

Towards a sustainable environment of the metropolis Algiers, case: project “Great Winds Park-Dounya Park-Algiers”

Ms Rahil LAOUAR¹ and Dr Nadia CHABI²

¹Faculty of Architecture and urban planning, Constantine 03 university, Algeria

²Faculty of Architecture and urban planning, Constantine03 university, Algeria

E-mail: ¹rahillaouar@outlook.fr, E-mail: ²nadia.chabi@yahoo.fr

Abstract:

The issue of environment and development was discussed in June 1992 in Rio de Janeiro at the United Nations Conference, known as the Summit « Planet Earth». This summit adopted a declaration which has advanced the concept of rights and responsibilities of countries in the environmental field. It is, therefore, to include the city in an ecological approach that is today the concern of the capital Algiers.

As the metropolis Algiers is the capital and the facade of the country, it was the first city of Algeria that benefited from an ecological project. Through the latter, the state tries to apply the principles adopted during the "planet earth" summit. This project, which is the "Great Winds Park -Dounya Park-", occupies an important area within the urban perimeter of Algiers. Moreover, it is called to develop on a plate of 1059 Ha. It brings a unique set of solutions to the issues related to the protection of the environment and green space in urban areas, including that of the city of Algiers, around ecological principles and sustainable development.

The objective of this work is to identify the contribution of the project "Great Winds Park - Dounya Park- Algiers". It is a question of determining the important role of this park in the environment of the metropolis Algiers, in order to highlight the means and the adequate tools to the ecological approach using the quantitative and qualitative method based on directive and semi-directive interviews and an established questionnaire to determine the reach of the project.

Keywords: Environment, ecological approach, park, Algiers

1. Introduction:

Global phenomenon, urbanization poses problems to the different nations of the planet. Knowing a rapid evolution, this process has become more complex throughout history with the emergence of metropolises, megacities ... This excessive growth has generated nuisances affecting all aspects of the city and its space, especially its environment. Faced with the problems of the contemporary city, a warning bell was sounded at the United Nations Conference held in Rio de Janeiro (Brazil) in June 1992. This summit "Earth" had the merit of highlighting the dangers to the planet if urgent measures are not taken.

At this stage the Algerian government has committed, in the framework of the first National Report on the State and Future of the Environment, to prepare a National Environment Strategy and a National Action Plan, for the environment and Sustainable Development (Ministry of Spatial Planning and Environment - National Action Plan for the Environment and Sustainable Development - January 2002. Thus, the latter is interested in the protection and preservation of the environment, within the framework of the implementation of the National Plan of Territorial Development 2025 through Territorial Action Programs such as the master plan of the natural spaces and protected areas, (National Scheme of Spatial Planning 2025).

A country of northern Africa, Algeria has a large territory whose spatial constitution is varied but characterized. It consists of a littoral region formed by a coastal fringe and a Tellian zone, and another interior, which is subdivided into two distinct entities: the highlands and the desert: Sahara. Today, the Algerian city knows important environmental problems with the proliferation of concrete constructions and the disappearance of green spaces. To humanize the urban environment of the cities, the Algerian State is committed to implement the programs of actions, in various forms, within the framework of the program of support for the economic growth 2005-2009 (National Scheme Land Use Planning 2025).

Indeed, "*Algeria is an exceptional ecological entity in the biosphere. The current demographic growth, the difficult climatic conditions, the overexploitation of the natural resources generated problems of degradation and irreversible loss of the structure of the grounds*"¹.

Today, Algerian natural green spaces, currently fragile, need to be protected because they have many assets in relation to their great biodiversity and their impact on the socio-economic balance of the urban space (the city) or even the country. The Law N. 2007-06 of May 13, 2007 on the management, protection and development of green spaces reinforces the protection of the environment through the preservation of natural green spaces in Algeria. It aims to improve the urban living environment, maintain and improve the quality of existing urban green spaces, to promote the creation of green spaces of all kinds.

