

Bus Stations in Annaba between Mobility and Attractiveness

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Abstract Travel and transportation are seen as a necessity for our society and an essential component of social, economic and environmental development. In order to control the use of cars, especially in the city centre, urban planners and researchers are currently considering the question of the interaction between the public transport station, the train station and the city. Supported by the development and improvement of public transport networks, their importance is vital to reduce the ecological footprint of cities. To this end, the city of Annaba (located in the northern-east of Algeria) was chosen to study the relationship between service areas around public transport stations in the city centre. The development and growth of Annaba's agglomeration has had a major impact on travel levels and volumes. Field results state that the urban public transport station "Souidani Boudjemaa", which provides the link between the city centre and the outskirts, is certainly an asset thanks to its location in the heart of the city, but it does not meet the requirements of a bus station infrastructure. This work will take into account the observation supported by questionnaire surveys and supplemented by the analysis of planning tools, whether in the field of town planning or that of transport.

Keywords Bus Station, City Centre, Commerce, Public Transport, Souidani Boudjemaa Station

1. Introduction

Transportation is one of the most important urban

planning functions that ensures mobility within the urban area and access to various urban amenities [1-2]. Today, there is a growing demand for individual mobility with the development of societies and population growth. This change is hampered by the need to reduce the environmental impact of human activities and to combat socio-economic inequalities. The alternative to the car seems to be quality public transport; a public transport offer must be attractive enough to represent such a credible alternative [3-4]. Ergo, developing an accessible, reliable and attractive public transport offer is a key tool to limit the use of single cars [5].

In other words, the reduction of the weight of the automobile in travel represents an essential issue for sustainable urban development. Some countries understood that the spread of the automobile would inevitably produce scattered urbanism. From the perspective of Sustainable Urban Development, taking up German practices, we can say that they are marked by the will to make the city within itself and to master the automobile growth in the city with the notion of "city of the short distances". The policy implemented by the German public authorities calls for daily services to be located within 800 meters of housing and trading centres. The aim is to moderate short-distance mobility needs, to make public transport more cost-effective and attractive, and to encourage non-motorized travel [6] in the context of the concept of sustainable mobility. That is where cities have had to improve their existing transport systems by strengthening the complementarity between rail, road, maritime transport, cycling and walking while ensuring the transition from one mode to another [7].

Today, it seems that the efforts of cities like Strasbourg are oriented towards the development of public transport, trade parking, and bypass roads. Cars are banned in the city centre and the tram is not only a privileged means of transport but also a tool for urban planning. The canals are used for transport and the banks transformed into landscaped pedestrian paths crisscrossing the city. The car has been replaced by another, more environmentally friendly mode of travel. Other cities, such as Copenhagen, have opted for the introduction of pedestrian streets and to dissociate car traffic from commerce so as not to harm the latter. There were also recreational streets where traffic was mixed and pedestrians and bicycles were given priority. Many car parks in the urban centre have been converted into recreational spaces [8]. The creation of infrastructure for sustainable active travel and public transport and attractive public spaces is vital for the development of viable and sustainable cities [9].

With this in mind, the design of bus and train stations has been renewed to meet the principles of sustainable cities. The new design provides a positive image for the city as a focal point for mobility and city activities. The latter ensure accessibility and comfort for users while taking into account the requirements of an efficient public transit service. Comfortable spaces are created for users within the station while providing them with amenities. Stations and stations thus become meeting places more than spaces for interconnections, offering the passenger an optimised and safe route [10].

In Algeria, we are witnessing a phenomenon of accelerated growth (demography, motorisation, space consumption, etc.) where the transport infrastructures of cities are unable to follow this frantic movement. In a country where the rate of motorisation is still manageable, the existence of a quality public transport offer is essential [11].

We know that the alternative to the automobile is “quality” public transport, which is a crucial dimension of Sustainable Development. And in this context, at the level of the major Algerian cities, there is the introduction of new modes of travel such as the tramway or even the cable car. But the issue of user travel appears to be unsupported [12]. The impact on the ground is glaring. We are seeing city centres overrun by cars and public transport stations that do not comply with the standards resulting from the growth of private operators and buses. Is this phenomenon not generated by absent urban planning, without forgetting that the latter is essentially linked to human beings and their behaviours [13]? If this observation is specific to the Algerian city, how does the problem present itself in Annaba?

