

Environmental Impact of the Real Estate Companies Boom in the Central Region, Ouagadougou (Burkina Faso)

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Authors’ contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Aims: Impact of the real estate companies’ boom on the environment in the central region of Burkina Faso (Ouagadougou) and solutions to resorb the negative effects of the activity.

Study Design: The present study was run via the Problem-In-Context framework along with the Hydro-Quebec environmental assessment design.

Place and Duration of Study: The study was conducted in Burkina Faso, for the Environment department of Fada N’Gourma University for twelve months.

Methodology: The environmental impact of the project was assessed according to Hydro-Quebec group method by prioritizing the inventory items regarding to their sensitivity.

Results: Burkina Faso revised Law No. 034 on agrarian and land reorganization (RAF) on July 2, 2012. This revision allowed the population to be landowners, generating a boom in Real Estate development with the sale of big surfaces of lands by landowners. This boom is not without impacts on the environment. It leads to the destruction of forests, loss of biodiversity, loss of agricultural

production areas, threats to green spaces conservation areas, anarchic occupation of lands, etc. by real estate companies and the non-ecological urbanization of the city of Ouagadougou. The anthropogenic and climatic constraints with which Burkina Faso is confronted generate strong pressure on the existing natural resources: soil, fauna, flora, water, etc.

Conclusion: The Burkinabe capital is about to engulf all the surrounding municipalities of *Komki Ipala, Komsilga, Koubri, Loumbila, Pabré, Saaba and Tanghin-Dassouri*. The main ways to reduce the environmental impacts of this real estate boom are the registration of agricultural production and conservation areas and the revision of the RAF in order to remove the right of land owning to the population.

Keywords: Burkina Faso; real estate boom; environment; solutions.

1. INTRODUCTION

Limited to the North and East by the Central Plateau region, to the South by the Central South region, to the West by the Central West region, the Central region of Burkina Faso, Kadiogo, covers 1.03% of the national territory. Its population is mainly composed of Mossi. The capital of the region is Ouagadougou located in the center of the country [1]. The need to define a national policy on the environment is the manifestation of the political will at the national level, to better define and regulate the interactions between the environment and the prospects for sustainable development and the fight against poverty [2]. Burkina Faso, like other African countries south of the Sahara, is faced with the problem of land. Today the political, economic and social issues related to access to land do not spare urban centers, nor rural areas [3]. For the management of land, natural resources and the environment, Burkina Faso has a number of relevant political, institutional and legal instruments, programs and strategies. In addition, the country has subscribed to sub-regional and international agreements and conventions on environmental and social protection [4]. The country has adopted texts allowing property development in 2008, which allowed the creation of several offices in this field [5]. On July 2, 2012, the Burkinabe State reviewed its RAF (Agrarian and Land Reorganization) and granted the people the right to own land [6]. This revision has generated a boom of real estate companies because the mostly poor landowners will start selling their land to cope with their poverty. However, this boom of real estate companies is not without impacts on the environment. Agrarian reforms and decentralization policies have profoundly changed the configuration of the region. These changes generate tensions around the land issues [7]. Ouagadougou alone holds 237 projects and thus mobilizes more than 18,000

hectares [3]. Real estate development is an activity that consists of producing real estate intended to be sold to buyers who may choose to occupy or operate it. Collective or individual housing, shops, offices, industrial premises, the real estate developer supports the design of real estate assets of all kinds. The real estate developer assumes full responsibility for the project he undertakes. As the buyer of the initial property, he manages all the financial, administrative, technical and commercial aspects of the operation [8]. Compliance with ecological and environmental standards became one of the key concerns of the early 2000s in several sectors, and real estate is no exception [9]. The definition of sustainable development may seem abstract, but it is nevertheless essential today when we see how we are harming our planet.

This study presents the impact of the real estate companies boom on the environment in the central region of Burkina Faso (Ouagadougou) and propose solutions to resorb the negative effects of the activity.

