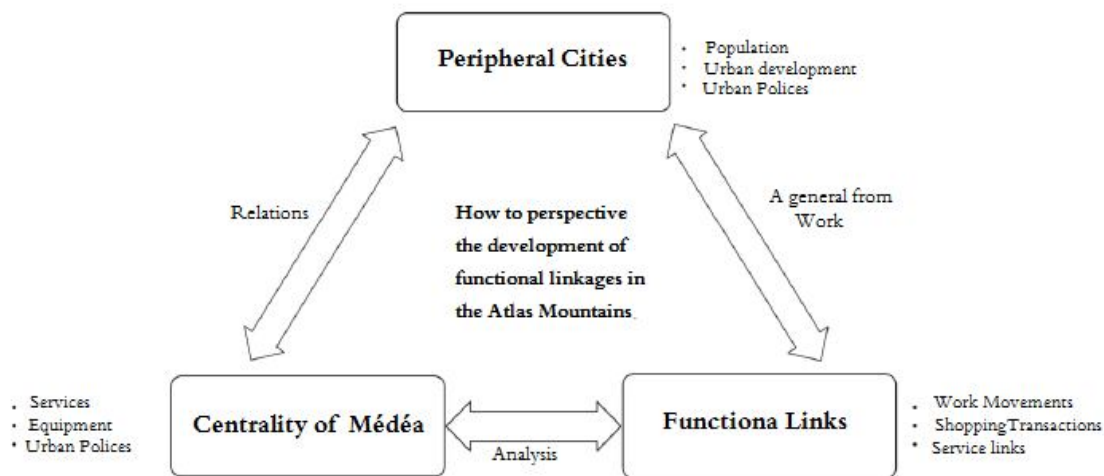


Source: Satellite data (2010-2020).

II. 2. Methodology

Today, at the beginning of the third decade, how can the central city in the Tell Atlas Mountains correct the course of its functional relationship with its periphery? This is the question that the authors seek to answer in the three parts of this paper (Fig. 5), based on the data collected directly from the field questionnaire, which included 1500 families from the community studied distributed over the periphery analysed (Draa Essamar, Ouzra, & Berrouaghia) equally, i.e. 500 questionnaires in each periphery. To avoid frequent trips and the difficulties that ensue, these forms were distributed to students in educational establishments (intermediate and secondary) in these peripheries to be presented to the head of the family so that it responds on 02February 2020, considering targeting most of these peripheries neighborhoods. Also, the satellite images of Landsat 7 and 8 for the years 2010 and 2020 were relied upon to extract maps and data related to the urban growth of the studied area.

Figure (5): Methodology of answering the research question.



Source: Authors.

III- Results and discussion :

III. 1. Analysis of the centrality of Médéa

The development of the phenomenon of urbanization is linked to two basic stages: it is linked to urban growth by which the city experiences significant urban growth with the concentration of population and work without urbanization affecting its peripheries, and urban expansion, which translates into an urban expansion that affects the peripheral circles, so that the importance of this city increases at the level of concentration of work, while the periphery fulfils the residential function with the presence of some activities, above all consuming large areas of land so that urbanization then affects the peripheries and population movements, therefore, testify to significant mobility in various directions and due to the sparse spatial distribution of population and work, especially between the central city and the surrounding areas (Sternberg & Cunha, 2003). In urban planning, centrality is a concept proposed by Walter Cristaller, a German geographer in 1933 « Centrality qualifies the action of a central element on its periphery. It has been defined as a hierarchical concept of service and attraction. It depends on the power of attraction or diffusion of this element, which is based on both the efficiency and accessibility of the central pole. The element can be an urban center and accessibility is a major condition » (Rabiaa, 2018, p106).

In general, the downtown area is the place where people, jobs, and the supply of goods and services come together. It is the easily accessible place that concentrates all internal and external activities and interactions (Rabiaa, 2018, p106).

Through the preceding, the city of Médéa gets the status of centralization due to its acquisition of the majority of services at the level of its territory, as well as its control over the funds in its surroundings, and by organizing village life around it. Although in addition, it is the oldest city compared to the urban areas located in its surroundings. In addition to being the capital of the state of Médéa since 1984, which includes 64 municipalities, it also has all the characteristics of an active and attractive center for daily and

weekly population movements from inside and outside, as it is an urban area that combines various activities and facilities (Table 2 and Fig 4).

Table (2): Various services and equipment in the city of Médéa in 2020.