Research shows that developing countries are characterised by rapid urbanization due to high internal growth rates and large-scale rural-urban migration. In many cities in developing countries, public transport, which is an essential component of travel patterns, has generally remained neglected [14-15]. Formerly a

pedestrian town, Annaba has become “automoville”, with a growing car fleet [16-17].

Today, pedestrians and cars are in constant conflict, especially in the city centre. Public transport stations are located in the heart of the city. In this city offering the characteristics of a city favorable to walking, is there an adequate development within and around public transport stations? It is clear that the shops of the city centre contribute strongly to the animation of the city [18]. Pedestrians appear to be loyal customers and are a major contributor to the merchant’s revenues. It seems advisable to be concerned about these customers and to identify their movement from the transport station to the commercial zone [19].

2. Method of Analysis

Apart from the documents Urban Development Master Plan (PDAU), Ground Occupancy Plan (POS), Urban Transport Plan (PTU), Traffic Plan that addressed the issue of transport in its entirety, the station Souidani Boudjemaa has not been the subject of any research. This study was supported by a literature review of walking service areas around public transit stations. For our case, we will be interested in the urban station located in the heart of the city nestled within a residential, administrative, commercial space, and which provides the connection between the city center and the outskirts of the city. Our attention has focused mainly on the hyper center first extension of the colonial city where pedestrians are numerous.

It should be mentioned that this site has always been the nerve centre of the city and has not lost its vitality until today. It is from this first extension of the colonial era from 1833 to 1840 that the city was born, having as its starting point the course of the revolution (Cours Bertagna) and which takes its present downtown appearance. The development of the new city consisted of the opening of the main streets by the French military authority in order to facilitate traffic between the old town, and the newly built neighborhoods [20].

Visual observation is another instrument, which is a first mode of investigation of the real, giving rise to a questioning that allows us to grasp the relationship between space-user, space-means of displacement.

This research is supported by household surveys carried out as part of the reorganization of public transport and the feasibility study of a new tramway transport mode in 2007 for the city of Annaba.

The analysis will be completed by cartographic support and shooting. The statistics were collected from documents of the Directorate of Transportation of the Wilaya of Annaba:

- The Master Plan of Planning and Planning years: 1995 – 2008.

- Urban Transport Plans (PTU) as well as the Traffic Plan developed by the Algiers Metro Design Office (2000-2002-2007).

The work was completed by the traffic plan carried out by the Directorate of Transport in 2016 where an investigation and counting of all motorized modes and pedestrian movements was carried out at the level of the area concerned dwellers within and around public transport stations.

3. Results and Discussion

3.1. Towards a Motorized Mode of Travel

Located in northeastern Algeria, Annaba (also known as Bouna) is a coastal town bounded by the Mediterranean Sea and the wilayas of Guelma, El Tarf and Skikda (Figure 1). Bouna consists of a varied relief consisting of mountains, hills and plains. A rich and varied forest massif occupies more than the wilaya of Annaba [21]. The massive industrial implantation has made this city undergo a surface extension and a process of periurbanization. The extension of the city took place in two directions: North-East and South-West giving rise to under-equipped localities.



Figure 1. Location of the City of Annaba

The inhabitants of these areas are obliged to move to the mother commune to work there, to study, to buy, or

simply to walk, to hang out. There are therefore two types of urban and suburban (inter-communal) travel (see Table 1).

Table 1. Suburban Travels to the Municipality of Annaba

Destination /Origin	Annaba Town		
	VP	Taxis	TC
El Bouni Commune	5922	6005	34348
Sidi Ammar Commune	2608	2308	17658
El Hadjar Commune	2218	1794	9814

This unbridled urbanism has generated increased mobility accentuated by a motorisation particularly the automobile. Annaba has become an “automoville” with a growth of the car fleet of more than 5.7% per year on average between 2002 and 2012 and more than 7% for the period 2013 and 2022 [22].