2. METHODOLOGY

2.1 Administrative Situation

Law No. 10/96/ADP of April 24, 1996, modifying provincial boundaries, makes Kadiogo a province made up of six departments (*Komki Ipala, Koubri, Komsilga, Pabré, Saaba and Tanghin-Dassouri*), a full-service municipality (Ouagadougou) with special status and a medium-service municipality Tanghin-Dassouri. Located in the heart of Burkina Faso, the central region has a single province, which is the province of Kadiogo whose capital is Ouagadougou. These communes are represented in Fig. 1 according to the results of the Burkinabe National Topographic Database [10].

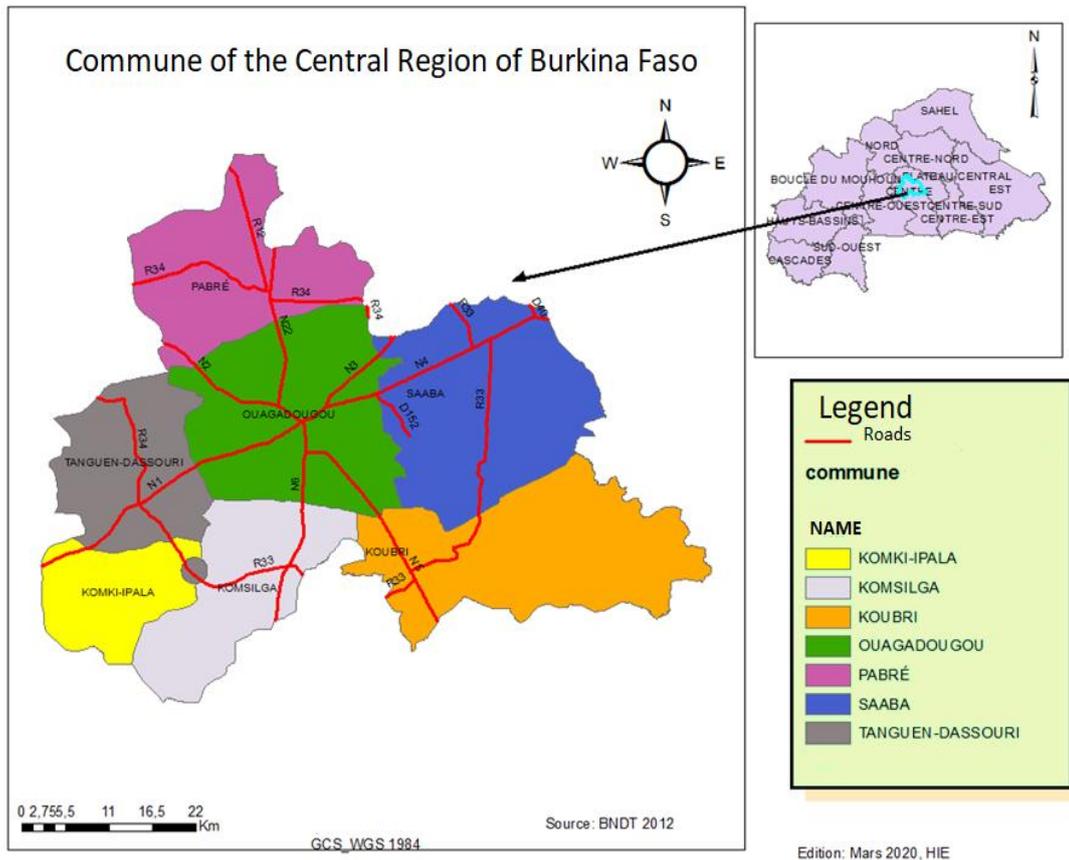


Fig. 1. Administrative location of the Central region [10]

2.2 Biophysical Study of the Central Region

The Central region belongs to a Sudano-Sahelian climate, determined by a tropical climate with two main seasons: the rainy season that extends from May to October; this is marked by the humid monsoon winds. Water levels are rarely greater than 700 mm per year. The month of August is the rainiest. The longest dry season runs from October to May and is dominated by harmattan winds. Average annual temperatures are between 17°C and 36°C, i.e. a thermal amplitude of 19°C. The insufficient rainfall is irregular from one year to another [1]. However, in recent years, there has been a reduction in the cold period and the duration of the rainy season, due to climate change.