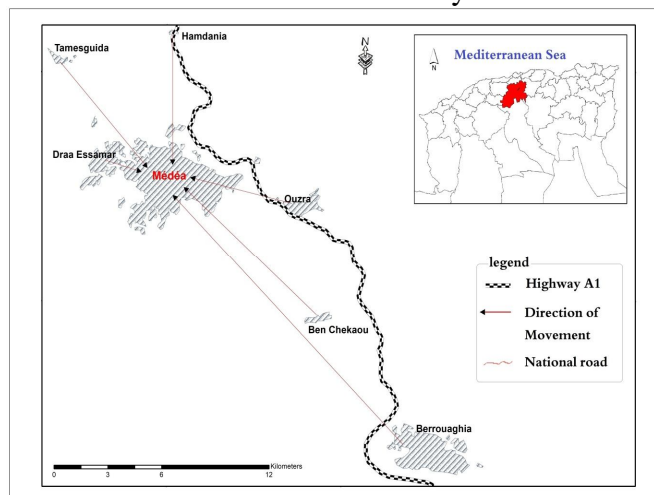
Services & Structures		Number in the city	Number of in Wilaya
The number of educational institutions	Primary	46	629
	Middle	17	126
	Secondary	10	39
Training centers	Centers	7	15
Structures Health	Hospital	1(622 Lit)	05
	Clinic	06	65
		09	149
	Clinics private medical (general medicine, surgery, dentistry)	10	209
	Pharmacies (public and private)	40	125
	Laboratory of medical analysis	15	50
Structures Commerciales et Shopping	Weekly markets	03	60
	Wholesalers	294	/
	Retailers	2874	/
Transport	Out-of-town transit stations	05	64

Source: Statistics of the Directorate of Health, Directorate of Commerce, Directorate of Education for the year 2020.

The city of Médéa combines various activities and facilities, including services (education, health, etc.), and it is a city that has not abandoned its centrality for a long time. The mix and variety of commercial activities and services in the city center make it the most visited area by the inhabitants of the peripheral and attract many mechanical (individual and collective transport) and pedestrian flows that cause many problems for the city.

These various services have contributed mainly to the expansion of the urban sphere of the city of Médéa and have greatly contributed to the new commercial and central attractiveness. A sufficient number of basic facilities and commercial activities in the peripheral area is significant to mitigate the daily flow of residents to the city center of Médéa.

Figure (4): Functional relations between the city center of Médéa and its peripherals.



Source: Authors.

III. 2. Analysis of the functional links between the center – peripherals

The peripheries surrounding the city of Médéa have formed and developed in such a way that the city of Médéa has imposed itself as the central city since it is the capital of the state. To reduce the intensity of pressure on the central city, an urban policy was followed by the responsible official bodies through which it aimed to direct urban expansion towards the surrounding peripheries. As previously mentioned in the problem of this article, there was a prospective vision to make the study area an integrated urban agglomeration.

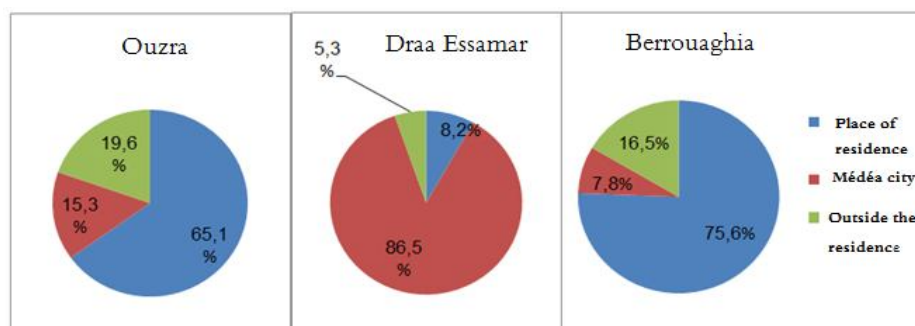
The city of Médéa and its surroundings remain the main engine of dynamism in the region at the various economic, social, and urban, and the reason is the preference given to these peripheries during the period 1990-2020 in terms of improving the economy and services, which has been reflected in the increase in the built-up area. The area of each of these peripherals has increased from 34.5 hectares in 1990 to 714 hectares in 2020, and its population from 71683 in 2008 to 79339 in 2020(ONS, 2008& Researchers estimates based on the latest population census in 2008).

