I AM
DE·N·CITY

“Reallocation of space: transforming urban environment into a circular system.„

Delft University of Technology - MSc Urbanism
AR2U86 R&D Studio - Spatial Strategies for the Global Metropolis

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I. ABSTRACT

Key words:
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Use of Space
Public transportation
Waste management
Livability
Circular Economy

The Amsterdam Metropolitan area, and especially Amsterdam city, attracts large amounts of people due to the diverse economy opportunities, cultural and recreational activities, and the strong connection of the region by public transport and road network. The need for space, resources, and mobility are increasing and will keep increasing due to the growth of population and, thus, the rise of demand. This unbalanced distribution requires full use of spaces and resources.

The main focus of the project is to identify what causes this unbalanced distribution by researching the different densities of the region, in order to make the region more stable and move it towards the circular economy. At the same time, the project focuses on the spatial conditions of the different neighbourhoods and tries to increase the livability levels in order for the general quality of life of the citizens will be improved. The main tool that we used during our research, but also later on the vision and strategy plan, is density. Firstly, we analyze the region by understating what the different densities that can be found in it are, and how they work. Afterwards, the focus shifts to the analysis of the different neighborhoods, trying to determinate and understand the different densities that can be found in the small scale. Finally, we try to find what opportunities and potential do these densities create for the different neighborhoods.

By analyzing the different densities and typologies in the region, we highlight the importance of sharing spaces in terms of facilities, transportation, and waste management for the inhabitants, in order to help AMA move towards a more sustainable and balanced future direction.

The innovations that we make depend on the existing situation, the density, and the character of the city. Taking into account these aspects and the regional analysis, we decide what needs to be densified in terms of facilities. These new density developments either make the existing identities of the city stronger, or, in the cases of lack of identity, we propose new ones to be adopted.

This interpretations will release the pressure on Amsterdam city, balance the region, create more livable spaces, and move the AMA towards circularity.

II. EXPLAINATION OF THE BRIEF

What is AMA?
The Amsterdam Metropolitan Area is comprised of 32 municipalities, two provinces (North Holland and Flevoland) and the Amsterdam City region. Around 2.4 million people, more than 14 percent of the Netherlands' population, live within the AMA[1]. The strong economy of the region and various resources attract people continuously and have established a positive image to the outside world. In this project we were called to design a vision for the region and develop strategies that will help AMA move towards circular economy. The AMA is an unbalanced region where we believe that, by "adjusting density" from local scale, people's daily life will change towards a more sustainable direction. When we gradually apply this to the whole region, the AMA will be able to shift towards a more synchronous and circular direction.

How do we define density?
Density is the relationship of a certain aspect in the city compared to the amount of consumed surface. For us density is the combination of the size of a city, the different neighborhoods typologies or the amount of people. Density can also show resource distribution and development of different aspects which are related to person who lives in certain place. It is more reasonable for us to use density as a way of researching to discover the key problem in AMA and use it later as a tool to introduce solutions which can be beneficial for the inhabitants as well as for the whole region.

Why do we need to be circular in terms of waste management?
With the ongoing population growth, the need of resources and space that are required by people will increase in the coming years, considering we change nothing. However, at some point the region will grow out of space and the earth will grow out of resources. Thus, in order to promote the capacity of the region, it is crucial to reduce what we are currently using and reuse what we are wasting in daily life.

We believe:
The key towards circular economy is to understand the AMA in terms of density, and how that results in the quality of living and waste of people.

[1] https://www.amsterdam.nl/publish/.../planam-02-2016_www-summary.pdf. Retrieved 01 April, 2018.

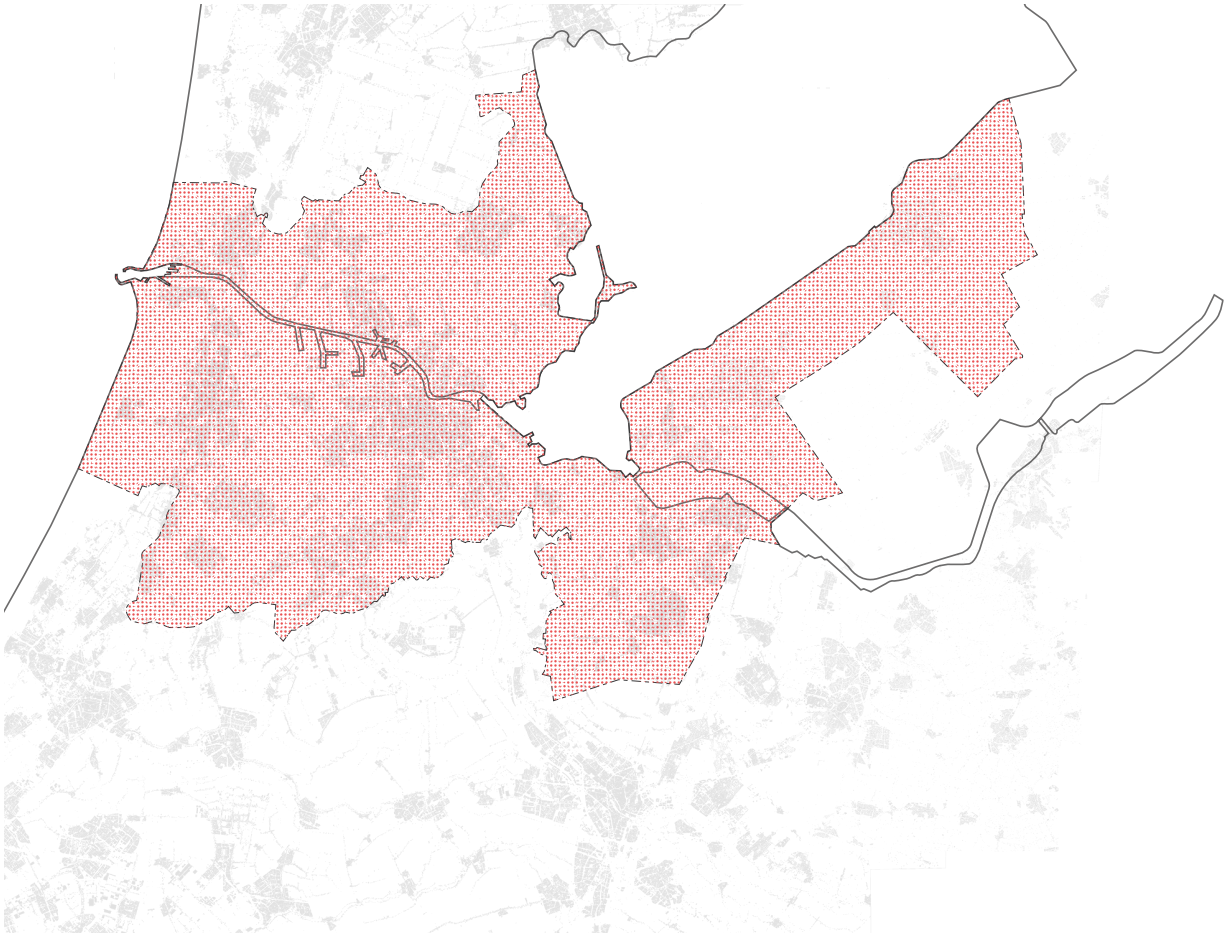


Figure 1.
The Amsterdam Metropolitan Area

III. INDEX

| 01

THE REGION UNDER PRESSURE

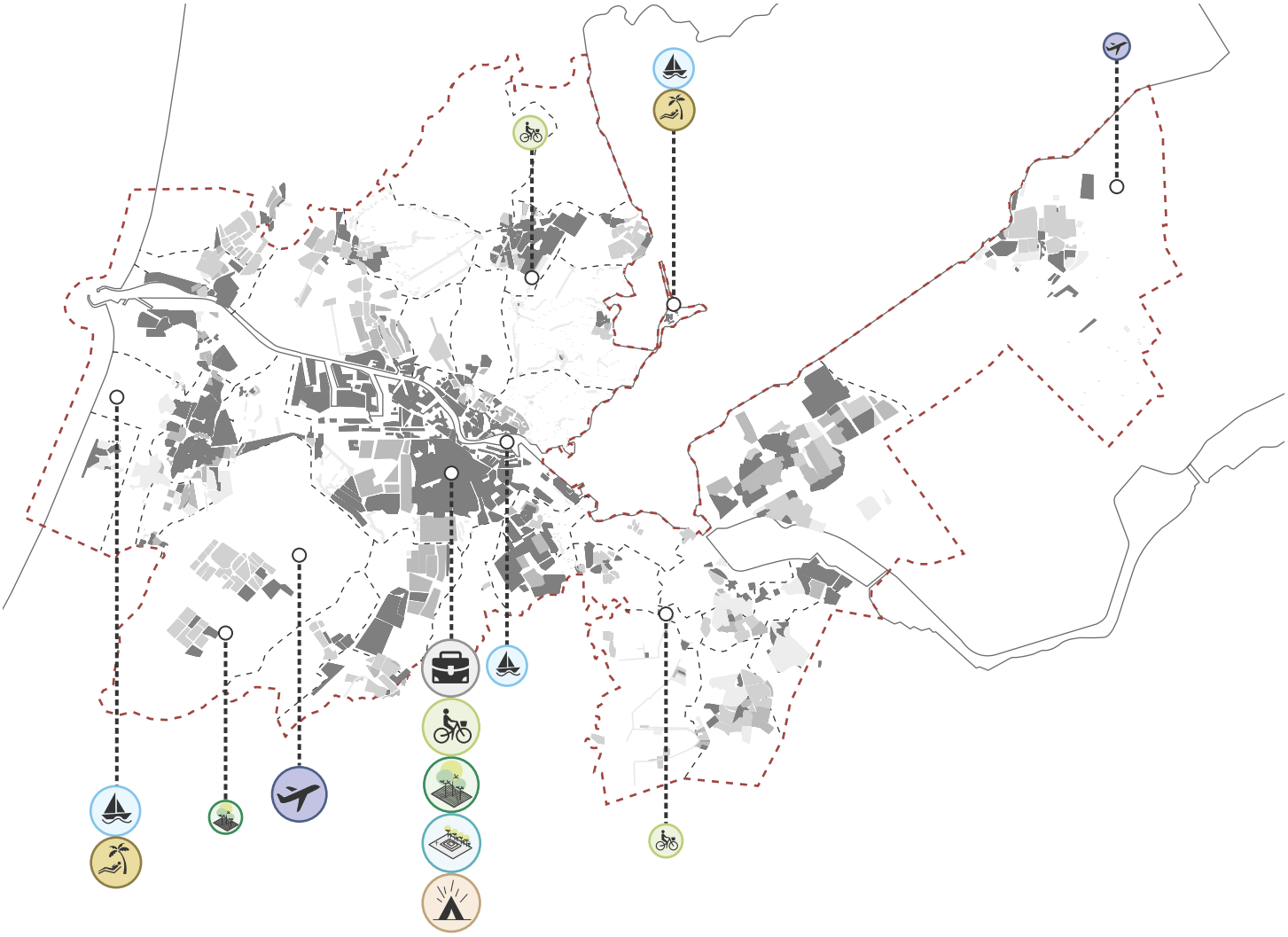


Figure 2.
Identities in the AMA in 2018, with Amsterdam as main attractive city in the region.

1.1 LIVABILITY UNDER PRESSURE | IN THE AMA

Population growth
According to Joop de Beer et al. (2017) the population growth is not everywhere in the Netherlands the same. In more urban areas, which are part from "the Randstad", the population growth was the previous years much stronger than in the other Dutch cities. This is also in line with prediction of CBS and PBL: urban municipalities will grow with approximately 13% while non urban municipalities will only grow 1% in the coming 25 years. In the AMA, this means that Amsterdam is under a lot of pressure, because this city has the highest urbanity rate of the region.

Attractiveness
The pressure on Amsterdam, however, is not only due to population growth. Other factors, which determine the attractiveness of a city, also play a role when we talk about city pressure. A London-based alternative education group, called "The School of Life", argue that there are six fundamental thing cities need to be seen as beautiful, and they say, if cities are beautiful this will reflect in the number of tourist as well (The School of Life, published in the Guardian (2015). Cities such as London, Paris and Amsterdam are often described as beautiful and have therefore, according to The School of Life, spatial order/variety of buildings, street life, compactness (density) and of course, a strong character. In the AMA this means that 46% of the total amount of tourist coming to the Netherlands, is staying in Amsterdam (Gemeente Amsterdam, 2018). From this we could conclude that Amsterdam is just stunningly beautiful or there are little attractive cities in the AMA, which do not have this variety, compactness and order in their spatial context as Amsterdam has.

But not only the international tourist is increasing the pressure on Amsterdam in terms of attractiveness. Amsterdam is also very popular on domestic scale. This is more due to the variety of the city; not in buildings especially but in functions and jobs. In comparison to the AMA, Amsterdam is a magnet which attracts a lot of commuters and day-trippers. This is great for the city economy, but it could also result in overcrowding, which has a negative effect on the livability of the city.

Thirdly, city also play an important role in terms of accessability. Because of the well developed public transport network among Amsterdam, it is more likely for Amsterdam to attract more jobs than other less developed cities. Most of the cities in the AMA accommodate only housing, have a low density and low variety in functions. This should change if we want to increase the livability of Amsterdam, and the other cities in the AMA. To accomplish this, we have written a research how we can use density (compactness) of the spatial structure as a tool to create more variety, using the existing spatial context of the AMA. This way, we believe we can make more cities attractive and circular.

Close the gap!
At the same time, we need to think about a way to add livability while thinking about improving the ciruclar economy. Why circular economy? Because in the year of 2015, only 9,2% of the extracted resources were cycled (Wandl, A. 2018). The high need of material reuse is also seen in the AMA and on national level (see fig. 4 ane 5 next page). Since we think that circulairity begins with the citizens, the people, we focus in this research on the seperation of household waste.
When we compare the national average waste per person with the average waste per person in Amsterdam, we see that we seperate more than half of our waste on national level, while in Amsterdam people only seperate 27% of their waste. However, the total amount of waste produced per person is less in Amsterdam then the national average.

In our research we will investigate the influence of urban density on the amount of waste separation, created by citizens, and how we can stimulate them to separate their waste, so we can reuse and recycle more of our resources.

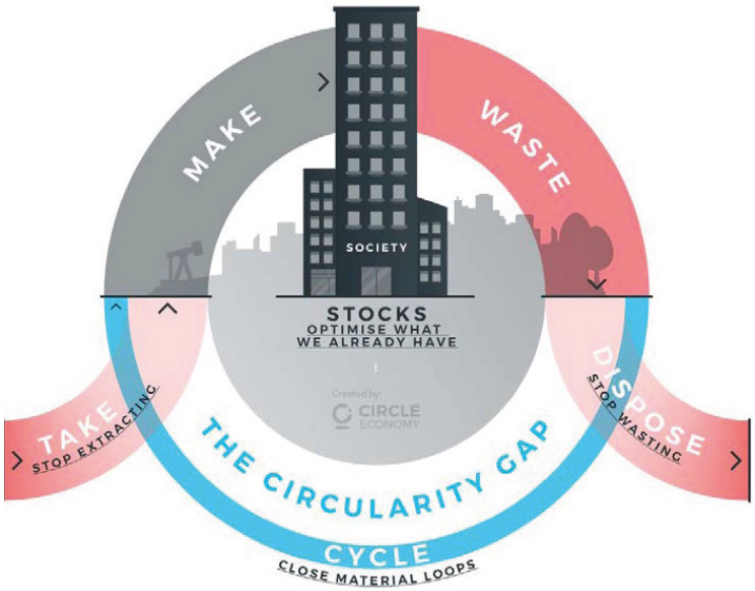


Figure 3.
Conceptual drawing of the current global problem: the circularity gap.
(Wandl, A. 2018)

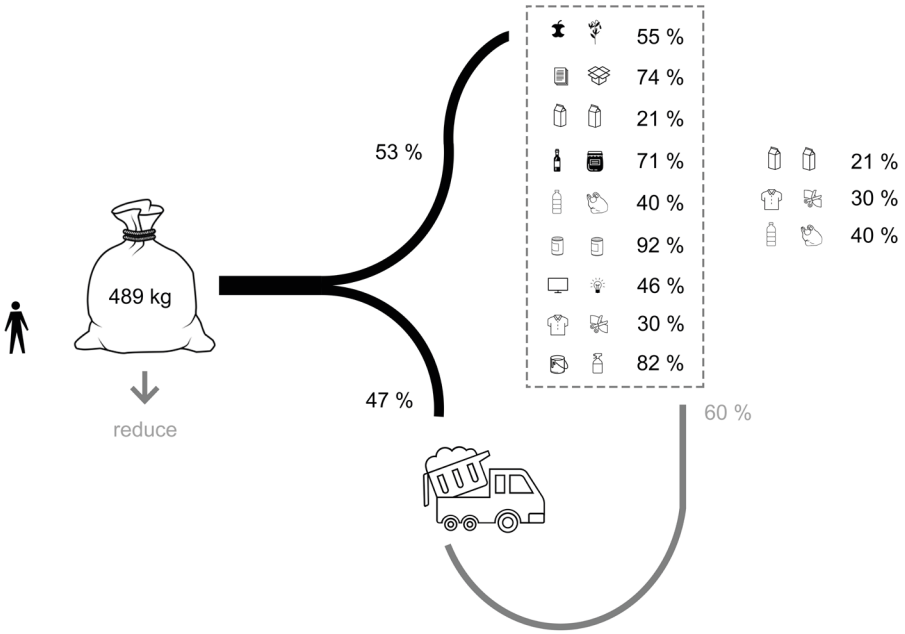


Figure 4.
National average amount of waste per person. Sources that people find difficult to seperate are milkpakkages, textiles and plastic.
(MileuCentraal, Afval scheiden in cijfers. https://www.milieucentraal.nl/minder-afval/afval-scheiden-cijfers-en-kilos/, Addressed on 10th of March.)

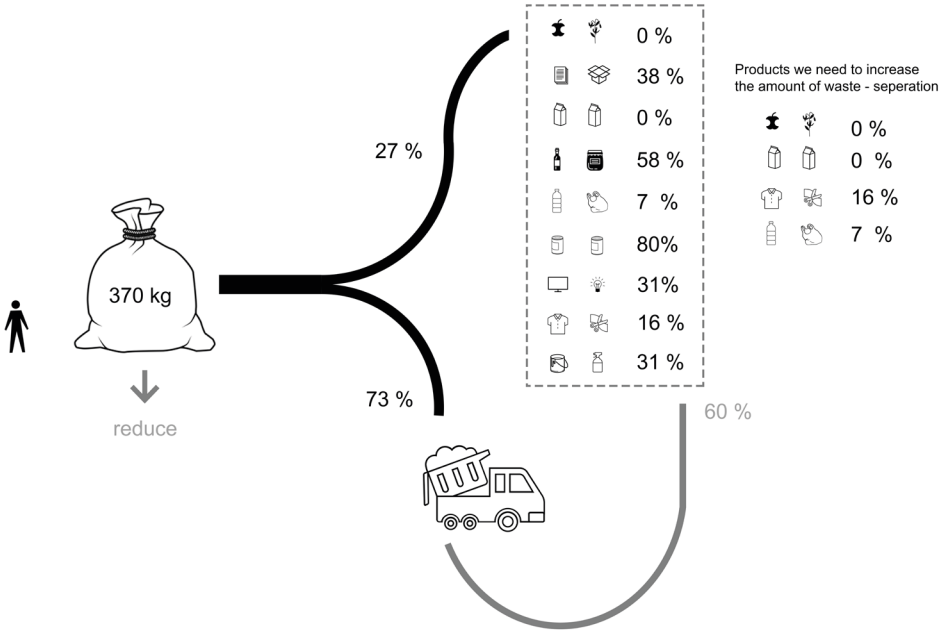


Figure 5.
Average amount of waste per person in Amsterdam. Sources that people find difficult to seperate are biowaste, milkpakkages, textiles and plastics. (Amsterdam, G, Afvalketen in beeld (2015))

People's life in AMA in terms of density

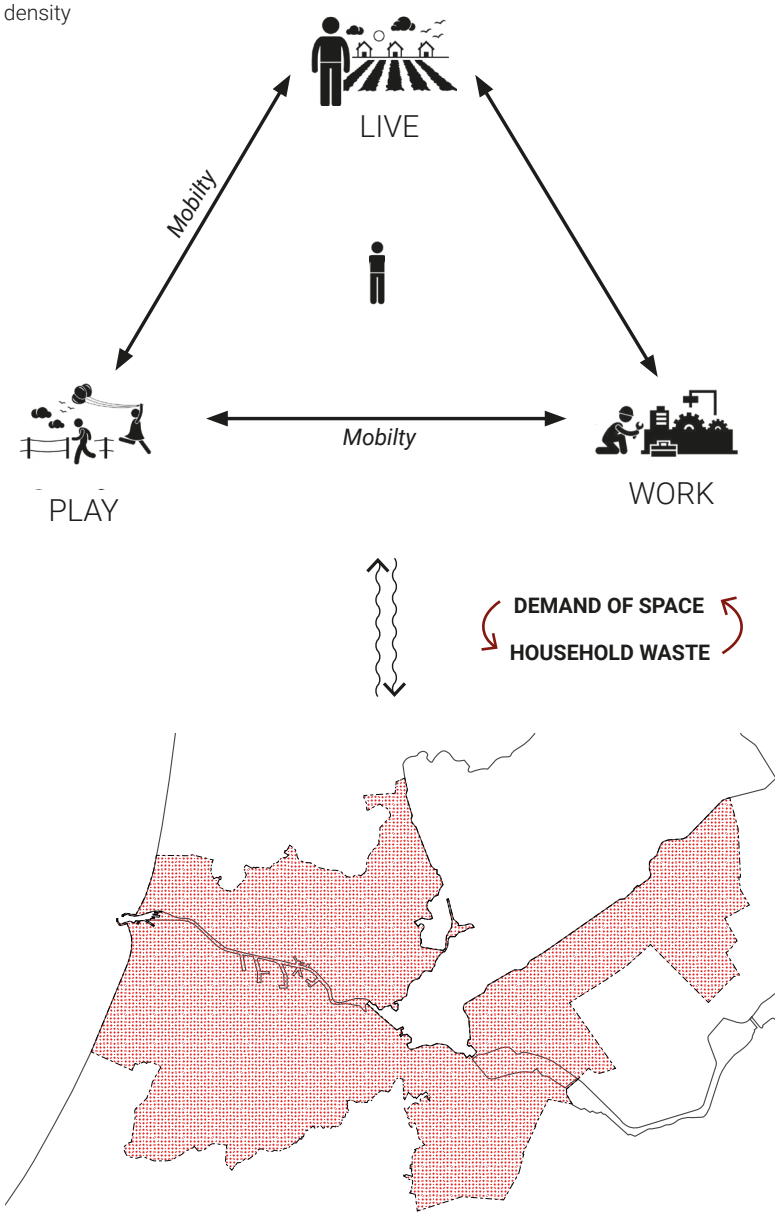


Figure 6.
Conceptual drawing of how density is influencing daily lifestyle and how this is influencing the environment of the AMA.

1.2 THE THREAT | OF UNBALANCED DENSITIES

With its 32 cities, 2 green ports, and 2 airports the AMA region is very attractive both on national and international level, in terms of welfare and economy. However, due to its spatial context and strong character, Amsterdam is put under pressure, caused by the transport network, the growing number of inhabitants and tourists, while many other cities remain underdeveloped and are not subjected to any pressure.

This has a negative effect on the livability of Amsterdam, since the pressure directly affects the everyday life of the inhabitants. The pressure that can be found in some cities of AMA, in combination with the rapid population growth and the weak transportation system in some areas causes an unbalanced density distribution in the region. Meanwhile, the demand of living space and resources in the region will continue to increase in the next years due to the population growth. Since waste separation rates and reuse of waste is still under the national goal of 2020, problems will be intensified in the coming years since there will be a need for landfill space but also for people. Thus, this will make the balance in the region even weaker.

1.3 REDUCE SPACE CONSUMPTION | DENSITY AS A TOOL

How can we reduce the consumption of space (in which we need to live and transport ourselves) and at the same time stimulate source separation, based on density analysis, in order to reuse our sources and improve the quality of life from small scale to the whole region?

Sub-questions

1 What are the main densities that we can identify in the region and how do they affect the circularity and the livability of the region?

2 What are the main problems in terms of resources that will affect people's daily lives according to the different densities of the region?

3 What is the current waste system in the cities of AMA?

4 How affects the behavior and lifestyle of inhabitants (related to the different cities of AMA) the waste cycle?

5 What are the main housing typologies in AMA and what potentials and opportunities can be identified according the different densities?

6 What are the main principles that make a neighborhood livable?

7 How can we encourage source separation and reduce the amount of waste within the spatial context?

8 What developments do we need to release the pressure from Amsterdam and balance the region?

9 How to implement neighborhood scale interventions to regional scale?

| 02

SCIENTIFIC ANALYSIS OF DENSITY

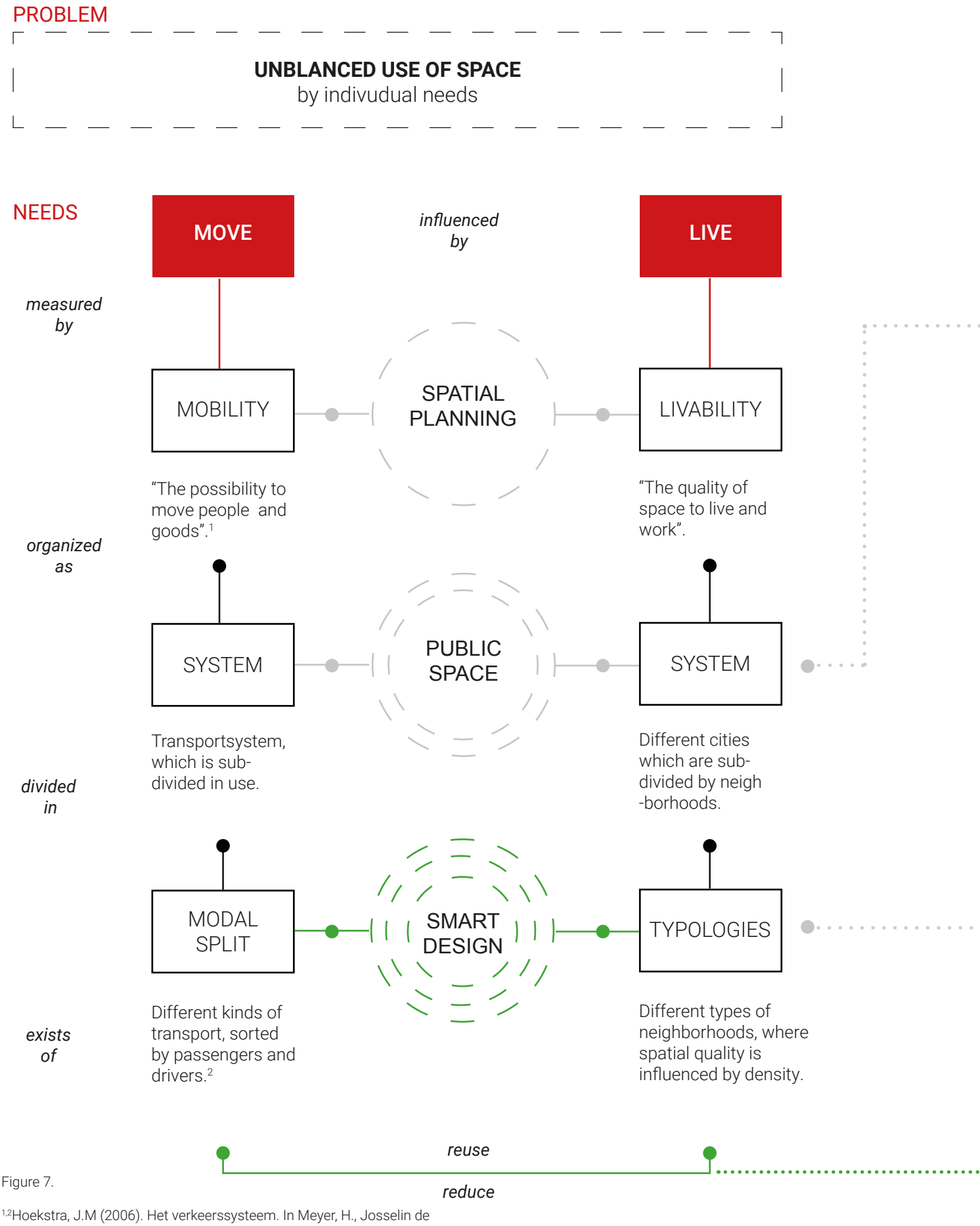


Figure 7.

[1,2]Hoekstra, J.M (2006). Het verkeerssysteem. In Meyer, H., Josselin de Jong, F., Hoekstra, M., Harteveld, M., & Cosijn, B. (2006). Het ontwerp van de openbare ruimte, p.59. Amsterdam: SUN.

2.1 STRUCTURE OF THE RESEARCH

Our approach
In order to balance the density of the entire region, we want to research how we can reallocate space and how we can stimulate shared transportation systems to make the daily lifestyle of people more circular by reducing the consumption of waste and space through the region.

To address these topics, we first use density as a tool to analyze and understand the region. We do this by analyzing people's daily lives from three aspects: live, work, and move in terms of density. This result into analyses of population density, job density and transportation density. Parallel to that, we research the amount personal waste separation, which is mostly related to population density and different lifestyles that reflect the amount of recycling and reuse of waste. Finally, we study the density of transportation which is a key element that makes the whole system work. Through data and mapping, the most urgent problems to be solved are: the increased demand for space and resources, the rates of separation of waste, and the improvement of public transportation. To tackle this, we select the most representative and promising cities, Amsterdam and Almere.

Secondly, we need to analyse densities in a spatial context, we call this spatial densities; analyzing the influence of density on urban typologies. The relevance of this is that each typology influences the use of the space in a different way. By understanding the typologies of the entire region through maps and sections, we choose the most representative neighborhoods in the city of Amsterdam and Almere to reflect our proposal design of the space by managing the waste separation and improving the mobility As a result, we create new identities or make the existing ones stronger. These reflections of the different interventions can be applied to the entire region.

Ultimately, we hope to see that AMA optimizes the rational use of space and resources which will have as a result the resistance of the increasing population. We aim towards more efficient public transportation, unique cities with their own identities that will attract national and international people and a lifestyle that will move more to sustainability where people will be more aware and active in separation and reuse of waste.