Formerly referred to as a pedestrian city, Annaba is currently referred to as a motor city or old-age city, an age characterized by the development of the urban road network in favour of the car. It is important to mention that the parent commune has the privilege of grouping together several poles: employment, trade, as well as meeting and relaxation. To reach these poles, mobility takes place by car, public transport, or on foot.

3.2. Public Transport Stations Located in the Heart of the City

Two urban and suburban stations are located in the heart of the city (Figure 2). They are respectively Souidani Boudjemaa and Kouche Nourredine who encourage the use of Public Transport in order to make purchases or regain employment. We recall that the city center presents itself as a commercial center characterized by the so-called luxury trade (clothing and home equipment) [23]. The busiest commercial area is made up of shopping streets. A particularly commercial area that has a pleasant and attractive character and is related to “pleasure buying”, “love buying” [24-25].

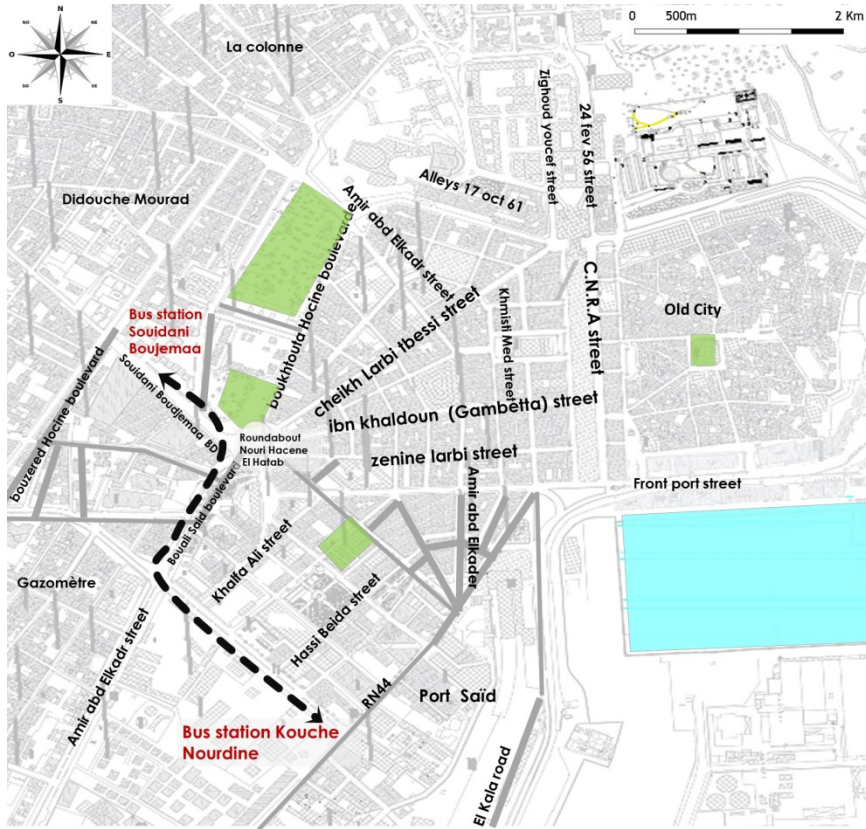


Figure 2. Soudani Boudjemaâ Urban Station and Kouche Nourredine Suburban Station

For European cities, the PDU Urban Travel Plans planning tool addresses the theme of downtown commercial dynamism. Trade and trade-related issues are part of movement policy choices. Parking, deliveries, accessibility by public transport are designed to ensure the accessibility of commercial areas in the city centre and to encourage the use of alternative modes of transport to the car [24].

Boudjemaâ" is the one that ensures these trips by serving the west side: the west plain and the north one (See Table 2). The latter is reinforced by a second with an area of 16392m². Called "Kouche Nourredine", this station ensures all the suburban movements that take place between the communes of El-Bouni and El-Hadjar (See Table 2). According to field data, this suburban (but occasionally urban) bus station does not fulfil its role as a transport station because of its advanced precariousness (lack of adequate facilities for vehicles and users).