III. 2. 1. Analysis of work movements

The employment opportunities offered by urban agglomerations to their residents and the surrounding population are important indicators for measuring their economic weight in their local or regional environment (Bastie & Dezert, 1980, p263). It is well known that employment opportunities are closely linked to the type of activities in these communities. Therefore, the increase in the number and diversity of these activities has had a positive impact and has resulted in a significant portion of the population in these communities working in or near their place of residence.

By classifying the data from the field questionnaire that we distributed to the peripheral cities studied, the data obtained were classified in Fig 6.

Figure (6): Distribution of the working population in the study area according to their place of work in 2020.



Source: Questionnaire, 2020.

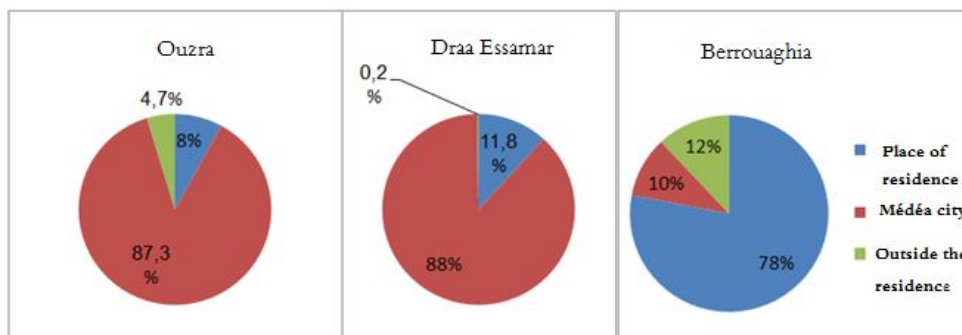
The areas studied have a significant lack of employment opportunities available in the places of residence, where we note that more than 86.5% of the active population of the periphery of Draa Essamar work in the city of Medea, against 8.2% who work in the place of residence, and this is mainly due to the close distance between these peripheral areas and the central city - 4 km - and the lack of economic, health, educational and administrative facilities. In addition, the majority of the inhabitants of the periphery of Draa Essamar are inhabitants who migrated from the city of Medea to this one in search of calm and stability while keeping their places of work in the central city, and this was answered by more than 65% of the inhabitants of the city of Draa Essamar who answered the questionnaire. While the periphery of Ouzra & Berrouaghia witnessed relative stability in the field of work in places of residence, with 65.1% and 75.6%, respectively.

III. 2. 2. Analysis of the shopping transactions

The movement of people between two or more regions to do shopping, particularly to acquire semi-rare products, is one manifestation of trade relations between regions. Fig 7 shows that the residents of each of the peripheries of Draa Essamar and Ouzra are strongly connected in the field of shopping to the city of Médéa at the level of their shopping for almost the majority of items by 88% and 87.3%

respectively, in contrast to a weak percentage of shopping in places of residence in these two peripheries, which was estimated between 8% and 11.8% which confirms the lack of shopping services in these two peripheries, in contrast to the residents of the periphery of Berrouaghia who are closely related to their place of residence in the field of shopping for almost all products with a rate of more than 78%.

Figure (7): Distribution of shopping location percentages for the study area population in 2020.



Source: Questionnaire, 2020.

Fig 7 shows that there are weak rates of individuals who visit areas outside their places of residence for shopping, as it reached 10% in the city of Médéa and 12% outside the studied areas, so it became necessary to take into account this urban expansion and population growth witnessed by this area studied in the national development strategies in the mountains The Tell Atlas in northern Algeria to create an integrated growth between the various systems that make up the urban system in the region by paying attention to providing services of all kinds, employment opportunities, road networks...etc.

As for the reasons for seeking alternative shopping destinations for residents of these peripherals outside their residence, the population group that responded to the questionnaire expressed these reasons, as shown in Table 3.

Table (3): Percentage distribution of reasons that drive peripheral residents to shop outside their place of residence in 2020.

Peripheral Cities	Reasons that drive peripheral residents to shop outside their place of residence				
	Lack of shopping centers in the places of residence.	No weekly markets.	High prices of products in the place of residence.	Poor quality of goods in the place of residence.	Other Reason
Draa Essamar	53%	20%	3%	17%	7%
Ouzra	46%	22%	8%	14%	10%
Berrouaghia	2%	00	83%	15%	00

Source: Questionnaire, 2020.