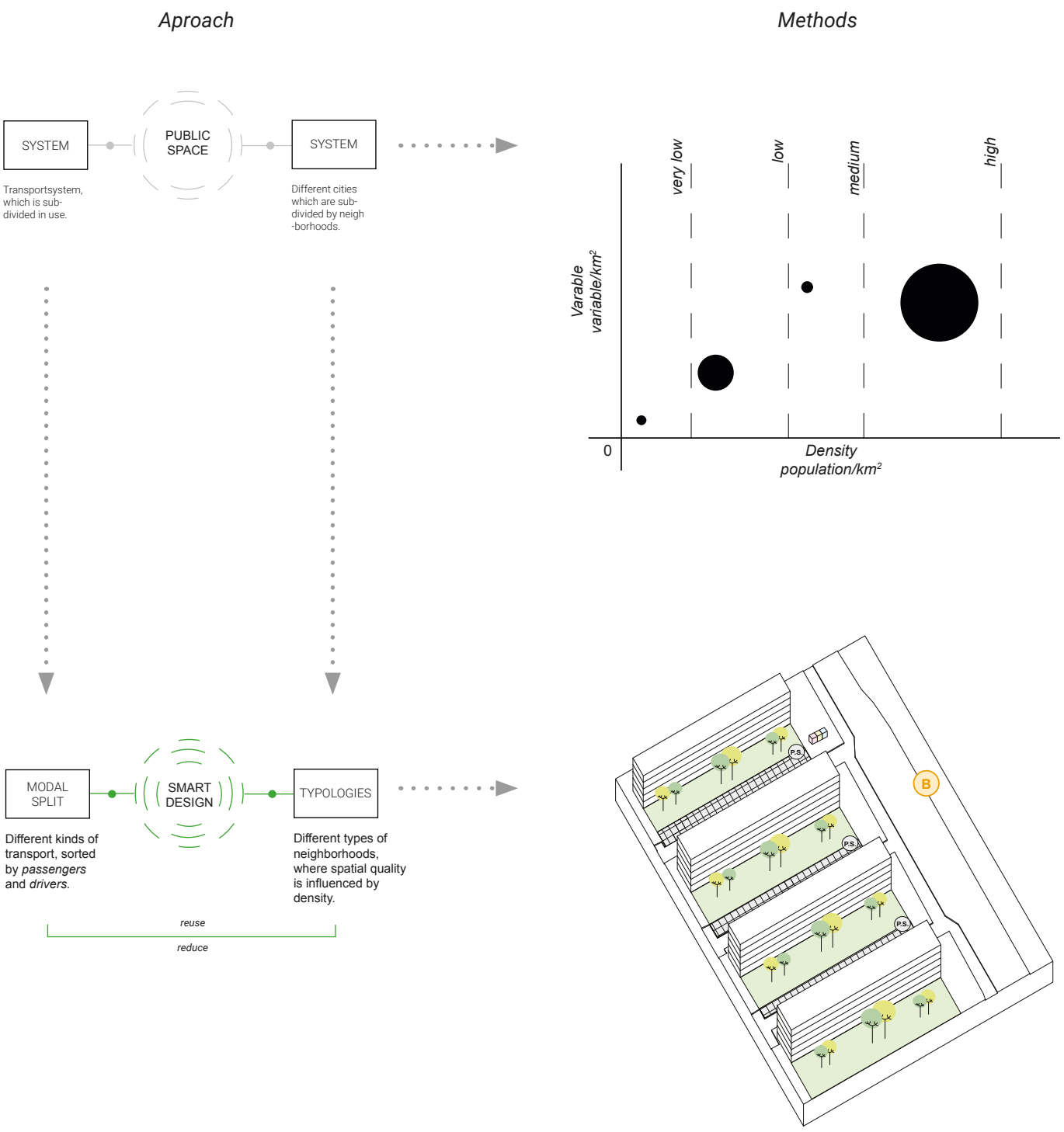


Figure 8.
Conceptual drawings of used methods. From top till bottum: data (scatterplots), and spatial (typology) research to understand the metabolism of the AMA.

2.2 SCIENTIFIC METHODS | TO ANALYZE DENSITIES

Data analysis (regional analysis)
In order to analyze the effects of different densities on living, work, mobility and personal waste from a regional scale, we decided to compare the data of the municipalities we got from the Central Bureau of statistics (CBS). This way, we get the relationships between the various densities and are then able to identify unbalanced distributions of resources.

This research was performed using scatterplots that directly show the vast differences but also similarities between the municipalities of the AMA.
In order to create these we used excel to calculate the relations in datasets from the CBS.This analysis helps us to:

1. Understand the regional system and help us to make decisions
2. Chose representative cities of different density to design our interventions
3. Define strategic goals of each aspect

Spatial analysis (typological analysis)
We decided to perform a spatial analysis, as we uncovered that the effects of location and spatial form were a limitation in our research into density. For this we analysed the spatial dimension of density, mobility, neighborhood typologies, waste management and wasted or unused space in order to understand their influence on the AMA region. Using this we define the areas with more potential, and from this we choose two cities as areas for the final design.
In order to perform this analysis we use spacemate as our main reference and tool to measure the different densities of the typologies. This analysis helps us to:

1. Define the areas that need improvement in terms of mobility and waste management
2. Utilise the space to its maximum
3. Change existing habits and move towards a more sustainable lifestyle
4. Densify the existing facilities or add more
5. Make the existing identities stronger or create new ones

These steps will help us to create a more sustainable and livable environment and move the region towards a circular economy.

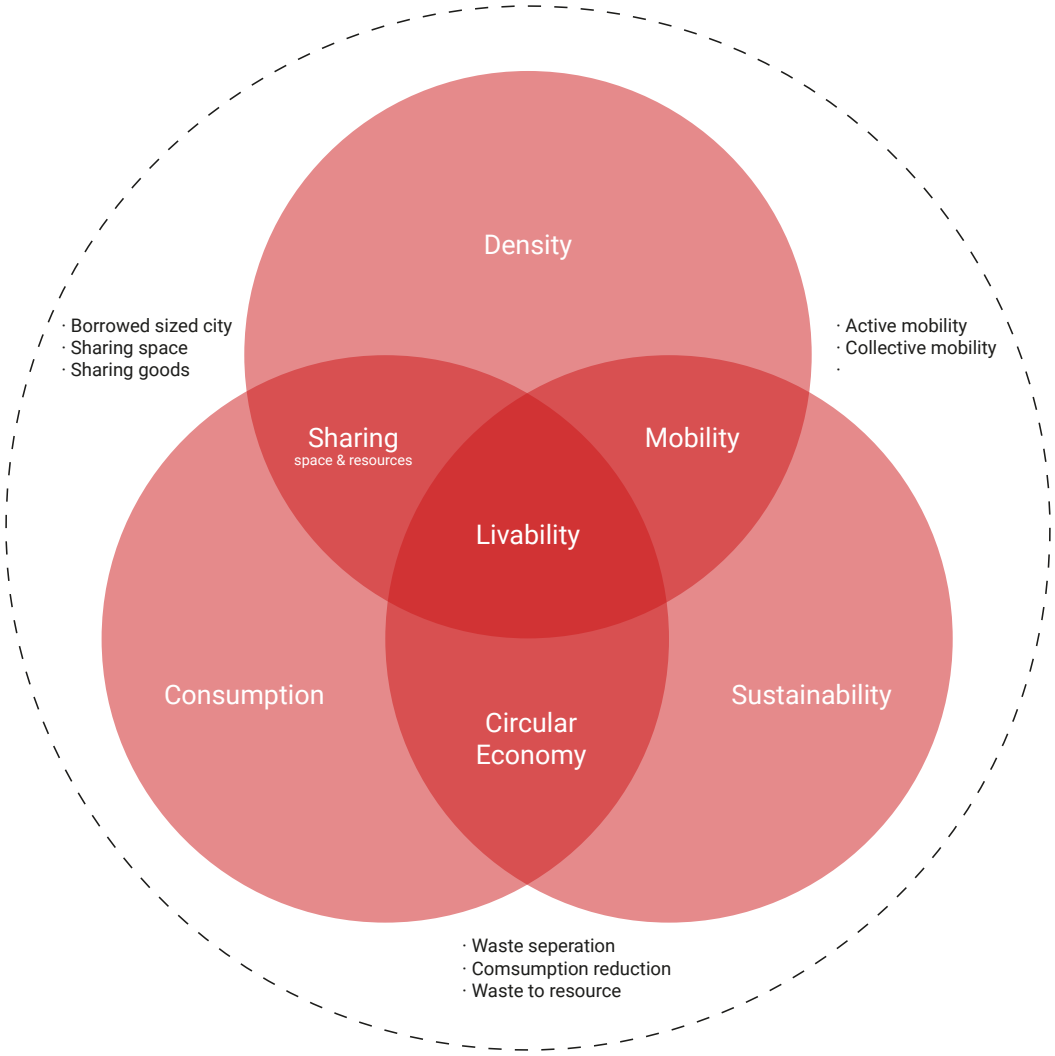


Figure 9.
Conceptual drawing of theories supporting our research.

2.3 SUPPORTING THEORIES

In order to increase the scientific validity of our project, we devised the following theoretical framework to address our problem statement. In this we address the problem with several theories and ideas that informed our design research. We framed the project as shown in the diagram to conduct the research towards a more livable AMA region where living, work and moving are central factors.

We identified three main aspects where we perceived an imbalance in what would be necessary for our pursuit towards a livable AMA. These are Density, Sustainability and Consumption. As mentioned in the previous chapters, the Amsterdam Metropolitan Area (AMA) is continuously attracting more people and tourists to the region. This is leading to an increasingly visible pressure on the city of Amsterdam. An example of this is the 35% rise of the housing prices in the last four years (Hekhuis, Nijskens, & Heeringa, 2017, p. 13). Together with the expected population increases in the AMA (Kooiman, Jong, Huisman, Duin, & Stoeldraijer, 2016, p. 14), with the city of Amsterdam even expected to reach a million inhabitants by 2034 (Kooiman et al., 2016, p. 17), potentially resulting in a vastly increased use of resources and thereby threaten the sustainability goals of the AMA. With resources becoming scarcer (Nicole Smolders, 2011, p. 1), high consumption could jeopardize future livability.

As an increasing population has to be combined with a decreasing consumption in order to ensure the livability of the region we have combined the interrelated aspects Density, Sustainability and Consumption to consumption reduction themes. Here we consider density to be the combination of different aspects, and the relationship between them within a city. These aspects are compared to each other according the size of the neighborhood or city and the population of people.
Consumption is the use of space within a city or/and the waste that is being produced by the inhabitants of the city.

Livability is the situation that is created within a city or neighborhood, where people's general wellbeing is affected by the planning of the city. We believe that in order to sustain the increasing population, the AMA needs to focus on Mobility, the Circular Economy and the sharing economy.

Sharing space and resources
The first part in our strategy to lower resource consumption per capita consists of stimulating the sharing economy. The Netherlands already has an ecological footprint exceeding 4 ha, while less than 1,8 ha is available per person globally(Maas, Haikola, & Hackauf, 2010, p. 166). Our hypothesis is that increasing density will be accompanied by an increasing resource consumption unless measures are taken to curb this development. As we saw before, the higher demand for space in the AMA region has led to rising prices due to the mismatch in the market. The demand far outstrips the supply of housing in municipalities like Amsterdam. There the citizens are limited in their use of space due to financial and spatial constraints.

To further decrease the use of resources we propose to strengthen the sharing economy. On the level of the agglomeration this is shown by the "borrowed size" concept. This concept is described by Meijers and Burger as follows:

"Size borrowing occurs when a city exhibits urban functions and/or performance levels normally associated with larger cities as a product of interactions within networks of cities on multiple spatial scales that provides a substitute for the benefits of agglomeration." (Meijers & Burger, 2017, p. 288)

In the context of the AMA it is clear that the city of Amsterdam hosts a variety of functions that it could not support by itself (Metropool_Regio_Amsterdam, 2018). Burger et al further continue their research on what it is specifically that makes certain areas become new centralities while others fail to do so. They mention international connectivity as a major factor that can even lead to a smaller area outperforming a larger city. (2015) In the case of the AMA this connectivity could be a major factor for the consistent attraction of Amsterdam over the other municipalities.

Interestingly the research of Burger et al also raises the point citizens often accept the higher costs of living in cities due to the wider availability of services and cultural amenities in the city(Burger et al., 2015). This prompted our question whether similar dynamics may underlie the potential of the sharing economy as more limited private space is combined with higher densities of population.

In our approach towards the sharing economy we focus on sharing of both space and goods as these are closely connected to density. Apart from this offering new opportunities to 'borrow space', this could potentially increase the livability of our increasingly dense cities.

In addition to being more economically sound, sharing goods becomes more attractive for people when their sale price is higher. (Hamari, Sjöklint, & Ukkonen, 2016) Hamari et al also state that even when participants don't contribute equally to the sharing of goods there is an overall ecological, economic and social benefit to this concept over individual ownership as long as participation in the system remains enjoyable and contributions are enforced (2016, pp. 2056-2057). Our expectation is that this leads to a wider adoption of such systems and concepts in higher density areas and so contribute to a lower resource consumption.

Mobility

The second part of our strategy to lower consumption is mobility. With the increasing centralization of functions towards Amsterdam due to the aforementioned Borrowed size, there is increasing pressure on the different transport systems within the region. However, we expect that with increasing population densities, collective and active mobility we will have a greater potential for development, decreasing the use of private passive mobility.
Here active mobility consists of walking, cycling etc, while passive mobility refers to motorized transport. Passive mobility can then be further subdivided in collective mobility and private mobility.
As active mobility and collective mobility have a lower impact on space and resource consumption, we decided to focus on increasing the share of these modalities compared to private passive transport. This we combine to research the opportunities of combining Transit oriented development with active transport.
A curious thing we must keep taking into account here is that not the travel time, but the amount of comfort is a major factor in the choice for a particular form of modality. Increasing efficiency in travel times just seems to increase the travel distances.(Verkade, 2017)

Circular Economy

One of the key factors of our project is to create a more circular economy. For that we focus on the approach discussed by McDonough and Braungart in their book Cradle to Cradle (2002). This approach is based on closing the material cycles and reusing materials in a high quality instead of the loss of quality often brought about by recycling. (2002, p. 56)
With the current low rates of household waste separation this cannot sufficiently be achieved. For this the terms at source separation and post collection separation need to be introduced. At source separation consists of separation of the waste streams by the inhabitants themselves, while post collection separation consists of separation at the waste management facility. The city of Amsterdam itself states that spatial constraints make household waste separation more difficult in high densities. (Gemeente_Amsterdam, 2015, p. 10)

With the largest municipality choosing post collection separation as the standard method for waste separation due to spatial restraints there seems to be a design challenge for us for a shift towards at source separation. Especially since even the AEB admits that post collection separation renders lower quality materials than at source separation. (AEB, 2017)
In the DIFTAR or Differentiated Tariff system, the citizen pays according to the amount of waste he or she produces. This system has however mostly been applied in rural municipalities and there seem to be risks to applying it in urban municipalities like dumping of waste to evade payment (Allers & Hoeben, 2009)

Process
Our key ambition is to increase the livability within the region of the AMA. In order to create a greater livability in the region we must not only question the existing spatial reality, but also the current market-oriented development model. According to De Gier, the shift towards the "participatiesamenleving" coincides with a shift from redistribution of resources to investment, central coordination to decentralization and a shift from collective to individual responsibility (2007).

This is starting to have real implications for the development of the cities of the AMA. The shift from redistribution to investment is most clearly seen in how the privatization of the GVB in Amsterdam coincides with a focal shift towards the more profitable lines over those many in poorer areas depend on (Veen, 2017). The trend towards decentralization of spatial planning has been an ongoing development throughout the last decades (Nadin & Stead, 2008, pp. 41-43). The individual responsibility, and space for citizen initiatives is thereby an area that is currently experiencing ongoing development with organizations like Participatiemotor.

This is however not a new development within the AMA. The city has conducted a variety of research into this topic. One of its investigations concluded that the potential for citizen participation is not equally distributed, with the higher educated population being more likely to participate in neighbourhood participation processes.(Gemeente Amsterdam, 2013)

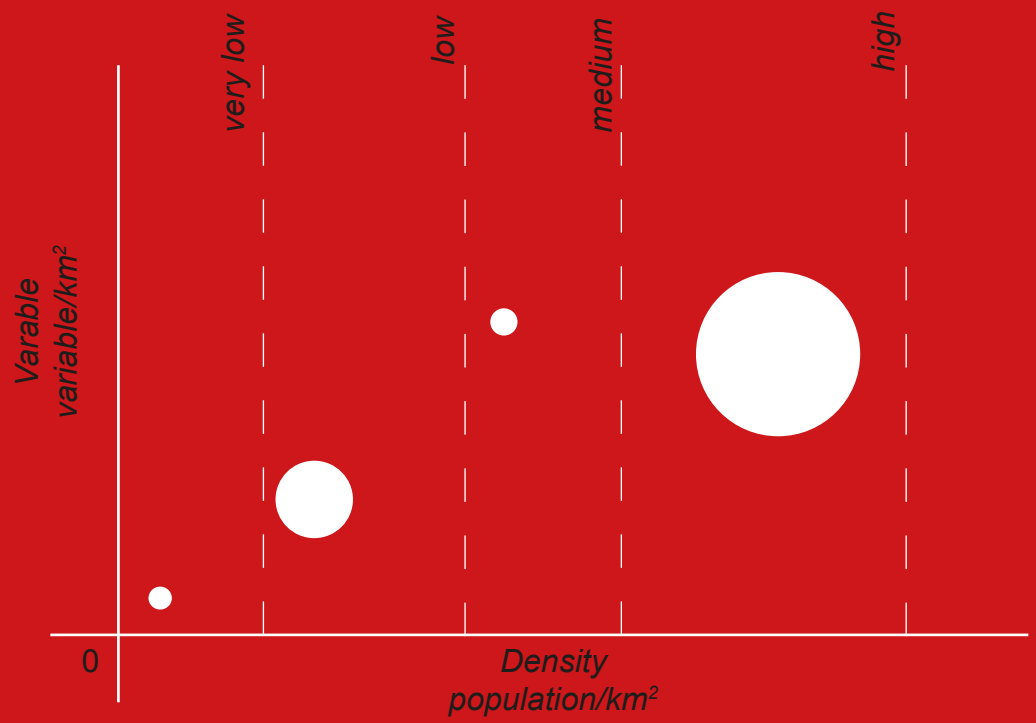
In the past we have seen citizen activation can have a profound influence on how the city develops. An example is how Amsterdam's city centre was largely saved from demolition and modernist reconstruction through massive mobilization of citizens. (Verkade, 2018)

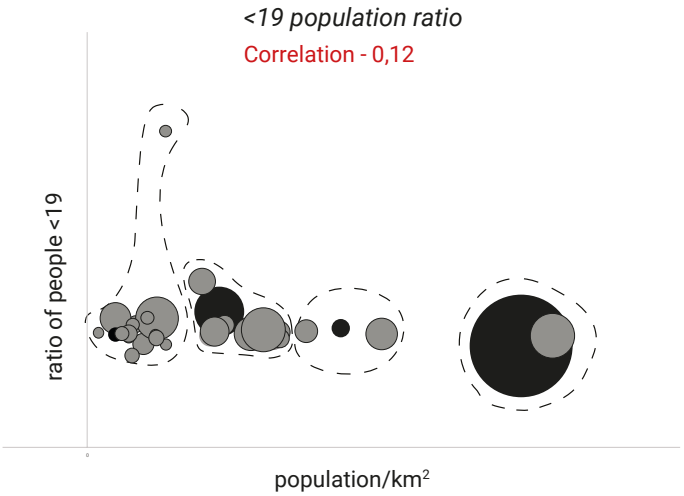
Verkade describes this as the effect of a large-scale development being imposed on a population that was largely opposed to it. Partly due to their lack of influence on the planning process and the perceived distance of power, many sought to 'exert influence' through squatting and confrontations with law enforcement (2018). That is something we would like to avoid by incorporating citizen initiatives and decisions into our strategy at an early stage to tackle the challenges the AMA is facing.

We define identity as something that attracts people in one space or a city. This could be either an activity, the character of a city or the variation of jobs. The main focus in the project is to find what and where are the current identities in the different cities of the region, if there are, and make the existing identities stronger or introduce new ones through our vision.

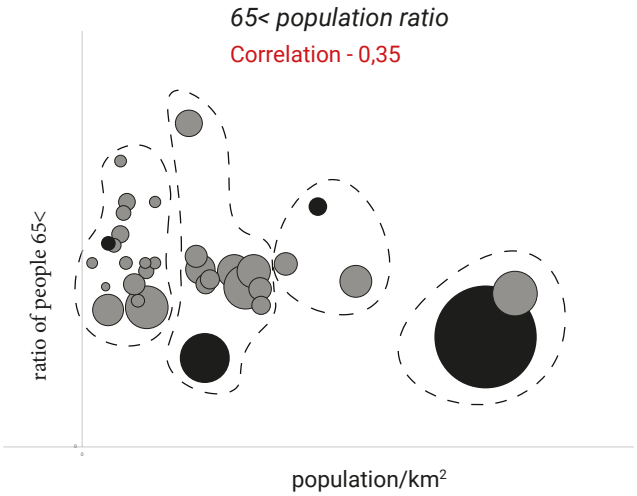
| 03

COMPARING DENSITIES

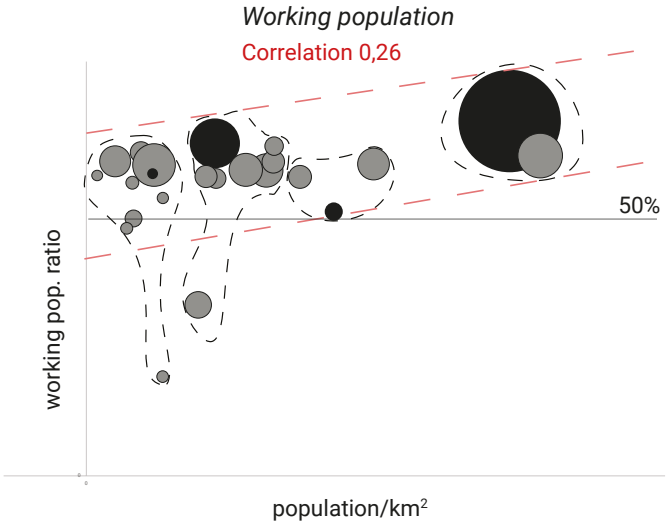




The ratio of population that is or is under the 19 years old, we describe as 'youth'. We see that, apart from Laren which has an outstanding amount of youth, the rest of the cities are behaving quit the same.



The ratio of population that is or is above the 65 years old, we describe as 'elderly'. Especially low dense and small towns have more elderly than denser cities, or cities that have more inhabitants.



The ratio of population that is capable of working (between 19-65 years old) is related to the population density of the city. In the AMA, still most of the population of the AMA is above 50%. There is a lot of demand for jobs.

1 cities are oriented towards a work environment, rather than a living environment.
2 cities are oriented towards a living environment, rather than a work environment.

Only a few small cities and Amsterdam are work oriented, while through the AMA is a lot of demand for jobs. This makes Amsterdam likely to be a center for commuters.
Demographics and jobs municipalities (CBS, 2015)

● Waterland, Almere, Heemstede Amsterdam.
⬚ Density clusters; from very low density (1) to high density (4).

Figure 10.
Data research of the characteristics of the AMA, in terms of population density.

3.1 REGIONAL IMPACT OF DENSITIES

This chapter is about how we analyse the region, in terms of density. As we have already stated, this chapter "Comparing densities" helps us to understand the regional system. Can we find data, providing us with information why urban cities are more attractive than other cities? What consequence has this on the AMA?

From the introduction we understood that a lot of factors are determining the spatial context of a city or region. To have a first impression of the character of region, we first analyzed the types of population per municIpality in the region. From that, we could calculate the amount of working population. See the fugures on the left side of the page.

So by comparing different densities, we conclude that, while the demand of work is very high (working population), the cities that accomodate jobs are just a few. This means a lack of job variety in the region, and could be one of the reasons why Amsterdam is more attractive than Waterland (1), Almere (2) or Heemsted (3).

This way, by comparing densities with each other, we will analyze the relation between density and transportation and waste management in order to know how the use of space and resources are now distributed in the region and where we have to do more research in order to achieve a circular economy which will increase the livability in the region.

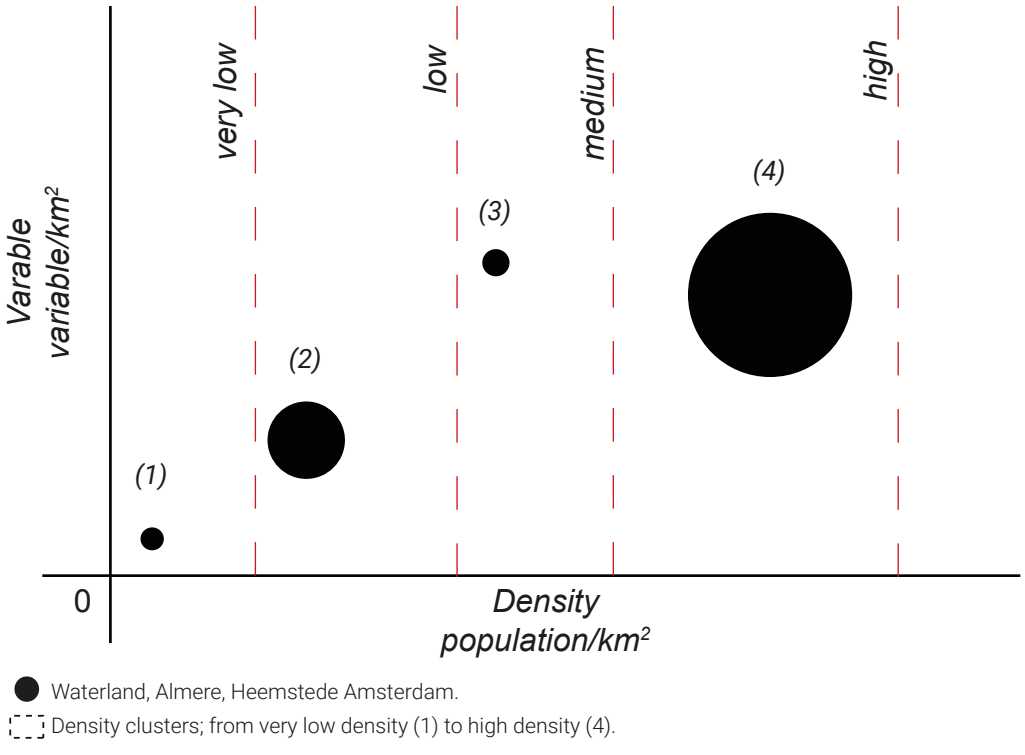


Figure 11.
Conceptual drawings of the scatterplot, and the different density clusters. For each cluster, a representative city is chosen. From left to right: (1) Waterland, (2) Almere, (3) Heemstede, (4) Amsterdam.

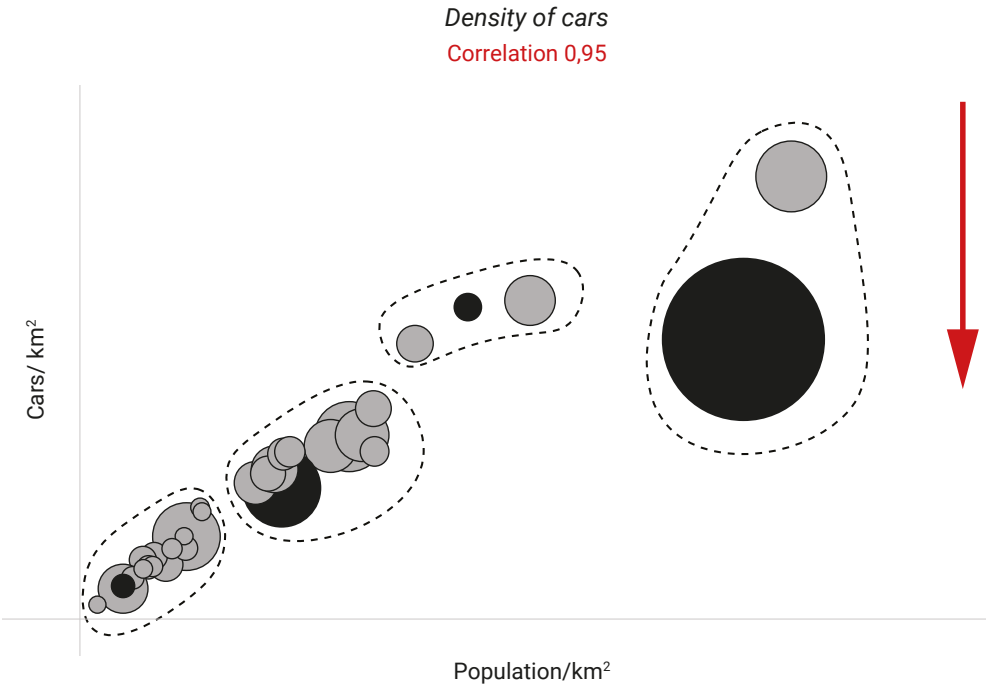


Figure 12.
Scatterplot of the amount of cars in use per kilometer.
The correlation in terms of density is very strong. Cars per household (CBS, 2016)

● Waterland, Almere, Heemstede Amsterdam.
⬚ Density clusters; from very low density (1) to high density (4).

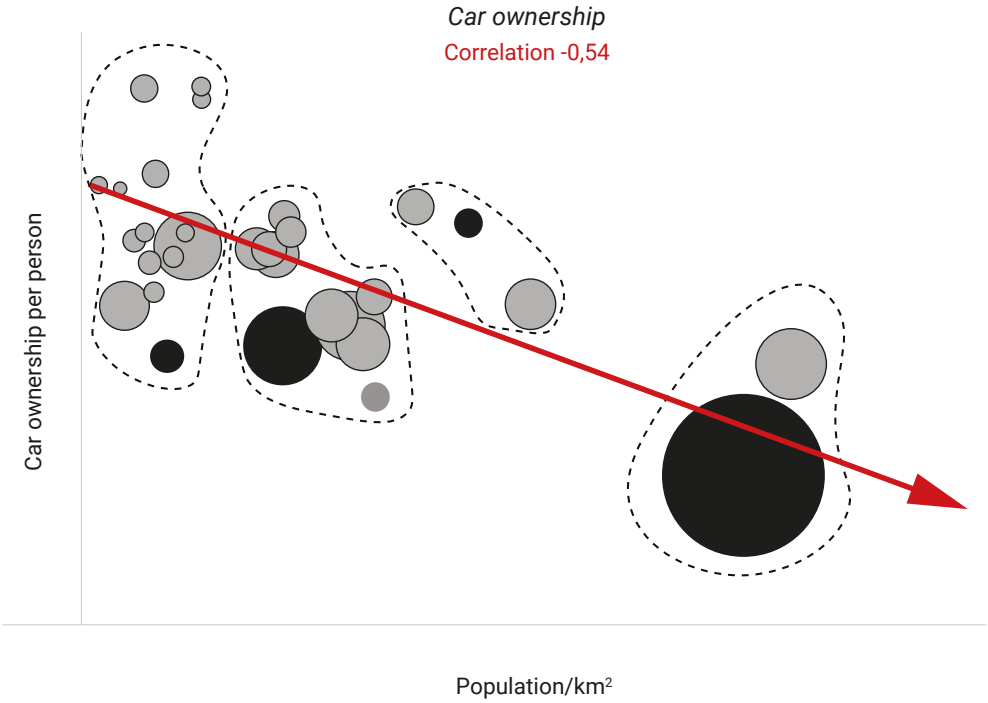


Figure 13.
Scatterplot of the amount of cars owned per person.
The correlation is strong, and if we compare this graph with the car use/km², we see that around Amsterdam and Heemstede is a lot of car movement, but that the most of that is due to commuters from other, low denser cities.

3.2 DENSITY OF TRANSPORTATION

Density of car use
We suspected mobility to be a factor strongly influenced by population density and as such decided to analyse the data of car ownership and shared mobility in the AMA municipalities. For public transit we decided to map it, but we expect it's share to also have a strong relationship with density as 2 of the busiest train stations in the Netherlands, Amsterdam Centraal and Schiphol Airport are located within our area.
As we can see (fig.11) there is a strong positive correlation between the amount of cars/km2 and the population density. It is clear that Amsterdam diverges the furthest from the expectation, but that may be due to a combination of spatial factors and the fact that car ownership is lower.

Density of car ownership
Next to car use which is influencing the density and capacity of the road network, we also look onto the ownership of cars, related to population density. As a result, we see that there is a moderate negative correlation between the ratio of car ownership and the population density. As such the density of the municipality seems to play a part in the likelihood of inhabitants owning a car.

On the next page we also see the connectivity of cities due to public transport, in terms of train station density. Amsterdam is very well connected on the railway network, whether Almere is only connected with Amsterdam and Lelystad by one or two stations. That's why a car might be more convenient .

Consumption of space
We chose to include this data in our research as it relates to the use of space. The red rectangle is the land area currently necessary to park the total amount of cars owned by people in the city of Amsterdam. It is clear that it is of comparable size to the Zuidas neighbourhood.

Considering that Amsterdam attracts many commuters from the region, many of which travel by car, this may take up a much larger space in the municipality.