Today, the question of sustainable development of the metropolis of Algiers has become critical. In other words, the matter is to take into account the ecology (increasing needs in terms of natural areas) of a city three millennia old where the quality of the air and the water is deteriorating, where the space is diminishing. It is urgent to repair the damage caused by accelerated and uncontrolled urbanization of the Algerian cities by improving the living environment, reducing inequalities and preserving the rights of future generations.

At this point, Mr. HANIFI², during a day of awareness of the protection of the nature said that : "*National Conservation projects are being prepared for the conservation of animal and plant heritage of our country that is a true ecological wealth*"³. Therefore, the city of Algiers has been given a park called park of "Great Winds ". This project involves the development of a large green space in the form of a park. The latter "*derives most of its objectives from the Law on Development and Sustainable Development of the Territory and the Law on the Protection*

¹ BENDARADJI MED EL HABIB, ALATOU Djamel, ARFA AZZEDINE Med Toufik, BENACHOUR Kheireddin: Problems of environmental degradation through desertification and deforestation - Impact of the phenomenon in Algeria. (2006) NEWMEDIT

² M HANIFIAyad: Director general of the National Agency for the Conservation of Nature- ANN

³ URL: ALGERIE PRESSE SERVICE : <http://www.aps.dz/algerie/2551/2551>

of the Environment and Sustainable Development. The Great Winds Park joins the priorities of the State for the metropolisation and internationalization of Algiers, proposing to transform a free space today unspoiled and undeveloped but nevertheless coveted and threatened, to make it a model of functional and social mix in a recreational site open to all those who are inclined to discover nature and soft energies. It will constitute one of the ecological support points needed to revitalize Algiers and leverage to harmonize environment of the capital."⁴ In fact, it contributes to the enrichment and greening of the capital by the development of a large green space to ensure a high environmental quality and ecological balance essential to a large city like Algiers. This project aims, thus, the rehabilitation of the soil, the exploitation of the natural resources (wind, water, sun, etc.), the planning of the spaces and the programming of the equipment of information, training and the recreational activities in adequacy with the problem of the preservation of nature.

2. Literature review:

2.1. Urban ecology:

In the context of sustainable development, urban ecology has emerged as a new and unavoidable discipline to address the concerns of the city's current ills. It plays an important role in the development of urban space. It aims to study the living conditions of living beings in their environment. The term ecology has emerged since several decades in the late nineteenth century. It refers to the science that studies the relationships of living things with each other and with their environment (Jean-Paul Deléage, A History of Ecology, 1992). It helps to find an urban balance between man and city in all fields of urban life: transport, industry, public spaces, green spaces, etc.

⁴ General Organization file: Great Winds Park (2015). Ministry of the DEVELOPMENT OF THE TERRITORY AND THE ENVIRONMENT.

However, there are other visions that define and explain ecology including that emitted by Lindeman (Raymond L. Lindeman, *The Trophic- Dynamic Aspect of Ecology*, 1942). He tried to define the general organization and functioning of ecosystems. Anisi Odum, in his book in 1953⁵ spoke about the energy aspect of the functioning of ecosystems, their productivity, the flow of matter and energy that passes through them. Moreover, Vicary⁶ seeks to analyze the city according to the links that exist between the different components of the city, which are themselves linked through a series of feedback loops creating between these elements equilibrium and / or dynamics (Box 6). The goal of J. Vicary is to point out the dysfunctions of the urban system and to locate the elements on which it is necessary to intervene in order to act effectively on the system.⁷

2.2. Urban Park:

The park is a extent of land partly or totally wooded, arranged in a city, carefully maintained and intended for the pleasure and the walk (Bassma LOUKIL- urban parks in Tunis: for whom and why?)⁸. It constitutes space-space relational contexts, social localization and identity of the place (Ronnie Donaldson, Sanette Ferreira, Sophie Didier, Estienne Rodary, Janie Swanepoel - Access to the urban national park in Cape Town: where urban and natural environment meet- Article in *Habitat International* 57 (2016) 132-142).