Table 2. Station of Urban Travels

	Destinations	Number of lanes	Number of vehicles
Urban transport station Soudani Boudjemaâ Station	West and North of the city	13	172
Urban and suburban travel station - Kouche Nourredine Station	South of the city	11 (in UPT) 5 (out of UPT)	256 (in UPT) 324 (out of UPT)

Urban movements are those that take place within the commune of Annaba. The bus station "Soudani

3.3. Proximity and Effect of Soudani Boudjemaâ Station on Trade

Soudani Boudjemaâ station is located in the city center occupying a privileged place in the urban framework because of its historic center which concentrates most of the structuring equipment. This situation makes the station a place of affluence. The survey carried out in 2007 as part of the study of a tramway line for the city of Annaba informs us about the average rate of bus lines leaving the Soudani Boudjemaâ station at peak time in the evening (15:45 and 18:15).

At the end of the day, users travel by public transport, which is concentrated at the stations in the city centre, which makes it possible to investigate as many passengers as possible.

Table 3. Traffic leaving the Souidani Boudjemaa bus station at the rush hour of 3:45 p.m. and 6:15 p.m.

Destinations		Offered Places	Number of Travellers	Average Occupancy
Moving to the West of the City	5 juillet	1780	1629	91%
	Oued Eddheb	1010	997	99%
	08 mars	1120	852	76%
	Oued Forcha	1220	788	65%
	Sidi Achour	1520	1236	81%
	Cite Rym	1000	1194	120%
Travel to the North of the city where there are residences-hotels-relaxation areas- beaches	Rizi Amor (passant par Beni Mhafeur)	570	677	119%
	Rizi Amor (passant par CHU Ibn Rochd)	560	457	81%
	Ain Achir	450	316	70%
Travelling to North East and North West Outlying Areas	Cite Seybouse	1260	987	78%
	Sidi Aissa	740	691	93%
	Cite an Nasr	1030	670	65%
	Cite des Cretes Gassiot	580	543	93%
Total		12840	11037	86%

Table 4. Type of Equipment by Sector

	Habitat	Big equipment	Agricultural practices	Commercial Activities	University
Center of Annaba	X	X		X	X

Bus movements are to the west, to the north and to peripheral areas with an average bus occupancy rate exceeding 100%.

It must be emphasised that the peripheral areas consist of low-density dormitory cities with insufficient equipment. This explains their dependencies vis-à-vis the city center which continues to experience a growing commercial dynamic.

Although the city centre of Annaba has experienced a slight spread of its commercial activities in different directions (north: administrative cities with commercial activities, and west: Boulevard d'Afrique and business centre) (see Table 4), it remains the dominant place of essential commercial centrality. Indeed, energy and vitality emerges from the heart of the city dependent on the presence of commerce (small shops, shops). It attracts a large number of customers throughout the city and even neighbouring cities (Guelma, El Taref, etc.). The presence of commerce in the city centre has been fostered by alternative mobility to the automobile: public transport contributing to the persistence of the environment, issues related to our future [26].

In addition to this trade dynamic, the fruit and vegetable market is called "El-Hattab". This site occupied by the Zaouia "Sidi-El-Hattab" (located at the right entrance of

the market) was the wholesale market of fruits and vegetables. Today, given its location close to the station, this market attracts a fairly loyal clientele, coming from everywhere. Historically, this site was, according to our investigations, the entrance of the city where there was a door called KAREZAS or Bab Rahba overlooking the only national road of the time (travellers coming from Guelma, Calle, Constantine or Philippeville entered through this door). Being a "Rahba" (An Arabic word which signifies place), this site already had a commercial dynamic, a continuous coming and going of busy people going from the wheat market (located inside the ramparts) to the cattle market outside the city [27] where the current station Souidani Boudjemaa is located. This demolished door has given way to a roundabout (Maria Fabre Square (well-done) named today Nouri Hacene, the name that most belongs to him is El-Hattab.