Table 3 shows the reasons driving the residents of the studied peripheries to go outside their places of residence for daily or weekly shopping, whether towards the city of Medea or toward other regions, especially the neighboring states(Wilayas). The absence of commercial centers in the places of residence and regarding especially the newly established areas is the main reason and the main motive for the residents of the peripheries of Draa Essamar and Ouzra with 53% and 46%, respectively, unlike the city of Berrouaghia, whose main reason for the departure of its residents out of their place of residence to make their purchases is represented by the increase in prices to 83%. There are two other important reasons: the first is the lack of weekly markets, and this is clearly demonstrated by the high percentage of those who declared it (20% - 22%) of the residents of the peripheries of Draa Essamar and Ouzra, respectively, which pushes its residents primarily to go to the weekly markets of the city of Medea because it is the place the closest, as for the second reason, is the poor quality of goods in the place of residence, and this was stated by all respondents in the questionnaire in the three peripheries, at a close rate ranging between (14% - 17%).

III. 3. Analysis of Service links (Administrative, Health, Educational & Commercial)

Administrative, health and educational services are considered the backbone of public services, as they are essential to the individual's life. Therefore, the stability of the population is often subject to the concentration of these services because the more they multiply and diversify, the more intense this stability becomes. But, of course, this happens if other conditions are conducive to this stability.

III. 3. 1. Administrative Services : The city of Médéa is the capital of the state and all of its communes and departments have long been linked to it in terms of administrative services, in addition to the central policy that has prevailed for a long time in the state, which has contributed to the large concentration of administrative institutions in the city of Médéa, including the liberal professions (law firms, notaries, architects, and public agencies and others), The absence of such institutions or the near lack of some of them in the cities of the peripheries studied is what prompted us to dispense with asking questions on this subject in the field questionnaire that we conducted, considering that most of the inhabitants of these peripheries go to the city of Médéa to benefit from its administrative services, and then these peripheries have a significant dependence on the city of Médéa at the level of the administrative function.

III. 3. 2. Health Services: The questionnaire found that many groups of residents of the cities of these peripheries seek medical treatment outside their place of residence, as shown in Table 4. This highlights the dominance of the city of Medea over the rest of the other treatment areas because of the advanced health services it contains, whether public or private, compared to the health services in their place of residence.

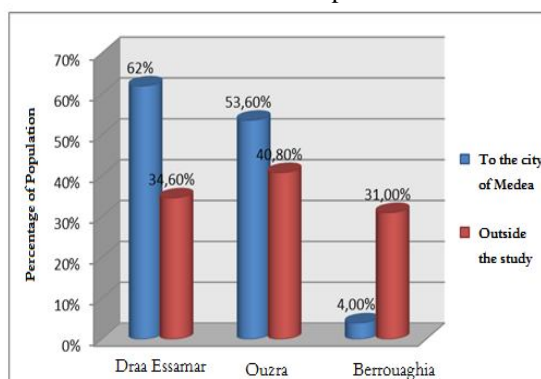
Table (4): Percentage distribution of residents of the studied area according to their frequency to places other than their places of residence to benefit from health services in 2020.

Place of Residence	Frequency to places other than their places of residence to benefit from health services.		
	Never	Sometimes	Mostly
Draa Essamar	3.4%	19.8%	76.8%
Ouzra	5.6%	34.4%	60%
Berrouaghia	65%	25.4%	9.6%

Source: Questionnaire, 2020.

Fig 8 shows that the city of Médéa is the main attraction for the residents of the peripheries of Draa Essamar and Ouzra to benefit from health services. It was also noted that the city of Medea attracts 62% of Draa Essamar, and 53.6% of the people of Ouzra, due to the concentration of private health clinics in various specialities and the large public hospital of the state of Médéa in the central city. However, Médéa attracts only 4% of the population of Berrouaghia.

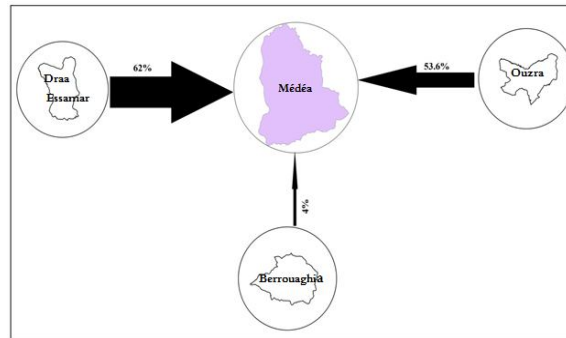
Figure (8): Distribution of the proportions of the population of the studied peripheries according to places of use of health services outside the place of residence in 2020.