The region has drainage axes that constitute the Massili (a branch of the Nakambé or Volta Blanche) and its many ramifications; cuirassed glacis inserted between the relatively high plateaus and the drainage axes. In the city of Ouagadougou, three dams have been built to

meet growing water needs (Tanghin 1, 2 and 3). The Loumbila dam, in the province of Oubritenga, plays a big role in supplying the city of Ouagadougou with water. The province also benefits from a few water reservoirs scattered throughout the localities [1].

The vegetation is subject to uncontrolled exploitation for domestic, artisanal and construction needs. Along the temporary watercourses has developed a wooded savannah. The region has two (02) classified forests, which are the classified forest of Gonsé and the classified forest of Bangrewéogo, one (01) regional forest (Forest of Bargo), eight (08) endangered village forests, four (04) groves.

In the central region, wildlife is almost non-existent due to land pressure, degradation of plant cover, scarcity and drying up of surface water. The essentially ferruginous tropical soils, of the clay-lateritic type, rest on a large fissured granite mass. These soils are poor, fragile and therefore vulnerable to erosion.

Table 1. Forests present in the central region

| N° | Forests | Communes |
|-----------|-----------------------------------|-----------------|
| 1 | Bangréweogo Classified Forest | Ouagadougou |
| 3 | Communal Forest of Komsilga | Komsilga |
| 5 | Kalzi Village Forest | |
| 6 | Communal forest of Koubri | Koubri |
| 7 | Pitioko Village Forest | |
| 8 | Kouba Village Forest | |
| 9 | Didri Village Forest | |
| 10 | Goghin Village Forest | |
| 11 | Kuba Grove | |
| 12 | Communal Forest Komki-Ipala | Komki-Ipala |
| 13 | Komki-Peulh Village Forest | |
| 14 | Komki-Ipala Village Forest | |
| 15 | Communal Forest of Pabré | Pabré |
| 16 | Nedogo Village Forest | |
| 17 | Sabtenga Village Forest | |
| 18 | Gonsé Classified Forest | Saaba |
| 19 | Bargo Regional Forest | |
| 20 | Communal Forest of T-Dassouri | T-Dassouri |
| 21 | Departmental Forest of T-Dassouri | |
| 22 | COTECNA Grove | |

2.3 Demographic Situation of the Central Region

The central region is the smallest region of Burkina Faso with an area of 2,869 km² but the most populated region with 3,032,668 inhabitants or 14.80% of the country's total population according to the preliminary results of the Fifth General Population and Housing Census of Burkina Faso [11] with a population density of 1057 inhabitants per km². The distribution of the population by commune shows that Ouagadougou is the largest commune with more than 85% of the total population. The commune of Tanghin Dassouri with 3.2% of the population and Komsilga, which has 3.1% of the population, follows it by far. The smallest of the communes are *Pabré* and *Komki -Ipala*, which represent respectively 1.6% and 1.2% of the population.

The land system in Burkina Faso is governed by Law No. 001-2007 of June 4, 2007 and reread on July 2, 2012 [6]. This law determines the fundamental principles of land use planning, rural and urban land management, regime of water, forests, wildlife, fisheries, substances, quarries and mines, as well as the regulation of real property rights. However, it should be added that even today the effectiveness of this law suffers from traditional practices, especially with regard to its management.

2.4 Data Analysis and Classification

According to Hydro-Quebec (1990a), for the projects submitted for environmental assessment, it is appropriate to prioritize the inventory items according to their sensitivity. An apprehended impact is *strong* when an element is destroyed or strongly disturbed by the realization of the project. It is *medium* when it is altered by the implementation of the project; this alteration diminishes the quality of the element without calling into question its existence within the layout or the location. Finally, the apprehended impact is *low* when the element is somewhat modified by the implementation of the project.