3.4. Current Status of Souidani Boudjemaa Station

The urban public transport station "Souidani Boudjemaa" presents an asset thanks to its location in the heart of the city, however and relative to its surface 7500 m², one cannot not hesitate to say that this station is no longer suitable for the number of buses assigned to it or

the number of lines assigned to it (13 lines and 172 vehicles): this area may not contain more than 80 buses [23]. In 1987, there were only five lines serving northern areas. In view of this capacity, we can say that the station was not designed to operate in the long term: an urban development towards the north and the west and towards the south peripheral localities accompanied by a population growth for the city centre Annaba up to a number of 269,181 inhabitants in 2005 and 367,592 inhabitants in 2025 according to the forecasts of the PDAU.

In order to remedy this problem, Law 88-17 of 10 May 1988 [28] on the orientation and organisation of land transport has encouraged the contribution of private operators. The sector has been rapidly privatized, with growth in the national fleet (1 to 2 vehicles on average per operator). The station Souidani Boudjemaa has a number of 356 outgoing buses with a number of passengers being 14573 for 20105 places offered with average occupancy rate of 72% (overall supply and demand on PTU bus lines from Annaba city centre stations between 2:30 pm and 6:30 pm [29]).

3.4.1. A Station out of Step with Urban Growth

The development and growth of the Annaba agglomeration has had a major impact on travel levels and volumes. A study carried out transport plan in the agglomeration of Annaba 2007 study office CNTC/SPA [30] showed that the projected travel volumes for the year 2015 amounted to 959270 trips in public transport and that the city presents itself as the main flow-attracting zone or 77% of the total traffic received.

As the station has not experienced any extension or mutations, it would be unable to receive the current travel flows. The station manages minicars, minibuses and buses [29-30] on a daily basis. The space is shaped like a rectangular trapezoid. The total area of this space is insufficient for the parking of these means of transport, especially since it provides another function of storage maintenance and others.

The interior layout of the station consists of eleven platforms, insufficient for the number of buses (172): 57 of the AutoBus type (AB), 28 of the Mini Bus type (MB) and 85 of the Mini Cars type (MC) (Cf. Table 5).

In addition, it should be noted that the difficulty of manoeuvring is due to the number of buses and their dimensions in relation to the area of the station (Table 5).

Table 5. Types and Numbers of Vehicles at Souidani Boudjemaa Station

Types de vehicles	Number of places	Number of vehicles	Dimensions
AutoBus AB	100	57	L- 11440 / l- 2500
Mini Bus MB	40	28	L- 6998 / l- 2200
Mini Cars MC	25	85	L- 6655 / l- 2300

Despite these shortcomings, amenities exist within this station. There is a cafeteria and it is accompanied by two metal kiosks improperly made to meet the multiple needs of passengers (sale of tobacco, newspapers, confectionery, mineral water, soft drinks, cell phone refills, etc.) located respectively at the entrance and at the exit from the station as shown in Figures 4 and 5. We note also the presence of a police station whose mission is the safety of passengers; it is located within the administrative block of two levels; separate public toilets are added to the rest of the amenities.

3.4.2. Source of Air Pollution and Nuisance

It should be noted that the inscription of the station can be attractive as it can be repulsive depending on the mode of inscription in the urban fabric. The neighbourhood close to the station may tend to deteriorate or devalue because of nuisances (access congestion, insecurity, noise, air pollution, etc.). As it can tend towards land valuation resulting in an amplification of local activities. This advantage resulting from the station is intended to be a driving force for urban centrality at the scale of the city or the agglomeration [31].

The pollution caused by urban transport was confirmed by the pollutant measures of the various stations of the Sama Safia monitoring network. In the city of Annaba, more than 70% of the public transport fleet has a running time of more than 11 years, with a significant rate reaching 63.2% in 1998 and 70% in 2010 [15]. This fleet is a source of pollution because studies on the thermal engine have shown that the older an engine is, the worse it burns its fuel, thus releasing tangled substances that pollute the atmosphere. The age of a vehicle is one of the main parameters involved in air pollution. The morphology of the site also favours non-polluting and the first reached by this pollution is the pedestrian.

