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## For a Sustainable Use of Agricultural Land in Constantine (Algeria)

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### Abstract

Constantine's urbanization is a two-faced issue. In addition to its rapid and uncontrolled nature, the city's expansion boundaries lie entirely within the agricultural territory of the valleys of Oued El Rhumel and Oued Boumerzoug. These agricultural lands have unfortunately attracted large-scale housing, infrastructure, amenities, and services projects because of their favorable and inexpensive geological nature for urbanization. This contribution aims to assess the damage done to the region's agricultural heritage from the end of the 1980s to the year 2021. The chosen approach entails conducting a spatiotemporal analysis of the phenomenon of urban sprawl's impact on agricultural land using the DPSIR framework. The findings demonstrate that between 1985 and 2020, approximately 22 000 hectares of the total agricultural land were lost throughout the study area. Approximately 50% of the agricultural land lost was affected by urbanization.

**Keywords:** Agricultural Lands; Urbanization; Urban Sprawl; Sustainable Use.

### 1 Introduction

Urban expansion is defined by Yussif et al. (2023, p. 3) as "the physical expansion of urban land cover, either vertically or horizontally, as one of the major outcomes of broader urbanization processes." According to the UN DESA PD (2018) report, inadequately planned and managed urban expansion, combined with unsustainable production and consumption patterns and a lack of capacity in public institutions to manage urbanization, can jeopardize sustainability through urban sprawl, pollution, and environmental degradation.

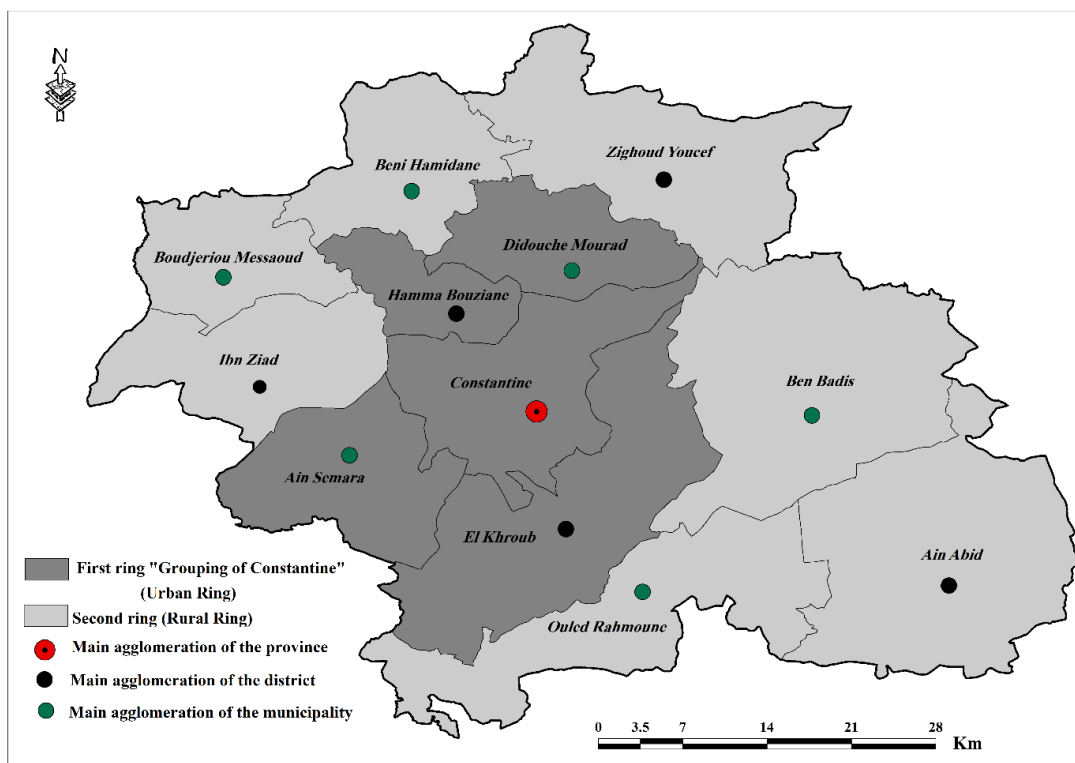
Hence, uncontrolled urbanization and urban sprawl are multidimensional issues, as they affect several aspects (environmental, economic, legal, and social). It is also part of political agendas since it has long been a major concern in land use planning and regional prospective. The challenge was always to define the appropriate devices to control and manage the spatial expansion of cities (Chevalier, 2010), to preserve the soil from all types of waste (Ruegg & Cavin, 2014), and to protect the environment from pollution in all forms, since urbanization poses many challenges in terms of mobility and CO<sub>2</sub> emissions (Djelloul et al., 2010).