Indeed, the urban park is a place with a natural environment surrounded by urban environments (Mohd Ali Waliyuddin A. Razak, Noriah Othman, Nurul Nazyddah Mat Nazir- Connecting People with Nature: Urban park and human well-being- *Procedia- Social and Behavioral Sciences* 222 (2016) 476- 484). It provides aesthetic and recreational services and improves

⁵ Eugene P Odum (1953). *Ouvrage Fundamentals of ecology*.

⁶ Jaques VICARI. (1981). *Urban Architect: Author of the book Acting on the City: Urban Ecology Test*.

⁷ Extract: from the dream of urban ecology to the reality of the modern city, sustainable development in the face of territories: a non-fractal concept? <https://www1.agora21.org/entreprise/these-ABoutaud-02.pdf>

⁸ Seminar Act (2006) organized by the Higher Institute of Environmental, Urban and Building Technologies- City and Green Space - coordination of Sami Yassine Turki

the quality of life in cities (V. Milano, J.Cortet, Baldantoni D., Bellini A., Dubs F, Nahmani J., Strumia S., Maisto G.- Collembolan biodiversity in Mediterranean urban parks: impact of history, urbanization, management and soil characteristics- Article in press Applied Soil Ecology, journal homepage: www.elsevier.com/locate/apsoil). Currently, the urban park has become a place of relaxation, attractiveness, and meeting.

3. Methodology:

This article is interested in a project that is initiated and programmed by the state. Thus, to conduct this research several methods were followed. It is a question of studying if this project assures the environmental role which is attributed to it. To obtain the data in situ, direct observation is used as a necessary first step that the researcher must perform. Surveys and photographs are taken as proof and reference bases from which the case study is approached. Another method, which is quantitative, comes to complete the qualitative one. For this purpose, the quantitative method is based on direct and semi-directive interviews conducted with the decision-makers concerned by this project. These methods are useful for gathering information first and data analysis second.

4. Case study : the Great Winds Project –Dounya Park- Algiers:

The development of the Great Winds project - Dounya Park - aims to create a landscaped park of leisure and relaxation at the confluence of the Sahel and Mitidja. It is located at the gates of Algiers and in the continuity of the development of the new technological city and cyberspace of Sidi Abdellah. In addition, the Great Winds Park is located along the East-West motorway in a site threatened by urbanization, even though it is classified as an unbuildable zone in the master plan of planning and urban planning of Algiers. It can become and acquire a real green pole status integrated into a network of major green centers: the Concorde National Park, the Bainem forest, the large urban park of Sidi Abdellah, the Bouchaoui forest, Sidi Fredj and

Zeralda. (General organization file PARC DES GRANDS VENTS - Ministry of Regional Planning and Environment).

4.1. The land property:

The land area of the Great Wind Project is estimated at 1059H (Figure01). The land is located between five communes of wilaya Algiers: Dely Ibrahim, Oueld Fayet, Baba Hassen, El Achour, and Draria. In fact, its area was taken from these five municipalities. Its scope includes a variety of properties of various legal nature, belonging to the public domain (State), the private domain of the state (agricultural and other), Melk property (private), and other properties of unknown legal nature.