3.4.3. Pedestrian-Motorist Conflict

Within the station or at the exit, there is interference with general motorized traffic and potential vehicle/vehicle and vehicle/pedestrian conflict. At the exit of the station «Souidani Boudjemaa» begins an area of dissimilar «friction» between the pedestrian and the motorist; the two riders seem to cohabit. According to the observable observation and the 2016 survey, pedestrians move throughout the space and seem to grant themselves rights to cross without really having them. The first obstacle encountered when going to or leaving the public transport station is the «Nouri Hacene» roundabout, commonly known as the El-Hattab roundabout, which serves seven particularly commercial routes (Figure 2). At this space begins a zone of «friction», a dissimilar friction between the pedestrian and the motorist, the two users seem to cohabit.

This roundabout reached a saturation threshold in motorized traffic with a load greater than 3000 UVP/H (Private Vehicle Unit per Hour).

It should be noted that transit stations and adjacent areas must be designed to prioritize pedestrian access while meeting the needs of other users such as cyclists, public transit and motor vehicles). In addition, the cities that have introduced a quality public transport mode have allowed for large-scale pedestrianisation at the level of the city centre.

3.4.4. Lack of pedestrian paths

Walking remains the main mode of folding at the origin of the urban station Souidani Boudjema. The distribution of passengers by this mode of travel is higher for walking than for other modes of travel: On foot 62.3% – by bus 28.7% – by taxi 4.7% – train 3.9% – VP 0.5% – undetermined 0.0% [29]. This walk is supported by the presence of a well mesh road network in a dense urban area where the pedestrian, according to the analysis made by [32], can use almost 100% of the network with a low average detour percentage. The analysis shows that in relation to pedestrians, the well-meshed centre as well as a medieval or Haussmann-type network is favourable: the average detour is about 20%.

Pedestrian accesses are not materialised, they are merged with those of the entrance and exit of the buses (Figure 3). For people with reduced mobility, access to this station is complex. Within the station, pedestrian waiting areas are not clearly identifiable and we are seeing a conflict between pedestrian and bus traffic. Drivers are having difficulty manoeuvring their vehicles.



Figure 3. Passengers' Access Lane Combined with that of Buses



Figure 4. Presence of a Kiosk in Passengers and Buses' Access Lane



Figure 5. Commodities inside the Station

3.4.5. Discontinuity between the green space and the station

Square el Houria (which means freedom) dating back to

colonial times is part of the resort's immediate environment. In view of its situation, the square can play an important role. It can be a resting place for passengers coming from the neighboring areas that can be a space at the service of the station.

This green space should therefore have both a spatial and functional link with the infrastructure in question. A vegetal atmosphere will embellish the landscape, create shade and facilitate pedestrian travel. The renewed interest in the plant landscape through the introduction of green spaces into any project is an obligation that must be taken over by any urban study [33].

3.4.6. Security of Passengers

The observable remark in parallel with the study conducted by the Quebec Ministry of Transport [34] shows that the passenger disembarkation and collection areas are not identifiable either by sidewalks or by special coatings or markings. No orientation map is seen at the main entrance (indicating the user's location inside the station area) and the main destinations of the latter while walking, and more generally opting for soft modes, are travel practices to be valued for access to public transport [35].

In short, and despite these handicaps, these nodes between bus lines excluded from the definition of bus station and even less of exchange pole, remain fairly frequented and the bus as transport used amply by city dwellers. The old surveys (2000, 2002, 2007) [36], [37], [30] and the recent surveys (2016) [17] clearly guide us on the citizen's opinion of stations and modes of transport.

The surveys highlight the non-existence of reception infrastructure that meets the requirements of a station or station. The station is even classified in the category "anarchic type". Compared to the 1990s, the bus fleet meets the needs of the clientele but comes with deplorable treatment conditions. The stations are certainly well located but the layout is absent. The diagnoses relate to the alarming state of the premises, such as quays and platforms broken down, or presence of street shops. Security is not provided within the station. There is a daily danger to the passenger, resulting in embarkations and disembarkations outside the platforms. To this is added the inadequacy to see the absence of information panels.

3.5. Summary and Examples of Stations

Based on this analysis, we can conclude that the presence of the public transit station in the city centre encourages the use of public transit. Despite the presence of obstacles, "Public transport is the mode of travel required for those who do not have access to an individual mode" [38].