The reorientations of urban public policies associated with the development of road infrastructure and the popularization of the automobile have stimulated the sprawl of cities (Pomonti, 2004; Ursic, 2012) and enabled the development of suburbs (Bouteche, 2018). However, they have affected the environment and ecological systems, such as the effects of excessive automobile use on soil sealing and hydrological cycles (Djelloul et al., 2010), and they have degraded some areas of the spatial system (Ursic, 2012). To ensure a sustainable future, land use planning and transportation systems must be coordinated, according to Galelo et al. (2014). Indeed, numerous old and recent scientific studies have examined the repercussions and irreversible damages caused by excessive urban expansion on regional balances and sustainability (Best, 1978; Kaur et al., 2020; Qu et al., 2020; Yousafzai et al., 2022; Yussif et al., 2023), especially in peri-urban areas where agricultural activity is common (Pawe & Saikia, 2020). Thus, several approaches have been used to understand, decrypt, and measure this phenomenon, such as the density approach, spatiotemporal tracking, Shannon's entropy, and the centrality approach (Pawe & Saikia, 2020), etc. Other studies also affirm the existence of two levels of analysis of the urban sprawl phenomenon: the first is quantitative and based on statistics, and the second is qualitative and refers to morphological and functional analyses (Nédélec, 2016).

Regarding the definition of urban sprawl, in the past the concept was frequently discussed without any associated definition, and it was often described as the extension of the urban fringe and sometimes referred to the dispersion of urban settlement over rural regions (Harvey & Clark, 1965). Carver (1962, p. 55) describes it as the result of the continued growth of metropolitan cities, which "take the form of continuous expansion around the edges, with a belt of land always in the process of conversion from rural to urban use. This transitional zone is the scene of urban sprawl, and has been well named the area of urban shadow." According to Habibi & Asadi (2011), the concept of urban growth refers to excessive urban growth. Moreover, cities tend to grow, and planned growth occurs when the proportion of urban growth to urban organism is appropriate. However, when the city's growth is greater than usual, its pressure on the boundaries generates significant issues. Furthermore, Sainteny (2008) explains that urban sprawl occurs when there is a decoupling between population growth and land artificialization; in other words, when the pace of urban extension is faster than that of population growth, the area consumed per inhabitant increases.

As result, urban sprawl is a source of issues that affect cities and environmental systems. Its management is a critical issue for all the countries including Algeria. By 2030, through the orientations of its national land use planning framework, the Algerian State plans to control urban growth while also preserving natural resources for sustainable use, particularly agricultural lands<sup>1</sup>, which are nonrenewable, limited, and fragile resources (Law Approving the National Land Use Planning Framework, 2010). The current situation of affairs in this regard is alarming, every day plots of fertile agricultural land are lost due to soil degradation (water and wind erosion, desertification, soil compaction, soil acidification, salinization, heavy metal intoxication, loss of organic matter, etc. (Bednář & Šarapatka, 2018; Mabit et al., 2002; Robert, 1992)), and anthropogenic factors through urbanization (Coulibaly & Li, 2020; Fazal, 2000) (implementation of housing programs and road and rail infrastructure, establishment of industrial units, etc.) and demographic pressures. Between 1960 and 2006, the useful agricultural surface area significantly decreased, falling from 1 hectare per inhabitant in 1960 to 0.24 hectare in 2008. Thus, 250 000 ha of agricultural land were lost to construction projects (Law Approving the National Land Use Planning Framework, 2010).

Constantine is the interior metropolis of eastern Algeria, with a population of more than 930 000 people, according to the last general population and housing census (ONS, 2011). Despite its restricted area compared to other provinces of the country (2229.10 km<sup>2</sup>), it has significant agricultural potential. It has a total agricultural surface estimated in 1987 at 198 570 hectares, which represents 89% of the province's total surface. 82 000 hectares of this surface are agricultural lands with high potential, of which 5000 hectares have extremely high agricultural potential (BNEDER, 1988). Its urban development is carried out in two distinct rings, as shown below (Figure 1). The first ring includes five urban municipalities (the grouping of Constantine) and contains 84% of the province's population (according to the last general population and housing census of 2008). At this scale, per-urbanization and urban sprawl on agricultural lands are most visible. The second ring is made up of seven rural municipalities. It is home to 16% of the province's population and is less affected by urban encroachment on agricultural land. However, it is not completely out of the woods for the foreseeable future.



