

# Green Networks Exarchia

## Resilience Strategy 2050

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### **Introduction**

The phenomenon of urban heat islands (UHI) in Athens is well documented (LIVADA, S ANTAMOURIS and ASSIMAKOPOULOS 2007; MIHALAKAKOU, S ANTAMOURIS, P APANIKOLAOU, C ARTALIS and T SANGRASSOULIS 2004). Studies range from descriptive research on the phenomenon and its development for the last decades to impact studies and adaptation measures (S ANTAMOURIS et al. 2015). However, the relevance of this topic is shown by this year's temperatures of over 40°C in the inner city and its densely populated districts accompanied by increased ozone levels (EUROMETEO 2017, www). Impacts are of environmental, economic and social nature (ibid.).

The “Green Networks Exarchia” is a plan on how to tackle the problems of urban heat island in the city district of Exarchia in Athens. The “Green Networks Exarchia” describes the idea of connecting parks and micro-parks by transforming the streets into green corridors. The overall goal is to reduce the problems heat islands by exceeding green spaces and reducing traffic. The steps to develop this idea were to determine the problem in general, to identify the problem in the district of Exarchia, to assess the goals and to elaborate ways to improve the situation.

To conduct these tasks, a variety of knowledge and different points of view were necessary. This included, on the one hand, the views from different academic fields such as architecture, environmental planning and urban planning and on the other hand considers the different scales of the problem. Each field played an important role to achieve the results. Environmental planning, for instance, played a huge role in identifying the problem and designing the ways of how to green the spaces. The field of architecture contributed a lot in terms of concrete measures and how to implement them in the city district. The field of urban planning was important to coordinate the project and to plan the network itself. Although the project focused on the district level, all scales were important to observe. While the likelihood of heat waves will be influenced by the global phenomenon of climate change, the measures to react to the increase of heat days and UHI must be implemented on the local level.



Figure 1: Location of Exarchia District in Athens (Source: Google Scribble Maps 2017)

**Methods** The process of strategy building was accompanied by several methodological steps that helped to develop a tailored strategy for the city district Exarchia.

The first step is the landscape planning stroll through the district where the aim is to get an impression of the research area, make first observations and to formulate theses. This method derives from landscape planning and helps to understand an area's history and prevents from making false presumptions that originated somewhere else (HÜLBUSCH 1988, 1). Observations and first theses were logged to integrate them in the next steps.

The scientific input by experts and stakeholders on the topic during the week was extended by a profound analysis of literature and geodata. Especially geodata on topics of local heat islands in Exarchia, traffic density, public green spaces and amount of sealed surface were considered.

With this knowledge basis, visions were formulated on how the district of Exarchia needs to develop to tackle UHI. The back-casting method was used to formulate desired future conditions and to define steps to attain those conditions. Developed in the 1990s the method works “backwards from a particular desired

end point to the present in order to determine the feasibility of that future and what policy measures would be required to reach that point” (ROBINSON 1990, 823). The outcomes of that process are presented in the third chapter: *Seven steps to create a Green Network*

Athen’s district Exarchia is located between Panepistimiou Road, Alexandras Avenue, Patision Road and Lykavitos Hill. Characteristic landmarks are the National Archeological Museum, Strefi Hill, the University and Exarchia Square. Its residents consist mainly of students, immigrants and older people. The district is known for its young and alternative character, as a centre for protest actions and demonstrations as well as for neighbourhood initiatives such as Parking Parko, a former sealed parking space that has been turned into an urban gardening project (PARKO 2015, [www](#); PARKING PARKO 2009, [www](#)).

### *The District Exarchia*



Figure 2: Parking Parko - From Non-Place to Common Good (Source: WORDPRESS 2017)

***Seven steps  
to create a  
Green  
Network***

Based on the basic principles of heat islands, urban resilience and the insights collected during the summer school in Athens, the project of “Green Networks Exarchia” was developed by the group. In order to develop the idea, different methods were used and targets were set. The aim was to form an overall strategy that should target the problems of the area. This strategy was based on three different goals and is designed to be implemented in seven different steps.