3. RESULTS AND DISCUSSION

3.1 Justification of the Activity

Social reasons, there is the possibility being landowner, and to selling the land freely. The physical causes are the exponential increase in the population of the central region; the low purchasing power of landowners; the presence of land and the low rainfall, which does not favor the practice of agriculture. Several reasons contribute to the existence of these activities, namely the failure of the texts, in particular the RAF (Agrarian and Land Reorganization) which attributed the right of landowner to the populations in its article 30. It stipulates that: "The land heritage of individuals consists of all

the land and other real estate belonging to them in full ownership; rights of use on the lands of the unallocated private real estate domain of the State and local authorities and on the land heritage of individuals; rural land holdings; rural land use rights” [6]. Every Burkinabe wants to possess his own house, which has led to strong demand with strong proliferation of real estate companies. Thus, a real deal is created between these real estate companies and the landowners who sell them their land.

3.2 Potential Effects of the Activity

The impact assessment evaluation was inspired by that established by the Hydro-Quebec method [12]. The analysis first proceeded to identify the impacts. The significance of the impact is based on the use of the five (05) criteria that are the Nature of the impact; Significance of impact; Intensity of the disturbance; Extent of impact; Duration of impact. Impacts are identified by linking the sources of impact, both in the site development phase and in the post-development phase (installation/operation), with the components of the receiving environment. This linking takes the form of a grid where each identified interrelationship represents a probable impact of an element of the project (source of impact) on one or more components of the environment. Depending on the criteria mentioned above, the impact of carrying out the activity on the environment is summarized in the Table 2.

Noise pollution from construction works on housing estates does not affect local populations and wildlife to a lesser extent. The natural landscape experiences major disturbances linked

to the activity of land clearing to clear spaces. During construction, air quality is locally affected by dust emissions and perishable household waste. The quality of surface and groundwater is impacted by withdrawals for construction and for consumption by the population. The work entails the cutting of trees and shrubs. Wildlife is impacted by the activities of real estate companies. Project activities do not affect public health and safety. However, dust during work can affect the health of workers and residents, and risks of accidents can occur. As a reminder, the RAF delimits the territory into areas of agricultural productions, conservation areas and housing. The real impacts of the activity are:

3.3 Encroachments on Production and Conservation Areas

Encroachments result in the loss of production areas (fields, lowlands, protected forests, pasture areas, etc.) [13]. For instance, the Bargo regional forest, which had an area of about 6000 hectares when it was created in 1953 [14], now has an area of 37 hectares [15]. Conservation areas (classified forests, the Ouagadougou green belt and green spaces, etc.) are also threatened. For instance, there are installations of farms less than 10 m from the Gonsé classified forest while the regulations authorize an installation only 100 m from the forest (Photo 1).

3.4 Anarchic Occupations of Production and Conservation Areas

In the central region, several anarchic occupations are observed in production spaces as well as in conservation spaces and mainly by spontaneous habitats (Photo 2).

Table 2. Summary of the impacts of the project on the environment

| Source of impact | Nature of impact | Intensity of the disturbance | Impact extent | Impact duration | Significance of impact |
|---|------------------|------------------------------|---------------|-----------------|------------------------|
| land clearing | Negative | Strong | Punctual | Long | Medium |
| Housing construction | Negative | Medium | Punctual | Long | Medium |
| Lane tracing | Negative | Medium | Punctual | Long | Medium |
| Presence of the workforce | Negative | Low | Punctual | Short | Small |
| Use of surface and ground water | Negative | Strong | Topical | Long | Major |
| Loss of production area | Negative | Strong | Topical | Long | Medium |
| Anarchic occupations of production and conservation areas | Negative | Strong | Topical | Long | Medium |
| Loss of biodiversity | Negative | Strong | Topical | Long | Medium |
| Development of the region | Positive | Strong | Topical | Long | Medium |
| Accessibility of plots and accommodation | positive | Strong | Topical | Long | Medium |
| Disposal of domestic waste | Negative | Low | Punctual | Long | Small |