**Figure 1.** The perimeter of the first and second rings of the province of Constantine (Authors, 2023).

This observation leads to the conclusion that Constantine's urbanization is a two-faced issue. In addition to its rapid and uncontrolled nature, the city's expansion boundaries lie entirely within the agricultural territory of the valleys of Oued El Rhumel and Oued Boumerzoug. These agricultural lands have unfortunately attracted large-scale housing, infrastructure, amenities, and service projects because of their favorable and inexpensive geological nature for urbanization. Furthermore, this phenomenon of urban encroachment on agricultural land affects all municipalities

<sup>1</sup> The Regional Action Plan No. 02 of the national land use planning framework focuses on preserving soils and combating desertification (Law Approving the National Land Use Planning Framework, 2010).

in the province, particularly those in the grouping of Constantine. Hence, this article seeks to answer: What are the factors causing uncontrolled urban sprawl? How much agricultural land was consumed between 1985 and 2020? And what measures should be taken to control urban sprawl and ensure agricultural land sustainability?

## 2 Materials and methods

This contribution aims to assess the damage done to the region's agricultural heritage from the end of the 1980s to the year 2021.

The chosen approach entails conducting a spatiotemporal analysis of the phenomenon of urban sprawl on agricultural land using the drivers, pressures, state, impacts and responses framework (DPSIR). This is a transversal framework that was developed and used by the European Environmental Agency (EEA) (Giupponi, 2002) in its annual report (1995) and its Environmental indicators: Typology and overview report (1999) (Maxim et al., 2009). It allows the assessment, measurement, and the provision of environmental management guidelines (Bell, 2012), and it demonstrates the relationships between the environmental and human systems (Smeets & Rob, 1999) as a causal chains of links (Giupponi, 2002). As such, it is considered as a decision support tool because it provides decision-makers with a detailed analysis of a specific environmental phenomenon. There are numerous studies that have used this approach to analyze the impact of urban expansion or sprawl on the environment (Al Tarawneh, 2014; Artmann, Inostroza, & Fan, 2019; Haase & Nuissl, 2007; Qu et al., 2020, etc.).

In this paper, the DPSIR was applied to help gain a better understanding of the phenomenon of unmanaged and uncontrolled urbanization as well as its major negative outcome, namely urban sprawl on agricultural lands, in all its dimensions. The process starts with the definition of the causes and factors of the phenomenon, and progressing to the determination of its magnitude and its impacts. This then would lead to finding adequate solutions at various levels and to clearly define the means and strategies of intervention for all stakeholders (Figure 2). As a result, the work has been divided into three sections:

- The first section seeks to identify the causal chain, or, in other words, the driving forces (socio-demographic, economic, institutional, and geographical drivers) that lead to pressures on the environment, which in this case are speed and uncontrolled urbanization. It also aims to assess the pressure damage caused by urban sprawl and how it affects the state of agricultural land using a spatial-temporal analysis based on the data of some studies provided by the following institutions as well as other research:
  - The study carried out by the National Bureau of Studies for Rural Development (Bureau National d'Études pour le Développement Rural, BNEDER) in 1988 on the agronomic nature of the land on the scale of the Constantine agglomeration.
  - Studies carried out by the Direction of Agricultural Services of the province of Constantine (Direction des Services Agricoles, DSA) of Constantine relating to the evolution of surfaces by soil category.
- The second section discusses "Impacts," which refer to how urban sprawl affects the environment (natural ecosystem impacts) as well as society (socio-economic impacts and human well-being).
- A third section is devoted to the responses. As a prospective reading, this section aims to identify the solutions required to address the problem of urban sprawl on agricultural land.

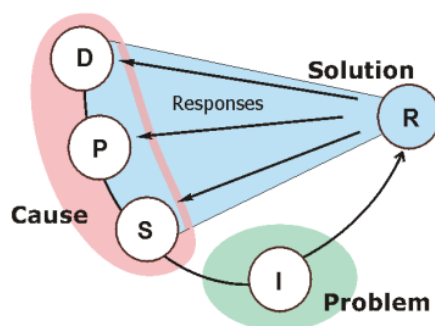


Figure 2. The DPSIR framework, in a decisional context (Giupponi, 2002)