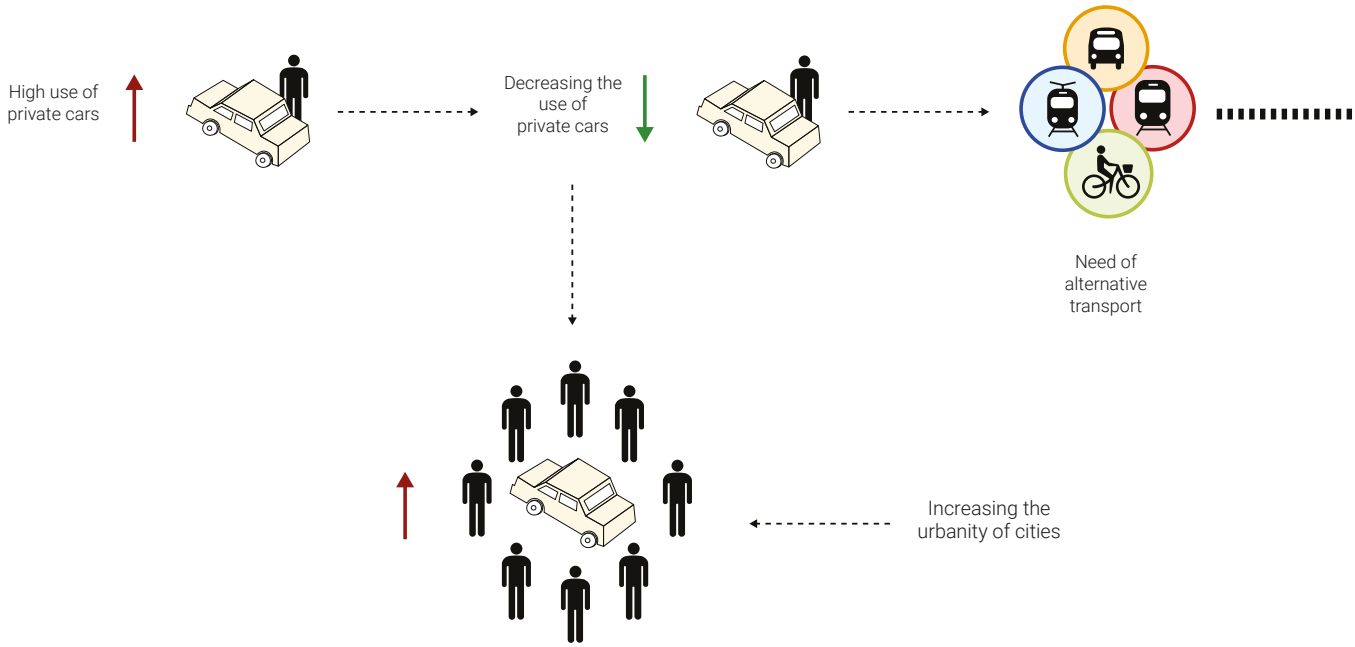
The next page shows the result of all these commuters: a lot of traffic on the road!

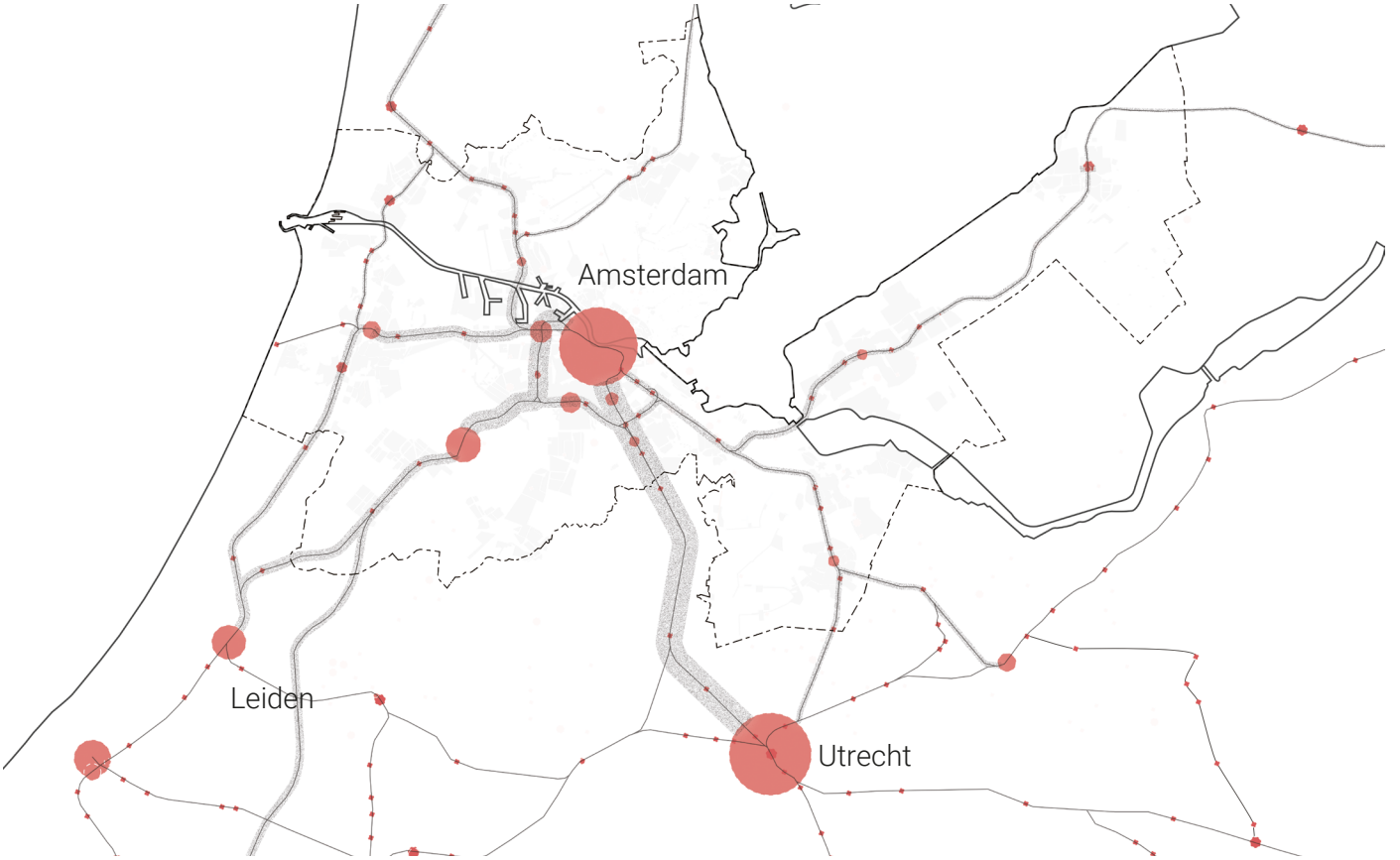
Figure 14.
Space consumed by cars owned by people in Amsterdam.

Road capacity

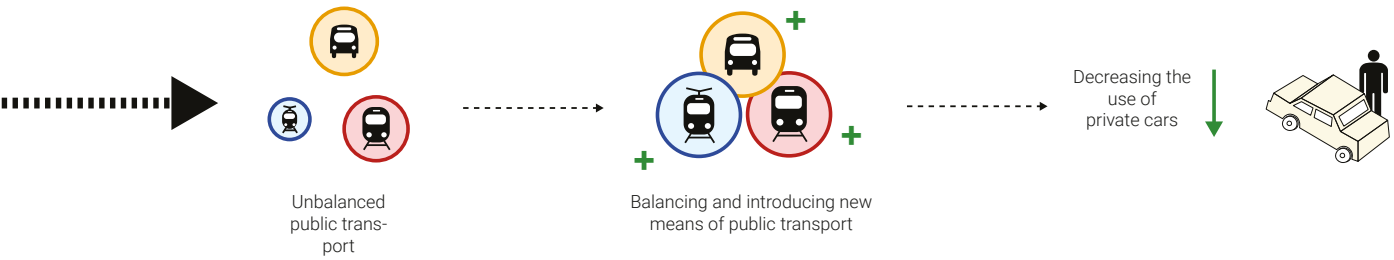
Due to the car density/km^{e} and the amount of car ownership, around Amsterdam conjecture is the main result. This is bad for the environment, and also bad for our health. Between Amsterdam and Almere the conjecture is the highest. We should decrease our car use per person, and make the public transport network stronger, also in low dense areas. (ANWB, 2016)

Conclusion:





Train station density
The railway network is much stronger towards the Randstad (Leiden, Utrecht) at the south side of the AMA. Amsterdam had the highest density of train stations, while lower dense areas have not that much. Number of travelers per train station (NS, 2017)



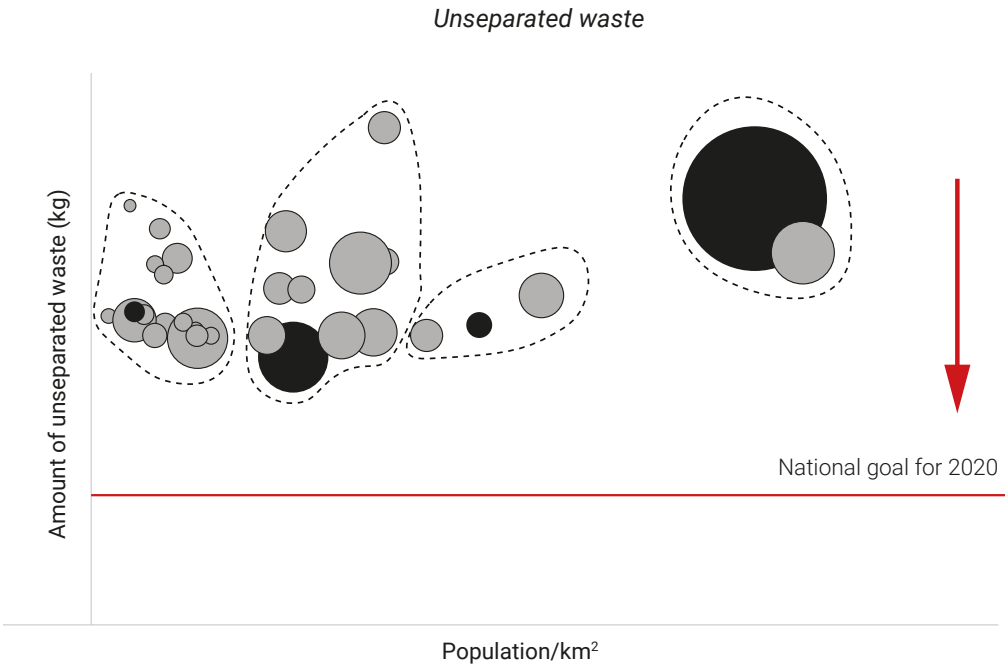


Figure 15.
Scatterplot of the amount residual waste per person.
The average around 370kg per person, while this should be 100 kg per person in 2020.
Waste dataset (CBS, 2017).

Waterland, Almere, Heemstede Amsterdam.
Density clusters; from very low density (1) to high density (4).

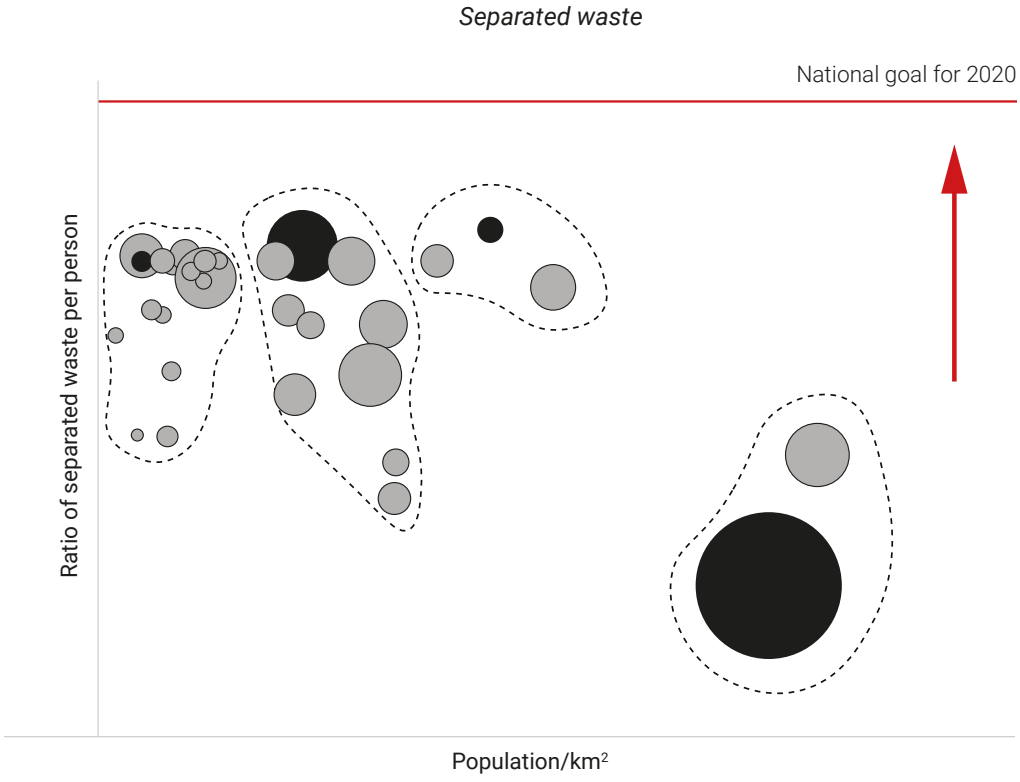


Figure 16.
Scatterplot of the amount of waste that is source separated per person.
High dense areas now have difficulty with source separation, than low dense areas.
Still the national goal for 2020 has not yet been reached.
Waste dataset (CBS, 2017).

3.3 DENSITY OF WASTE

Waste management in the AMA
As currently none of the municipalities of the AMA complies with the standards the national government has set up for the separation and reduction of household waste, there is a significant challenge for the municipalities.
In order to get a better understanding of this issue we decided to research whether separation and reduction of waste are related to population density.

Other factors involved

(1) There appears to be a weak correlation between the total amount of unseparated waste and the population density. This means other factors such as policy, behavior or typologies must account for these differences.

(2) The moderate negative correlation we find between the amount of waste separation defies our expectation that there should be a positive correlation and suggests there are spatial, policy and behavioral reasons for this.

(3) The weak to moderate negative correlation of waste production per household compared to the density suggests that density does play a role in waste production, but it can not fully be explained in this way.

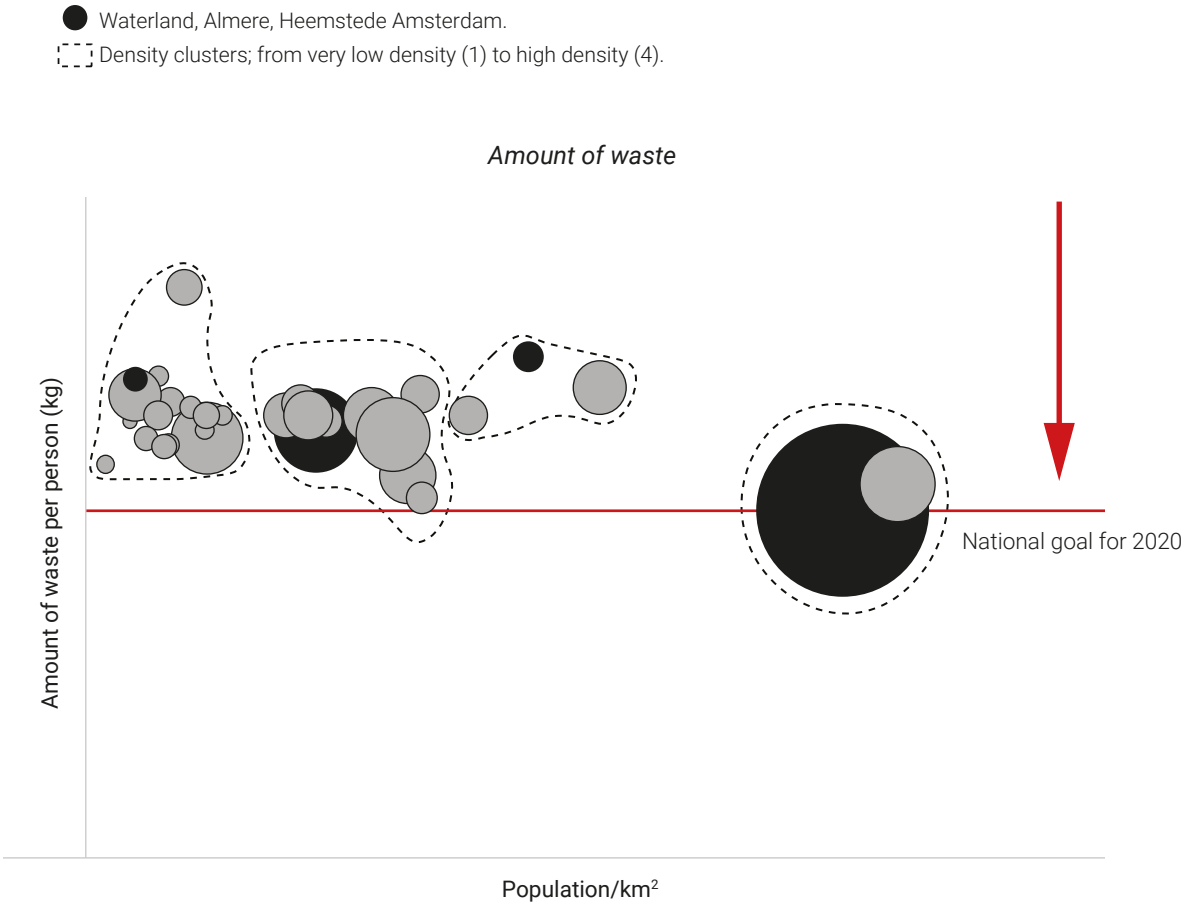


Figure 17.
Scatterplot of the total amount of waste produced per person in the AMA. Especially low dense areas have to reduce their waste production, while high dense areas should increase their source sepreation to reuse and reduce waste production.
Waste dataset (CBS, 2017).

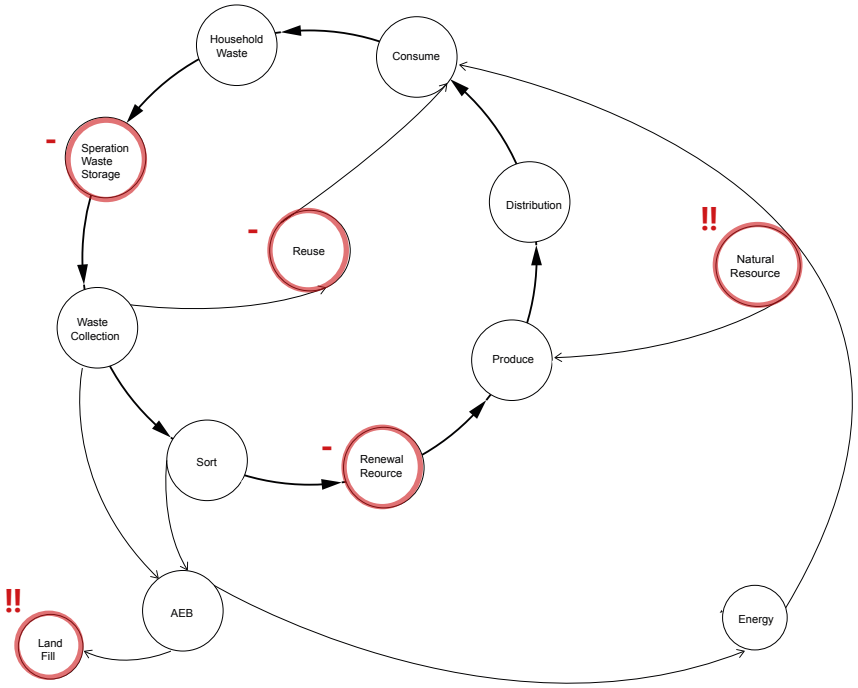


Figure 18.
Small household waste circle at the moment. If we want to develop the region towards a circualr economy, we have to improve the source separation. (Amsterdam, G, Afvalketen in beeld (2015))

3.4 DENSITY INFLUENCING LIFESTYLE

The way we move and live
Based on the data we gathered from CBS we were able to conclude that the age distribution is not primarily related to the municipality's population density. This is contrary to what we expected to find. Mobility on the other hand did show a strong correlation to population density. While the number of cars in use per km^2 increases as densities continue to rise, the rate of ownership drops. This may have to do with either the spatial consequences of high densities complicating the practicality of personal cars, but also other factors, like income and household characteristics are influencing car ownership (see Appendix I).We also see that due to the car-oriented spatial developments since 1900 (when the car was invented) cars are taking up an increasingly large part of the city.

When it comes to waste production the data completely defied our expectations. Our preconceptions that high densities would mean a higher feasibility for at source separation, instead these were the environments were there was the least amount of separation.

The waste production however was considerably smaller, and closer to the national goal for 2020. This asks for a more thorough research in how to increase the at source separation in high dens environments.

Almere and Amsterdam
For our further research we decided to choose the cities of Almere and Amsterdam as they have very different in densities and the relationships between density and other factors.

Moreover, Amsterdam is a high density municipality, which has a large history of spatial planning, while Almere is a lower density municipality and is considered more as 'a new town', since it emerged in 1976 when there was a increasing need of housing.

We believe that they provide an interesting starting point to get a better grip on the spatial context of the region, considering the influence of density.

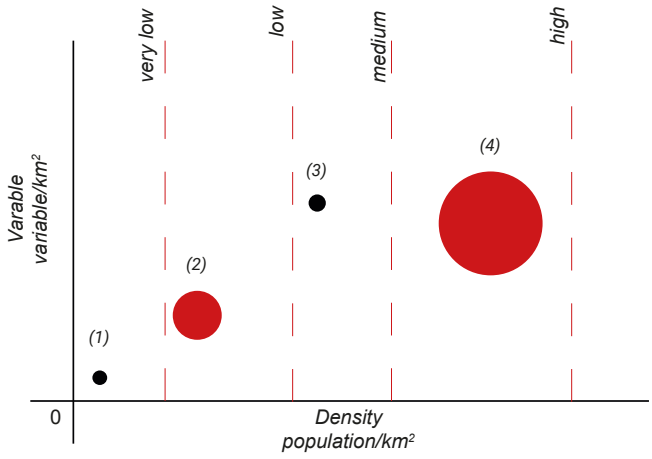


Figure 19.
Conceptual drawings of the scatterplot, and the different density clusters. For further research we pick (2) Almere and (4) Amsterdam.

| 04

IMPACT OF SPATIAL DENSITY

4.1 MEASURING SPATIAL DENSITIES

In this chapter we are further investigating the main typologies that we identify on the region. We analyze the different typologies of existing spaces in terms of quality, waste management, mobility and housing density of the space. Then we compare the typologies of the two cities, Amsterdam and Almere, the two cities that we reflected our overall research and later on our vision and strategies.

Before the typology analysis, we need first to have a look on what is the house density, how are we going to measure it and why is important for us. When we talk about density of housing or building in general we mean the amount of people (or inhabitants) that can live in a certain space (or building).

In order to identify what is the density of each typology we use “Spacemate”. Spacemate is a tool for designers to help them measure the capacity of an area and shows the relationship of space and form (Pont & Haupt, 2004). The graph below shows the different typologies and their densities. We use the graph to identify where the typologies located and then measure their density. The measure of density was done in different ways: FSI, GSI, OSR, and L. Each way shows a different aspect of the buildings and the space around it as it can be seen in figure 20.

But why the density of the different typologies is important in our research? Since density is the way of researching in this report, but also the tool that we will use to draw our intervention, we need to understand what the density of these typologies is, how many people can these typologies can fit in, and how much space, if there is, can we use to densify housing or other facilities in the future.

In AMA we identify six main typologies: Open block, medieval block, Cauliflower neighborhood, closed block, Villas neighbourhood and half closed block. The next drawings reflect the relationship of spatial design, population density, open spaces and mobility. All these aspects influence our daily life.

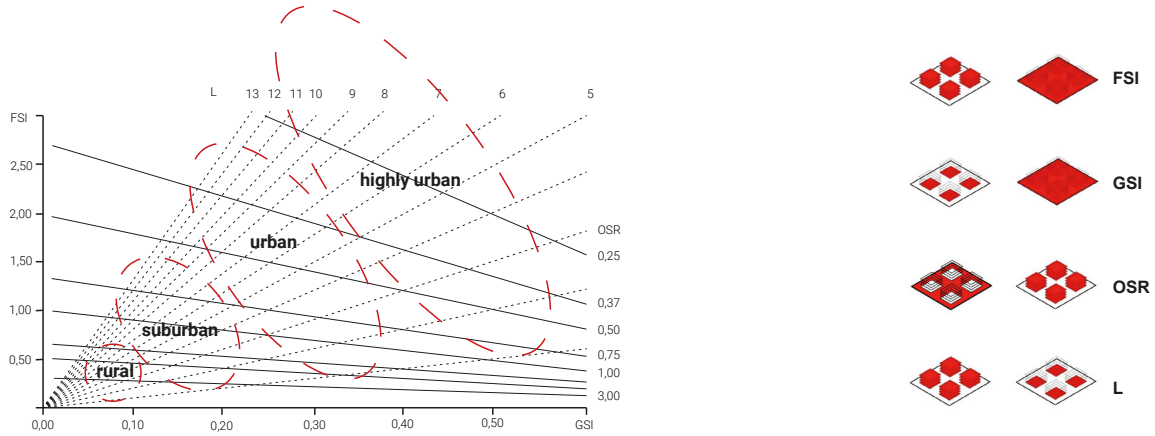
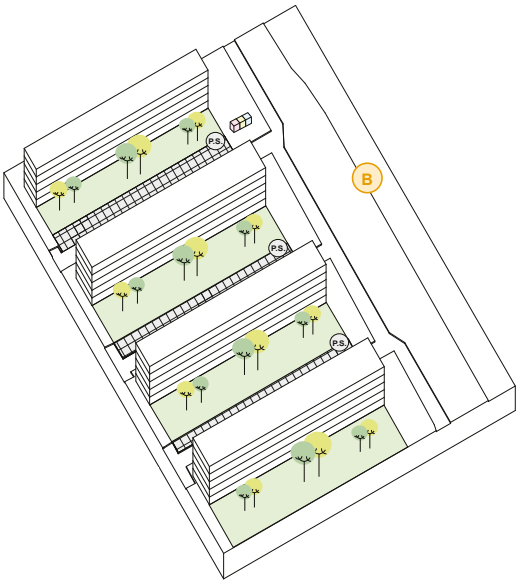


Figure 20..
On the left we see the character of living environments in relation to their spatial density.
Next to that, we see the measurements tools to calculate the spatial density.
Berghauser Pont, M., & Haupt, P. (2004). Spacemate : The spatial logic of urban density. Delft: DUP Science. p 10-15, p 50.

4.2 TYPES OF SPATIAL DENSITIES

Typologies of neighbourhoods, which reflect the relationship of spatial design and population density, and how they influence our daily routine.



Open block

FSI	1,20 - 1,50
GSI	0,20 - 0,30
OSR	0,50 - 0,75
L	4,00 - 6,00

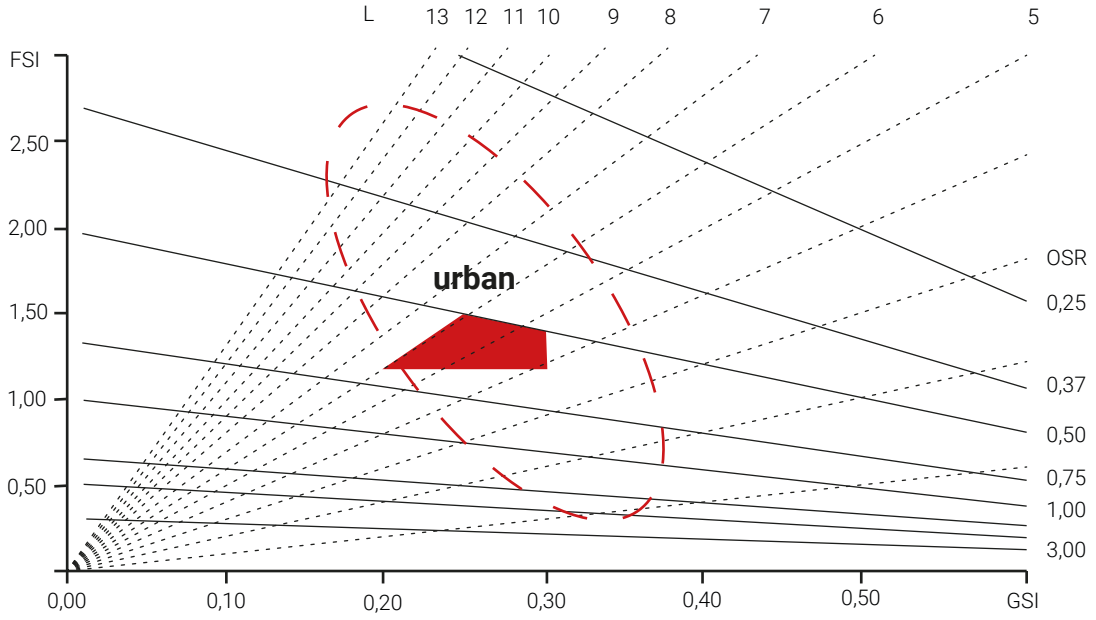
Time period 1930 - 1960

Presence in the region:
42,7 km² 15,8 %

Characteristics:

Density:	Low to medium
Open space:	Public unused green space
Mobility:	Low public transport
Functions:	Mostly residential

Living environment
according to spacemate



Medieval block

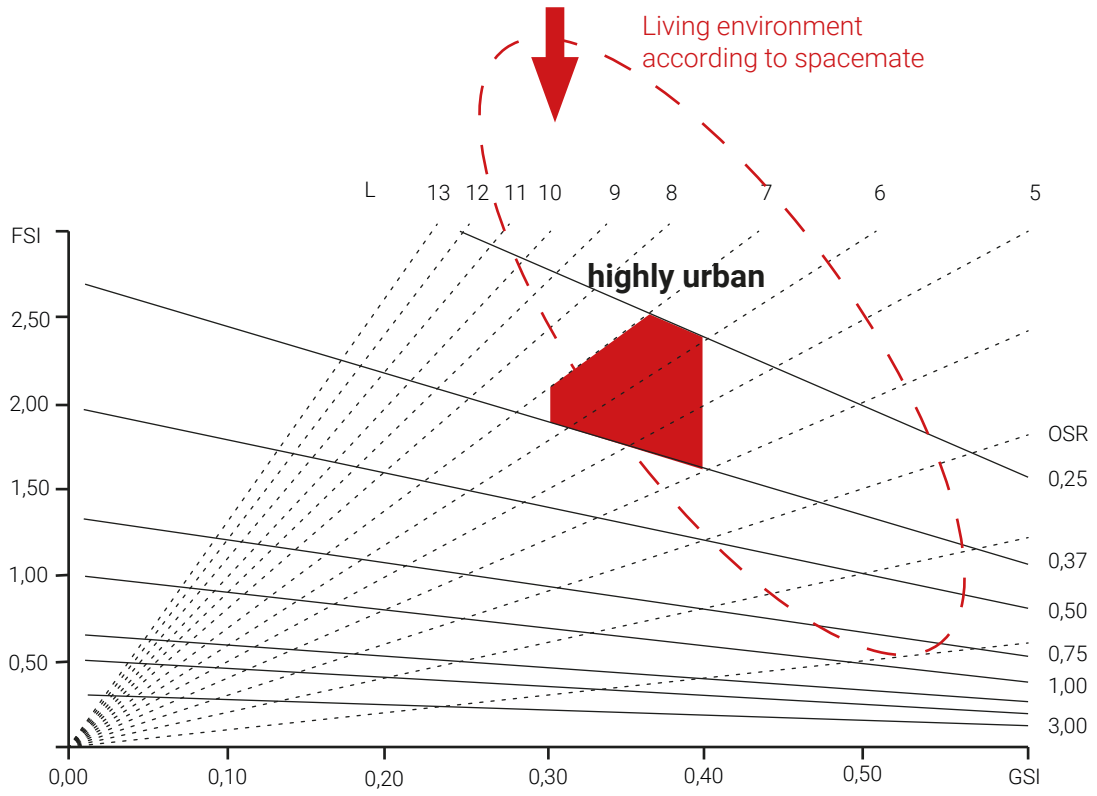
FSI	>2,00
GSI	0,30 - 0,40
OSR	0,25 - 0,37
L	5,00 - 7,00

Time period 17th century

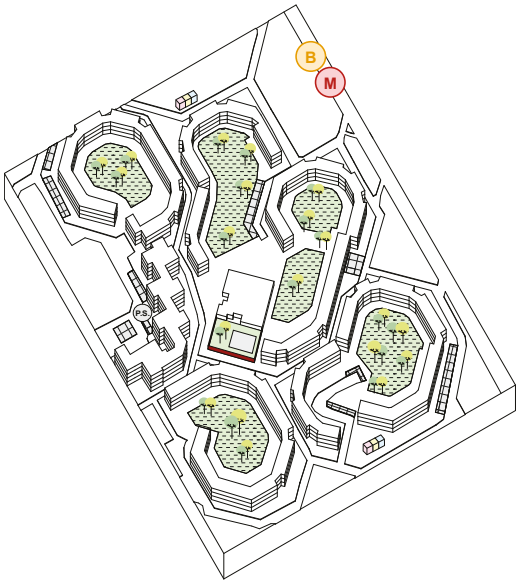
Presence in the region:
16,5 km² 6,1 %

Characteristics:

Density:	Medium to high
Open space:	Small public squares and unused private green spaces
Mobility:	High public transport
Functions:	Residential and commercial



Typologies of neighborhoods, which reflect the relationship of spatial design and population density, and how they influence our daily routine.