The urban resort Souidani Boujemaa is inserted in the city center where shopping streets attract a wide clientele throughout the city; and integrated into a compact and mixed context composed of residences, jobs and shops.

This organization is favourable because it fits perfectly with the concept of Transit-oriented development (TOD) developed by Peter Calthorpe, an urban architect (1993), which promotes the articulation of urbanization and public transport. Indeed, the TOD proposes the establishment of communities whose inhabitants can easily access on foot (that is to say within a radius of approximately 600 meters) to a core of services and shops, and to public transport [39].

From a legal point of view, Law No. 01-14 [40] on the organisation, safety and police of road traffic favours the least polluting modes of transport, namely bicycles and public transport.

Bearing in mind that the PTU Transport Planning Tool is essentially responsible for reorganizing public transport networks, changes hence take place at the parking points.

With regard to legislation, Algeria has promulgated Executive Decree No. 04-416 of 8 Dhou El Kaada 1425, corresponding to 20 December 2004, laying down the procedures for drawing up and implementing land transport plans for persons [41]. This decree has dedicated sections to the transportation plan. Some of its sections are devoted to the transportation plan and diagnosis. The diagnosis should focus on transport problems in terms of spatial coverage of populations and activities, frequency of services, and adaptation of the supply to the real needs of users. The recommendations are to formulate scenarios that address current and foreseeable transport demand concerns for improved travel conditions. The reorganisation of the supply and improvement of the conditions of transport, reception and processing of travellers must be within the prerogatives of the transport plan.

It is important to note that the management of the host infrastructure is granted to a dealer. Concessionary explanation, as stipulated by Executive Decree No. 04-417 of 8 Dhou El Kaada 1425 corresponding to 20 December 2004 laying down the conditions relating to the concession of the realization or management of the reception and processing infrastructure of travellers by road. The latter promulgates that the concessionaire must regularly provide the relevant transport authorities with information, including statistics on vehicle movements and passenger flows, the regularity of operation of the services to the incidents and accidents recorded and the tariffs applied. Similarly, it is required to inform the public of schedules and rates for its services.

In annex to this decree, several recommendations are left to the dealers. Emphasis is placed on improving the quality of service offered, among other things maintenance, environmental protection, safety of users, passenger information on modified fares or services and even a complaint book is made available to the passenger. Moreover, the order of 28 December 2015 [42] laying down special rules for the application of the prohibition of smoking on board means of transport and on the level of reception facilities in the transport sector stipulates that

public spaces and reception facilities at train stations, urban stations must provide enclosed spaces for tobacco use.

Conceptually, the station “Souidani Boudjemaa” does not fulfil its primary role, which is of reception infrastructure and does not offer in any case a pedestrian hospital environment. Dysfunctions that affect mobility are not permanently resolved. International experiences with bus station projects have focused on the design of the pedestrian area (passenger’s comfort and safety). It is in this aim that the station of Stafford in London, United Kingdom was designed. This project gave priority to pedestrian access: passengers travelling safely and comfortably. This was possible by the presence of the pedestrian square serving as a reception place for pedestrians and facilitating connections between the different modes. Another example is the Blackwood station in Wales, where pedestrian traffic is also important. Waiting areas have been set up to leave a lot of space for this type of traffic with pedestrian-focused lighting to increase visibility and safety. These amenities are complemented by seating and garbage cans.

Amenities vary from one station to another. The Burnley bus station in the UK (opened in 2002) offers a range of amenities. The passenger waiting area is a fully enclosed area to ensure seasonal comfort (winter, summer). A café and seating area are located where passengers can see their vehicle arrive. In addition, there is a staff information centre and pedestrian signage at the station entrance to inform users of the route they must take to reach destinations within the station or in surrounding areas.

The main function of a station is disembarkation and embarkation. It is from there that the organization of the platforms becomes fundamental because it plays an important role in the dynamism of a station. If we refer to the guide to the development of the Ile de France interchange poles, the layout of the platforms differs from one station to another. There are possibilities for a platform configuration that is reflected in the overall logic of the station (accessibility to the station and ease of use by the passenger). We could use the three principles of the organization of quays: the central quay, the side quays, the herringbone quays. These must be raised to a height adapted to the characteristics of the vehicles serving a station (minimum height 16cm).