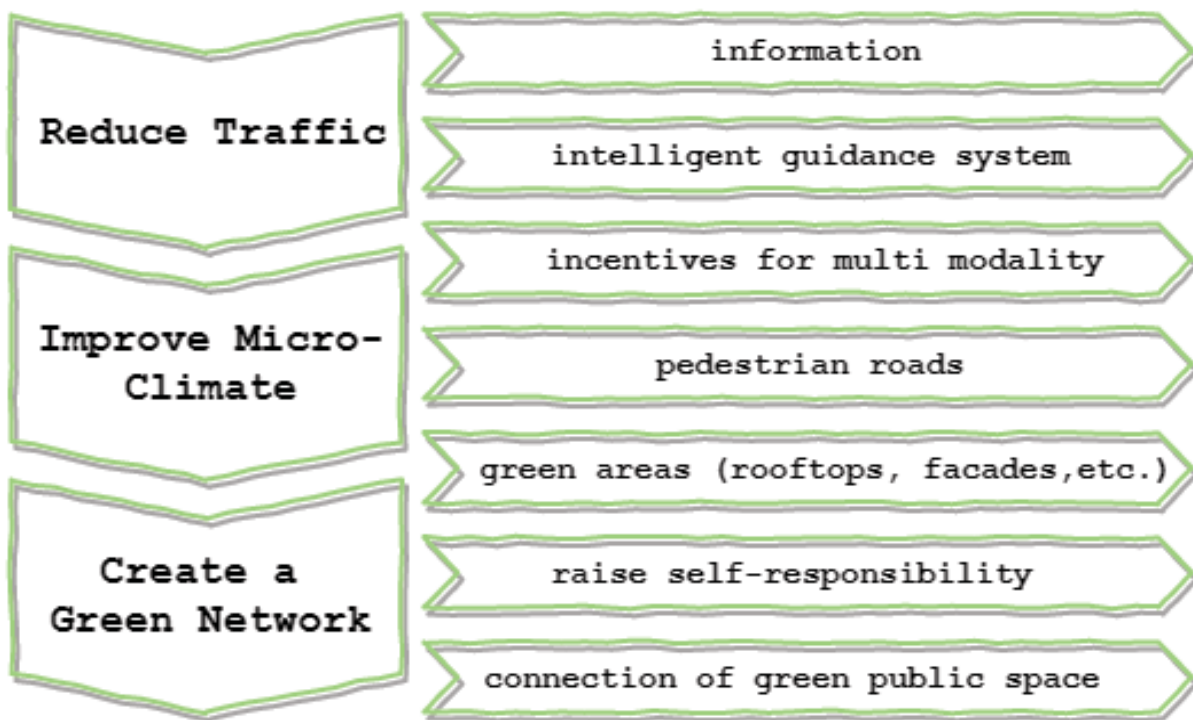


Figure 3: Green Networks Exarchia.png (Source: Own Depiction)

Since the goals and steps of the project had to fit to the district of Exarchia, the first step was to develop an idea of how Exarchia looks like, how the area is constructed and how it is used. From the side visit and the information of the Greek colleagues, it became clear that Exarchia is a dense area with some free spaces and a high attractiveness for young people. The neighbourhood seemed to be very vital and was full of people by day and night. One of the problems of this well-frequented neighbourhood is that due to the narrowness of the streets, the number of visitors is too high to allow an easy traffic flow. An additional factor that hampers the traffic flow is the number of parked cars, which exacerbate the problems of the narrowness. Part of the problem is the violation of no-parking zones (see Figure 4).



Figure 4: Solomou street, Exarchia (Source GOOGLE STREET VIEW n.d.)

Based on the central observation of these traffic flows and the fact that traffic is one of the main anthropogenic factors of heat within a city, it became clear that traffic should be one of the main targets of the project (FOUNDA et. al. 2015, 1). The idea was to reduce the car traffic and to promote other forms of transport. The reduction of traffic was set as a general goal of the project, besides this, the idea was to create new green spaces. Green spaces are in general recommended to cool down an area and are factors to improve the microclimate of an area (KLEEREKOPER, VAN ESCH, SALCEDO 2011, 31f). The idea to improving the microclimate in that area was set as a second goal. In order to connect the first two goals a combination of these goals was created, which became the title of the project. The creation of a “green network” was set as the third goal. The main idea of this “green network“ is to connect the existing green spaces in Exarchia by green roads. These roads should be pedestrian zones and should provide enough green spaces to have a cooling effect on the streets. Furthermore, the hope is that the connection of these green roads with the parks can help to create aisles for fresh air.

In order to establish such a “green network”, seven important steps were set out. All of these should be implemented to successfully transform Excharia in a resilient neighbourhood and to establish the “Green Networks Exarchia”. These seven steps are:

1.) To inform the public about the connection between their personal behaviour and the heat island, especially in regard to their mode of transport. This raises the self-awareness of the people.

2.) Emerged from this self-awareness, the people should be incited to green their streets and roofs on their own, for instance in a district-wide competition for the greenest streets. Furthermore, the self-awareness raises the acceptance of the changes that should be done in the district.

3.) The first major change that need be done is the introduction of an intelligent guidance system for traffic. This will help to bind the traffic on a few major roads and helps to decrease the traffic in the smaller streets. The idea is to create a system in which fewer streets are needed and major roads are used. The concept behind is the creation of a system with fewer crossroads and intersections.

4.) In addition to the intelligent guidance system incentives to increase multimodality will be implemented. This will help to further reduce the traffic and will make more roads dispensable for cars.

5.) The dispensable roads will be transformed into green corridors. These green corridors can be a mixture of green spaces, walkways and biking paths. The mixture depends on the size of the street and the wishes of the residents of the area.

6.) Parallel to the green corridors, green spaces and pocket parks will be constructed on empty spaces within the area. The green spaces will be implemented on the larger sides, while the pocket parks are planned as an alternative for smaller sides.

7.) The final step of the idea is to connect the green spaces with the green corridors and by that to create the “green network”. The extension of the network can be done step by step and neighbouring districts can be connected to it as well.

