

## HEALTH-AFFIRMING EVERYDAY LANDSCAPES IN SUSTAINABLE CITY. ECO-NEIGHBORHOODS IN FRANCE CASE

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### Abstract

**This paper discusses the close relationship between the concept of health-affirming everyday landscapes and the idea of sustainable city design. The French National program of eco-neighborhood certification ÉcoQuartier is described and the correlation between the concepts of health-affirming landscapes, sustainable cities, and eco-neighborhoods is explained using the example of a selected eco-neighborhood in France.**

**Keywords:** Health-affirming landscapes; Therapeutic landscape; Sustainable city; Health and well-being; Tools.

## 1. INTRODUCTION

The theory of sustainable development – development *that meets the needs of the present without compromising the ability of future generations to meet their own needs* [1] puts human being at the center of concerns for sustainable development and underlines that people are *entitled to a healthy and productive life in harmony with nature* (Principle I of the Rio Declaration on Environment and Development) [2]. Chinese scholars consider eco-city as “stable, harmonious, and sustainable complex ecosystem that makes possible “all-win” development among social, economics, and environmental factors” [3]. Such all-win development is present in *therapeutic landscapes* – places where “physical and built environments, social conditions and human perceptions combine to produce an atmosphere which is conducive to healing” [4]. According to WHO, health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity [5]. That definition of health

played a significant role in broadening the concept of health and its environmental conditions [6]. Modern idea of promotion of health concerns everyday actions of entire society seeking physical, mental and emotional wellbeing [7].

The operationalization of the theory of sustainable development requires creation of eco-neighborhoods in eco-cities. Thus, we define *Urban health-affirming landscapes* as everyday places which reunite the qualities of *therapeutic landscapes* to influence people physical, mental and spiritual healing.

### 1.1. Examples of eco-neighborhoods

The first attempts to create eco-neighborhoods date back to 1960's. Cyria Emilianoff [8] writes that eco-neighborhoods represent a preliminary phase of the sustainable city process. An eco-neighborhood is a way to test new approaches to urban planning. A neighborhood is treated as a place to live, where most of basic needs are satisfied within a walking distance.

This idea is opposed to the urban planning based on zoning and separation of functions, which was predominant in the 20<sup>th</sup> century. At the same time, urban design and architectural form of eco-neighborhood are quite traditional [9, 10]. However, they rely on the new technologies, for example solar panels, pneumatic waste collection, energy savings, water retention and reuse techniques, etc... Eco-neighborhoods are natural size models, prototypes and urban laboratories to test the most innovative sustainable solutions. Levy [11] insists that the sustainable urbanism, which evolved after the last *environmental revolution*, is not providing precise principles like the Charter of Athens did in 1933. However, there are certification programs, for example *ÉcoQuartier* in France which stipulates pre-requisites and provides guidelines for building eco-neighborhoods [9, 10].

## 2. FRENCH NATIONAL PROGRAM OF ECO-NEIGHBORHOOD CERTIFICATION – ÉCOQUARTIER

*ÉcoQuartier* is a French program of eco-neighborhoods evaluation and certification created by French Ministry of Ecology, Sustainable Development and Energy (MEDDE – MINISTÈRE DE L'ENVIRONNEMENT, DE L'ÉNERGIE ET DE LA MER) in 2012 to promote good examples. The program is being constantly monitored and developed [9, 10].

According to the official definition, *ÉcoQuartier* is an urban project which is well-adapted to local environment and implements sustainable development principles. The principles for *ÉcoQuartier* certification program are saving natural resources, stopping urban sprawl, promoting new lifestyles, raising awareness of inhabitants and dealing with other challenges of sustainable development.

The *ÉcoQuartier* certificate, available from 2013, has three objectives:

- encourage sustainable urban development projects
- assure the quality of urban projects. (Evaluation is based on specific objectives and indicators)
- enforce the ecological approach with government policies

According to MEDDE there are three phases of *ÉcoQuartier* development. First, a community needs to sign the «*Chartre des ÉcoQuartiers*» (Charter of *ÉcoQuartier*) which contains 20 commitments, including 8<sup>th</sup> Commitment – requesting a healthy and safe living environment.