Cauliflower

FSI	0,80 - 1,50
GSI	0,10 - 0,20
OSR	0,50 - 1,00
L	6,00 - 13,0

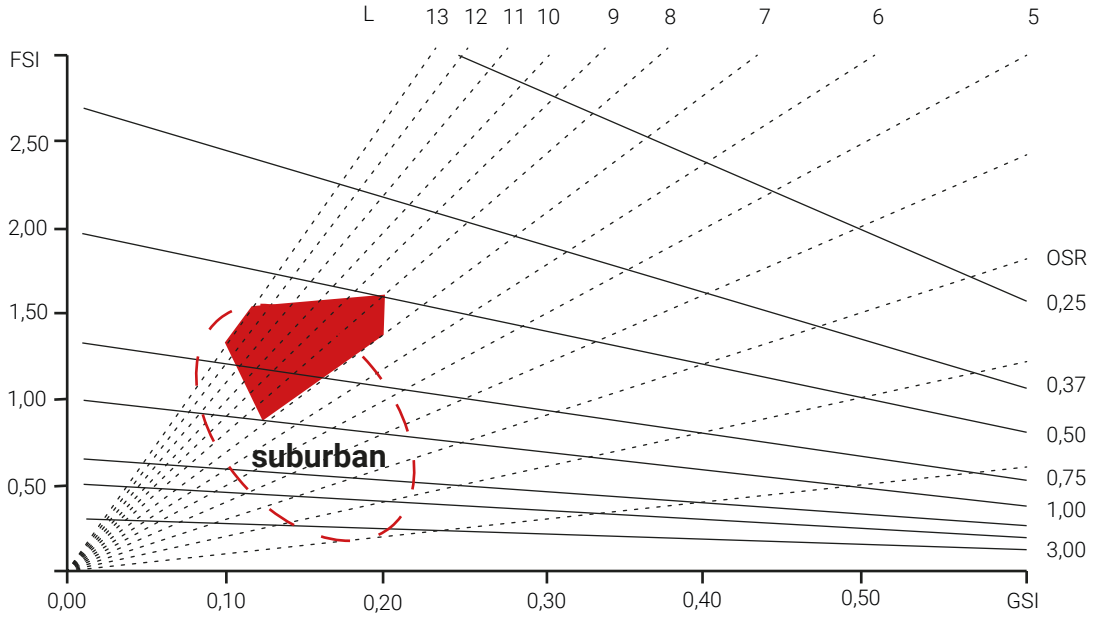
Time period 1960 - 1990

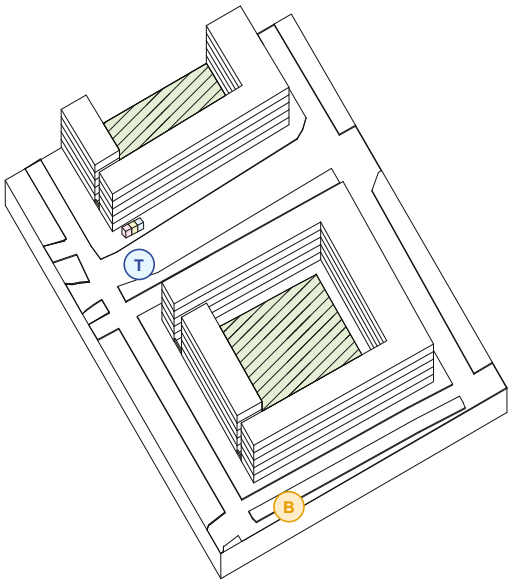
Presence in the region:
10,0 km² 3,7 %

Characteristics:

Density:	Low
Open space:	Semi-public, unused green spaces
Mobility:	Medium public transport
Functions:	Mostly residential

Living environment according to spacemate





Closed block

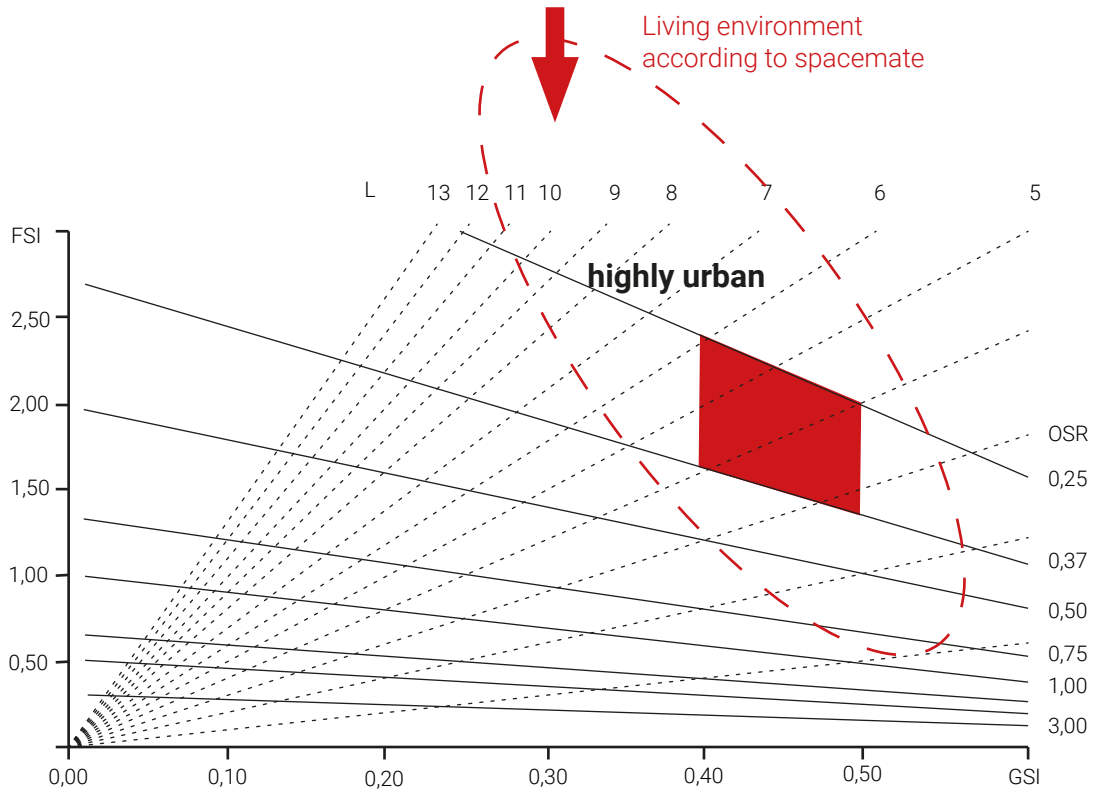
FSI	>2,00
GSI	0,40 - 0,50
OSR	0,25 - 0,37
L	4,00 - 6,00

Time period 19th century

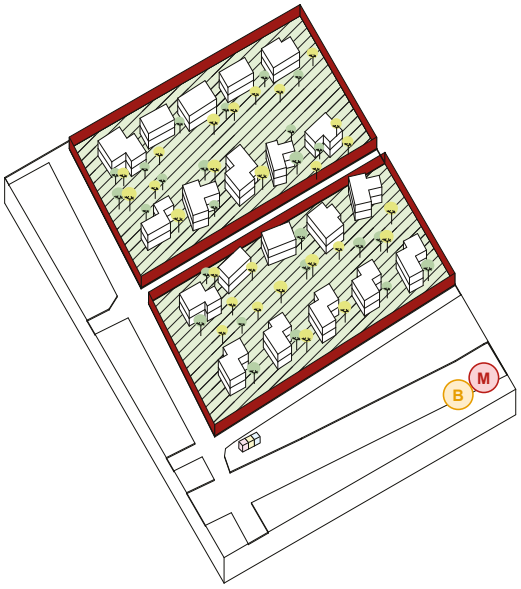
Presence in the region:
22,7 km² 30,2 %

Characteristics:

Density:	Medium
Open space:	Private unused green spaces
Mobility:	Medium public transport
Functions:	Mostly residential



Typologies of neighborhoods, which reflect the relationship of spatial design and population density, and how they influence our daily routine.



Villas

FSI	<0,60
GSI	0,10 - 0,20
OSR	1,25 - 3,00
L	2,00 - 3,00

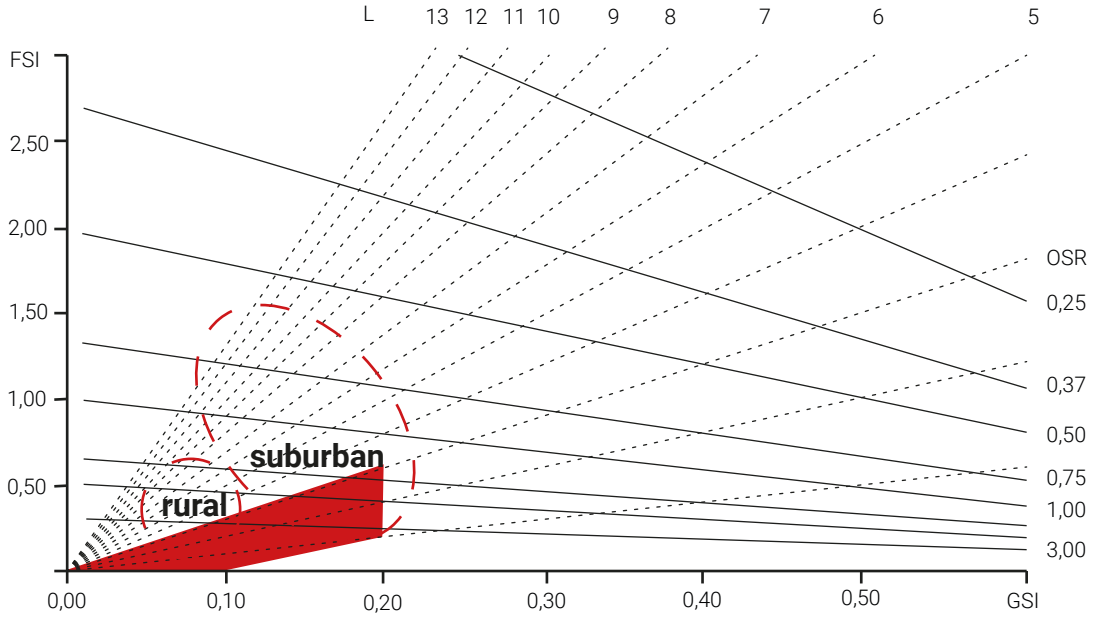
Time period 1960 - 1990

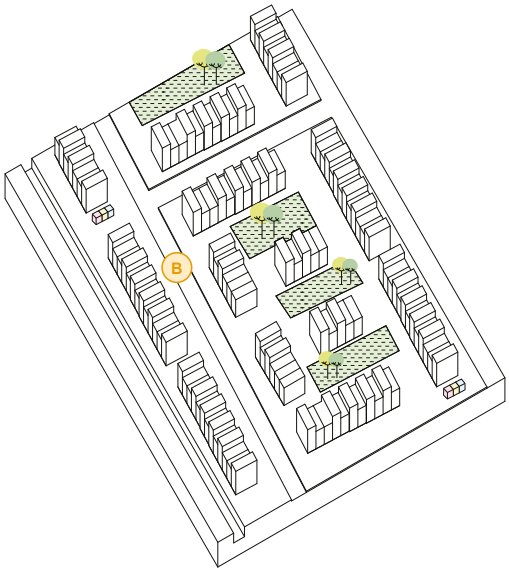
Presence in the region:
61 km² 22,6 %

Characteristics:

Density:	Low
Open space:	No open space, only private yards
Mobility:	Medium /low public transport
Functions:	Only residential

Living environment according to spacemate





Half closed block

FSI	0,75 - 1,25
GSI	0,15 - 0,20
OSR	0,75 - 1,00
L	4,00 - 5,00

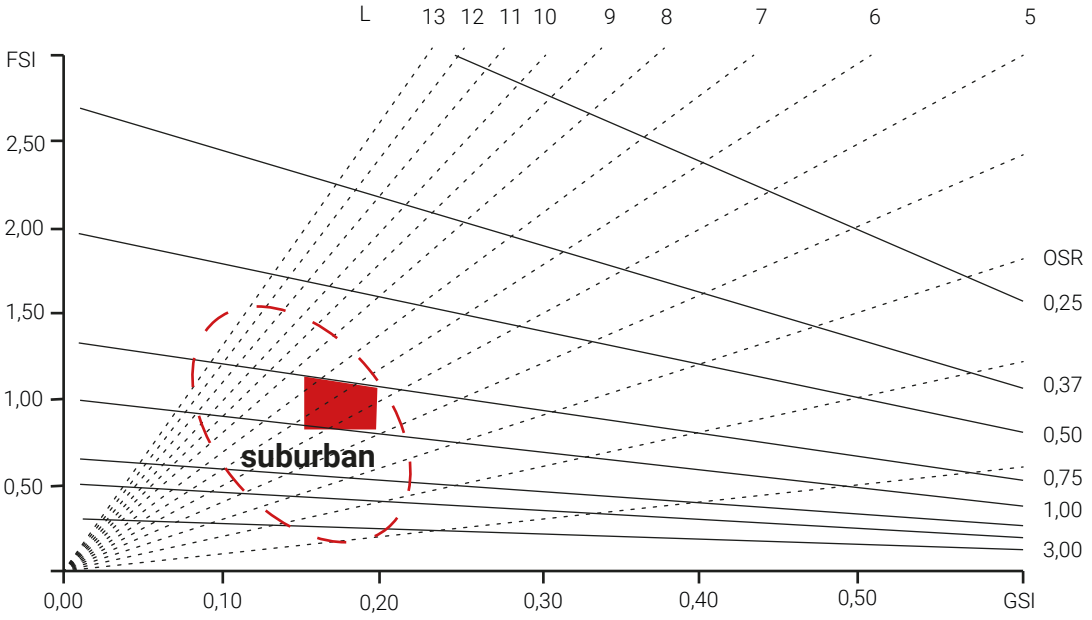
Time period 1930 - 1960 century

Presence in the region:
58,6 km² 22,6 %

Characteristics:

Density:	Medium
Open space:	Semi-public, unused green space
Mobility:	Low public transport
Functions:	Mostly residential

Living environment according to spacemate



4.3 DENSITIES IN THE REGION

All the typologies that we identify in the region have their own characteristics as we mention on the “passport” on the previous diagrams. But what is the main typology that can be seen in the region?

The pie chart below shows the share that each typology takes in the region. The most common typology is the closed block. When we say closed block we don’t only mean the block apartments that have a private courtyard in the middle but also the row houses which mostly have their private yard on the back side and all together create the same private space in the middle as the block apartments. The next most common typologies that can be also seen in the region are the half closed block and the villas. While the least common ones are the Medieval blocks which are usually a small part of the center of most cities in the AMA, and the Cauliflower neighborhoods which are recent neighborhoods of 20th century.

The next map shows the different typologies on the region, and it can be seen clearly that the main typology is the closed block, but also the industrial zones. However, since we only focus on the livability of residential areas and not on the working areas we do not analyzing the industrial zones. Also, map shows that most cities have their own medieval center. However, there are few new developed cities such as Almere that do not have medieval blocks. Finally, it can be seen that mostly in south-east, west, and north of Amsterdam smaller cities, have mostly villas which take a large amount of the land of the city.

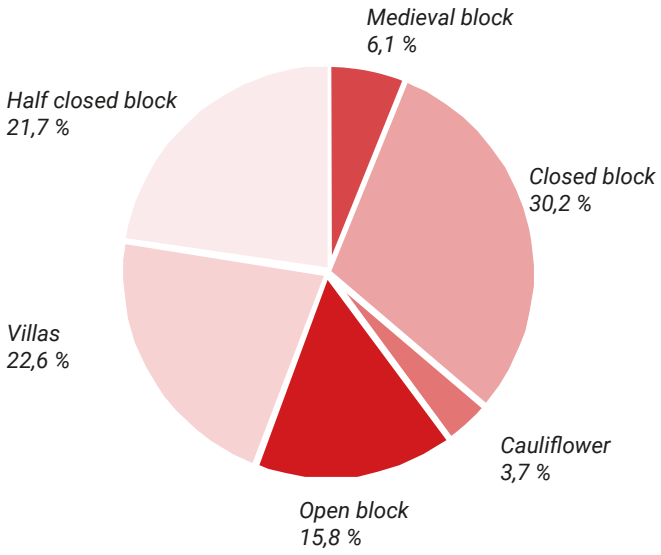
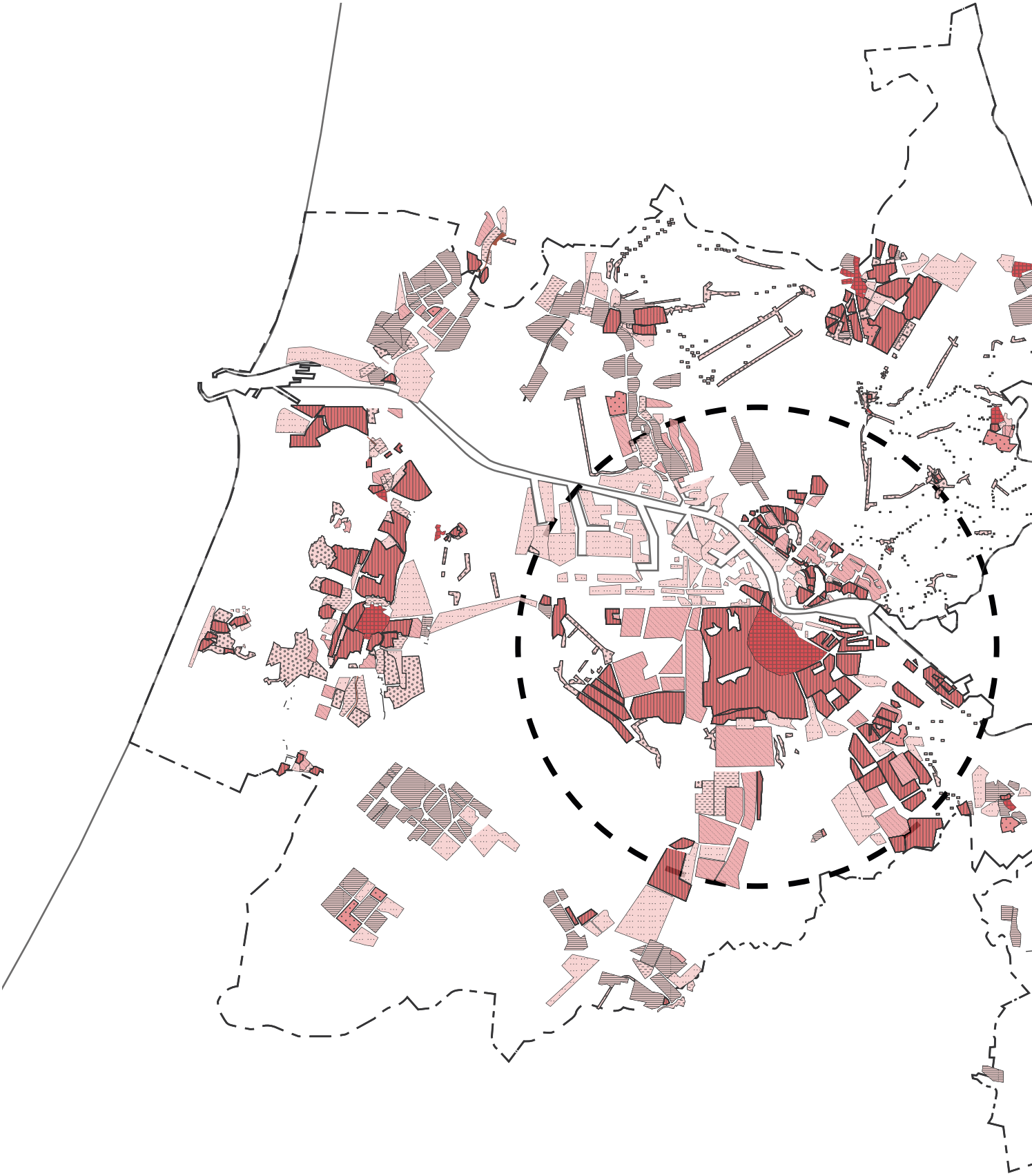


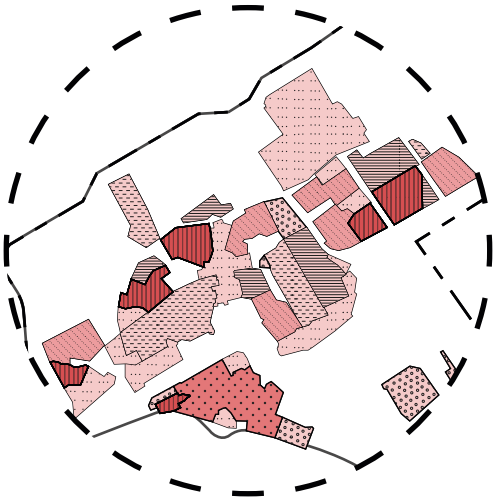
Figure 21.
Chart pie of the amount of typologies present in the AMA region, in percentages.

Typologies of neighbourhoods, which reflect the relationship of spatial design and population density, and how they represent the region




Legend
Inner city (3-5 floors)
Closed block (2-4 floors)
Cauliflower (2-3 floors)
Open Block (4-6 floors)
Half closed block (2-4 floors)
Villas (1-3 floors)
Mix typologies
Industrial Zone

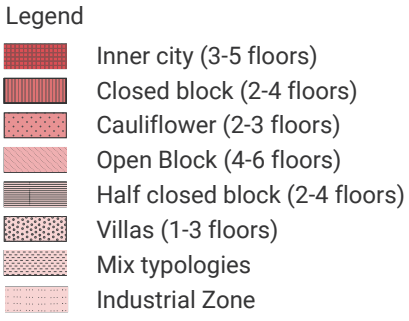
4.4 COMPARING SPATIAL DENSITIES | AMSTERDAM vs. ALMERE



In this chapter we zoom into two different cities, Amsterdam (density of 5,1 thousand inhabitants per km2) and Almere (density of 0,4 thousand inhabitants per km2). As we mentioned before we choose this two according the scatter plot analysis but also the variety of typologies that each city has.

First, we will compare the two cities of how residences preform in terms of waste separation and mobility. Then we will look further into the typo-morphology of both cities; what does this city density mean in terms of transport development, building variety and waste management. We will compare the same typologies, but in the context of each city. What are positive points? What are weaknesses?

At the end of this chapter we will give some key points of how we can improve existing typologies in different city environments to optimize the use of space.



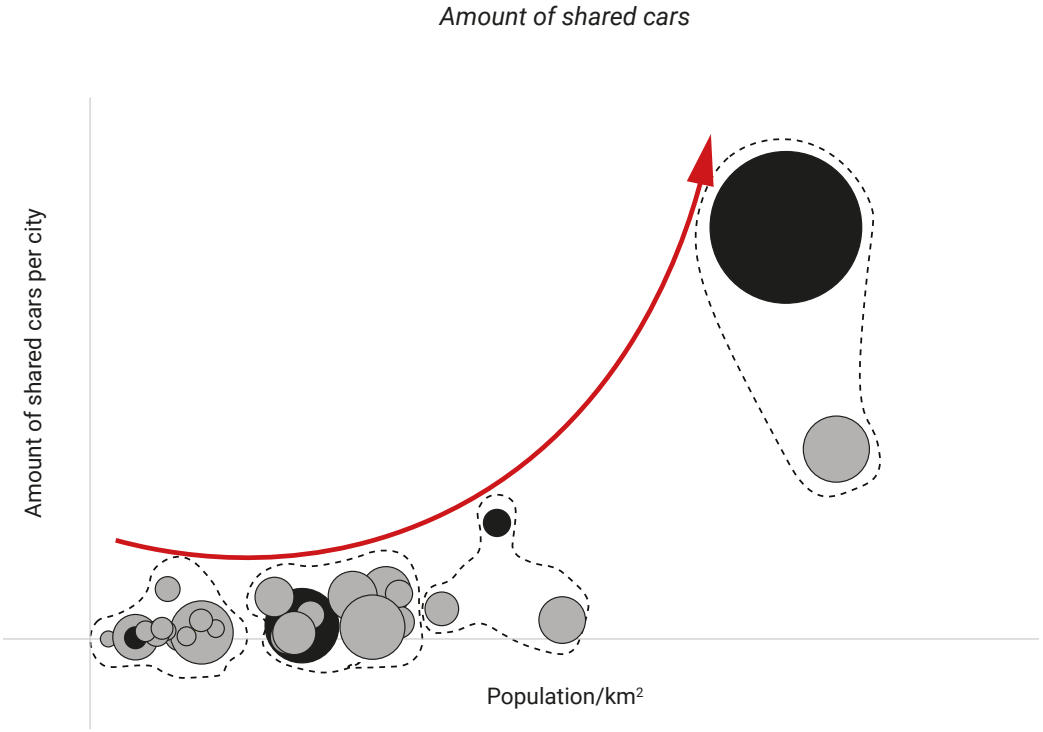


Figure 22..
Scatterplot of shared cars related to density.
Waste dataset(CBS, 2017)

Waterland, Almere, Heemstede Amsterdam.
Density clusters; from very low density (1) to high density (4).

(1) Mobility:

The mobility in the two cities is very different. Amsterdam has a very strong transport system that connects the whole city within but also with other cities. In Amsterdam there are several means of transport: tram, train, metro, bus, and boat. Some areas with large amount villa typology are not very well connected with the transportation system. The main transportation in those areas is the bus. This might be due to the fact that people live in villas have their own cars and don't need to use the public transport. Of course, the stronger transportation system is mostly located in the center of Amsterdam since the most tourist attractions, businesses and commercial functions are located in the center.
On the other hand, the public transportation system of Almere is very weak since there is only a train and bus line. Even though the bus line is of a BRT (bus rapid transit)(Wever, 2016) type with the frequency of a metro and the city with their own dedicated bus lanes (Franssen) the residents of Almere mostly travel by car(Wever, 2015). As it can be seen from the scatter plots but also from the map (appendix II), Almere is a car-oriented city. That means, the residents of Almere prefer to use their own cars to travel in and outside of the city, that's why there is a high traffic conjunction on the main road that connects Almere and Amsterdam. Finally, in Almere, areas that have the villas as their main typology are not connected with the public transport at all, and that makes it more convenient for the residents to use their own cars.
Moreover, it can be seen from the scatter plot (figure 22) that Amsterdam has a high capacity of shared cars while Almere has very low. That, might has to due to the fact that the lifestyle of people differs.

The main challenge for us is to make innovations that will help people to change their habits and lifestyle and move towards to more sustainable lifestyle and create more livable spaces.


Commercial hotel
Culture, Education, Medical, Social
Public utility, army baracks
Public offices and services
Business- and office areas
Cattle breeding, agricultural land

Morphology of cities, which reflect the relationship of spatial design and population density in Amsterdam an Almere, and how they influence the living environment.

(1)

Figure 23.
Typomorhology ofAmsterdam representing the region.

Source: https://maps.amsterdam.nl/trammetro/?LANG=en
https://kaart.edugis.nl
https://maps.amsterdam.nl/grondgebruik/?LANG=en


Commercial hotel
Culture, Education, Medical, Social
Public offices and services
Business- and office areas

(2)

Figure 24.
Typomorhology of Almere representing the region.

Source: https://kaart.edugis.nl
https://www.algobus.nl/gedia/d2bd009b-a03f-4000-8759-fe285658cfdd/KEO_ALM_GEO_A4_WT-2-3.pdf

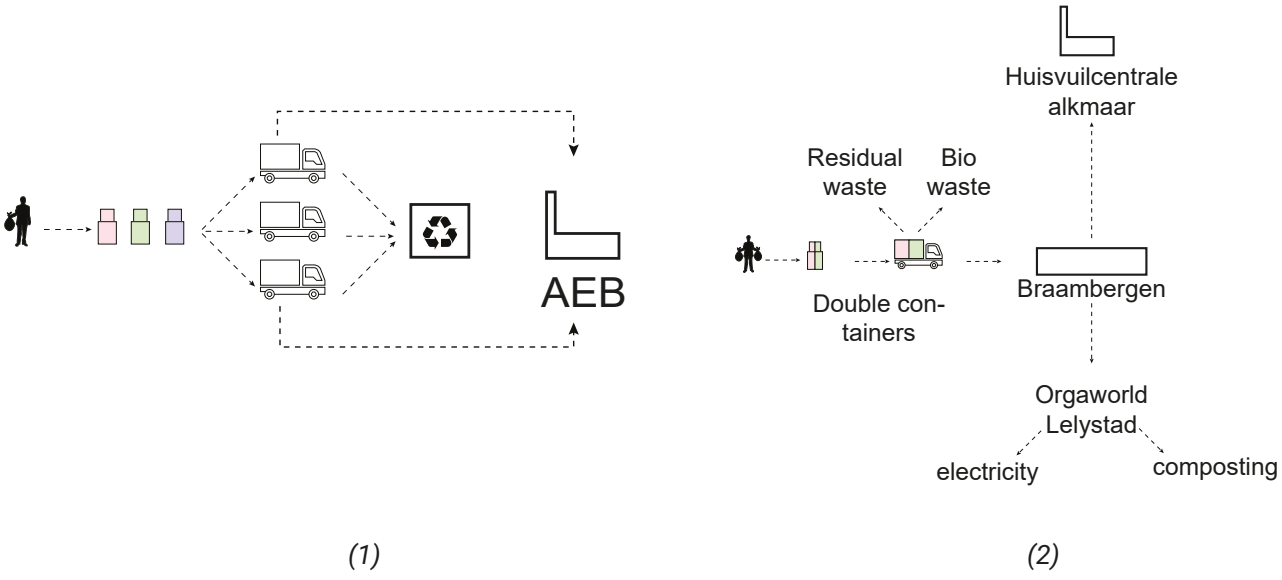


Figure 25.
Different waste management of the cities Amsterdam (1) and Almere (2).
This influences the amount of source separation.

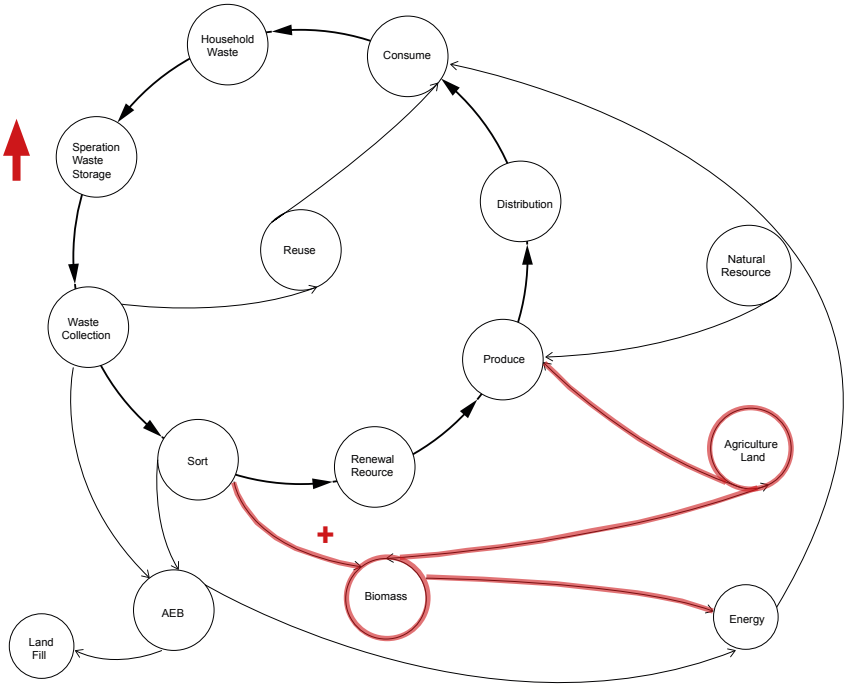


Figure 26.
How we can improve the waste circle, by increasing the amount of source separation (which will result in higher amount of reuse and recycling) and by using the organic waste for biomass.