For maneuvers, the guide related to the design of bus infrastructures [43] evokes those of half-turn buses that are carried out through roundabouts. Knowing that the turns of the buses must in no case sweep the space dedicated to pedestrians.

In a contemporary station, people with reduced mobility are fully supported. As an example, and in order to help visually impaired passengers on board, the location of the forward door is marked on the platform by a vigilance alert strip (BEV).

In short, a bus station must be a healthy place that does

not harm public health and the environment. It was in this context that research was carried out by architects from Tremend (Poland). The challenge is to capture ambient pollution from the built-up, the Lublin station located in the city. Modern photocatalytic material containing titanium dioxide and exposed to light purifies smog. There will also be a garden on the roof or the green wall.

Furthermore, in Singapore, a company specializing in urban green structures (GWS Living Art) installed green roofs on 10 public buses, in order to reduce emissions and improve the air quality of their services. These measures can be applied for the case study which requires the urgent renovation of the buses. Existing transport systems must be strengthened by the complementarity between cycling, walking and ease of transition from one mode to another. The mode of gentle travel or walking is planned in conjunction with the planning of bike paths and the development of public transport. Roads, organized as a network of specialized corridors (pedestrians, bicycles, buses, other vehicles) separated by parking, street furniture and plantations. Public transport is an extension of walking and must therefore be attractive and accessible. Without omitting road improvements in favour of buses, they also improve not only the speed of buses but also their regularity. These can be approach bus corridors at intersections, or a clean bus site. A public transport offer must be attractive enough to represent a credible alternative to the automobile. As well as cheaper public transport such as express bus services would replace more expensive systems such as tramway and metro. The final traffic report [26] cares for solutions for pedestrians or cars. In the city center to save parking, aerial or underground parking parks are offered. At the Hacene Nouri roundabout, motorized or pedestrian traffic will be regulated by horizontal and vertical signs as well as the reinforcement of sidewalks with guide chain. There are proposals for pedestrian crossings and Persons with Reduced Mobility PMR in crossroads or area of refuge in islet. Only the Souidani Boudjemaa station is not supported in this study.

It should be mentioned that the tramway-quality public transport project, a marker of modernity and dynamism, is a future project for the city of Annaba. Its realization will undoubtedly strengthen the station, which will be intermodal especially as its route will follow the course of the revolution public space typically pedestrian located less than one kilometer from this infrastructure of reception.

4. Conclusions

In the light of this work, we can say that the urban station “Souidani Boujemaa” which provides the link between the city center and the periphery does not meet the most elementary requirements such as to offer security and comfort well and re to the passage. The location of the

resort in the heart of the city contributes to the commercial dynamic. And so, in addition to the functionality dimension, it should also be humanized, ensuring continuity with the city center, with and in particular the public garden space of oxygenation, relaxation and opening to the public.

Much more than a place of mobility, it will be a space of walk and attraction. The internal and external facilities of a station are essential to ensure the modal transfer, accessibility, and orientation of passengers. Walking is the preferred mode of access to the stations, so we must take into account the physical aspect of the route and its perception by the user. Recall that many works confirm that walking is not only as a mode of withdrawal to the receiving infrastructure but also as a mode of transport in its own right.

In short, the station "souidani boudjema" is to be reconsidered or even to be reconsidered because it would contribute to the preservation and the enhancement of this heritage center of life reflecting an urban and commercial centrality while maintaining it prosperous and dynamic. The quality of services is at the heart of the expectations expressed by users.

In the same way, the development of the urban fabric and the transport infrastructure is needed today and is recommended in the transport planning tools.

Despite the station's handicaps and malfunctions (lack of organization and legibility, safety, absence of the discontinuity between the station and its immediate environment, passengers continue to use it even if the landscape does not lend itself to it either within the station or its surroundings.

Finally, the objective is to go beyond the simple setting up of a station. But introduce new approaches where mobility is at the heart of the issue of sustainable development of the city, and articulate the three fields of mobility practices, environmental concerns and public policies.

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