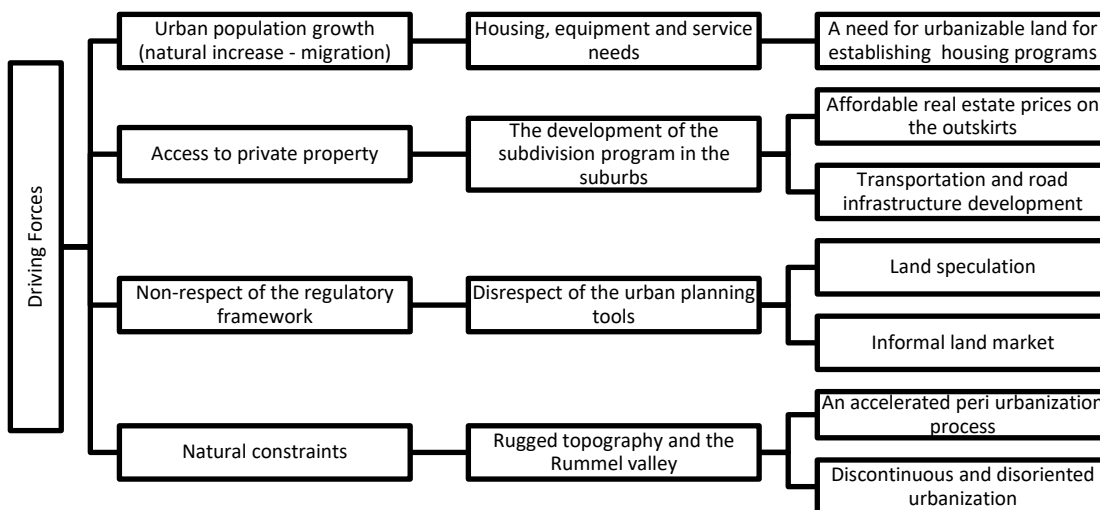
## 3 Results and discussion

### 3.1 Causes of urban sprawl

On the basis of causal relationships between driving forces and urban sprawl impacts, this section will define the factors causing urban sprawl on agricultural lands.

#### 3.1.1 Drivers and pressures

Cities' rapid development and reconfiguration were always strongly linked to urban demographic growth, economic flourishing, and changing societal practices (population lifestyle and the way of inhabiting). In Constantine's city, many driving forces (Figure 3) have influenced his urban spatial planning and exerted pressure on his land occupation and use.



**Figure 3.** Driving forces of urban sprawl on agricultural land in Constantine

**3.1.1.1 Urban population growth and urbanization**

Constantine's demographic growth has long shaped its urban history. This fact dates from the period of French colonization, mainly from the years of liberation war (1954), when the city was invaded by a massive rural migration from the eastern region as a result of the scorched earth policy led by the colonial army (Bouteche & Lazri, 2020). The city experienced an annual average population growth rate of 5.53% between 1948 and 1954, and 14.68% between 1954 and 1960 (Hafiane, 1989).

During the post-independence period and until the end of the 1970s, the city's annual average growth rate exceeded 3%, reaching around 3.70% during the intercensal period of 1966-1977, a value nearly identical to the national average (3.72%)<sup>2</sup>.

While the city's population continue to grow, its capacity for urban expansion has reached saturation. This pushed the local authorities to shift their focus beyond the city's urban outskirts. First, towards the suburban agglomerations of Zouaghi Slimen in the south and Bekira in the north. Then towards the colonial villages: El Khroub, Ain Smara, Didouche Mourad, and Hamma Bouziane, which can provide land to mitigate the housing crisis (Bouteche, 2018). This explains the slight decrease in the average annual growth rate of the city to 2.76% for the period 1977-1987. These small urban cores were transformed into satellite cities to constitute, with the mother city, the grouping of Constantine.

Indeed, the history of Constantine's demographic development demonstrates a continuous trend of evolution of its periphery, which constitutes the site of postponement of its urban growth, against a progressive decline of its (Table 1), in which it recorded a negative growth rate estimated at -0.68% for the period 1998-2008 (ONS, 2011).

**Table 1.** Demographic growth of the population of Constantine by census period (ONS - DTSPE, 2009; ONS, 1992, 2011).

Agglomeration	Population					
	1966	1977	1987	1998	2008	Annual growth rate (1998-2008)
Constantine	245621	345566	440842	479122	448028	-0,68
El Khroub	9529	14962	36924	65239	90122	3,33
Hamma Bouziane	11473	19252	29203	64749	83603	2,63
Didouche Mourad	3564	4932	8839	30080	40819	3,57
Ain Smara	2082	2815	10558	20318	32057	4,73

Constantine's population loss can be explained not only by the postponement policy of the end of the seventies, and the launch of new housing programs in the form of new urban housing zones established under the quadrennial plan

<sup>2</sup> This figure is calculated by the authors from ONS data (1992).

(1974-1977). It also refers to the mainly social housing programs launched in the late 1990s and triggered significant intermunicipal migration movements, which were mostly absorbed by cities in the first ring.

This growth and these demographic movements, along with housing programs implemented without global urban planning, have led to rapid, non-homogeneous, or even informal urbanization and an irrational consumption of land for urban use and agricultural land in the cities of the first ring.