(1) Waste separation:

Amsterdam and Almere have a different way of separating waste. As it can be seen in the next two diagrams, Amsterdam has different waste collection point where people need to travel to reach them. Most of the time these collection points are not located in the same area, which means that people need to travel in different areas to throw their separated waste. The main waste collection points that people can find in the city of Amsterdam are PMD (plastic, metal and drinking cartons), paper, glass, organic and general waste. Since, these collection points might not be close to each other, visible, accessible or far away, residences tend to not separate their waste and the amount of waste that goes to landfill increases. As it can be seen on the map (appendix III) Amsterdam has a very low waste separation compare to the other cities of AMA.

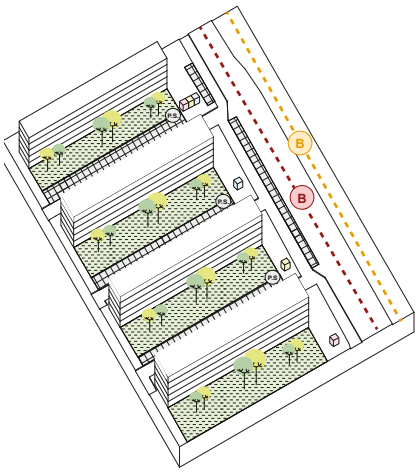
On the other hand, Almere has a very high amount of waste separation, even though it's a new city. This might happen because people don't need to travel to the collection points since they have separated bins outside of their houses.

In Amsterdam, there are different trucks that collect the waste that is been separated, while in Almere there is only one truck that is divided into two parts and collects the different waste. In both cities the trucks need to travel waste management points to drop the waste that they collect and from there the waste management point will manage the waste if they are eligible to do that or transfer it to eligible point. Most of the time these trucks need to travel outside of the cities that they collect the waste from and that makes it less efficient.

So, it can be seen that the behavior of the residence changes according to the waste management of each city. Of course, we cannot say that if the waste collection points are located outside of the house people will separate their waste. As it can be seen in the map (Appendix IV), there are other smaller cities such as Beverwijk or Haarlem that have the same waste separation as Amsterdam and have a higher waste separation. That could also be due to the awareness of citizens. Since in Amsterdam city there are more international people living there they might not following the same cast of mind as Dutch people or citizens of Amsterdam there are not that aware of the need of recycling and reusing of waste.

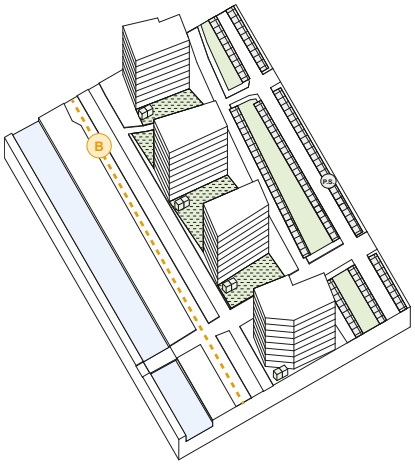
The next drawings compare the same typologies in Amsterdam and Almere, and reflect the relationship of spatial design, population density, open spaces, waste collection points and mobility. All these aspects influence our daily life and behavior.

Typologies of neighborhoods, which reflect the relationship of spatial design and population density in Amsterdam an Almere, and how they influence behavior.



Earth version 7.3.1 (March 27, 2018). Amsterdam, The Netherlands.

52° 23' 41.18"N, 4° 57' 14.84"E, Eye alt 526 feet.
DigitalGlobe 2018
http://www.earth.google.com [March 27, 2018].



Open block

FSI	1,20 - 1,50
GSI	0,20 - 0,30
OSR	0,50 - 0,75
L	4,00 - 6,00

Time period 1930 - 1960

Amsterdam:

Weaknesses:
- Car park for private cars
- Many waste collection points located in each block.

Strengths:
- Bus and bike line are present in the block.
- Shared semi-public green space

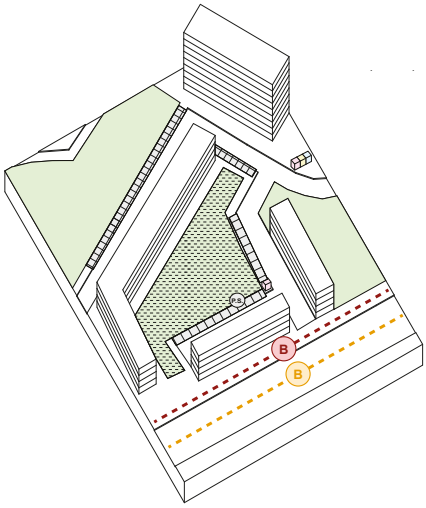
Almere:

Weaknesses:
- Car park for private cars
- Waste collection points in front of building block.

Strengths:
- Bus line is present in the block.
- Shared semi-public green space

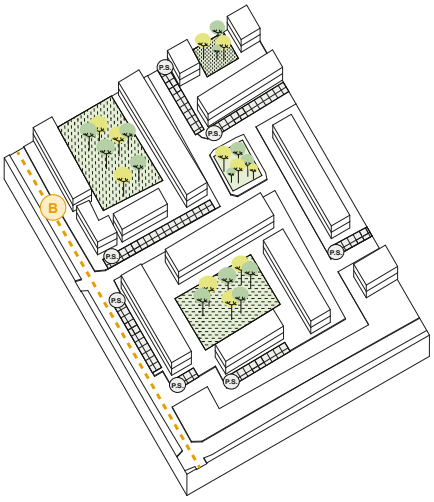
Earth version 7.3.1 (March 27, 2018). Almere, The Netherlands.

52° 22' 42.54"N, 5° 14' 38.75"E, Eye alt 367feet.
DigitalGlobe 2018
http://www.earth.google.com [March 27, 2018].



Earth version 7.3.1 (March 28, 2018). Amsterdam, The Netherlands.

52° 24’ 12.14”N, 4° 56’ 35.39”E, Eye alt 381 feet.
DigitalGlobe 2018
http://www.earth.google.com [March 28, 2018].



Half closed block

FSI	0,75 - 1,20
GSI	0,15 - 0,20
OSR	0,75 - 1,00
L	4,00 - 5,00

Time period 1930 - 1960

Amsterdam:

Weaknesses:
- Car park for private cars
- Waste bins and parking lots use a lot of space.

Strengths:
- Bus and bike line are present in the block.
- Shared semi-public green space.
- Waste collection point visible and accessible for everyone.

Almere:

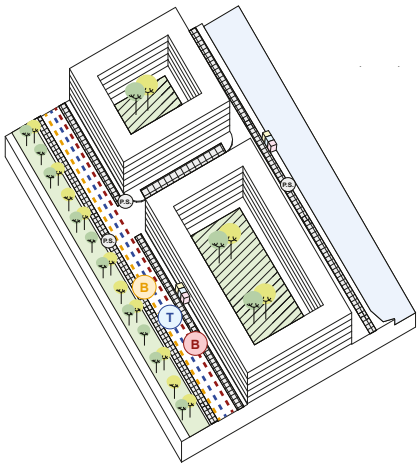
Weaknesses:
- Car park for private cars
- Waste collection points in front of building block.

Strengths:
- Bus line is present in the block.
- Shared semi-public green space.
- Waste collection point visible and accessible for everyone.

Earth version 7.3.1 (March 28, 2018). Almere, The Netherlands.

52° 21’ 36.84”N, 5° 12’ 28.64”E, Eye alt 557feet.
DigitalGlobe 2018
http://www.earth.google.com [March 28, 2018].

Typologies of neighborhoods, which reflect the relationship of spatial design and population density in Amsterdam an Almere, and how they influence behavior.



Earth version 7.3.1 (March 28, 2018). Amsterdam, The Netherlands.

52° 20’ 51.80”N, 4° 53’ 24.76”E, Eye alt 315 feet.
DigitalGlobe 2018
http://www.earth.google.com [March 28, 2018].

Closed block

FSI	>2,00
GSI	0,40 - 0,50
OSR	0,25 - 0,37
L	5,00 - 7,00

Time period 19th century

Amsterdam:

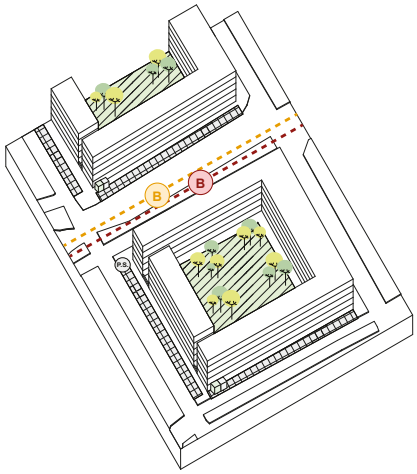
Weaknesses:
- Car park for private cars
- Waste bins use a lot of space and are not visible.

Strengths:
- Tram, bus and bike line are present in the block.
- Private and semi-public green space.
- Waste bins accessible to everyone.

Almere:

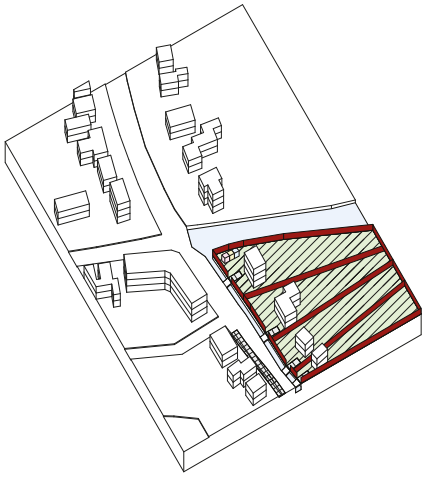
Weaknesses:
- Car park for private cars
- Waste bins use a lot of space.

Strengths:
- Bus and bike line is present in the block.
- Private green space.
- Waste collection points visible and accessible for everyone.



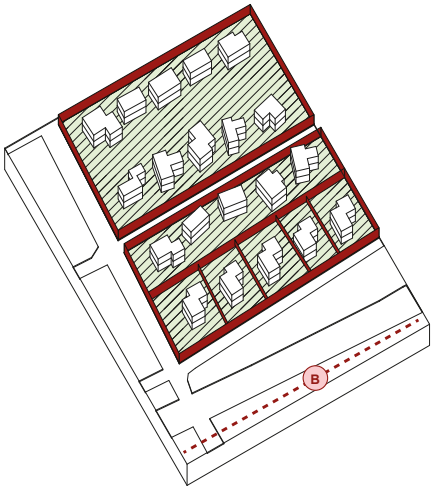
Earth version 7.3.1 (March 27, 2018). Almere, The Netherlands.

52° 22’ 40.65”N, 5° 12’ 58.63”E, Eye alt 271feet.
DigitalGlobe 2018
http://www.earth.google.com [March 27, 2018].



Earth version 7.3.1 (March 28, 2018). Amsterdam, The Netherlands.

52° 25' 01.42"N, 4° 54' 22.98"E, Eye alt 341 feet.
DigitalGlobe 2018
http://www.earth.google.com [March 28, 2018].



Villas

FSI <0,60
GSI 0,10 - 0,20
OSR 1,25 - 3,00
L 2,00 - 3,00

Time period 1960 - 1990

Amsterdam:

Weaknesses:
- Car park for private cars inside the villa
- Car park for private cars on the streets
- No public transport.
- Waste bins use a lot of space.

Strengths:
- Private green space
- Waste bins accessible to everyone.

Almere:

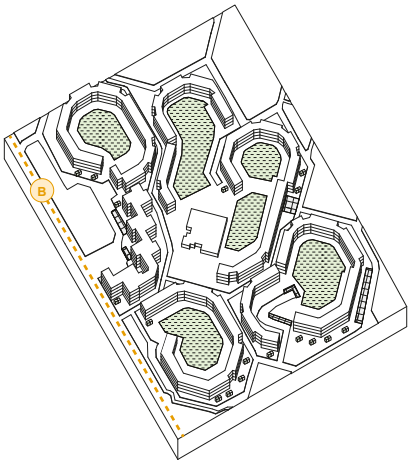
Weaknesses:
- Car park for private cars
- Waste bins use a lot of space.

Strengths:
- Bike lane is present in the block.
- Private green space
- Waste collection points visible and accessible for everyone.

Earth version 7.3.1 (March 27, 2018). Almere, The Netherlands.

52° 20' 25.09"N, 5° 11' 27.75"E, Eye alt 336feet.
DigitalGlobe 2018
http://www.earth.google.com [March 27, 2018].

Typologies of neighborhoods, which reflect the relationship of spatial design and population density in Amsterdam an Almere, and how they influence behavior.



Earth version 7.3.1 (March 27, 2018). Almere, The Netherlands.

52° 20' 43.09"N, 5° 13' 44.91"E, Eye alt 802feet.
DigitalGlobe 2018
http://www.earth.google.com [March 27, 2018].

Cauliflower

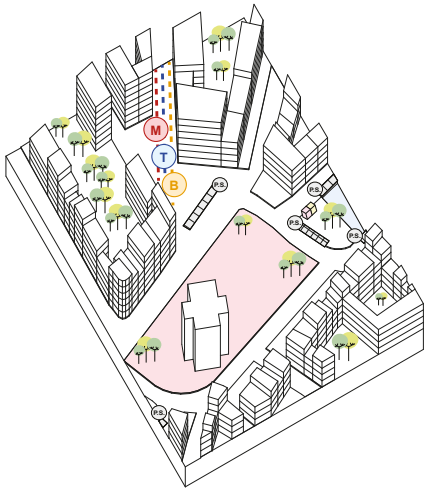
FSI	>2,00
GSI	0,40 - 0,50
OSR	0,25 - 0,37
L	5,00 - 7,00

Time period 1960 - 1990

Almere

Weaknesses:
- Car park for private cars on the streets.
- Little public transport.
- Waste bins use a lot of space.

Strengths:
- Tram, bus and bike line are present in the block.
- Semi-private green space.
- Waste bins accessible and visible to everyone.



Earth version 7.3.1 (March 27, 2018). Amsterdam, The Netherlands.

52° 22' 21.18"N, 4° 54' 02.35"E, Eye alt 476feet. DigitalGlobe 2018
http://www.earth.google.com [March 27, 2018].

Medieval city

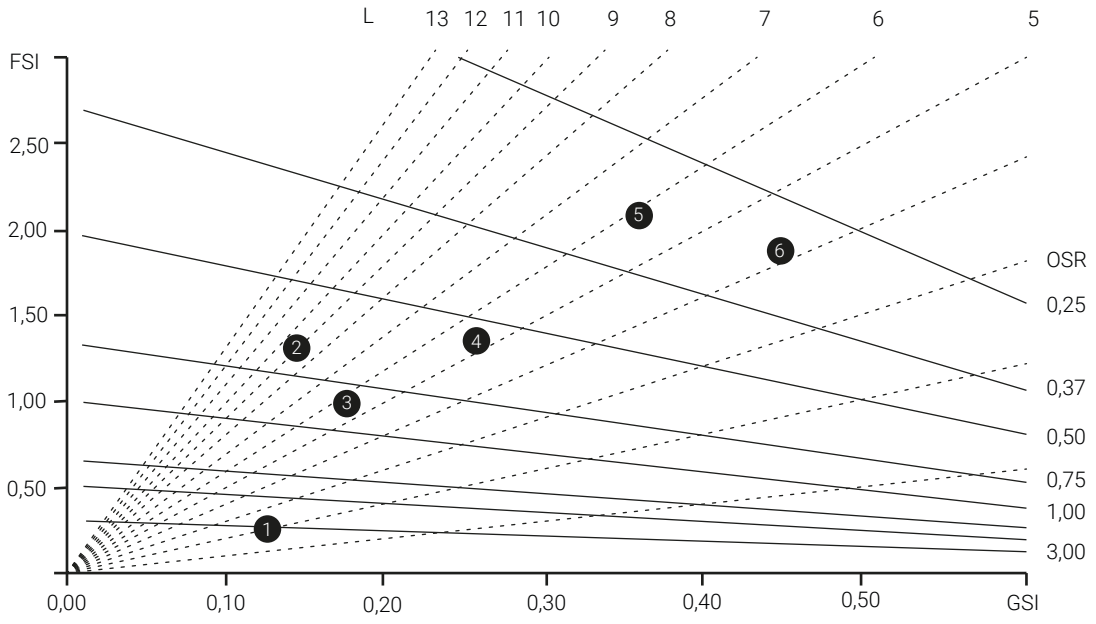
FSI	>2,00
GSI	0,30 - 0,40
OSR	0,25 - 0,37
L	5,00 - 7,00

Time period 17th century

Amsterdam:

Weaknesses:
- Car park for private cars on the streets.
- Waste bins not visible and accessible for everyone.

Strengths:
- Metro, tram and bus line is present in the block.
- Private, semi-private green space.
- Mixed use of streets.



1= Villas
2= Cauliflower
3= Half closed block
4= Open block
5= Medieval
6= Closed block

Figure 27.
Summary of different typologies in the AMA and their densities.

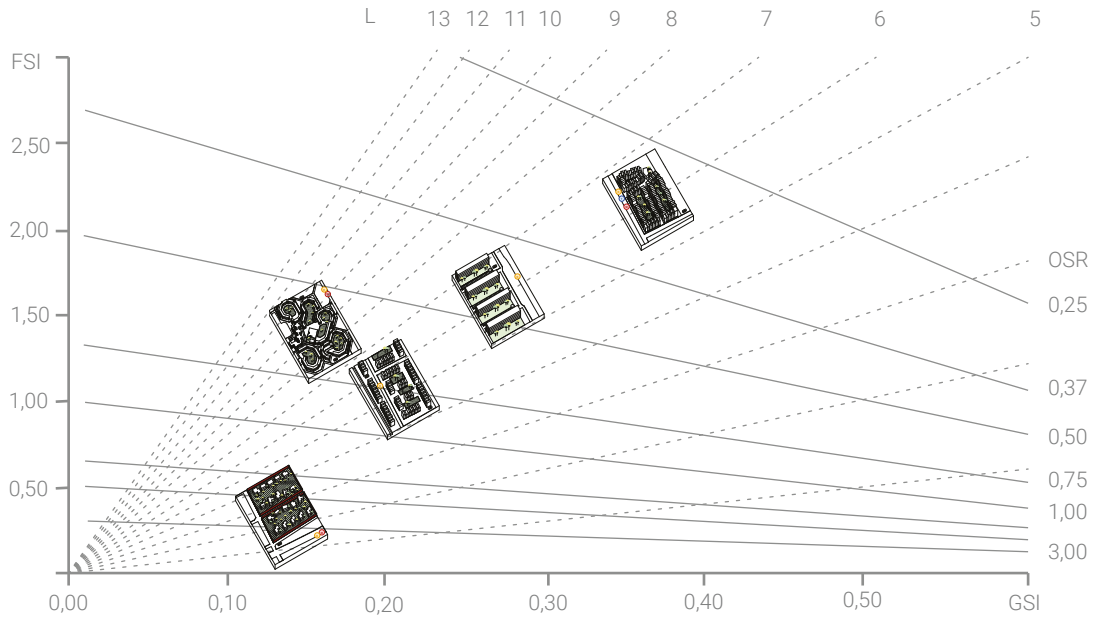


Figure 28.
Summay os the different typologies in the AMA and their desnities, and how this is relected in spatial context.

4.5 REFLECTION & IMPROVEMENT AREAS

From the comparison of different typologies of the two cities we found out that in most typologies, and especially in city of Almere, the neighborhoods are lacking public transport. But also, in most typologies in both cities there is a large surface of unused green space that have great potentials to reuse. Furthermore, the space that waste collection points take especially in Almere is very large, while in Amsterdam the waste collection points are not that visible and accessible to everyone. And finally, there is a lot of space that is been used for car park and also has the potentials to be decrease and reuse in more innovative way.

Thus, we listed some key points that we will use later on the innovation chapter. The key points are:

1) Make the transportation system stronger and more attractive to everyone

2) Re-use smartly the un-used green spaces to increase livability

3) Build awareness for reducing and recycling waste, and make the waste collection point visible and accessible to everyone

4) Reduce the need of car park by introducing or increasing other ways of transport

5) Re-use the “new” wasted car park

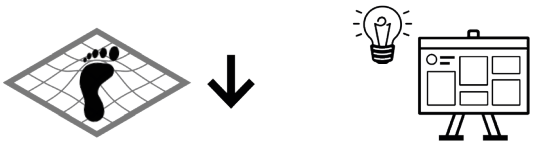
| 05

VISION

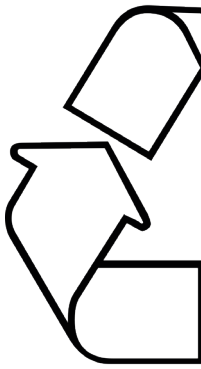
SPACE REALLOCATION

SPACE REALLOCATION
FOR BETTER LIVABILATY

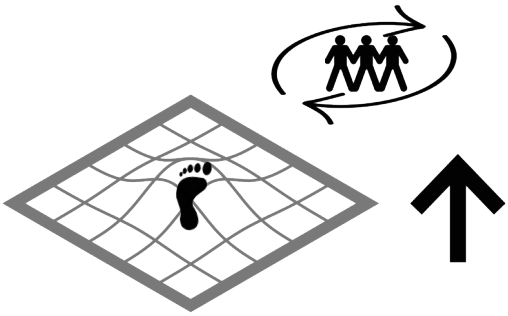
REALLOCATION OF SPACE



Space reallocation is a different way of spatial planning, where people can move and live while using less space. This supports ongoing trends, like the growing population and cares about long term environmental impacts.



WHAT DOES THIS MEAN?



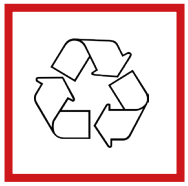
To achieve succesful space reallocation we provide a tailor-made approach for environments with a different population density. As we saw in our analysis, different population densities have different problems in terms of space use and resource consumption.

BENEFITS OF SPACE REALLOCATION

easy
ACCES

In this new way of thinking, the accessibility of public- and active transport is one of our key points towards a circular design. It reduces resource consumption, stimulates better health and creates space in your neighborhood.

stimulate
RECYCLING

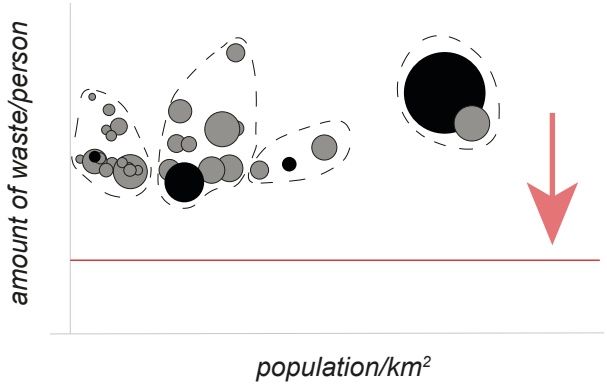


Next to transportation, we also want to stimulate people to separated their waste in the neighborhood, so we can reuse an recycle more of our resources.

new
DEVELOPMENT

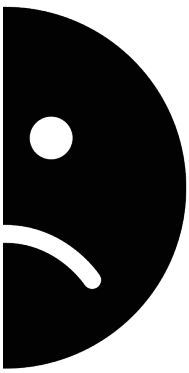
If we use less space for cars, by using shared cars or public transport, we can add new developments, which add quality to the living environment and stimulate a sustainable lifestyle.

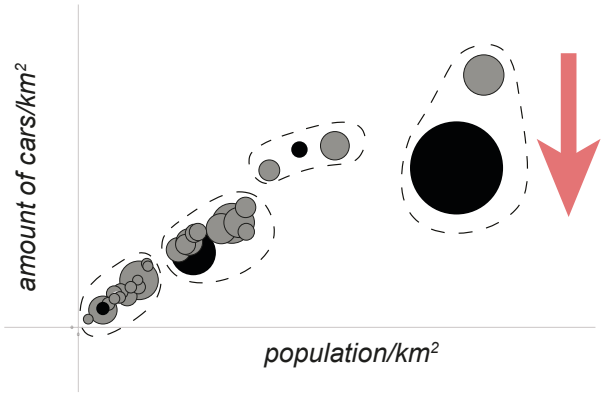
TRADITIONAL USE OF SPACE



Traditional spatial planning stimulates the use of space per person, since the arrival of the car.

Furthermore, the densities of cities influence our way of life. They stimulate indivuals to act in a more collective or individual way. Half of the population of the AMA is now living in a low dense area, resulting in an individual lifestyle with a large footprint!

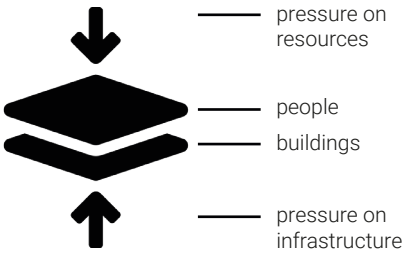




This is reflected in the way people move and live in the AMA: conjecture on the roads and little recycling of personal waste.

This can be better!

space used to move and live creates PRESSURE ON THE ENVIRONMENT



This mis-match of use and the spatial environment, results in pressure on the cities and resources.

This is not beneficial for further development, the livability of the environment and the environment itself. Thus, there is a need for a better understanding how we can design a spatial plan, while thinking circular.

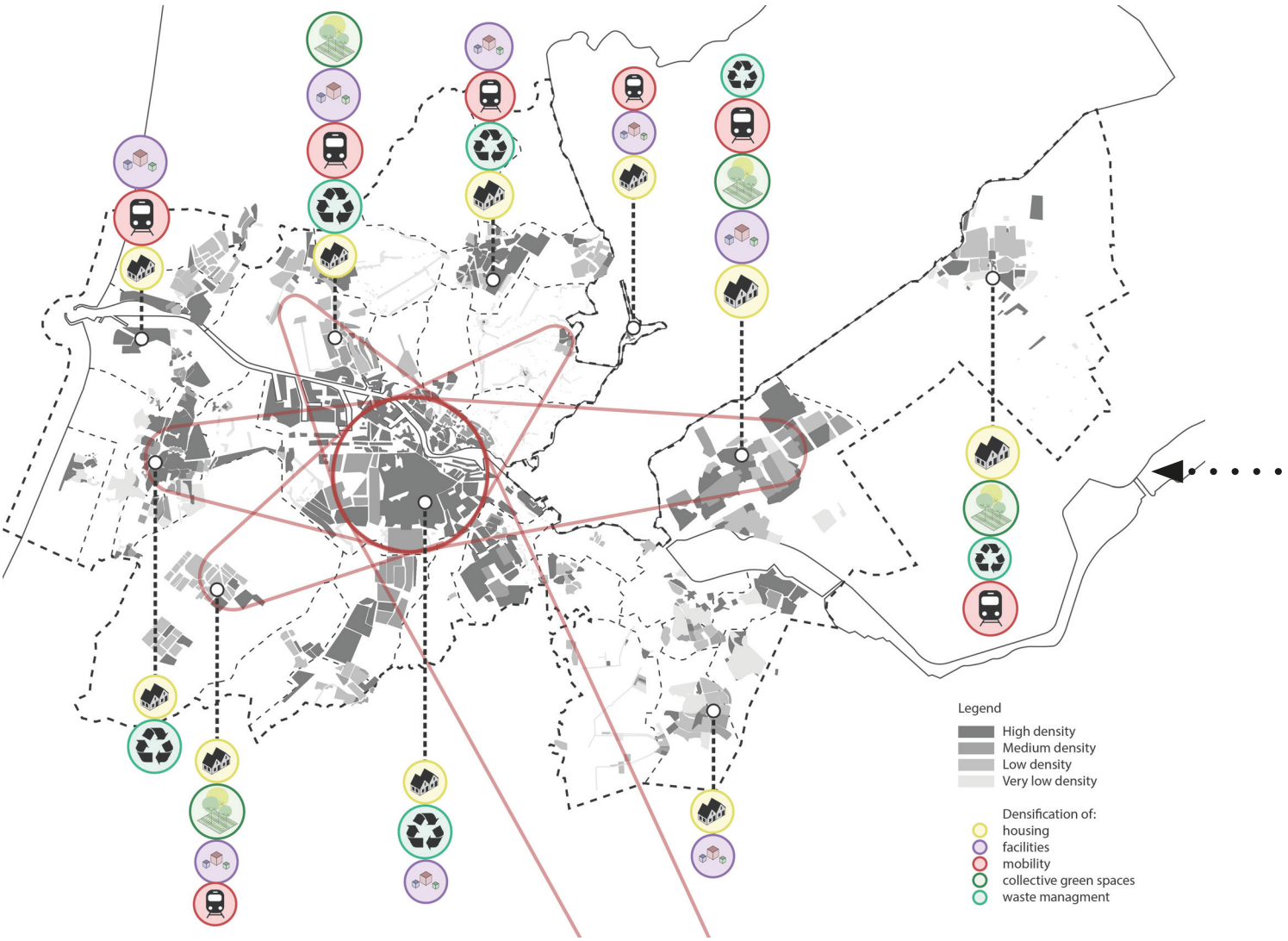


Figure 29.
Regional vision of the AMA.

5.1 VISION OF THE REGION

What does this new way of spatial planning really mean for the region? The regional map shows the cities of the region, each with their own population density. According to that density, we made a program of requirement what each city should improve or develop in order to make the region a circular system and the cities more livable.

In the next pages it can be seen how this vision is related to the two cities Amsterdam and Almere. Afterwards, we will introduce a strategy how we can realize this vison. In the end, we will show what kind of interventions Amsterdam and Almere could make to reach a circular and livable environment.