Afterwards, that community becomes a member of «*Club National ÉcoQuartier*» (National Club of

*ÉcoQuartier*) and is entitled to professional help in preparing the documents required in the certification process. During the preliminary phase, a project is evaluated by three experts (national, local and external) and at least one of them has to visit the local site. The Assessment list [12, 13] is based on the twenty commitments of «*Chartre des ÉcoQuartiers*» and includes twenty criteria of evaluation (e.g., the mentioned 8<sup>th</sup> Commitment – reduce the identified nuisances and improve the comfort of users (e.g. air quality, noise, soil pollution, electromagnetic fields, etc...), enforce the feeling of safety in public spaces (e.g. orientation, visibility, urban animation, etc...), reconcile the density and quality of life). The data provided by the community is used to automatically calculate the twenty numerical indicators (e.g. percentage of green areas, number of square meters of green public space per inhabitant, percentage of non-permeable surfaces, etc...). At this stage, the project can receive a preliminary certificate «*Engagé pour la labellisation*» (engaged in the certification process) [12, 13].

Finally, when the project is completed and inhabited, it is evaluated again and, if appropriate, it receives the certificate *ÉcoQuartier*. This certificate is a guarantee of French State that within the project the requisites of sustainable development were satisfied and the final results are acceptable. *ÉcoQuartier* is an eco-neighborhood encompassing all types of engagements: environmental, social and economic. Souami [9] mentions that sustainable urban planning movement does not have a strong theoretical back-up, instead it is driven and fueled by experience gained with previous projects.

French *ÉcoQuartier* are located on a public land, which belongs to local authorities [9, 10]. Therefore, a local authority can stipulate conditions, which make the creation of *ÉcoQuartier* possible. However, there must be a mutual agreement with developers and construction companies concerning ecologically and economically feasible design: construction of low-energy buildings, alternative energy sources, number of parking spaces, ways to promote functional and social density. Taoufik Sounami [10] insists that a compromise between people who demand the latest most ecologically advanced solutions, and construction companies, which estimate the budget, is required for the *ÉcoQuartier* to be build. After the negotiation of obligations, individual lots are offered to developers. If there are numerous bidders for a single lot, they can be evaluated by the proposed sustainability of their projects.

Eco-neighborhoods are also constructed on a private

land, in other countries. However, in case of privately owned land, there is no guarantee that the neighborhood will be ecologically sustainable [9]. External evaluations are inevitable.

There are common features of *ÉcoQuartier*, which are evaluated by the program and are closely related to therapeutic landscapes [9, 10, 12, 13]. They *combine to produce an atmosphere which is conducive to everyday health promotion* [4]. They can be classified into following categories:

- physical and built environment: green public space, sustainable management of water and environment, risk prevention and management, climate change adaptation and protection of biodiversity
- social conditions: simple living, economic environment, strive to consolidate social capital (e.g. different age groups),
- human perceptions: protection of cultural environment, architectural quality, public spaces quality, walkability, universal accessibility, functional diversity.

## 2.1. Physical and built environment

### Green public space

A public park is one of the best places for connecting people with nature within the city. *ÉcoQuartier* have larger proportion of natural open spaces comparing to traditional urban tissue – approximately one third of their urbanized surface [14]. There are numerous examples of *ÉcoQuartier* designed with centrally located urban park. That type of urban planning assures proximity to green space for the densely developed neighborhoods. Parks and open green space can provide places for social interactions, physical activities, psychological renewal, etc... which can prevent and reduce many health problems [15]. Public parks centrally located in *ÉcoQuartier* fulfill the role of public gathering space, “a living room”, where all people can enjoy benefits of contact with others and nature. Open public green space is a place for social inclusion, which is crucial for *health-affirming places* [16, 17]. An idea that each apartment should have at least one window with a view of greenery is applied whenever possible within *ÉcoQuartier*.