### 3.1.1.2 Access to private property

Individual housing is one of the driving forces contributing to urban sprawl and urban density reduction. The housing crisis experienced by the province of Constantine and particularly its mother city, and the government's inability to fill the housing shortage through public housing programs, forced the local public authorities to embark on a major subdivision program. To accomplish this, first the land agency was created at the level of the Constantine province in 1986 which created 13 000 plots of land at the level of the Constantine municipality and its satellite cities (Benidir, 2003). Second, on November 18, 1990, Law No. 90-25 relating to financial orientation was enacted, repealing Order No. 74-26 from February 20, 1974, and ending the government's monopoly while ensuring private property rights (Bouteche, 2018). This mode of urban production has been further favored by affordable land prices on the outskirts of cities, as well as the development of infrastructure and affordable transportation options. However, land consumption has increased significantly due to rapid suburbanization. For every kilometer of highway built and every hundred individual dwellings built, respectively, 5 hectares of land are consumed (BNEDER, 1988)

### 3.1.1.3 Non-respect of the regulatory framework

The rapid and excessive growth of Constantine overtook urban planning tools, which were supposed to guarantee sustainable use of land. Inhabitants and real estate developers have turned to illegal ways to acquire real estate that do not take into account the real strategic and economic value of lands, which are often fertile agricultural land (Table 2).

Additionally, to illegal land acquisitions by individuals for self-built housing, local public authorities have exploited substantial agricultural land areas for public utilities to implement collective housing programs. These operations frequently take place outside the guidelines of urban planning tools and the instructions of national and regional land use planning frameworks. This situation of non-compliance with legal requirements for urban and regional planning tools is old. It has marked Algeria's urbanization from independence until the present, despite the promulgation of a substantial legal arsenal from the 1990s. Furthermore, the urban planning tools have been found to be ineffective in terms of control, management, and spatial planning, as they have reached their limits and have been overtaken by reality due to their approval delay. That is why the solution to the problem of urban encroachment on agricultural land must certainly take this significant aspect into consideration.

**Table 2:** Area of agricultural lands reclassified in 2011 in favor of urbanization (extract from Executive Order N°11-237 of July 9, 2011).

Municipalities	Area (ha)
Hamma Bouziane	92
Didouche Mourad	397
El Khroub	590
Ain Smara	590
Ibn Ziad	57
Messaoud Boudjeriou	73
Ain Abid	228
Ben Badis	66
Total	2100

### 3.1.1.4 Natural constraints

Natural constraints are one of the driving forces dictating the urban growth of Constantine and explaining its urban history. The rugged site and the presence of Oued el Rhumel and Boumerzoug were decisive and amplifying factors that accelerated the peri urbanization process starting in the late 1970s with the postponement policy. Thus, the rugged topography had created discontinuities in the urban evolution of Constantine and oriented it towards Hamma Bouziane's fully agricultural areas in the north and towards Oued Boumerzoug in the south.

## 3.1.2 The state of the pressures of urbanization on agricultural land between 1987 and 2020

According to the data in the report carried out by BNEDER (1988), until 1985, a significant part of Constantine's urbanization took place on agricultural land. On the scale of the Constantine urban grouping, out of the 4556 ha of agricultural land consumed by urbanization at that date, 2290 ha were land of average to poor quality (3rd, 4th, and 5th classes), 1569 ha were of good agricultural potential, and 697 ha were of very good agricultural potential, belonging respectively to classes 2 and 1, which are designated exclusively for agriculture activity (BNEDER, 1988). Thus, within the framework of the 1982 Constantine Master Urbanism Plan, 5943 ha of land were reserved for the

future urbanization of the first ring of the province, of which more than 3000 ha were programmed on land of high and very high agricultural potential (BNEDER, 1988). Add to that the lands reserved for creating the new City of Ali Mendjeli, estimated at 1500 ha, are projected on medium and mediocre-quality land shared between the El Khroub and Ain Smara municipalities.

The Master Urbanism Plan 82 also programmed the artificialization of 50 ha, 80 ha, and 95 ha of agricultural land in the municipalities of Ain Abid, Ibn Ziad, and Zighoud Youcef, respectively. In fact, urban sprawl also affected rural municipalities. In the case of Ibn Ziad municipality, for instance, 70 ha were set aside to accommodate a program of 1650 land plots and a 10 ha activity zone, whereas, their real needs over 10 years did not exceed 450 plots. The Rahal seed farm was not the only one affected by the urbanization process, Kaidi and Faralla land, which represent beautiful agricultural soils, were also affected (BNEDER, 1988).

Urbanization has become more pronounced over the past three decades (Figure 4). According to the spatiotemporal analysis by Gana (2018), 4361 ha of agricultural land were artificialized between 1987 and 2000, and 6324 ha between 2000 and 2015 (Figure 5 and 6). That proves how housing programs launched at the end of the 1990s influenced urbanization's spread. The Constantine DSA figures for 2020 show that over the past 35 years, nearly 22 000 ha of the total eligible agricultural area have been lost, of which 11 000 ha have been urbanized.