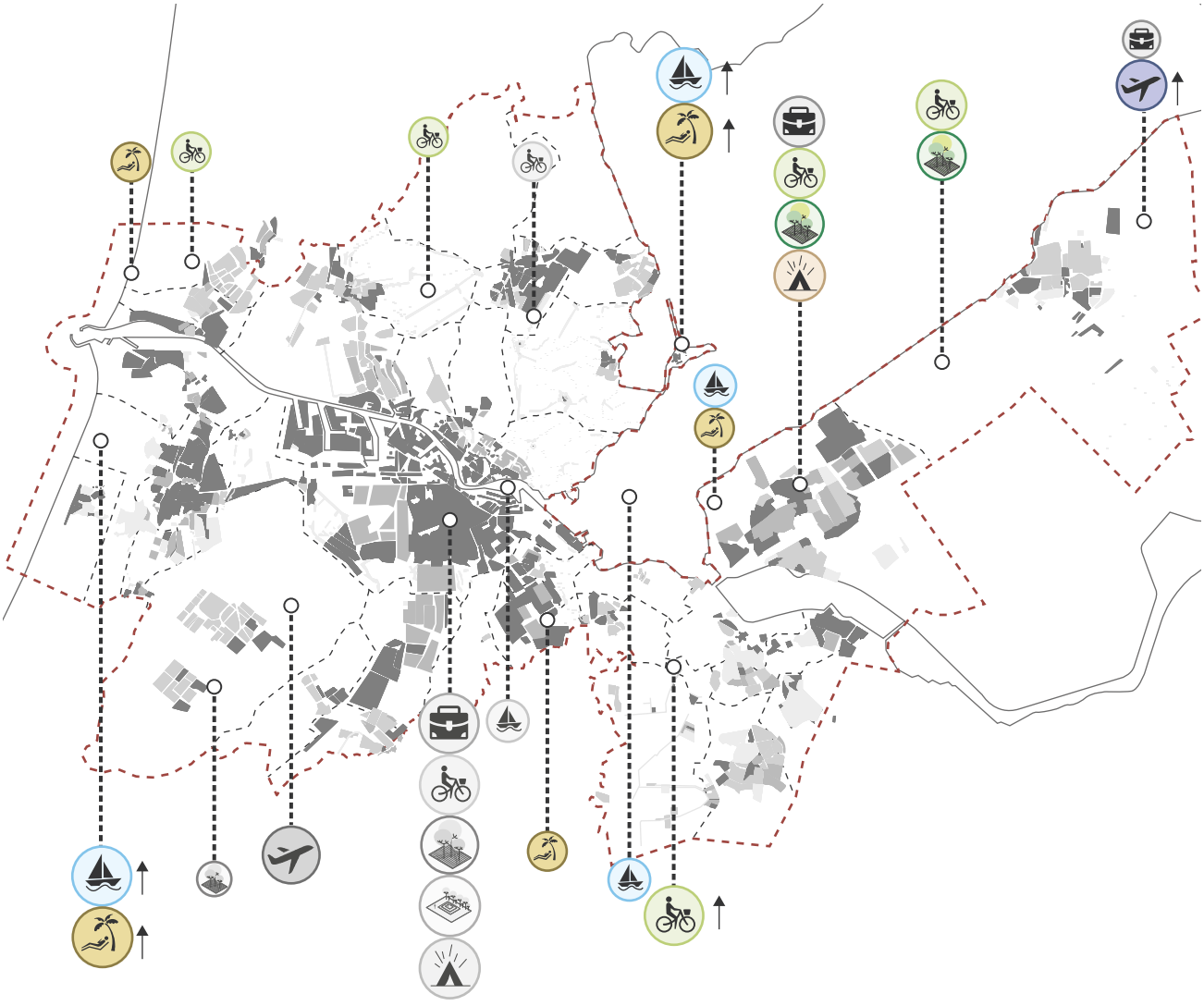
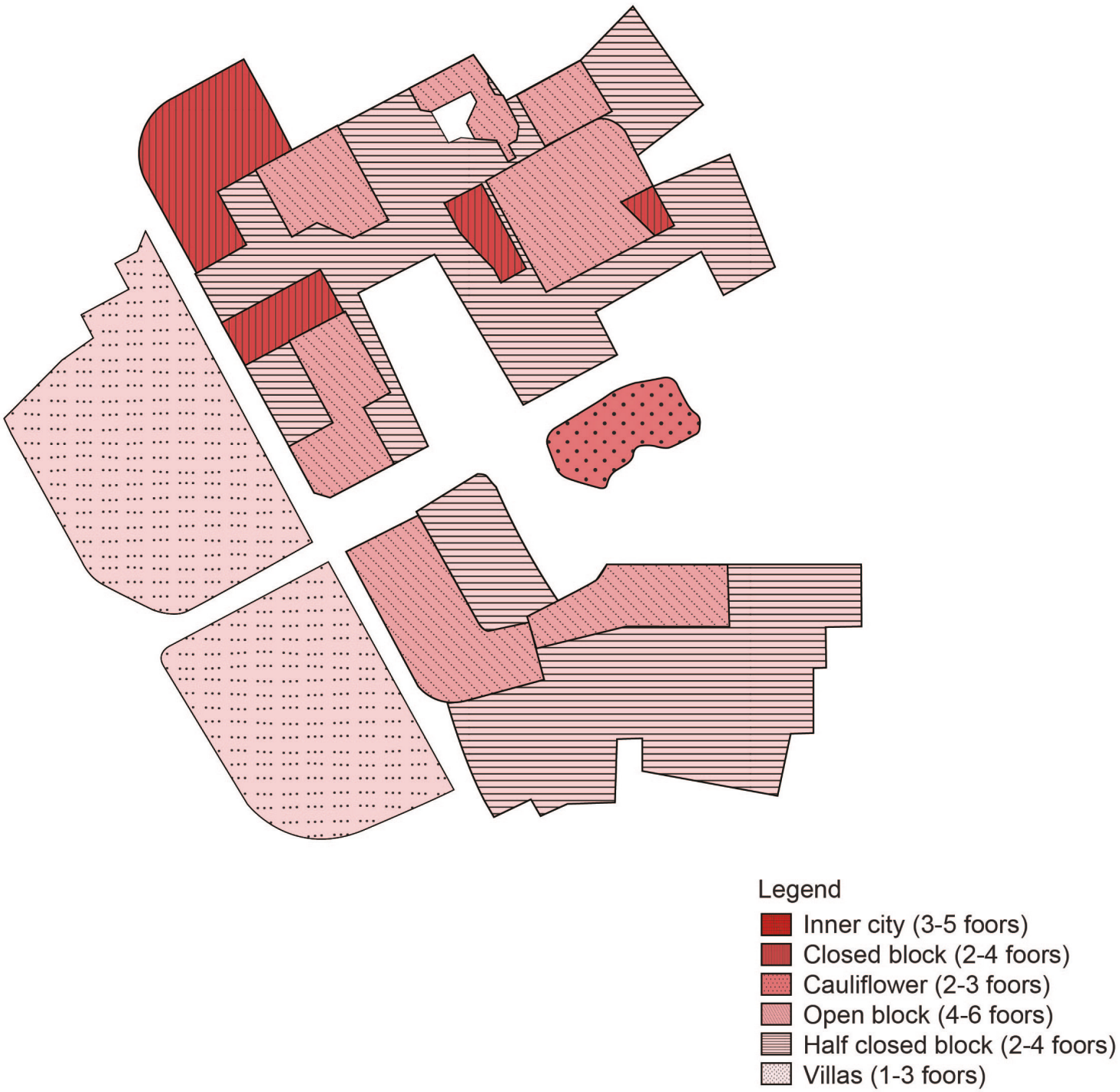


Figure 30.
New identities AMA, to balance the region by making more attractive sites.


Legend
Inner city (3-5 foors)
Closed block (2-4 foors)
Cauliflower (2-3 foors)
Open block (4-6 foors)
Half closed block (2-4 foors)
Villas (1-3 foors)

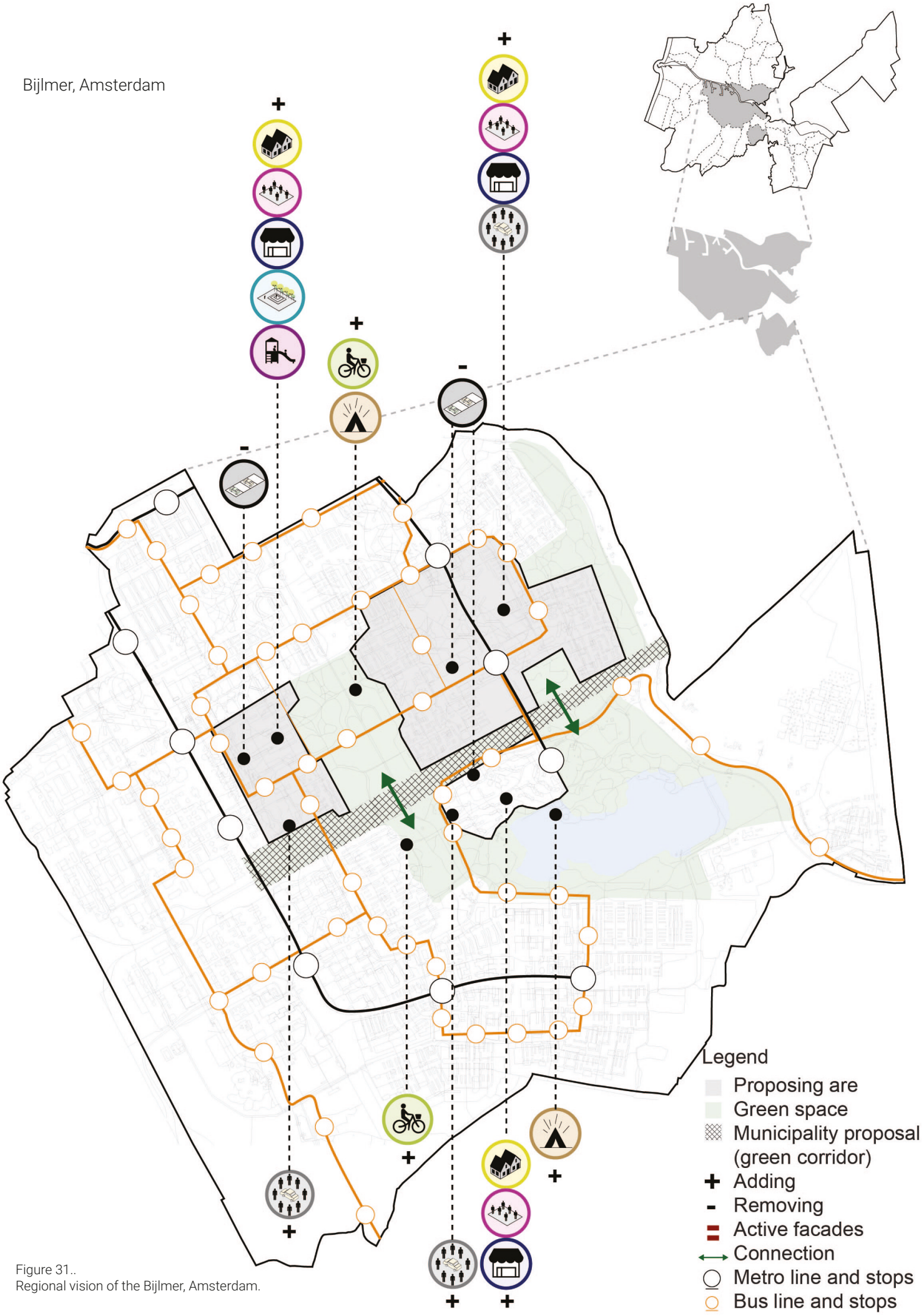
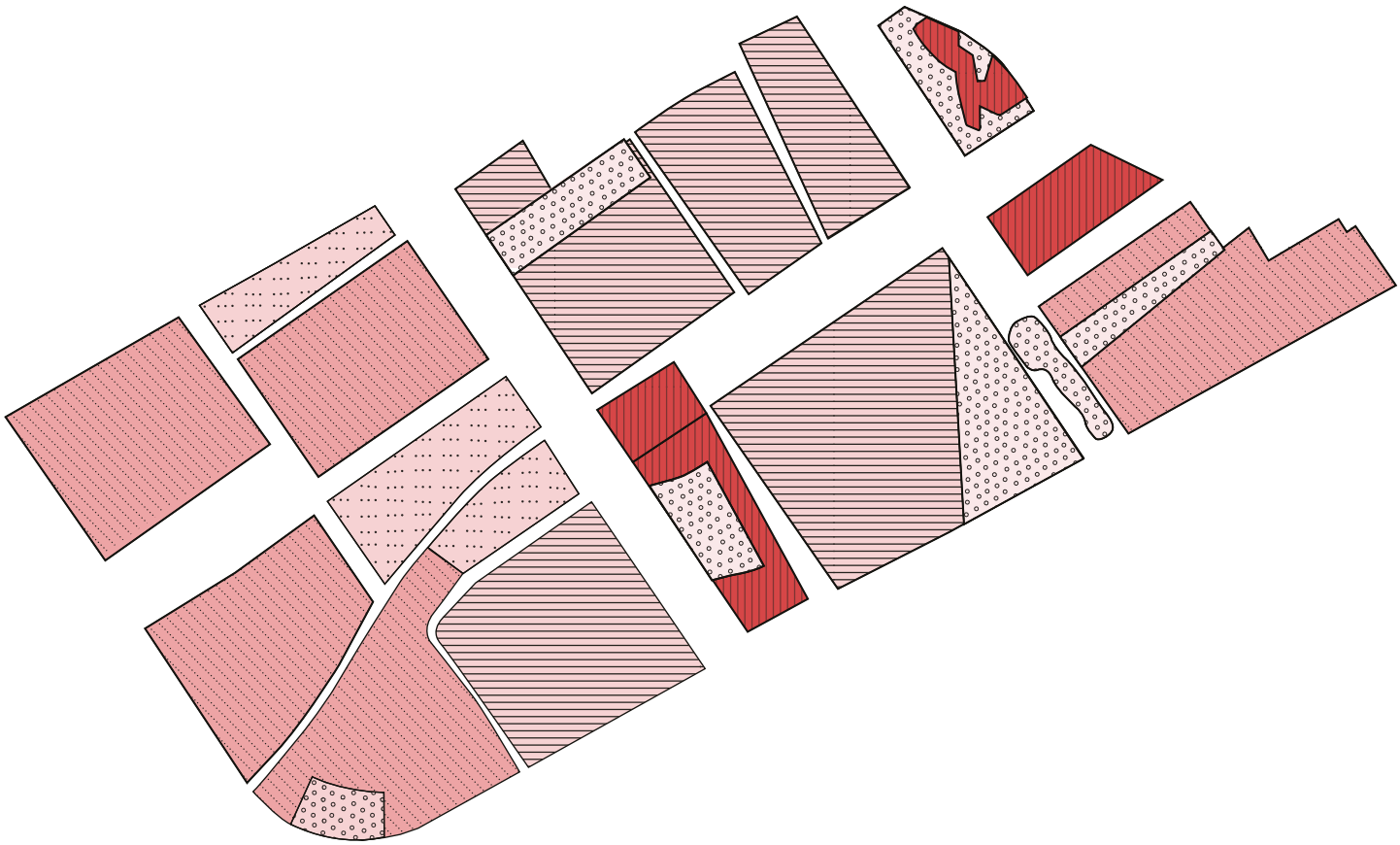


Figure 31..
Regional vision of the Bijlmer, Amsterdam.


Legend
Inner city (3-5 foors)
Closed block (2-4 foors)
Cauliflower (2-3 foors)
Open block (4-6 foors)
Half closed block (2-4 foors)
Villas (1-3 foors)

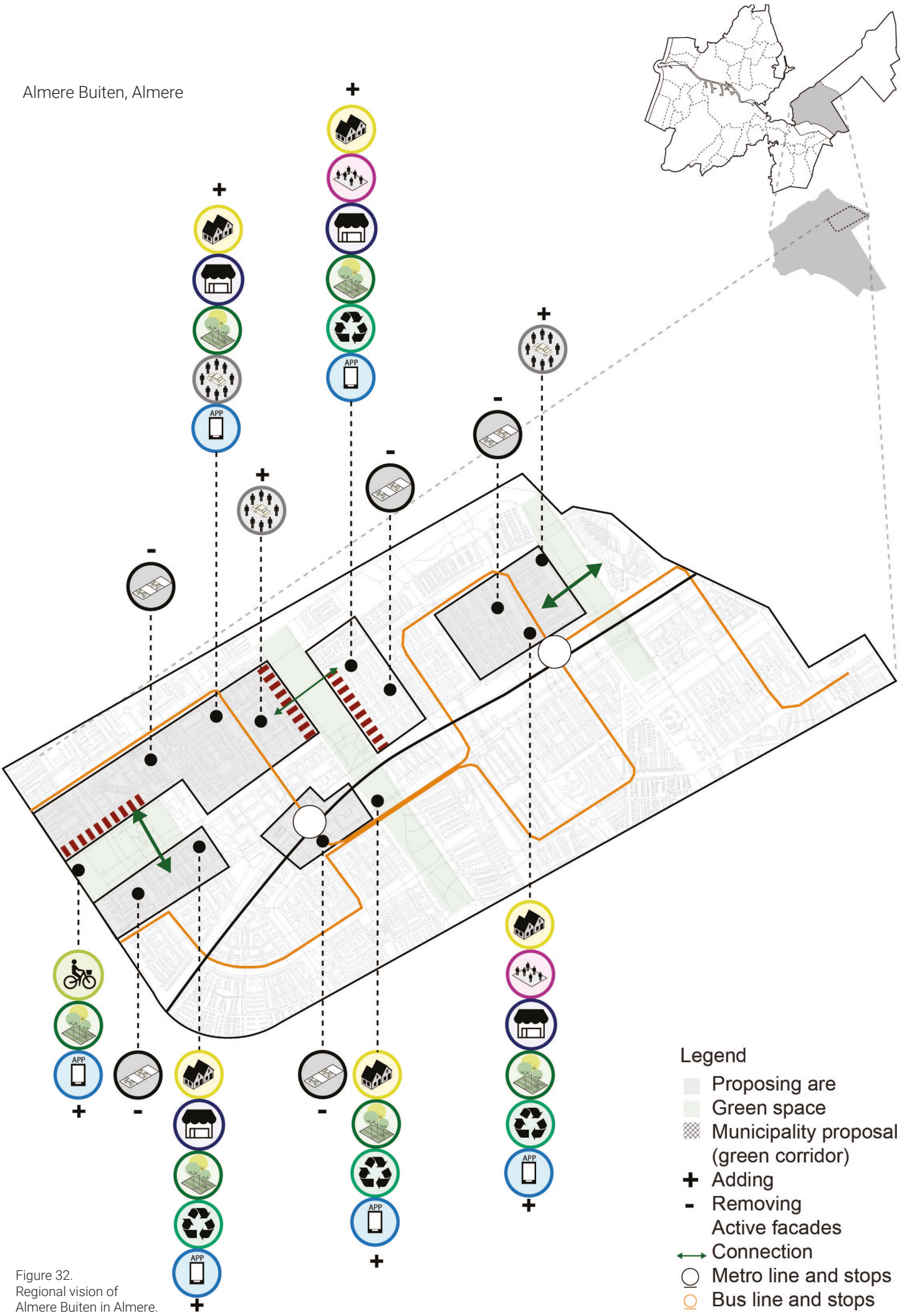
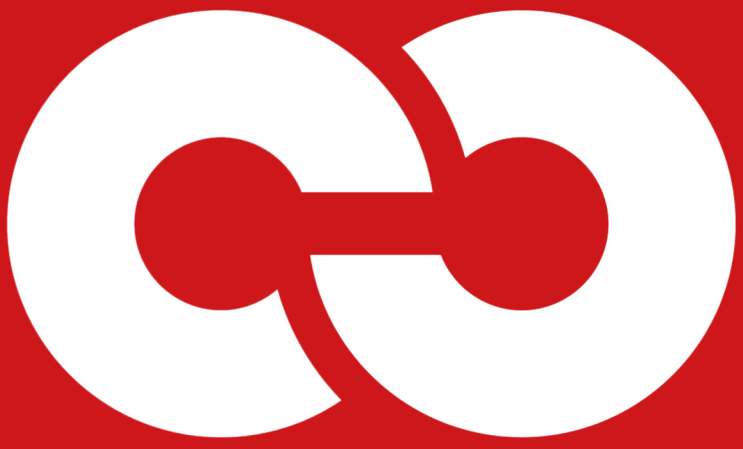
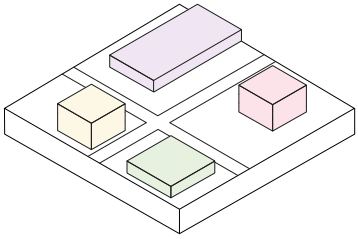


Figure 32.
Regional vision of
Almere Buiten in Almere.

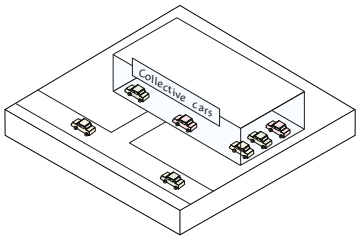
| 06

A STRATEGY FOR LIVABILITY





(1)



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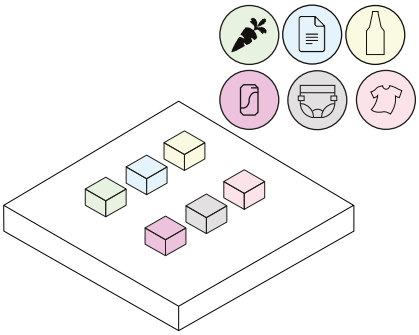

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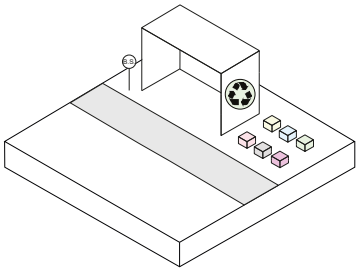

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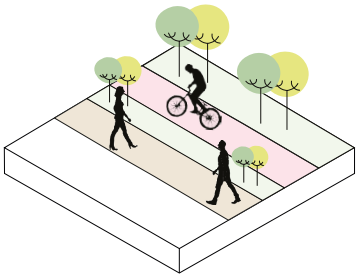

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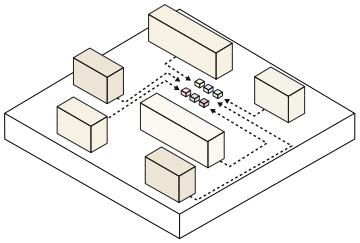

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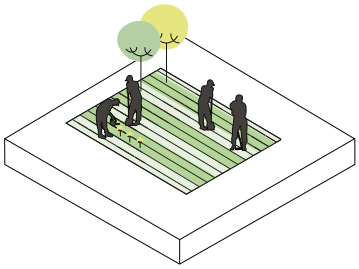

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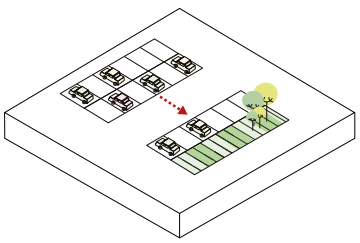

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6.1 PRECONDITIONS FOR LIVABILITY

This chapter will further explain how the vision of both the region and on neighborhood scale will be reflected by explaining the main thinking behind our strategy, what design principles we are using and why, and who the stakeholders with their respective positions.

Following that, we are going to describe the phases and timeline of the project, and later, in more detail, the spatial interventions. Finally, we will present a tool for future developments with which experts can design with sustainability in mind and people are integrated in a way that encourages circular economy.

Principles:

1) **Mixed use:** In order to achieve a livable and enjoyable environment for people, there is a need of variety of uses

2) **Share of goods:** In order to minimize and reuse the space there is a need of sharing facilities, transport and infrastructure.

3) **Source separation:** Due to the increasing amount of waste there is a need of increasing the waste separation and reusing materials to release space from landfill and maximize resource efficiency.

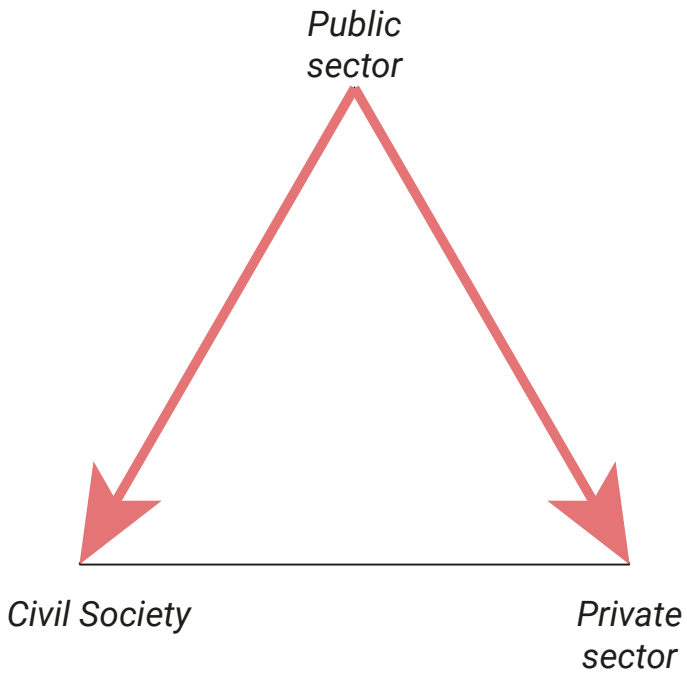
4) **Awareness of reusing sources:** In order to achieve the previous principle, there is a need of spreading awareness to the inhabitants of the AMA to change their lifestyle and habits.

5) **Healthy environment:** Since our main goal is the livability of the region, a healthy lifestyle is required to achieve that. Thus, we introduce a more active lifestyle by increasing the active transport (biking and walking) and minimizing passive transport (by car).

6) **Easy access:** To achieve a livable space for all, people need to have equal access to public goods and services. Thus, we introduced visible and accessible waste infrastructure next to public transport where people can have access every day.

7) **Participation of citizens:** A livable environment also requires good communication between people. We introduce collective activities such as urban farming to encourage people to get in touch more often.

8) **Re-use of land:** By reducing the use of unnecessary facilities, such as private cars, we reuse the space in other ways to increase the level of livability in the neighborhood scale.



With the Netherlands moving towards a "Participatiemaatschappij", shifting responsibilities towards the market and civil society, we believe there is a need to rethink development in a way that benefits the citizens and maintains accountability.

In this model, that is still developing, the market or private sector emphasises individual interests, while civil society emphasises collective interests in varying coalitions.

Having this shift towards the private sector and civil society in mind, we propose a development model in which there is a balance between the two and the local needs and wishes become guiding.

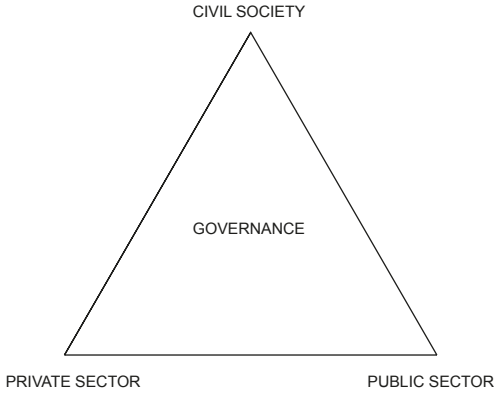
6.2 DIVIDING RESPONSIBILITY | STAKEHOLDER ANALYSIS

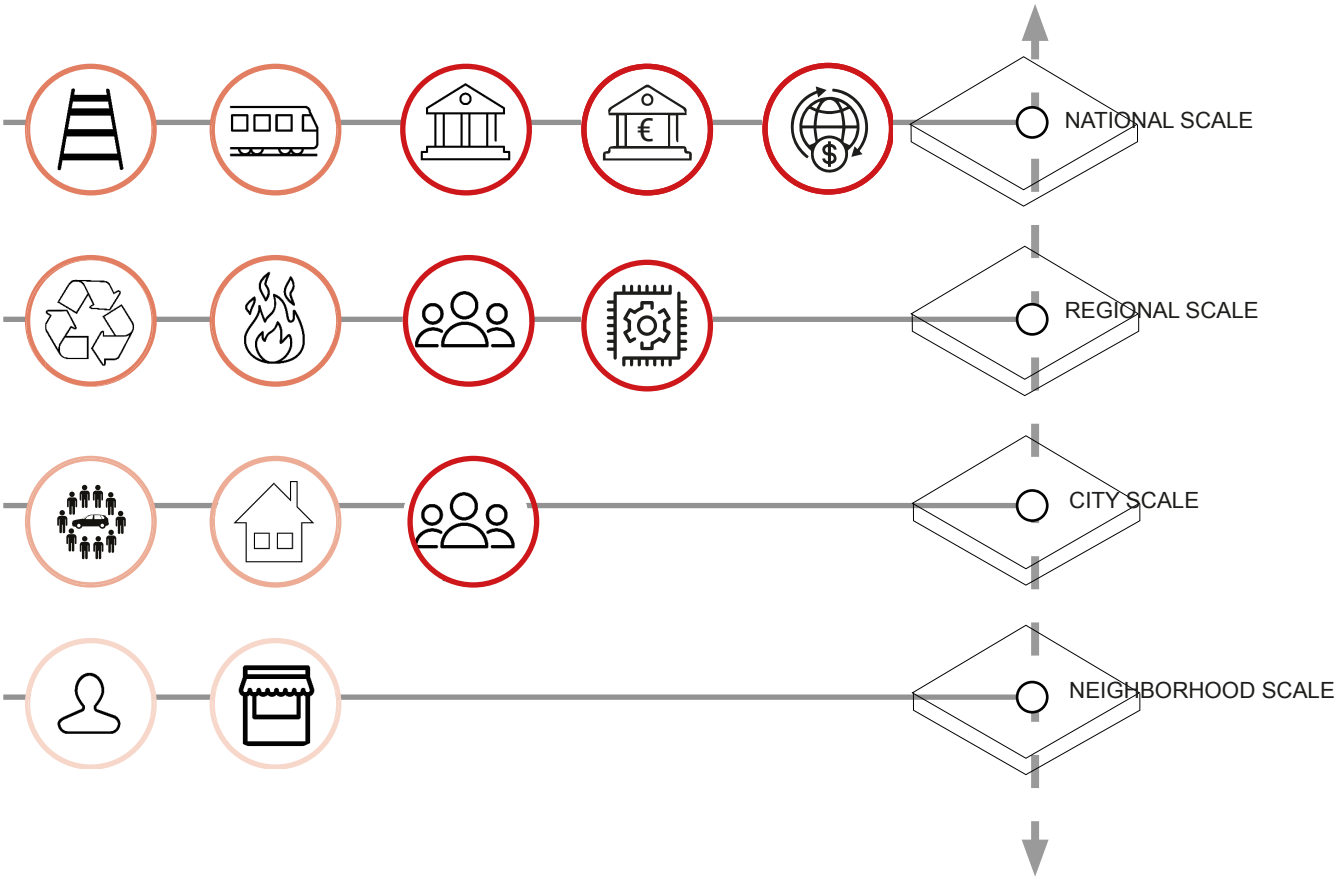
Governance:
Environment of Infrastructure department
Rijksdienst voor Ondernemend Nederland
AMA board
Municipalities of cities representing the AMA

Public sector:
National Railway network
Prorail
Renewi
AEB/powerplants

Private sector:
Bankers/inverstors
Multinationals
Tech companies
Housing cooperations
Greenweels

Civil society:
Small businesses
Citizens





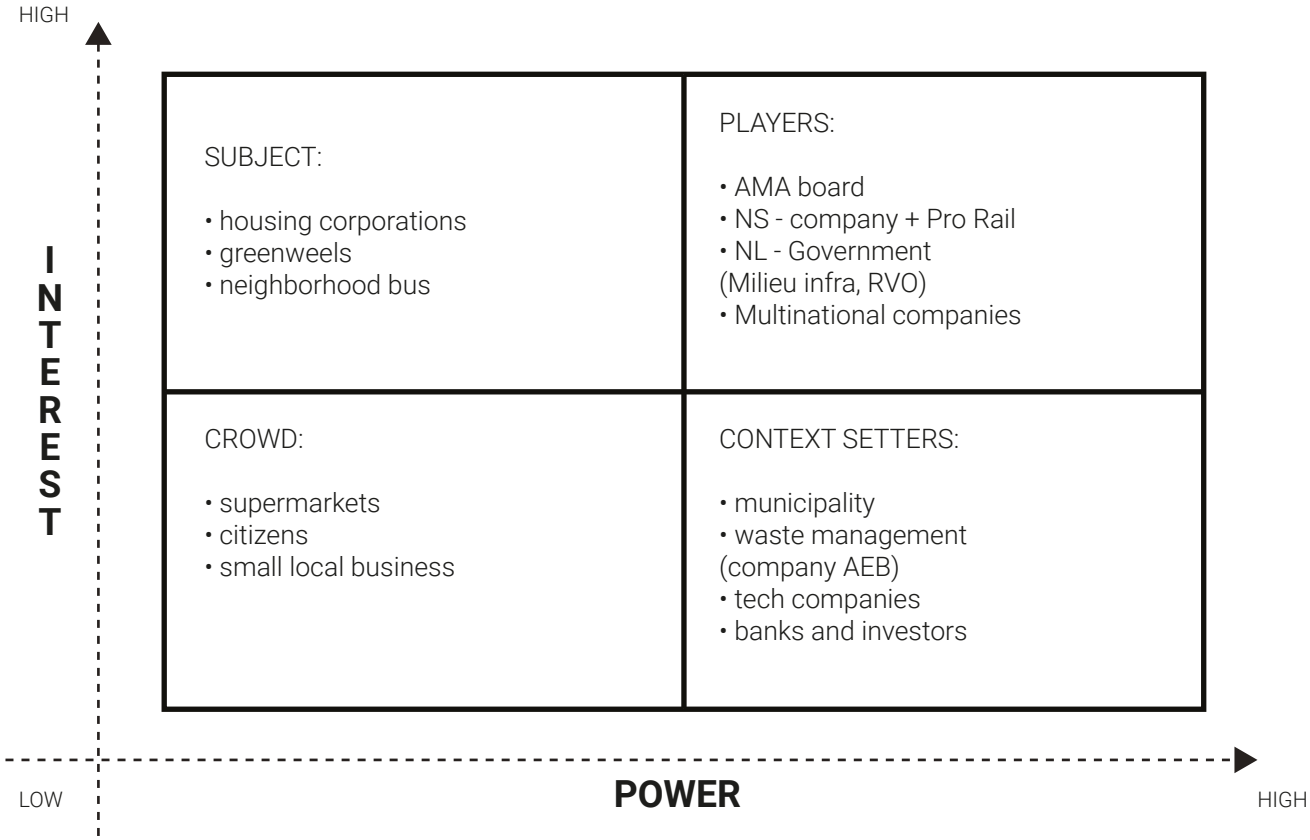


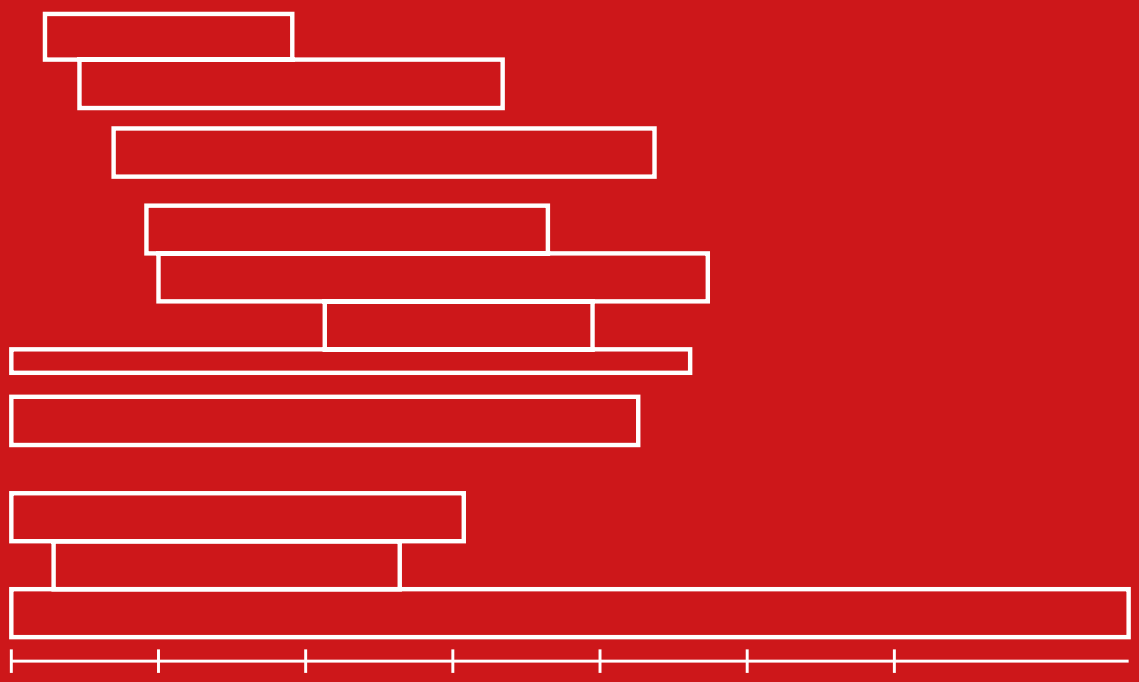
Figure 33.
The power of the stakeholders.