Source: Questionnaire, 2020.

Through the above and the questionnaire data, a brief chart was planned to show the relationship between the population of the studied peripheries and the city of Médéa regarding health services (Fig 9).

Figure (9): Relationship between the population of the studied peripheries and the city of Médéa in terms of health services.



Source: Authors.

As for the motives for searching for other destinations for treatment for the residents of these peripheries outside their place of residence, the population group that answered the questionnaire expressed these reasons as shown in table 5.

Table (5): Reasons peripheries residents will go outside their place of residence for health services in 2020.

Peripheral Cities	Reasons peripheries residents will go outside their place of residence for health services		
	Absence of health services	Poor-quality health services	Maltreatment
Draa Essamar	72%	22%	6%
Ouzra	87%	10%	3%
Berrouaghia	28%	61.4%	10.6%

Source: Questionnaire, 2020.

Table 5 shows the reasons that motivate the population of the peripheries studied to leave their residence to benefit from health services, whether to the city of Médéa or other regions, particularly the neighboring states (Wilayas). The absence of health services is the main reason and motivation of the inhabitants of the outskirts of Draa Essamar and Ouzra, with a rate of 72% and 87%, respectively. While the poor quality of health services in Berrouaghia, with a rate of 61.4% is considered the main reason for the departure of its residents from their place of residence, unlike the two previous peripheries. Added to these two reasons is the cause of Maltreatment in health facilities by sector users expressed by the respondents to the questionnaire as (10.6%, 6%, and 3%) in each of the Berrouaghia, Draa Essamar, and Ouzra, respectively.

III. 3. 3. Educational Services: The educational services of the city of Médéa, particularly the educational institutions at all levels (primary-intermediate-secondary) had played an important role in attracting the population to this city in the first years after independence. But at present, it no longer has this importance, and this is due to the educational and social policy carried out by the state in developing the establishment of academic centers in various urban and peripheral communities, as well as in many rural areas, but on the other hand, the city of Médéa is still relatively distinct in terms of educational services, especially about the university, the semi-medical training center, and the vocational training institutions that are not located in the outskirts surrounding the town of Médéa. This is because the education sector has achieved its objectives (the availability of the basic and necessary structures for the pupil's schooling in a comfortable manner). While on the contrary, the health sector remains far from the desired objectives, and the citizen still moves from one place to another to get the health services that are convenient for him.

III. 4. Perspective of the development of functional links in Study Area

Many researchers, such as (Ravetz et al., 2013, p16), have indicated that peripheral areas are the transition zone between urban and rural environments and comparing what has been discussed theoretically in many studies and current reality of city and periphery growth and distribution of their functions, it is found that the development and spatial distribution of residential peripheries presented in theoretical studies is not very applicable to current reality. And if we consider the growth models of the central city, we can say that the city has two options, either growth towards the periphery or growth towards the interior (Mc Gregoret et al., 2006, p10).

The future of urbanization in the Atlas Mountains of northern Algeria foresees the emergence of increasing agglomeration forces whereby the periphery towns merge into large, constantly built-up areas with varying levels and diversity of development. The results of this study also indicate that the continued urban expansion of these peripheries will see the merging with surrounding small villages along road networks, mainly the north-south highway (A1). These developments have direct implications for urban policy and planning, which now seem out of step with growth trends and the increasing demand for infrastructure and service provision.

The sustainable city must control peri-urbanization and sprawl, and peripheries that are seen as the natural extension of cities benefit from the new relationships in the sustainable city. These peripheries support new jobs, host critical production facilities, and serve as renewable energy sources.