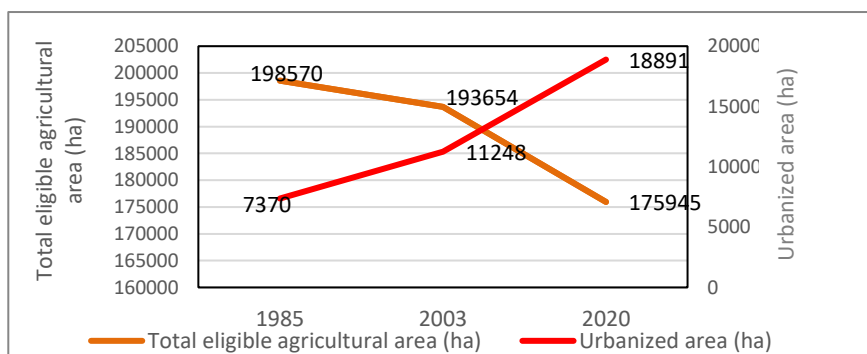


Figure 4. Urbanization and agricultural land evolution between 1985 and 2020 (ha) (BNEDER, 1988; DSA, 2020)

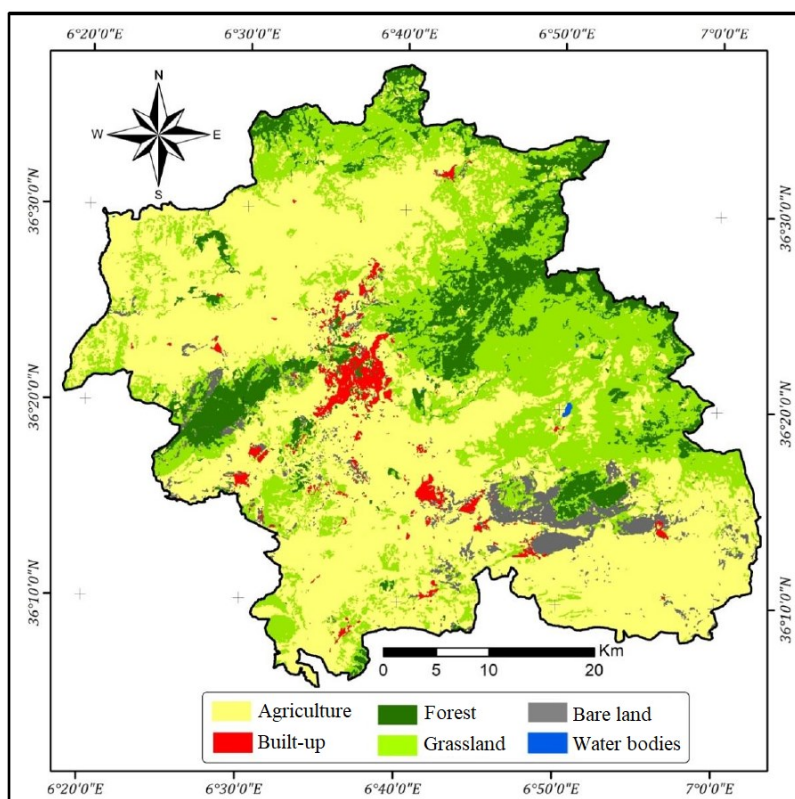


Figure 5. Land use of Constantine province in 1987(Gana, 2018).