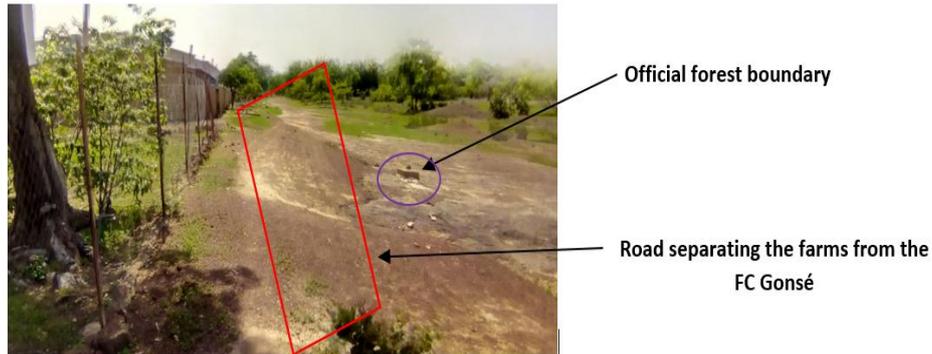


Photo 1. Encroachment on the Classified Forest of Gonsé



Photo 2. Spontaneous habitats on the green belt of Ouagadougou



Photo 3a. Aggregate collection



Photo 3b. Quarry on Ouagadougou green belt

Table 3. Types of green space occupation

| Type of anarchic occupation of green spaces | Total | incidence (%) |
|---|-------|---------------|
| Mosques | 14 | 11,43 |
| churches | 20 | 17,14 |
| Schools | 17 | 14,28 |
| Trading places | 31 | 25,71 |
| Car garages | 27 | 22,85 |
| Uncontrolled rubbish dumps | 10 | 9,37 |
| Total | 119 | 100 |

Artisanal quarries (18) and aggregate collection sites (23) are also present on the green belt (Photos 3a, 3b) with difficulties to restore the belt [16].

The different anarchic occupations are summarized in Table 3.

Real estate companies have bought and taken over large areas of production land. These lands became their private properties. The green belt of Ouagadougou was supposed to limit the extension of the city but today this belt is found in the middle of the city of Ouagadougou. The degradation of vegetation in the central region leads to the loss of biodiversity. For instance, Buffaloes, Jackals, spotted Hyenas, Warthogs etc. once encountered naturally in the region, have almost disappeared [17]. The fauna present consists of small animals such as hares, rats, genets, monkeys, duikers, civets, ground squirrels. There is also guinea fowl, hornbills, sparrow hawks, francolins, bats, doves and a few bustards and battler eagles encountered especially in the areas of the rural communes of the region. However, if nothing is done to stop this accelerated degradation of the vegetation cover, these remaining species risk disappearing as well [18].

3.5 Conflict between the State and Actors of the Activity: Solutions

Often certain anarchic installations are demolished by the State and this leads to conflicts between the State and these actors. Solutions to those issues are numerous. Among them are the followings:

- ✓ Securing the land assets of State structures, by proceeding with classifications, registrations and declaring public utilities;
- ✓ Prioritize a participatory approach taking into account all rural development actors in any land development project in order to achieve an eco-responsible and sustainable land management system;
- ✓ Review the RAF, by attributing the right of landowner to the State;
- ✓ Decentralize services and develop other cities, which will greatly reduce the population of Ouagadougou;
- ✓ Carry out an environmental and social assessment beforehand for any land development project and implement the

resulting Environmental and Social Management Plans (ESMPs);

- ✓ Accentuate awareness campaigns on the need for the protection and restoration of natural resources;
- ✓ Support the municipality in the fight against the wandering of animals;
- ✓ Teach environmental education to the population.

4. CONCLUSION

Insofar as Burkina Faso seeks to reconnect with the principles of good governance of the rule of law, it is appropriate that vigorous measures be taken to clean up the property development activity and ensure strict respect for legality, ethics and fairness in land subdivision and allocation operations. The boom in real estate companies has allowed landowners to save a little money and has also made it possible to make plots and habitats for sale available. The activity of real estate companies has harmful effects on the environment. It leads to the destruction of the vegetation, the loss of production areas, the modification of natural landscapes, air, water and soil pollution etc. Strong measures are needed to secure production and conservation areas. Decentralized services and development of other cities could slightly reduce the population of the city of Ouagadougou.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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