### Water management

Cliff Moughtin [18] states that “Specific elements taken from nature are thought to possess healing powers. Chief among them is water. Most of the world's great centers of healing are associated with a

stream, a river, a lake, or hot and cold springs”. Numerous research confirm the importance of presence of water in public open green space.

Providing free access to potable water with systems of drinking fountains is a valuable asset for health-affirming places. The City Authorities of Paris maintain the dual systems of potable and non-potable water. Non-potable water can be used for watering public gardens, street cleaning and others. It's a good example of sustainable practice, worth following.

Various sustainable solutions are applied in *ÉcoQuartier*: rain water collection and recuperation for green areas maintenance, sustainable drainage solutions – which filter and absorb rainwater and runoff from impervious surfaces, rain gardens, etc. Some *ÉcoQuartier* use advanced technologies of water sanitation & remediation and put it on display in open public space. For example *Parc de Docks de Saint Ouen* and *Parc de Chemin de l'Île in Nanterre* employ water remediation in successive basins with plants indicating the quality of water.

## 2.2. Social conditions

### Simple living

Foo Ah Fong [19] implies that “a sustainable city does not require luxury... simplicity is more appropriate and enduring. A sustainable city has no need of any visible splendors”.

The idea of closing the circle of urban metabolism with proper waste management and recycling is promoted by the French government with “zero waste” approach. It is perceived as a new responsibility of less consumption oriented society. Eco-neighborhoods often re-use previously contaminated sites, or brownfields (e.g. *ÉcoQuartier Clichy Batignolles, Paris*; *ZAC Gare de Rungis, Paris*; *ÉcoQuartier de Docks, Saint Ouen*; *ZAC Trapeze, Ile Seguin, Boulogne-Billancourt*; *Quartier du Port, Choisy-le-Roi, etc.*).

One of the objectives of eco-neighborhoods is to “reduce dependence on private cars” [20]. *ÉcoQuartier* are designed to promote walking, cycling and public transportation. Several projects rely on proximity to railway and metro stations. For example, the *Grand Paris* project envisions extension of existing metro lines and construction of new underground metro infrastructure to better connect various eco-neighborhood operations with key city areas. Eco-city concept is based on perceiving environment as systems [20]. The recycling, reusing and energy conservation are important.







Figure 1.  
A view of the park from the neighboring residential building. Photo: M. Trojanowska

### Sustainable economic environment

Employment for inhabitants is one of the largest problems facing eco-neighborhoods. So far, the proposed solutions in France included intertwining the residential and industrial areas, construction of new office space and mixed-use development. However, these solutions may not provide the employment for all, because some of *ÉcoQuartier* are faced with difficulties to find tenants for commercial or office space and attract prospective employers.

Corburn [20] stipulates that one of the first challenges for healthy city planning is to avoid reacting and removing urban problems, but instead in the first place work to prevent harms. The French *ÉcoQuartier* program seems to be based on that precautionary principle in contrast to outdated politics of removal of hazards and people.

### Strive to consolidate social capital

The concept of *ÉcoQuartier* promotes social diversity and strives to reduce social exclusion based on health status, age, wealth, profession, religion, etc... The interesting question is whether social diversity promotes environmental justice. Dutch scientists provide evidence that lower-income groups rely more on access to public space and public greenery within walking distance [17]. The social inclusion in *ÉcoQuartier* relies on mixing social housing programs and private market real estate within one neighborhood dotted with public parks and open space. The subsidized housing for lower income groups is constructed next to private upscale apartments, students dormitories, assisted living houses for senior citizens, etc. The concept of bridging and bonding social capital is applied to public spaces in mixed-income neighborhoods. So far, the program seems to bring good results. The largest encountered problem is the difficulty to attract private home buyers in some less favorably located eco-neighborhoods.