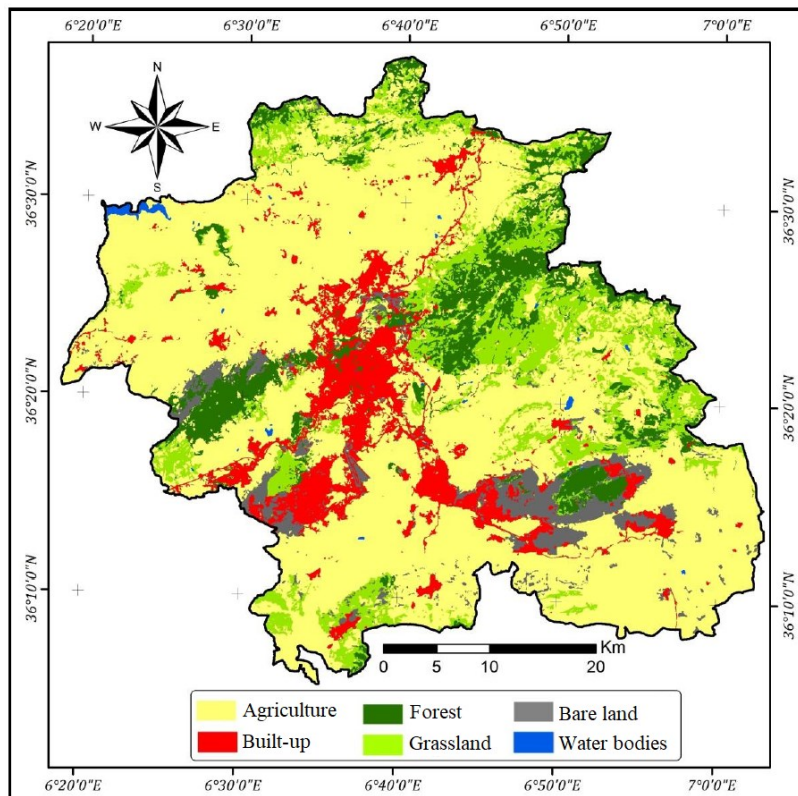


Figure 6. Land use of Constantine province in 2015 (Gana, 2018).

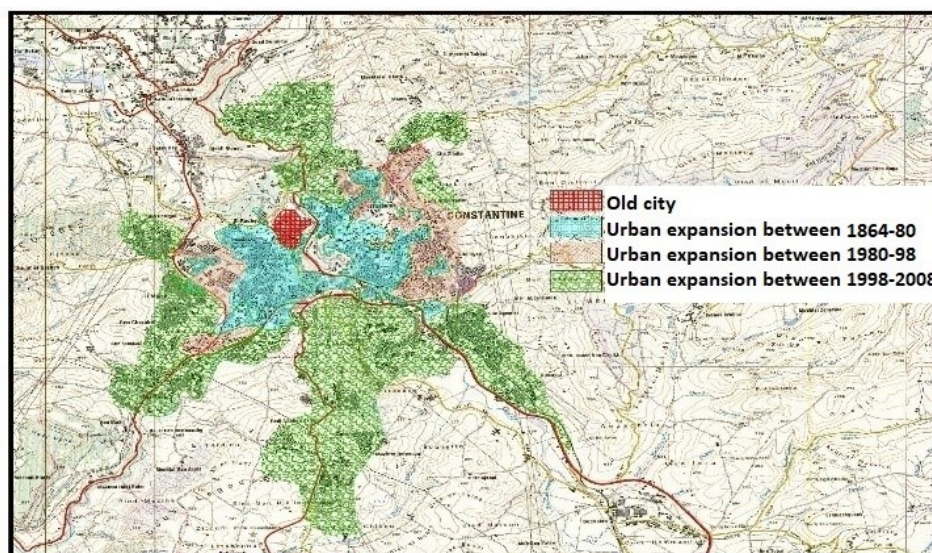
### 3.2 Impacts of urban sprawl

#### 3.2.1 Discontinuous urbanization and excessive peri urbanization

Historically, the size of the walled city of Constantine was dictated and limited by its geography (a rock surrounded by ravines), and this remained over centuries limited to an area of 30 hectares (URBACO, 2008) (Figure 7). The first extensions outside the wall date back to the middle of the 1860s, during the colonial era, because of the steady increase in the population (both European and indigenous) (Pagand, 1994). After independence (1962), the city continued to expand spatially toward the periphery, with the first extensions being collective housing (Cilic, Fadila Saadane, Filali, les Terrasses, Kadi Boubaker, and Benboulaid). Its urban extensions also subsequently took other forms, such as the new urban housing zones (the neighborhood of Daksi, Sakiet Sidi Youcef, Ziadia, 20 Août 1955, 5 juillet 1962, Hacene Boudjenana et Boussouf); formal housing estates (El-Riadh, Boussouf, Djebel Ouahch, Sarkina, etc.); informal housing estates (Bencherghi, Zaouch, 5th KM ONAMA, Benmahmoud, Chaabani); etc. As well as major urban projects such as the Palma industrial area, the University of frères Mentouri, and the sports complex.

From the 1990s, the city expanded beyond its urban boundaries into the suburbs under the guise of private property rehabilitation and the encouragement of public and private real estate development. The expansions took the form of promotional collective housing, public or private planned subdivisions, and illicit and precarious subdivisions. The extensions were in different directions, but mostly towards the southern axis of the city (Figure 7).

Due to its significant expansion, the city has assumed a significant dimension (Figure 7). Its surface increased from 2558 ha in 1977 to 5138 ha in 2000. (URBACO, 2008). However, its urbanization process was unmanaged, and its urban fabric was heterogeneous and anarchic.



**Figure 7.** Constantine's city urban expansion until the year 2008 (URBACO, 2008).

Furthermore, the first ring experienced an accelerated urbanization process due to demographic pressure, urban planning failures, natural constraints, and other factors. It was invaded by housing programs, principally social public housing, as well as other formulas that appeared later. These formulas included rent-to-own housing, assisted promotional housing, promotional public housing, and promotional and self-built subdivisions, etc. These housing programs irrationally consumed land without considering its nature, leading to significant agricultural land consumption. This is explained by the interventions made after the fact and in an ad hoc manner, without any coordinated planning policy for the entire territory, and they also lack prior impact studies (Benidir, 2003).