	Actors with production power	Actors with blocking power	Actors with a diffuse power position
Proponents +	• AMA board • municipality • NL - Government (Milieu infra, RVO)	• NS - company + Pro Rail • greenweels • neighborhood bus	• citizens • small local business • banks and investors • multinational companies
Opponents -	• waste management (company AEB) • tech companies	• waste management (company AEB)	• citizens • small local business • housing corporations
Fence sitters o	• NL - Government (Milieu infra, RVO)	• housing corporations • supermarkets	• citizens • supermarkets

Figure 34.
The power and interests of the stakeholders, translated into characters

| 07

MOVING TOWARDS LIVABILITY & CIRCULARITY



7.1 INTERVENTIONS | AMSTERDAM AND ALMERE

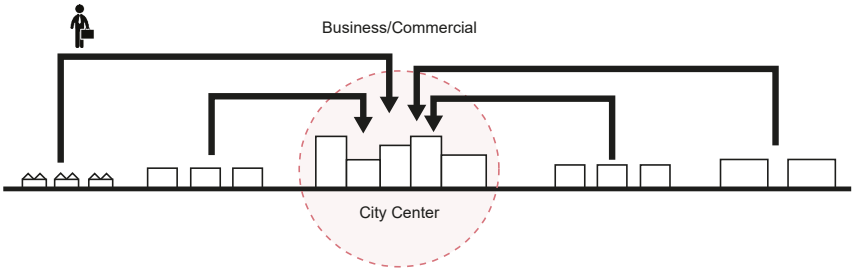
In this chapter we will explain how we develop our vision, which is based on our regional and spatial analysis. Moreover, we will show the main thought process behind our strategy. What are the design principles? Who is involved in the intervention progress? Both, the vision and the strategy were fueled by the need for a circulair future.

Following that, we will show the spatial interventions in more detail. Finally, we will show a tool that local authorities can use it in the future to design more sustainable environments and integrate the environment and peoples' lifestyle to create more circular developments.

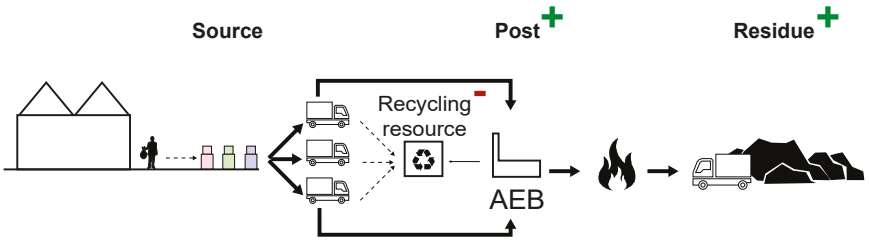
The two sites that we choose to make the interventions are Bijlmer in Amsterdam and Almere Buiten in Almere.

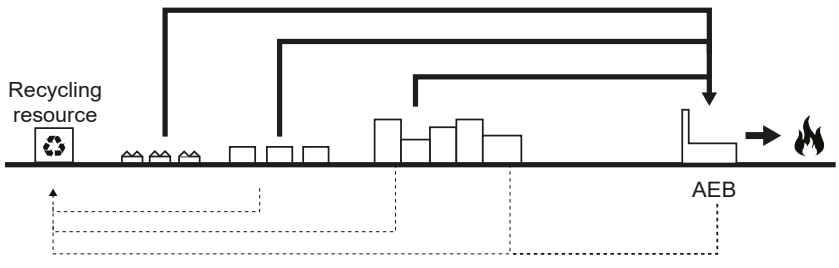
Before

People flow



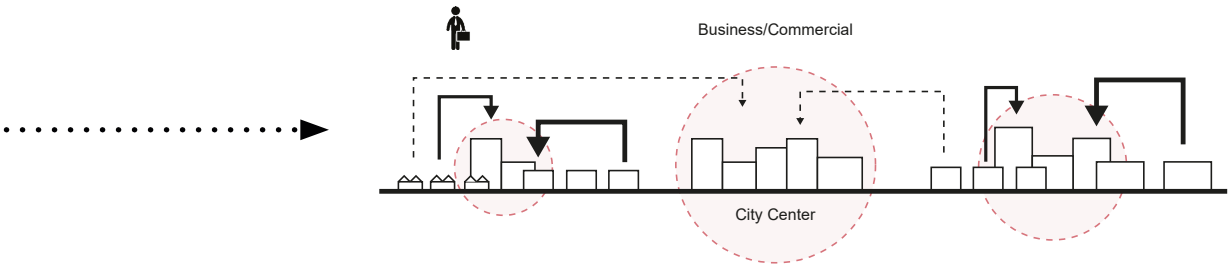
Waste flow



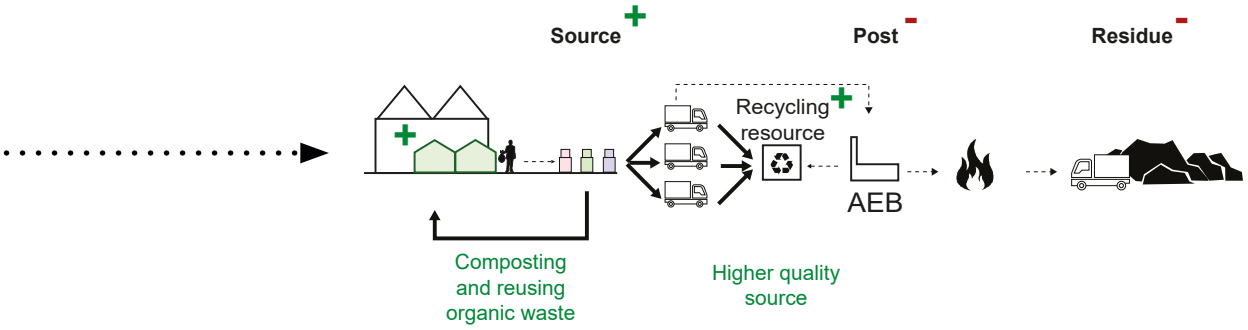


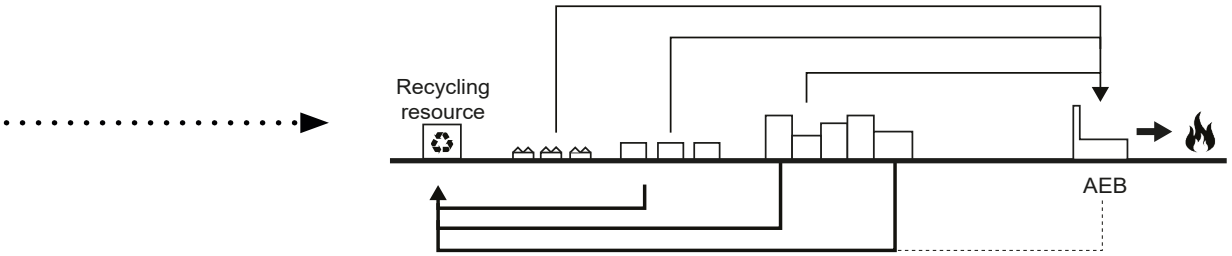
After

People flow



Waste flow





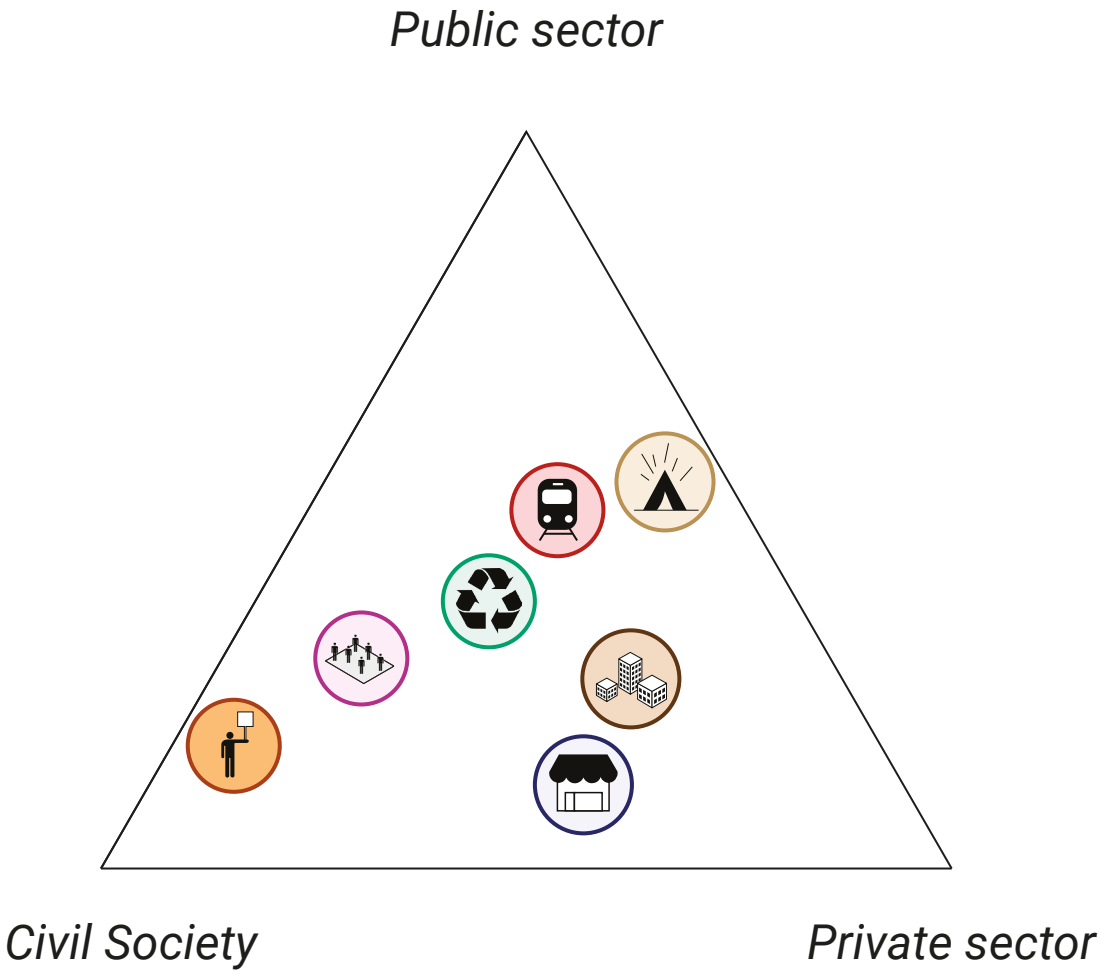
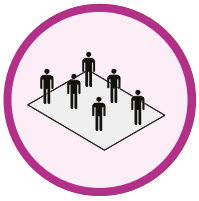


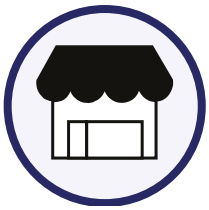
Figure 35.
Types of intervention guideliness, in terms of governance.

7.2 INTERVENTION GUIDELINES



Shared facilities and spaces. By sharing facilities, the pressure on existing infrastructures and demand for resources can be reduced, while introducing possibilities for interaction. This also makes certain services more accessible for citizens.

Collective and active mobility. This includes shared cars and new concepts such as demand driven public transportation. Instead of just taking up a lot of space standing still, cars can be used more efficiently and the space can be used to make active transport more attractive.



Local businesses. As the MKB-sector (small to medium sized businesses) is one of the most important in the Netherlands, it should be stimulated in the AMA as well. This can strengthen the local economy and bring more liveliness to neighbourhoods.

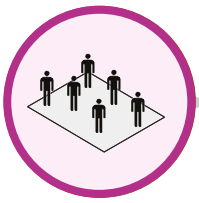
Citizen Decisions. Citizens will no longer be mere consumers of services but will be granted responsibilities and the power to decide on the direction their neighbourhood should take. The municipality is to facilitate this.

Densification. There is a large need for new housing and services in the AMA. Through strategic densification we can increase the viability of certain services while optimally using existing infrastructures.

New Attraction points. Several locations in the AMA could have a high potential for the development of the AMA and can be developed into valuable environments. These in turn can help stimulate developments within these locations.

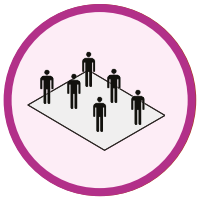
Waste Integration. In order to achieve a high degree of waste separation and reduction it is not only important to increase visibility and awareness, but special care should be taken to ensure minimum disruption of daily patterns. The waste separation systems should be integrated in these patterns.

Collective and active mobility



Shared facilities and space,

Densification,
Collective and active mobility



Waste integration

Shared facilities and space

Densification

7.3 POLICIES TO ACHIEVE LIVABILITY

1. Walkability should be a priority in neighborhood (re)development.

How?
Different services and "opportunities" must be in close proximity to housing.
Increase attractivity of walking infrastructure.
Increase amount of pedestrian areas.
Limit vehicle accessibility
Measures
Establish a desired rate of mixed use and number of services within walking distance. Create attractive active transport routes.

2. Densification should not lead to increased automobile use.

How?
Through the inclusion of different functions and services, a mixed neighborhood could be achieved.
Equal accessibility of public transport
Measures
Further densification of the neighborhood can take place only if it can be supported with active or collective transport. If it is still desired it will be accompanied by improvements in those. Flexible mixed zoning allowing for flexibility, will be the new standard instead of single function zoning. The number of parking permits granted will be lowered. And when it comes to granting parking permits, collective car users will have preference over individual drivers.

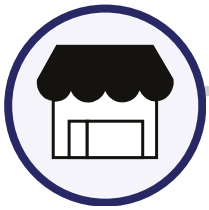
3. Each neighborhood will enable at source waste separation.

How?
In order to achieve a high percentage of at source waste separation, waste collection will not only be in close proximity to the citizens, but also become integrated in their daily practices.
Measures
Strategic placement of waste collection, or waste integration.

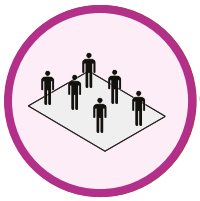
4. New development should focus on empty vacant buildings/areas in the existing cities.

How?
In order to make more efficient use of the existing use before expanding into greenfield sites, a preference is given to the existing built environment. This can be used to also strengthen the support for the existing infrastructure systems, such as rail and metro lines.
Measures
Allowing temporary uses (beyond zoning plans, "exemptions")
Allowing a lower rent to stimulate further uses when the area is considered less desirable from a market standpoint. Only allow green field development if function is grucial and no other area is available.

Citizen decisions



Local businesses



Local businesses

5. Citizens will no longer be mere consumers of city services

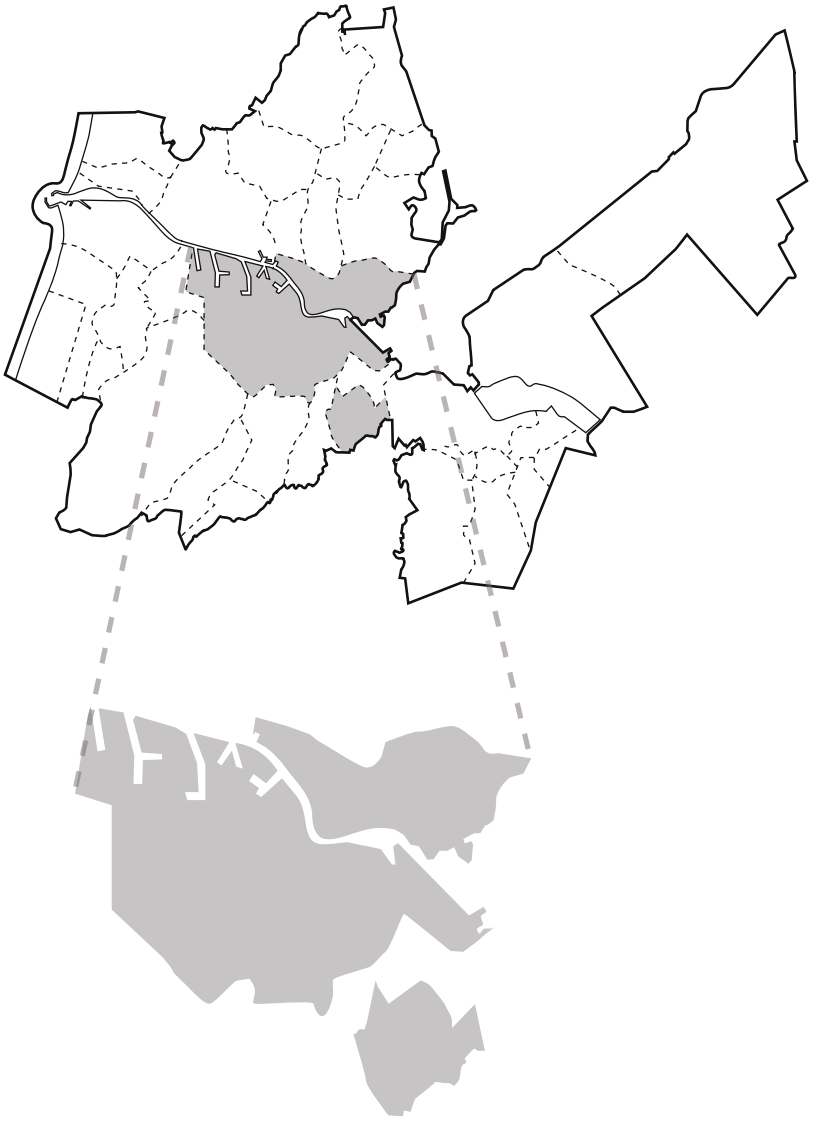
How?
Citizens will no longer be mere consumers of services but will be granted responsibilities and the power to decide on the direction their neighborhood should take. The municipality is to facilitate this.
Measures
Citizens will get the opportunity to negotiate directly with developers when it concerns their direct environment and the city will offer support to see whether their interests are taken into consideration and results comply with the city's goals. As a new form of citizen initiative, citizens will be allowed to take responsibility and decide on the function of their public space. The municipalities will then provide expertise if necessary and evaluate the process.

6. The private sector will be engaged more proactively

How?
In order to be able to better serve the inhabitants in terms of facilities and infrastructure while having lower budgets, municipalities will have to engage in more private public partnerships.
Measures
When new infrastructure developments or large developments are needed for the development of the AMA region, the private sector will be engaged proactively in order to get a better contribution from a sector deeply dependent on these developments.

7. Shared facilities and services get a priority

How?
The municipalities should stimulate the accessibility of services over the ownership of facilities. This can increase the efficiency of said services while lowering the pressures on the municipality.
Measures
As a desirable development, sharing facilities will be made less expensive. Negative externalities will be more internalized.



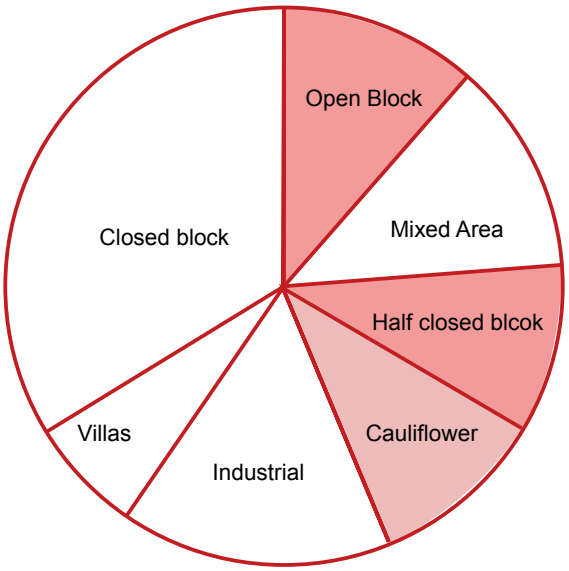
7.4 **BIJLMER** | AMSTERDAM

Site location

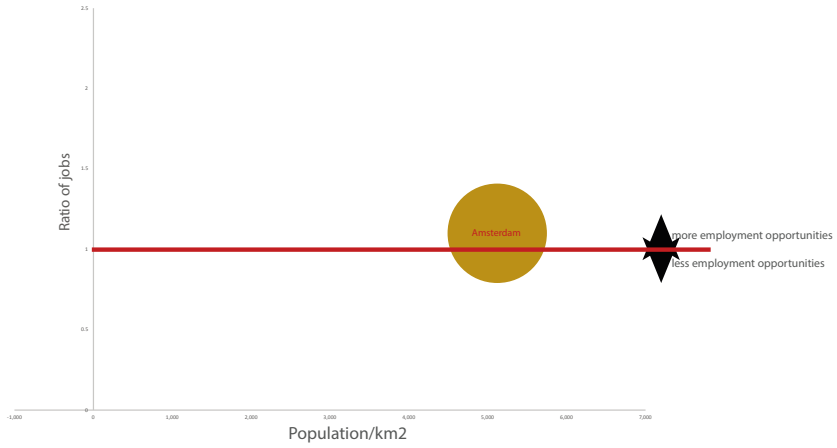
Bijlmer is located in the Southwest of the city Amsterdam and is a newly developed area with high density of population, jobs and public transportation. It has a great opportunity to be densified further to release the pressure from the centre of Amsterdam and meanwhile connect the Eastern part of AMA region.

Neighborhood typology

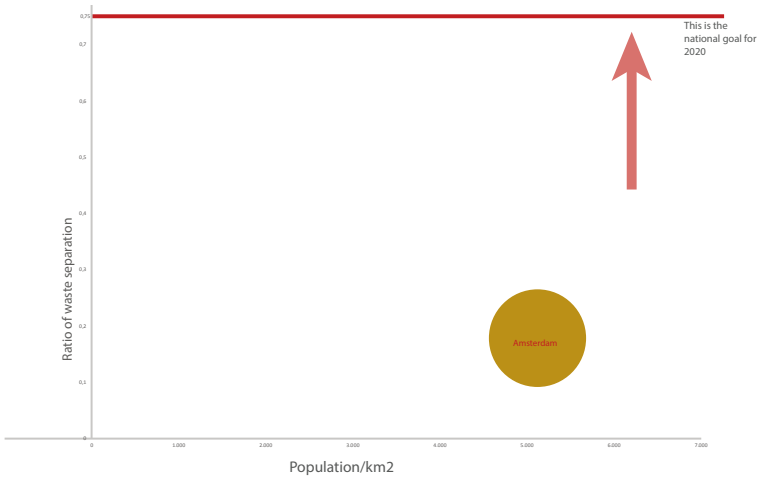
The city of Amsterdam has high population density and, at the same time, creates large quantities of municipal waste. There main residential typologies: cauliflower block, closed block, and open block. These typologies have the opportunity to be densified and be improved in terms of both spatial qualities and in waste separation.



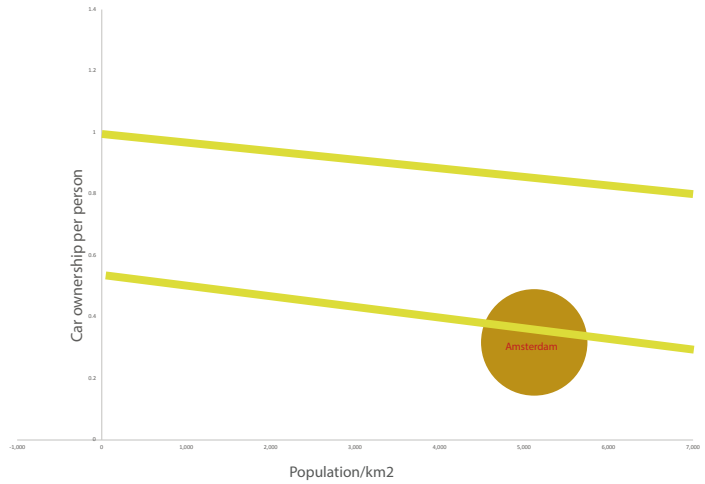
(1) Strategies for the intervention, based on spatial and regional analysis.



1. Amsterdam has high density of population and the density of jobs is higher than the current population.



2. Amsterdam is very weak in waste collection and separation, thus it is urgent to improve awareness on waste separation and create new waste reuse systems.



3. Amsterdam has quite low car ownership due to the efficient system of public transportation. However there is a high number of private cars that travel into Amsterdam every day and that's why there is a need to develop collective car systems to decrease the number of private car ownership.

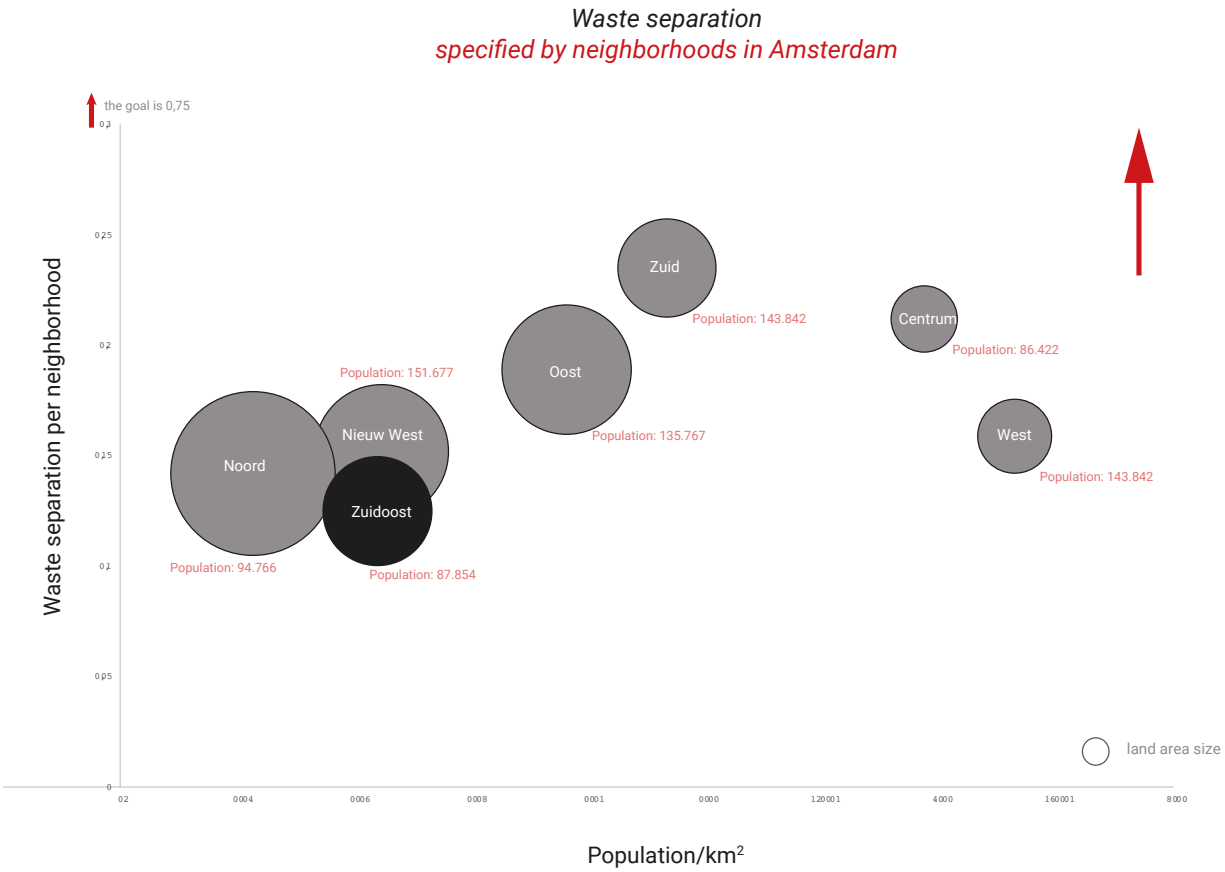
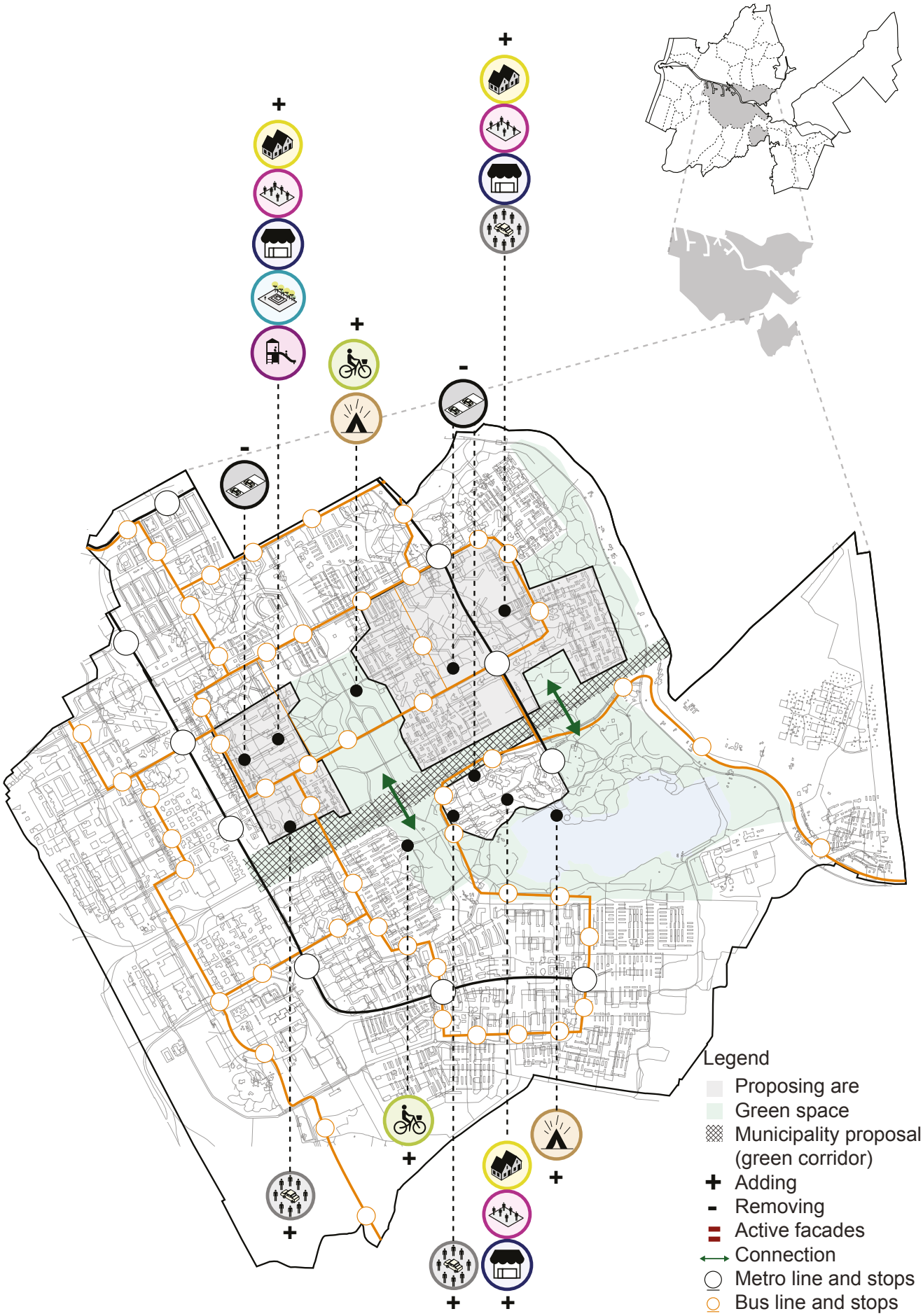


Figure 36.
Scatterplot specified on the neighborhoods of Amsterdam, because of the lack of source separation of regional scale. We see that Bijlmer, which is located in South East of Amsterdam is doing the worst.