Figure 2.  
ÉcoQuartier Clichy-Batignolles, Paris, Parc Martin Luther King: community garden, Photo: M. Trojanowska

### 2.3. Human perceptions

Each building in *ÉcoQuartier* is individually designed by a different architect. Architectural diversity, apart from esthetic and functional advantages, also facilitates the creation of mental maps. That feature is especially important for memory exercise and is invaluable for fragile minds of the elderly and disabled [15, 16]. Cliff Moughtin [18] points that “The build and natural environment can be seen, heard, felt, smelt and tasted: they can be directly experienced by the five senses. The symbolic or meaningful environment is less immediately tangible but equally important for the development of a healing place”. *ÉcoQuartier* strive to maintain the cultural heritage of local environment by preserving historical buildings (*ZAC Clichy Batignolles*), street names (*ZAC Baucicaut*), local services (*Bar de Mariniers*, *Quartier du Port*, *Choissy-le-Roi*), etc. The *Eco-cite culturelle Ile Seguin* is envisaged to become the cultural center of metropolitan scale. A functional program for *ÉcoQuartier* always includes cultural and social services, local churches, or libraries for various

age groups. Everyday urban places can become places of inspiration for people. The development of *ÉcoQuartier* requires creating diversified functional program and adequate urban form (ranging from single house to dense urban tissue), as well as, high quality environment having minimal environmental impact (e.g. minimizing air, water and soil pollution, noise, vibrations, light pollution, degradation of ecosystems and valuable or protected species) [16, 17].

In the period between 2012 and 2016, fifty projects in France have received the certificate *ÉcoQuartier*, a hundred and ten – a preliminary certificate «Engagé pour la labellisation», and more than two hundred have signed the «Chartre des *ÉcoQuartiers*» [12, 13]. One of them, certified *ÉcoQuartier* in 2016 – *ZAC Clichy – Batignolles* in Paris and its most important aspects of sustainable urban planning are presented below.







Figure 3. ÉcoQuartier Clichy-Batignolles, Paris, Parc Martin Luther King: water feature alimeted mostly by rainwater, Photo: M. Trojanowska

### 3. PARIS. ZAC CLICHY-BATIGNOLLES

This urban project, certified “Engagé pour la labellisation” in 2014 and situated on the former railway brownfield (54-hectares), forms a link between various surrounding neighborhoods. The new development is organized around centrally located park (10-hectares), highly accessible and easy to cross.

The district development is planned to bring together 7,500 inhabitants and 12,700 additional workplaces [21]. New public transport connections will facilitate movement of new employees of Public Offices and Court relocated to new eco-neighborhood. The project has succeeded in uniting functional and social diversity (3,400 apartments and 31,000 sq.m of shops, culture and recreational facilities) [22]. Around 50% of the residential surface is intended for social housing, 20% for rent controlled apartments and 30% is planned to be sold to private owners at real-estate market price. This project was designed to be an example of advanced sustainable ideas put into prac-

tice (water, energy, building materials, human health, risks management, pollutions remediation). The crucial pro-ecological elements are: urban renewal of formerly polluted site, centrally located public green space, passive buildings, energy efficiency, rain water collection for maintenance of green areas, urban density and mixed-use development. It is well-connected with existing and planned metro lines, rapid trains, buses and tramways.

The heart of new districts is the New green public space – *Martin Luther King Parc* (10-hectares). The streets leading to the park are extended by pedestrian paths inside the park. People are encouraged to cross the park on numerous occasions, when they do daily duties. This park has no clear limits, instead it is expanding with green corridors along all adjacent streets. Nature is brought to people with sustainable urban design. Park offers a variety of sports infrastructure, creative play areas for all age groups, as well as community gardens. *Martin Luther King Parc* design is consistent with all requirements of public





**Figure 4.**  
ÉcoQuartier Clichy-Batignolles, Paris, Parc Martin Luther King: architectural variety, Photo: M. Trojanowska

green space with therapeutic qualities [21, 22]. There are plans for hortotherapy sessions for pensioners of EPHAD (Assisted Living Home) in *Martin Luther King Parc, Clichy-Batignolles*. The beneficial effects of community gardening were widely discussed by scientific community [24, 25, 26, 27, 28]. Community gardens can rise social awareness and provide opportunities for both adults and children to participate in programs dedicated to gardening, discovering local biodiversity and learning about local plants. Additionally, rain gardens and drainage solutions are displayed inside the park. Collected rain water usually fulfills all watering needs for 11 months during the year.