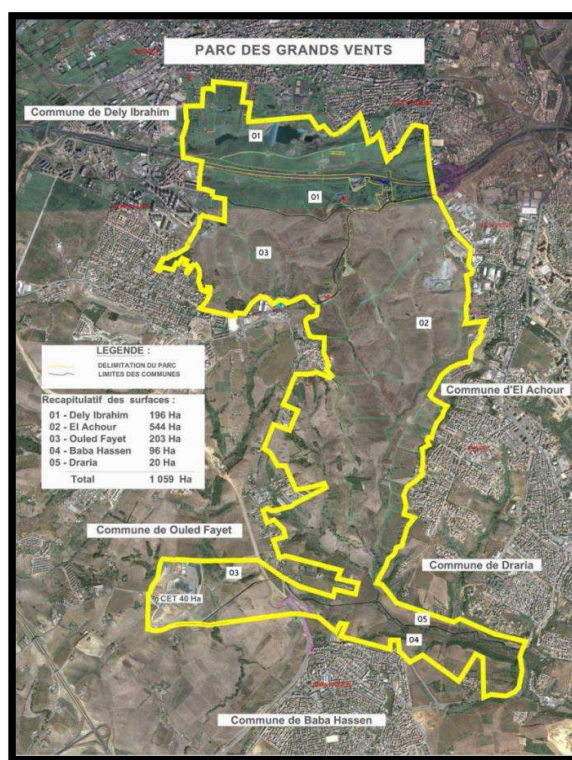


Figure 01 : Plan delimitation of the 1059H Great Winds Park in accordance with Executive Decree No. 12-168 of April 05, 2012

Source : Great Winds Park Promotion Agency

Thus, the table below (figure02) shows the distribution of 800 H of the Park according to their legal nature. Private lands were concerned by the expropriation procedure for reasons of public utility. This operation was fixed by the following executive decrees:

- Executive decree No. 06-235 of 4 July 2006 declaring the public utility operation for the development of the Great Winds Park, (630 hectares).
- Executive decree No. 08-285 of 17 September 2008 amending Executive Decree No. 06-235 of 4 July 2006 declaring a public utility the operation relating to the development of the Great Winds Park, (800 hectares).
- Executive decree No. 12-168 of April 5, 2012, amending and supplementing Executive Decree No. 06-235 of July 4, 2006, declaring a public utility the operation relating to the development of the Great Winds Park, (1059 hectares)).

municipalities	Private lands	Land of the State	Unknown Land
Ouled Fayet	269,380	1 151 087	21,613
DelyIbrahim	442 733	1,657,187	8,925
El Achour	349,295	2,207,330	213,375
El Achour extension	26,250	1,663,687	10 063
TOTAL	1,087,658	6,679,291	253,976
Percentage	13.56%	83.27%	3.17%

Figure 02 : Distribution of 800H of the park according to their legal nature
Source: Quantified balance sheet of investments + Authors

This table highlights the high percentage of land owned by the state. It is clear that there is willingness on the part of the authorities to realize and complete this project despite the problems encountered.

4.2. Project stakeholders

The Great Winds Park Project involves several stakeholders (Figure 03). However, the Agency for the Promotion of the Great Winds Park (APPGV) is the delegated project manager who plays the main role in the project. It must implement the general plan of development of the Park, which is adopted by regulation on the one hand, and to assure the management of the park and in particular of its common services, and to ensure the protection and preservation of heritage and the park in general, on the other. (Article 03, Chapter II, Executive Decree No. 2006-369 corresponding to 19 October 2006 on the creation, organization and operation of the Grands Vents Park Promotion Agency).