The prospect of developing functional links between the central city and its Periphery in the Tell Atlas in northern Algeria can be based on the application of an urban policy based on a new approach to urbanization and a fundamental policy of rebalancing between the central city and its Periphery. All measures must be directed to make the central city an engine of development and restructuring. To achieve these objectives, we propose to implement a series of actions :

- ✚ Reduce the fragmented and random growth of cities through urban planning tools by following all procedures that put an end to the fragmented urban growth that characterizes most urban agglomerations in the Tell Atlas Mountains in general, and the study area in particular, to improve the functions of cities to facilitate easy communication between the central city and its Periphery to take over and its function is the engine of development.
- ✚ Rehabilitation of the central city is a necessity to revitalize the attractiveness of cities, as the city of Médéa must be characterized by quality, competitiveness, attractiveness, and sustainability, capable of responding to the needs of its residents and the changes it is going through and contributing to an authentic urban culture and identity.
- ✚ Incorporating the commercial urban planning approach in urban projects allows for addressing the imbalance in the distribution of commercial activities. Through our study, we noticed that the distribution of commercial activities is unbalanced between the central city and its periphery. Therefore, it is recommended to integrate this interest in city planning tools to assist the authorities. The local government has to regulate trade and ensure consistency in activities and their regional distribution to combat the heterogeneous and non-functional distribution that generates many problems and pressures for the central city.
- ✚ Strengthening the role of the city of Berrouaghia in the area under its planning scope in coordination with other secondary urban agglomerations (Zoubiria, Saghouane, Moudjbar), and expanding its influence in the east through the development of the city of El Omaria, and this by valuing the wealth of the rural environment and the scenic landscapes of the region to support eco-tourism (Bin Chicao), and from the economic point of view, it is possible to allocate Berrouaghia as an industrial pole in the fields of mechanics, especially small and medium enterprises in the field of irrigation machines.

IV- Conclusion:

The city of Médéa has a huge potential and a great capacity to attract residents from other places, especially from the surrounding peripheries. The reason for this is the imbalance in the distribution of services, economic and social structures, and in some cases the lack of basic structures and supplies within the peripheral cities, and this was shown through our study, which showed the functional links for the peripheries of Draa Essamar and Ouzra, which are close to the central city, in terms of shopping and various services, increased by more than 85% due to their lack of availability at their residence, unlike the periphery of Berrouaghia, which is somewhat distant from the central city, its inhabitants enjoy

independence from the central city in the field of shopping and benefiting from services at their residence due to the availability of life needs that relieve them of the tedium of daily travel to shop and benefit from services provided by the city of Médéa.

The study also showed that the improvement witnessed by the peripheral cities studied on some of the functions that were addressed contributed to alleviating the urban and population pressure on the city of Médéa, which will result in the coming years in the emergence of large urban agglomerations around the city Medea, where each periphery will be able to form an urban area that serves it and structures its activities. The periphery of Berrouaghia is currently considered the most fortunate to become an urban pole due to the presence of a significant number of activities and services, as well as due to the relative distance from the central city, which may allow restructuring the area surrounding it and make it more closely linked to the city of Berrouaghia, so it became necessary to take into account the expansion Urban and population growth witnessed by these peripheries to bring about an integrated growth between the various systems that make up the urban system through the expansion of services of all kinds, employment opportunities, and different road networks.

The mountainous terrain has led to the unbalanced distribution of urban systems in the study area. Therefore, the strategy of balanced spatial development is unrealistic in the Tell Atlas Mountains in Algeria, meaning that the continued rapid development of urbanization and the continuous expansion of urban areas in the Atlas Mountains will lead to an increasing scarcity of land resources. The spatial expansion of built-up land will have a profound impact on the evolution of the ecological environment, so all measures must be directed to make the central city an engine for development and restructuring its field to achieve the goals of sustainable urban development in the region, by limiting the fragmented and random growth of cities to improve their functions, and make them able to respond to the needs of their residents and changes It passes through, as well as strengthening the role of the cities of the periphery, which is growing rapidly in the Tell Atlas Mountains, and giving them the role of reorganizing the surrounding field to create a new dynamic to restore urban balance in the region.

Referrals and references:

1. Abdelhak, A. (2013). Cities and Rural: Relationships and the Organization of the Field in North-East Morocco, Publications of the College of Arts and Humanities, Oujda, Journal of Research and Studies Series, Issue 15, 8-15(In Arabe)
2. Bastie, B., & Dezert, B. (1980). L'espace urbain, Masson, Paris, 258-270
3. Blyth, S., Groombridge, B., Lysenko, I., Miles, L., & Newton, A. (2002). Mountain Watch, Environmental Change and Sustainable Development in Mountains; UNEP-WCMC: Cambridge, UK, p. 11.
4. Ding, Y., & Jian, P. (2018). Impacts of Urbanization of Mountainous Areas on Resources and Environment: Based on Ecological Footprint Model, Sustainability 10, no. 3, p. 765. <https://doi.org/10.3390/su10030765>
5. Evans, A., Lamine, S., Kalivas, D., & Petropoulos, G. (2018). Exploring the potential of eo data and gis for ecosystem health modeling in response to wildfire: a case study in central greece . Environmental Engineering and Management Journal, 17(9), 2165-2178. Retrieved from <https://eemj.eu/index.php/EEMJ/article/view/3679>
6. Ezzi, H .(2000). The City and the Territorial Function: Mechanisms for Organizing the Domain Through the Case of the City of Oujda, Chapter 3, The Book "The Moroccan City on the Horizon of the Twenty-First Century Between National Identity and the Mediterranean Dimension", Anfalous Mohamed, Publications of the Faculty of Arts and Humanities in Mohammadiyah, Seminar Series, No. 12, p. 167.
7. Fujita, M., & Krugman, P.R. (1995).When Is the Economy Monocentric? vonThnen and Chamberlin Unified. Regional Science and Urban Economics, 25, 505-528. [https://doi.org/10.1016/0166-0462\(95\)02098-F](https://doi.org/10.1016/0166-0462(95)02098-F)

8. Gabaix, X. (1999). Zipf 's Law for Cities: An Explanation. *The Quarterly Journal of Economics*, 3, 739-767. <https://doi.org/10.1162/003355399556133>
9. Goldstein, G.S. & Moses, L.N. (1975). Interdependence and the Location of Firms. *Journal of UrbanEconomics*, 1, 63-84. [https://doi.org/10.1016/0094-1190\(75\)90040-6](https://doi.org/10.1016/0094-1190(75)90040-6)
10. Harold, W., William B., Jennifer C., Samantha F., Richard H., Jeffrey L., & Thomas, O. (2022). The state of urban research: Views across the disciplines, *Journal of Urban Affairs*, DOI: 10.1080/07352166.2022.2080073
11. Jörg, L., Kerstin, A., Barry, B., Oliver, D.F., Bernd, D., Dirk, W., Boris, S., Roland, P., & Anders, L.(2011). Mountain ecosystem response to global change. *Erdkunde*, Vol. 65, No. 2 , 189–213. DOI: 10.3112/erdkunde.2011.02.06
12. Kim, S. (1999). Regions, Resources, and EconomicGeography: Sources of U.S. Regional Comparative Advantages, 1880-1987. *Regional Science and UrbanEconomics*, 1, 1-32. [https://doi.org/10.1016/S0166-0462\(98\)00010-6](https://doi.org/10.1016/S0166-0462(98)00010-6)
13. McGregor D., Simon D., Thompson D.(2006). The peri-urban interface: approaches to sustainablenatural and humanresource use. Earthscan, London, p.10.
14. Milan,T., Sandra, R., & Bojan, P. (2020). Functional links between rural and urban areas in the territory of the city of Banja Luka and the perspective of theirdevelopment, *journal of Economics of SustainableDevelopment*, № 2, Vol. 4, 49-62.
15. (ONS) Office National des Statistiques.(2008). Rapport de Recensement de la Population et de l'Habitat, Ministère des Finances, Algérie.
16. Paulet, J.P. (2000). Géographie urbaine, Armand Colin, Paris, p.171
17. PDAU. (2021). Révision du Plan Directeur d'Aménagement et d'Urbanisme de la Commune de Médéa. Direction d'urbanisme de la Wilaya de Médéa, 1-20.
18. Ravetz, J., Fertner, C., & Nielsen T.S.(2013). The Dynamics of Peri-Urbanization. In: Nilsson K., Pauleit S., Bell S., Aalbers C., Sick Nielsen T. (eds) Peri-urban futures: Scenarios and models for land use change in Europe. Springer, Berlin, Heidelberg. p.16
19. Rabiaa, Ch. (2018). Les relations fonctionnelles entre le centre-ville de constantine et la périphérie bekira.*Journal of Sciences & Technologie*, Constantine 1, Algérie, D – N°47, 105-114.
20. Salim, L., George, P.P., Sudhir, K. S., Szilárd, S., Nour El Islam, B., Prashant, K.S., & Swati, S. (2018) Quantifying land use/land cover spatio-temporal landscape pattern dynamics from Hyperion using SVMs classifier and FRAGSTATS®, *Geocarto International*, 33:8, 862-878, DOI: 10.1080/10106049.2017.1307460
21. Sternberg,V. U., & Cunha, D. (2003). Impact de l'étalement urbain, *forum environnement : développement urbain durable*, 3-7.

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