Passive buildings are designed in such a way that inhabitants have to behave in ecological manner in order not to waste energy. Before moving in, they had to take part in dedicated workshops and special courses. For example, pneumatic waste collection can work properly, only if residents follow strict rules of garbage segregation. This effort brought good

results. Today, when interviewed, the inhabitants spoke with pride about their commitment to ecology. ZAC Clichy-Batignolles was planned to fulfill all the requirements of eco-planning. The health affirming landscape in ZAC Clichy-Batignolles includes: centrally located public park, easy access to open green areas, diversity of activities, their attractiveness for different groups of users, strive to consolidate social capital, walkability, universal accessibility, architectural and urban quality, protection of cultural values, water management and sustainable environment. This urban operation is a good example of the design for the health and well-being of inhabitants.

#### 4. CRITICISM

Majority of literature dedicated to eco-neighborhoods and *ÉcoQuartier* projects describes them as real-life laboratories for sustainable cities. The main criticism of the *ÉcoQuartier* program, and in general eco-neighborhoods, is that they are being promoted



as a miracle solution to all urban problems without any methodological, scientific studies of ecological effects and post-occupancy evaluations. Some authors think that their impact is relatively insignificant [29]. However, they do not hesitate to emphasize the pedagogical effects the *ÉcoQuartier* program has on entire Communities.

A study of evaluation of eco-neighborhoods in Europe [30] revealed that there are many problems, e.g. discrepancies in planned and effective energy consumption. The cost of energy production on site is actually too high to be affordable. The dependence on individual motor vehicles is higher than planned. People continue to use cars because there is no public transport close to their workplaces. However, when it comes to well-being of people, protection of biodiversity, healthy ecosystems and green public spaces, the design and maintenance of eco-neighborhoods is satisfactory.

## 5. FINAL CONCLUSIONS

The eco-neighborhoods projects can be regarded as an effort to operationalize both theories: sustainable development and therapeutic landscapes. Their main advantage is proper coordination of housing, transportation, land use and economic development with public health strategies [26]. They strive to create safe housing environment within walkable distance to basic services, facilities, public parks, and open green space.

Eco-neighborhoods are applying advanced concepts to improve life quality for all inhabitants, ensuring equal access to *health-affirming everyday landscapes*. Therefore, eco-neighborhoods may bring many profits for public health, e.g.: promotion of everyday physical activity and healthy lifestyle, stress reduction, creation of community bonds, increased resilience, etc....

French *ÉcoQuartier* certification program is a valuable laboratory, which tests many interesting solutions and provides well-documented case-studies for further research. The assessment list of criteria and indicators evaluated during certification process includes those directly or indirectly related to promotion of health. Additionally, the qualities related to *therapeutic landscapes*: physical and built environments, social conditions and human perceptions [8] are addressed during the certification process. However, the assessment of human perceptions is relatively limited.

The *ÉcoQuartier* certification program started in 2012,

therefore it is too early to determine its long term impact. The program needs constant monitoring, scientific evaluation and further research, especially concerning social inclusion and economic sustainability after the project completion and certification.

New fields of research are open to determine long term changes in: ecological footprint, social capital, self-assessed quality of health, life quality, etc... The research should engage specialist from various fields: e.g. sociologists', psychologists', medical researchers who, together with architects and urban planners, could analyze the scientific data to verify the long term impact of eco-neighborhoods.

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