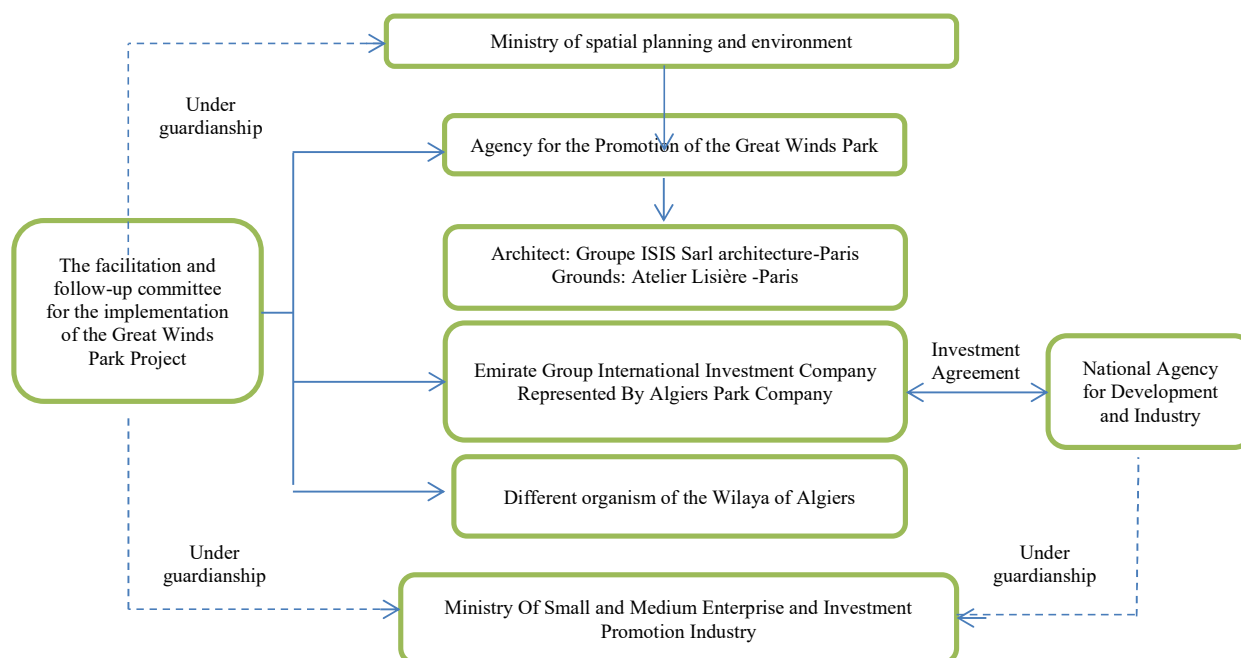


Figure 03: Stakeholders of Great Winds Park Project – Dounya Park -

Source: Authors

4.3. An integrated project, meeting the needs of the development of the city of Algiers

The Great Winds Park project is an exceptional project by :

- Its area 1059H ;

- Its location: in the heart of Algiers,
- The quality of the services offered: High Standards,
- The importance of its economic, social and cultural stakes,
- Its degree of openness towards the international: the influence of the city of Algiers and attractiveness for investors and national and international operators, as well as tourists.

The Great Winds Park project is a project that favors the general interest :

A new place of centrality for Algiers: a favored destination for young people and families ;

- A vibrant hub of creativity and innovation,
- A place of life and meetings,
- A dynamic and motor territory for Algeria,
- An exemplary model of life, seduction and ideal, to be imitated elsewhere in Algeria and the Maghreb.

4.4. Four axes of force define the coherence of the park⁹ :

- A set of activities : The activities of Dounya Park are grouped according to five according to five distinct zones :
 - Cultural enrichment,
 - Social space,
 - Active space,
 - Agrarian landscape,
 - Dominant forest.
- Green traffic: traffic in the park favors the modes of ecological transport, in order to minimize motorized traffic inside the park. Thus, it has a wide range of trails

⁹ The park of Dounya (2015). Algiers Park Company. Great Winds Park Promotion Agency

for hiking, cycling, horse riding or jogging. A streetcar will propose an ecological mechanical movement to serve the different attractions of the park.

- Floral arrangements: The Park's design is based on distinct landscape typologies that help to frame the development while preserving the ecology and topography of the site. The main typologies of the flora are :

- Forests,
- The oasis valley,
- The orchards,
- Meadows,
- Hedges,
- Trees planted along the streets,
- Gardens and sustainable courses,
- The forest belt.

- Management principles of the environment: the application of the latest technologies of "green architecture" will make the Dounya Park fully in line with the principles of ecology and sustainable development, source of sustainability. Recycling techniques will be heavily used :

- Recycling residues from garden maintenance,
- Selective sorting of waste,
- The park's light infrastructure will be composed primarily of recycled materials.

4.5. Sustainable development and planning of the Dounya Park:

- Respect for nature and the environment by:
 - The development of orchards;
 - The use of plants and trees adapted to the local environment.
- Nature takes precedence over development:

- The strengths and natural constraints of the site must be respected in the design of each building;
- The establishment of a set of aqueducts.
- Responsibilities of visitors and residents:
 - Establishment of a set of operating rules focused on respect for nature;
 - Development of a public-private partnership to promote the consideration of sustainable development considerations.
- Take into account the overall impact of development on nature.