### 3.2.2 Degradation of the environment and quality of life

Over the medium and long term, urban sprawl has detrimental effects on ecological systems and human well-being. In addition to increasing greenhouse gas emissions from transportation (due to an increase in the use of automobiles and longer travel distances brought on by uncontrolled urban sprawl), the loss of agricultural and forestry land also contributes to the phenomenon of heat islands, which in turn raises ambient temperatures in urban areas and has a negative impact on citizens' quality of life and health. The Hamma Bouziane plain is still an excellent illustration. She was once viewed as the vegetable garden who provided Constantine with various agricultural products. However, rapid and anarchic urbanization on even the old agricultural holdings (the municipality is dominated by formal and informal housing subdivisions) and industrialization (implantation of quarries, cement factory, etc.) have caused environmental disasters and significant atmospheric pollution that threatens the citizens of the entire municipality (allergic respiratory diseases).

### 3.3 Responses: Possible solutions to control urban sprawl on agricultural land and ensure sustainable land use

Urban sprawl has serious impacts on the economy, the environment, and the population's quality of life. This leaves all governments with the responsibility of dealing with the future challenges of this urban phenomenon in the decades to come to ensure sustainable development. These challenges include climate change, energy and food crises, water shortages, etc. In Constantine context, three different types of intervention are conceivable to ensure sustainable land use and efficient urban growth.

#### 3.3.1 Reconquest of urban brownfields

This operation aims to reclaim vacant areas within the city resulting from the eradication of precarious housing, industrial brownfields, and even military wastelands. Boussouf & Benidir (2014) estimate that in 2013, there were 1635 ha of unusable land, of which 563 ha are buildable land. These urban brownfields hold significant real estate potential for urban development and quality of life enhancement.

#### 3.3.2 Densification of existing urban fabrics

Urban sprawl is characterized by a reduction in population density in large cities as it moves from the center to the periphery. In the case of Constantine grouping, the population density decreased from 2356 inhabitants/km<sup>2</sup> in the central zones to 588 inhabitants/km<sup>2</sup> in the periphery (Debbabi, 2021). This situation requires studies on the possibility of densifying existing urban fabric before moving on to the exploitation of vacant land for the rational and sustainable consumption of soil.



### 3.3.3 Cultivation of agricultural land

It is notable that the abundance of agricultural land, especially domanial land, as well as long-term fallow land contribute significantly to their deterioration and urbanization. This is because the downgrading of agricultural land allows local authorities to integrate it into the urban perimeter in order to provide the land necessary for housing and equipment programs. Therefore, the cultivation and valuation of these arable lands prevent urban sprawl because regulations prohibit construction operations within agricultural holdings.

Other measures can be put in place to protect these lands, such as the integration of perimeters for agricultural land protection in urban master plans, in the same way that the non-aedificandi zones, which by force of law are taken as non-constructible zones. These considerations should be defined in relation to the agronomic nature of the land in the first place. In addition, they should be defined in relation to the future development strategies of the cities.

## 4 Conclusion

Prior to colonization, Algeria's territory was dominated by the rural sector, whose urbanization rate was estimated to be 13,95 % in 1886 (ONS, 2011). Algerian society and its territory have undergone significant upheavals due to the country's political, economic, and social conjunctures since French colonization until today. In almost a half-century since its independence, Algerian society has become increasingly urbanized, with the rate of urbanization rising from 31,43 % in 1966 to 65,94 % in 2008 (the date of the last official census) (ONS, 2011).

Constantine, Algeria's eastern metropolis, was not immune to this phenomenon. It has experienced spatial upheavals that have reconfigured its urban and rural spaces. This article attempts to use the DPSIR approach to understand the phenomenon of urban sprawl on agricultural land in the province of Constantine. The chosen approach allowed first for the definition of the problem's driving forces (demographic pressures, the failure of urban planning tools to manage urban space, natural constraints, etc.) and the estimation of the magnitude of the phenomenon. Second, the identification of its impact on the environment and citizens' quality of life. Finally, putting in place some necessary measures to deal with it.

This analysis led to the conclusion that local authorities, through their various departments, organizations, and institutions, are the primary force for controlling the urbanization process and preventing urban encroachment on agricultural land. They must ensure compliance with urban planning instruments requirements, enforce laws, and fight against all forms of spatial transgressions and fraud to ensure sustainable land consumption. In other words, maintaining a balance between urban development and agricultural land preservation. To successfully address this major challenge in the years to come, planners, managers, and decision-makers should work together.

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### Conflict of Interests

The authors declare no conflict of interest.

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