As a start for the “Green Networks Exarchia”, the focus is set on connecting the existing parks such as Lofos Strefi, Exarchia square and National Archaeological Museum of Athens. The creation of new parks and the decision on which roads will be transformed should be decided in consultation with local actors. A first draft was developed by the group (see Figure 5), this draft was based on the results of analysing the data on heat problems, street infrastructure, existing green spaces and the structure of the built-up area. In terms of an extension of the project, different neighbourhoods are suitable. Especially a connection with the Pedion Areos would be desirable.



Figure 5: Green Networks Exarchia Draft (Source: Own Depiction)

Besides the large steps in implementing the network, some small-scale measures can be implemented to support the network. These measures include ideas like green rooftops, vertical gardens and sunshade sails. In order to react to the fact, that the “Green Networks Exarchia” cannot completely get rid of the heat island problem, the network will also include measures in order to react to the problems caused by the heat. Therefore the parks of the „Green Networks Exarchia“ have an additional function.

## Seven steps to create a Green Network

The parks also function as the hubs of the network and are used as meeting places in case of an external stress, such as a heat wave. In order to fulfill this function, the parks should be equipped with a first-aid station, which should include a defibrillator, mineral supplements and other medicine. The idea of pocket parks is not a new concept and already exists in several cities around the world such as Copenhagen or New York (DAC 2017, [www](#)). Not only does it influence the openness of city districts it also fosters the identity process in communities (ibid.)



Figure 6: Paley Park, NY (Source: Flickr, n. d.)



Figure 7: Possible locations for First Aid Stations and Pocket Parks (Source: Own Depiction)



***Critical  
Reflection***

There are different challenges related to the „Green Networks Exarchia“, which will have to be investigated before the project can be planned in more detail. The first question to be addressed is how the local actors will react to the idea. Especially since Exarchia is one of the most controversial neighbourhood in Greece. Exarchia has a long history of alternative and youth lifestyle and has been discussed in media since the 1980s for its problems (VRADIS 2012, 28). The district is sometimes referred as “the heart of European resistance to capitalism” and home to the anarchists of Greece (PILIC 2015, www). Fights between anarchists and the police happen on regular basis until today (TAZ 2017, www). To avoid more conflict potential the consultation of the people inside the area needs to be considered. This consultation will not be easy or maybe even impossible, considering the fact that the driving powers of the district seem to be groups of the neighbourhood and not the local authorities. The question is if the arguments of a greener, safer and more resilient neighbourhood can convince the anarchist groups to allow a government led project in the area or if the crack between these groups is too dominant. Without the local support the project has no chance to be implemented at all.

The second huge challenge of the project is the question of how to finance it. The financing of the project will be difficult due to the financial status of Athens. The Greek financial crisis and the austerity measures have also influenced Athens financial possibilities. Until lately the situation was getting worse for the people due to the austerity measures (DAVIDSON 2015, www). Though the credit rating of the city by Moody’s has changed in June 2017 from Caa3 to Caa2, which indicates a positive outlook (JOSIFOV 2017, www), the financing of any nonessential measures will be tough to negotiate. Therefore, Exarchia might not be the first district to benefit, especially considering the circumstances of anarchist groups in the area. The problem of financing was considered during the design process of the project. Some parts of the network, like the pocket parks can be implemented by the residents of the area and are not relying on public spending. Further measures are designed to be implemented step by step and over a longer period. This would allow financing the project in small payments. Yet the whole network will be quite expensive both in construction and in maintenance.

One other challenge of the „Green Networks Exar-

chia“ is relying on the idea of networks and deals a lot with traffic. Therefore it is unrewarding to just take a look on one neighbourhood. In order to make the „Green Networks Exarchia“ a success, it needs to consider the neighbouring area and even more areas, for instances the area of origin of the people who commute to Exarchia. The in and out commuting of people need to be considered for the traffic guidance system in order to create a functioning system. These problems could not be considered during the development of the project due to the limited time. Therefore the described and developed project can only provide a first draft for a “green network”.

*Conclusion* The project of „Green Networks Exarchia“ shows one possibility of how a city district can be transformed in order to create a greener, safer and more resilient neighbourhood. The project deals with one of the major shocks, which can strike a city like Athens. The chosen focus is the problematic of heat islands, one of the most urgent ones in Athens, considering its impacts today and the fact that climate change will make the problem even worse.

The idea of „Green Networks Exarchia“ was designed to implement resilient measures for the future, by making the people benefit from its design today. The „Green Networks Exarchia“ would create more leisure areas, more pedestrian zones and nicer streets while improving the overall air quality. The network can improve the health and the way people enjoy their neighbourhood from its implementation onward. These are only the side effects of the overall aim of improving the resilience against a possible shock. But today this brighter future for the neighbourhood depends on a community that is struggling with other problems.

The main factors which will determine the future of the area and the future of the „Green Networks Exarchia“ are the willingness of the local community and the possibility of financing it. The circumstances today do not seem to favour the project. But if the local community can be convinced by the project and a financing can be ensured, the „Green Networks Exarchia“ will not only help to decrease the likelihood and the impact of heat islands, but furthermore will give the district a greener, safer and more enjoyable design.

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