5. Results and Discussions:

5.1. Action taken to protect and preserve the park:

For the protection and preservation of the Park, many actions have been put in place¹⁰:

- Maintenance and monitoring of the irrigation of plant heritage.
- Creation of experimental nurseries.



Figure 04: experimental nurseries of the Great Winds Park Project - Dounya Park-
Source: photo taken by the authors (2016)

- Cleaning the park.
- Follow-up of the planting work.

¹⁰ Promotion Agency of the Great Winds Park (2015)

- Fight against attacks of all forms, including wild dumps and illegal constructions.

5.2. Tools and means used for the preservation and ecological management of the

Project:

✚ As the agency of Promotion is the first person in charge of the project, it is called to implement tools and means, which ensure the protection of the park:

- 1- Agency action plan: this plan is issued every year in order to verify and put the various actions into practice to ensure the good conduct of the agency and the Great Winds Project in particular.
- 2- Roadmap with monitoring of planting work: is done every month. It concerns the planting work that must be followed.(figure 05)

NOT	désignation	Completion time						observation
		Month of April				May	Month of June	
		S1	S2	S3	S4			
1	Monitoring of EDEVAL planting works	×	×					
2	Follow-up of the Rose Garden Transplant Work Cleaning the site		×					
3	Follow-up of EHEV planting work	/	/	/	/			Unsigned convention
4	Police garden multiplication works		×	×				
5	Greenhouse propagation work - Potted cuttings -marcotting of indoor plants -maintenance of the greenhouse.		×	×				
		×	×	×	×	×	×	

Figure 05: Roadmap for monitoring plantation work

Source: Great Winds Park Promotion Agency

3- Roadmap for the maintenance of the plant heritage: it allows to implement the various works that serve to preserve the plant heritage of the park (Figure 06)..

NOT	designation	Completion time						
		April month				May	Month of June	Month of July
		S1	S2	S3	S4			
1	Manual weeding of trails	×	×	×				
2	Liming of trees	×	×	×				
3	Mowing by Mechanical gear		×	×				
4	Manual mowing					×		
5	Mechanical disruption				×	×	×	
6	Size of cypress trees		×	×	×			
7	Palm pruning			×	×	×		
8	Setting up of hardwood stakes	/	/	/	/	/	/	
9	Maintenance and shaping of watering bowls					×	×	
10	Irrigation campaign						×	×
11	Maintenance of grassed areas, mowing and cutting					×	×	
12	Garbage collection and waste disposal	×	×	×	×	×	×	×

Figure 06: Roadmap for the maintenance of plant heritage

Source: Great Winds Park Promotion Agency

✚ Protocol of Agreement for scientific and technical collaboration between the Great Winds Park and the National School of Marine Science and Coastal Development with a view to promote the development of scientific and technical exchanges between the two parts by:

- Joint reflection on topics of interest to both parties, and the exchange of information and the development of their respective funds, as well as the study of layouts and development of biodiversity in the aquatic domain of the Great Winds Park. As such, the preliminary draft of the Multilateral Collaboration Agreement between the National School of Marine Science and Coastal Planning and the National Coastal Commissariat and the promotion Agency of the

Great Winds Park, which has an ecological, scientific and recreational purpose, defines the main missions of the different parties such as¹¹:

- The settlement of water bodies by fish species.
- The creation within the park of a pole of scientific, environmental and educational interest.
- The promotion and development of recreational fishing.
- The future realization of a public aquarium.
- ✚ The environmental impact study report of the Great Winds Park project, by the Algiers parks society;
- ✚ The Environmental Impact Study Report of the Great Winds Park Project, by Emirates International Investment Company (EIIC).
- ✚ The preparation of monthly progress reports.
- ✚ The creation of the facilitation and follow-up committee for the implementation of the Great Winds Project¹² (one-stop shop): which aims to ensure coordination and collaboration between Project stakeholders, who meet once a month.
- ✚ A protocol of agreement is signed between the Promotion Agency of the Great Winds Park and the Spanish Foundation of Islamic Culture in the framework of the creation of an Andalusian Spanish Garden at the Great Winds Park.
- ✚ The different conventions of creation of thematic gardens of excellence: garden of China (figure 07), garden of the kingdom of Spain, garden of Japan, garden of Vietnam, garden of Austria.

¹¹ Draft Multilateral Collaboration Agreement (2013). Great Winds Park Promotion Agency

¹² Interministerial Instruction No. 03 SPM of 24 April 2012 establishing the facilitation and monitoring committee for the construction of the Great Winds Park.



Figure 07: Thematic garden of excellence: garden of China of the Great Winds Park - Dounya Park -
Source: photos taken by the authors (2016)

5.3. Some achievements of the Great Winds park project

- ✚ Realization of the house of the environment



Figure 08: The house of the environment of the Great Winds Park - Dounya Park -
Source: photo taken by the authors (2016)

- ✚ Realization of the green bridge linking the two parts of the project



Figure 09: The green bridge of the Great Winds Park - Dounya Park -
Source: photos taken by the authors (2016)

✚ Creation of a relaxation area (2014)



Figure 10: Relaxation area of the Great Winds Park - Dounya Park -
Source: Quantified balance sheet of investments (2015). Great Winds Park Promotion Agency

✚ Realization of a playground (2014)



Figure 11: Playground of the Great Winds Park - Dounya Park -
Source: photo taken by the authors (2016)

✚ Supply and construction of the renaissance gardens, fruit garden and agricultural area, and windbreak grove (figure 11) realized by the Establishment of Development of the Green Spaces of Algiers



Figure 12: Playground of the Great Winds Park - Dounya Park -
Source: photos taken by the authors (2016) and Quantified balance sheet of investments (2015). Great Winds Park Promotion Agency

The project of the park of the Great Winds is so ambitious and great that some parts were realized and others not. Indeed, the part intended for the Emirates International Investment Company (EIIC) could not be executed. The intervention of the Emirates International Investment Company (EIIC) consists in building the equipment that allows the development of the park of the Great Winds such as residences, shops, hotels, hospital, school and other social, economic, tourism, sports, cultural and ecological developments. This delay is caused by the problems encountered during the application of the court decisions to expel the induc-occupiers, who illegally occupied the land of the project belonging to the various municipalities mentioned above. In addition, the expropriation operation for public utility, which was initiated in 2006, is not yet complete. The latter is a major constraint, causing a pronounced delay in the project implementation process. As a result, the situation is ambiguous, marked by several problems that delay the completion of future operations of the Great Winds Park project.

6. Conclusion:

Ecologisation of the city is an act through which the environment is taken into account in public policies. The consequences of this act have a direct impact on the quality of urban life of the inhabitants of the city. Therefore, the greening of the city becomes a major concern for all countries of the world including Algeria. The latter began to be interested in the quality of the urban environment of the capital Algiers through the realization of the Great Winds Park project. Indeed, this project represents a unique operation, interesting and beneficial operation for more than one reason. The management of the urban ecology undeniably passes by this type of operation that must be generalized throughout the Algerian territory.

This ambitious project represents a development operation whose conduct, in the context of an urban project, requires the adoption of a policy and an elaborate strategy. The latter must be based on the principles of sustainable development, on the one hand, and the involvement and definition of the actors with a well - defined financing, and an awareness of the environmental and ecological aspect by all the actors concerned in particular the citizens on the other hand.

In other words, this type of urban project can protect the biodiversity and ecology in cities and make them green, despite the problems encountered. Through this project, the green spaces are preserved as well as the ecosystems of the city. It can solve the problem of urban biodiversity, especially green spaces in urban areas. However, does Algeria have the means to carry out these projects and be able to protect them and ensure their proper functioning? The success of such a project depends on the approach followed, which guarantees the improvement of the ecological and environmental performances of the capital. It is a question of raising citizens' awareness. They must participate in the realization of green projects and ensure their maintenance and the protection of the quality of the environment where they live while thinking to transmit them to the future generations within the framework of the sustainable development policy.

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