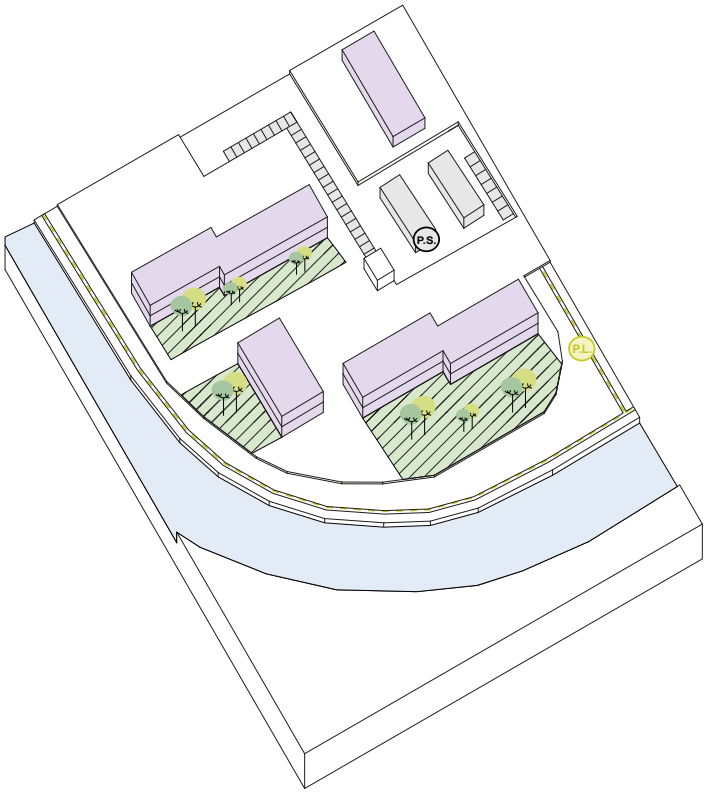
Waste data districts of Amsterdam me (Amsterdam, 2015, p. 17)


Legend
Proposing are
Green space
Municipality proposal (green corridor)
Adding
Removing
Active facades
Connection
Metro line and stops
Bus line and stops

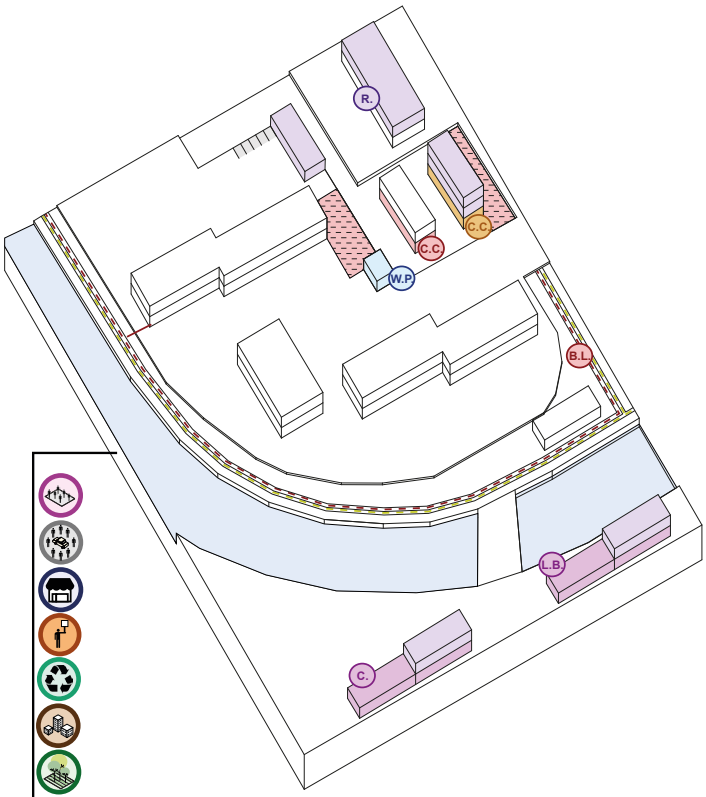
(2) Intervention of two typologies: half closed block, open block, cauliflower.

Half-closed block

Before



After



The half-closed block in Bijlmer has more unused space that can be densified with more shared facilities, collective green space and local businesses.

In these typologies there are existing car parks for private cars. Some car parks are open and others are closed. Since we introduce collective cars, private car numbers will reduce and the need for parking space will decrease. That space can be reused for futher purposes, such as squares, playgrounds etc. Also, there is the possibility to densify housing on top of existing houses or on top of build car parks.

The municipality of Amsterdam will ask the citizens around these areas to choose one of the options provided by the municipality or come up with their own idea. Based on this decision a private company, together with the citizens will develop the potential areas. This concept will be further explained in the next chapter.

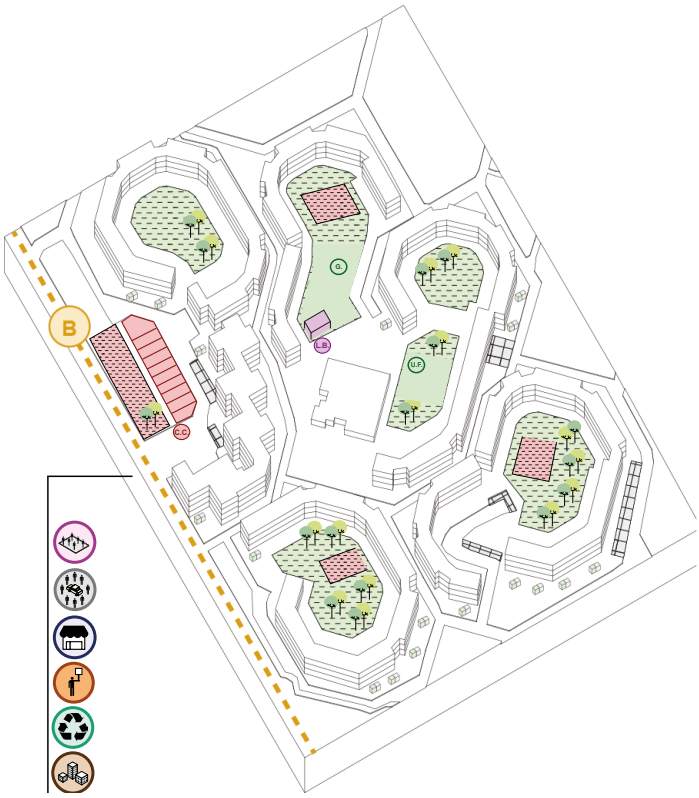
Legend

- Public green space
- Private green space
- Square/Playgrounf
- P.S. Parking space
- T.A. Tourist accomodation
- L.B. Local business
- C. Commercial
- R. Residential
- C.C. Collective cars
- Comp. Composting points
- G. Gardening
- U.F. Urban Farming

Cauliflower

Before

After



Cauliflower block has more centralized public open space which can be used as collective green to create shared spaces for the community.

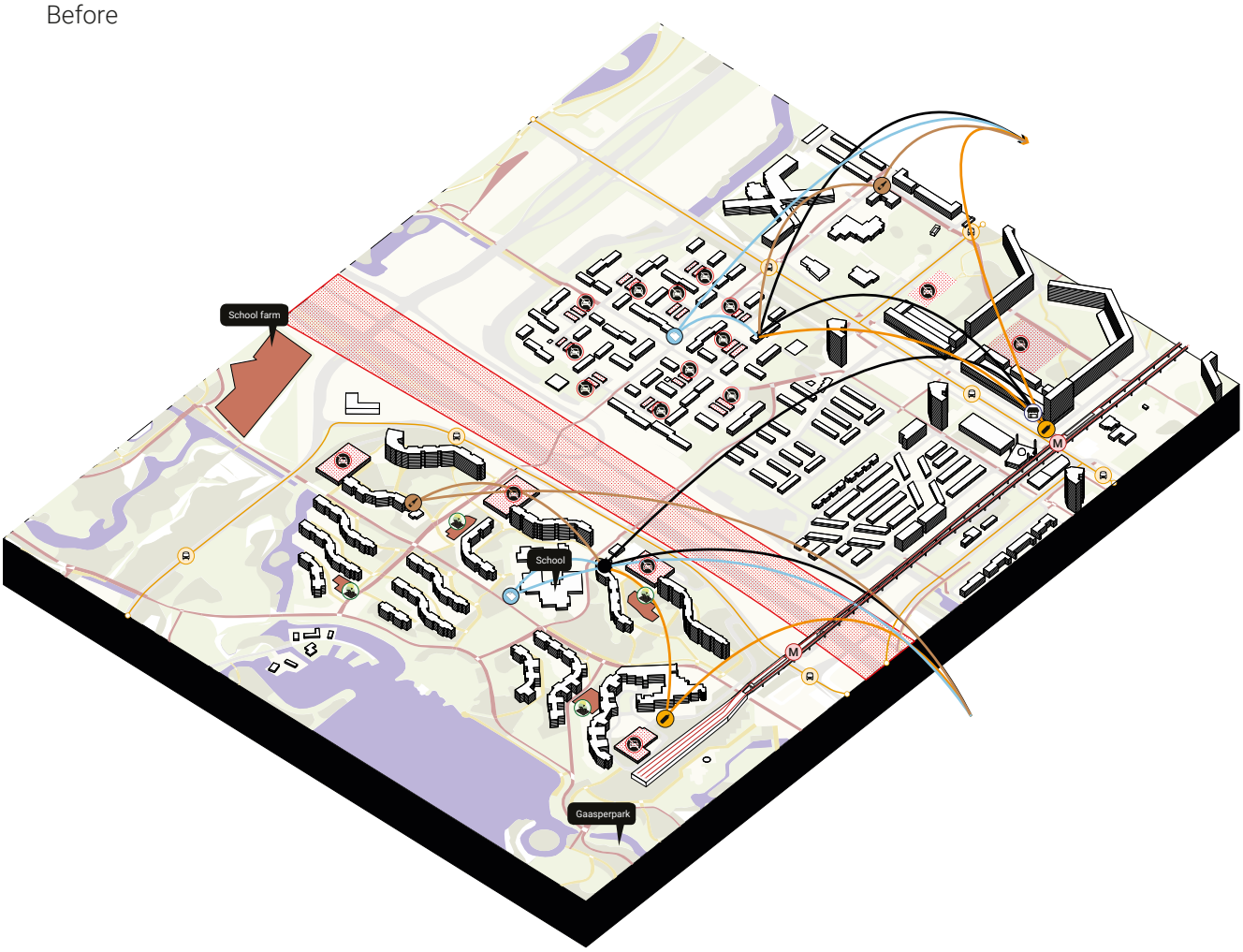
We introduce collective cars, thus the need for private cars will be reduced, the car park will be replaced by other facilities such as local business. All the collective car points will be combined with waste collection points to encourage and remind inhabitants to be more active in waste separation.

Legend

- Public green space
- Private green space
- Square/Playgrounf
- P.S. Parking space
- T.A. Tourist accomodation
- L.B. Local business
- C. Commercial
- R. Residential
- C.C. Collective cars
- Compo. Composting points
- G. Gardening
- U.F. Urban Farming

(3) Interventions reflected in the spatial context of the neighborhood.

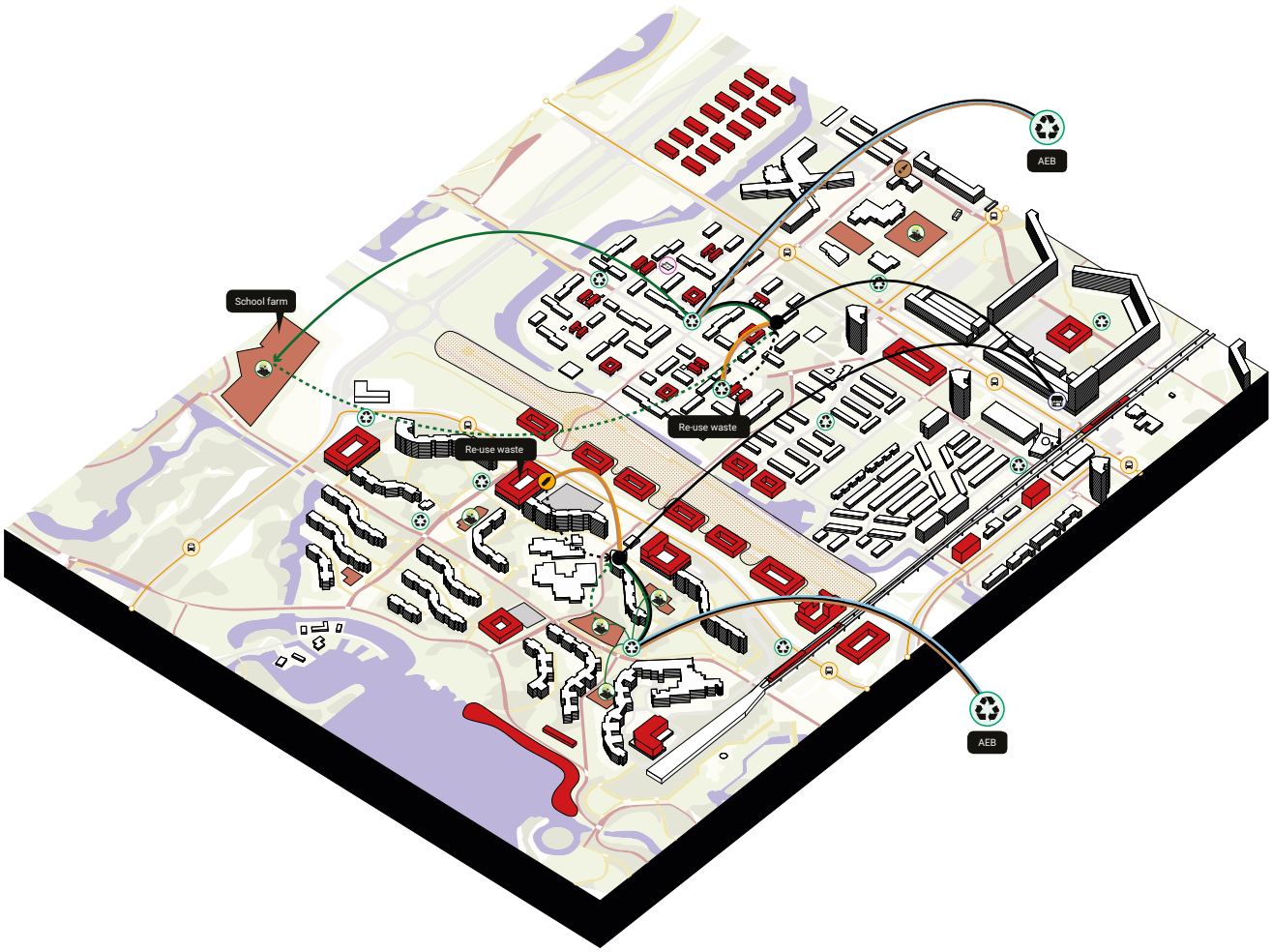
Before



The district, as seen above, includes various typologies like the open block, half open block and high rise cauliflower in the south. The area houses some commercial areas and a lot of green parks. Also, the area has a good mobility connection to the rest of the city by metro and bus to the train station. As seen in the flows, the waste separation lacks in this area and can be improved by reducing the waste and creating awareness by strategically placing collection points.

The area has a good opportunity to be densified with various facilities to improve life quality.

After



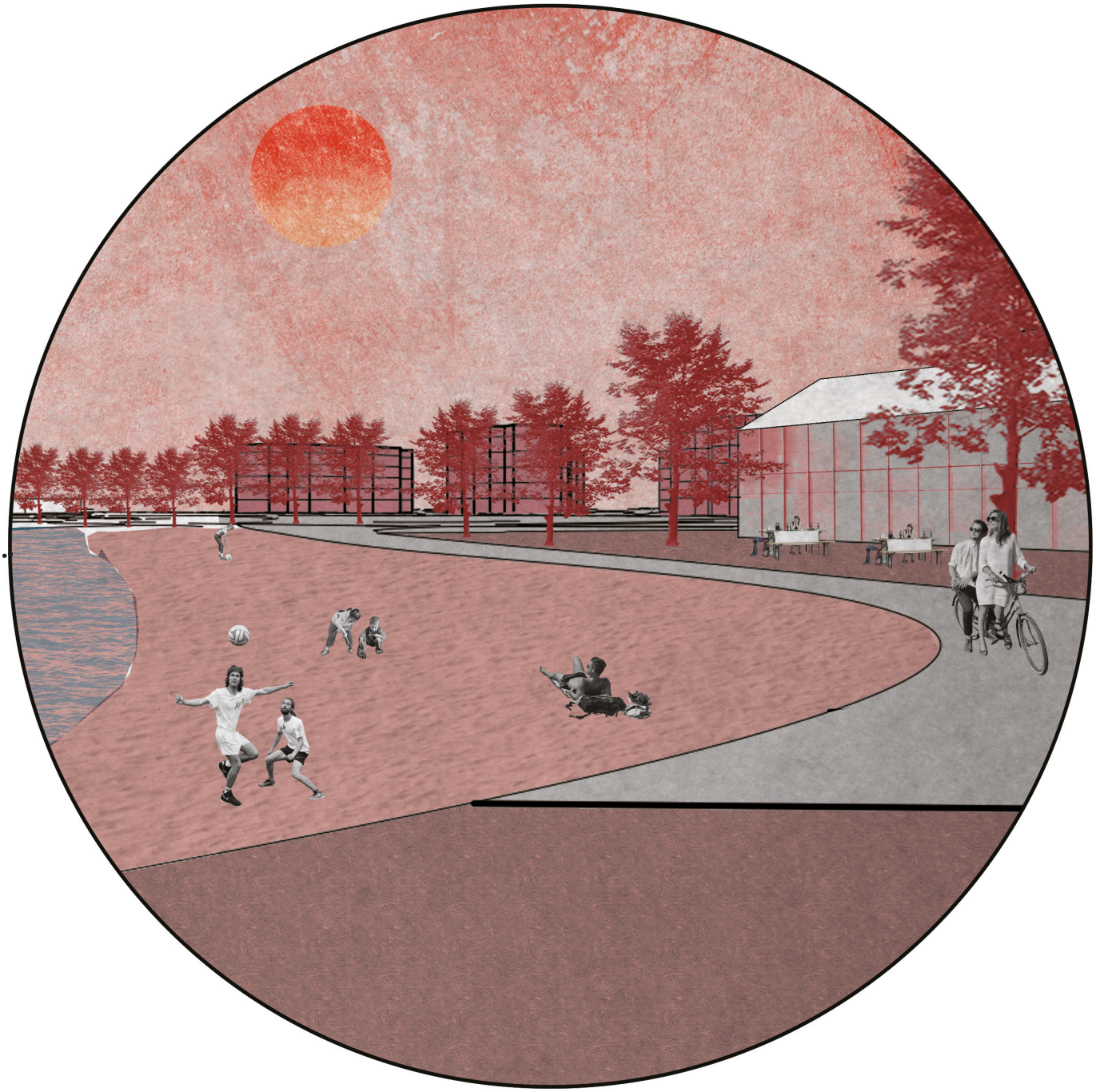
The green corridor, currently under development, will improve the connection between Gaasperdam and the Bijlmer. This creates space for a new park on top of the highway and new residential blocks on the southern part. On top of existing parking spaces, new residential and communal function will be added. Various waste flows will be improved by strategically place collection bins around the new developed blocks. In two of these blocks, a small company for the re-use of waste will be located where, for example, plastic can be converted in new products. Biomass will be collected centrally and used on the differen urban farms, which are already existing in the region.

(4) Zooming in livability.


Re-use waste
New park
M
M

Bijlmer Beach

The Bijlmer beach will be a new attraction point in the South-East of the city. The Gaasperplas is a well connected lake by metro and has a park with a small harbor. This new development will increase the quality of life in the Bijlmer and the citizens of Amsterdam.



New attraction point on city level. The beach will be a new developed area where the citizens of Amsterdam can recreate and participate in the activities organized around the beach.

To compensate the inhabitants of the high rise cauliflower area there will be shared facilities in a communal center.

Moreover the citizens have the opportunity to decide what will happen in empty spaces between the high rise cauliflower.

Communal court development

The parking blocks will be developed with citizen initiatives. The space on top and around these parking plots can be filled in with various functions. The small scheme on the right explains this citizen initiative policy briefly. In the next chapter this will be further elaborated.

Inhabitants around these garage blocks may decide what is going to be developen in and around this structure. Some examples:

The left over space will be used for the parking of shared cars.

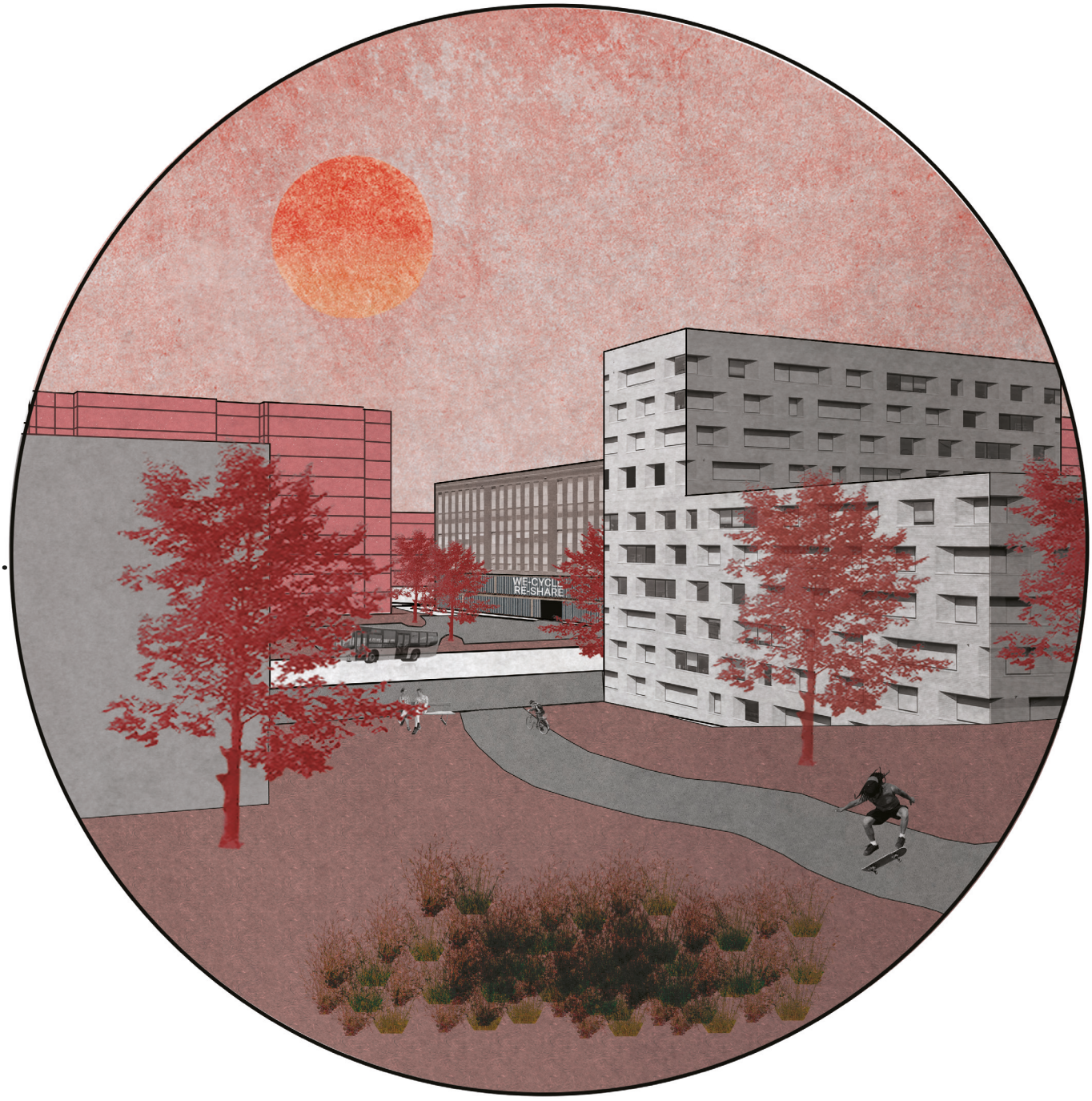
Each block will have it's own shared waste seperation point.

On top of the garage structure, some densification of housing or commercial functions.

- Shared facilities
- Playground
- Local shops
- Collective green

New residential development

The existing parking blocks will be topped with residential functions. The parking spaces will partially be used for shared cars to increase the use of these by the citizens. The parking area as shown in the image will partially filled with commercial functions such as a supermarket. In this block there will be a waste re-use and refurbish point to create awareness for waste reduction.

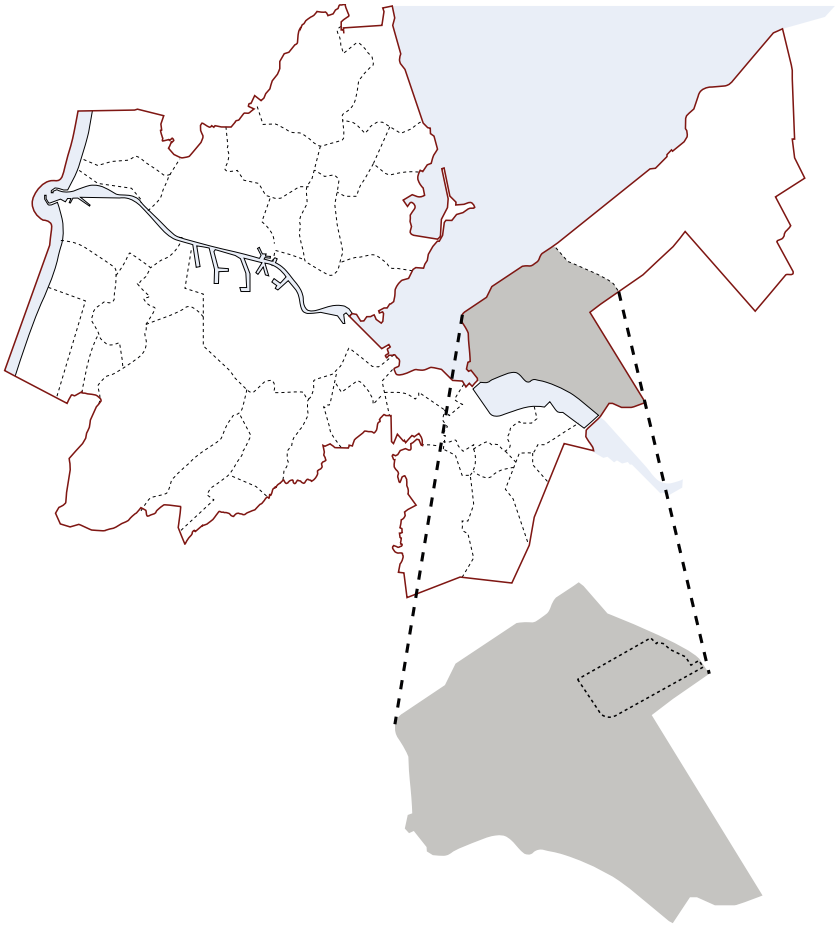


The existing parking garages within the high rise cauliflower area will be transformed to shared car parking area.

Densification will take place in the high rise cauliflower area in order to keep the neighbourhood attractive.

A waste refurbish point will collect useful waste from the Bijlmer area to up-cycle for instance plastic to new products. Inhabitants will in this way actively be involved in the process of reducing waste.

A new urban square will be the center point for these functions.



7.5 ALMERE BUITEN | ALMERE

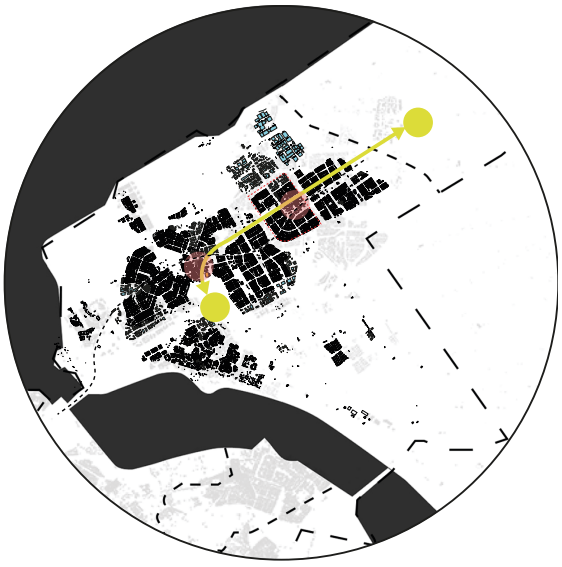
Site location

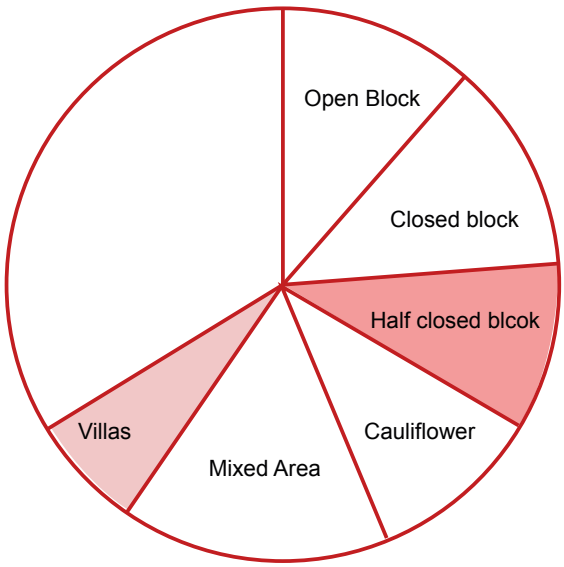
Almere is a car oriented city due to the fact that the transport system is not very strong and the job opportunities are very low.
Almere Buiten is located between two city centres with the railway passing through. This area also includes nature zones, such as small forests. The lakes of Almere and the big lake of AMA are also located nearby. These conditions create a perfect opportunity to introduce the location as a touristic destination and release the pressure of tourism from Amsterdam while developing more livable environments for the inhabitants.

Neighborhood typology

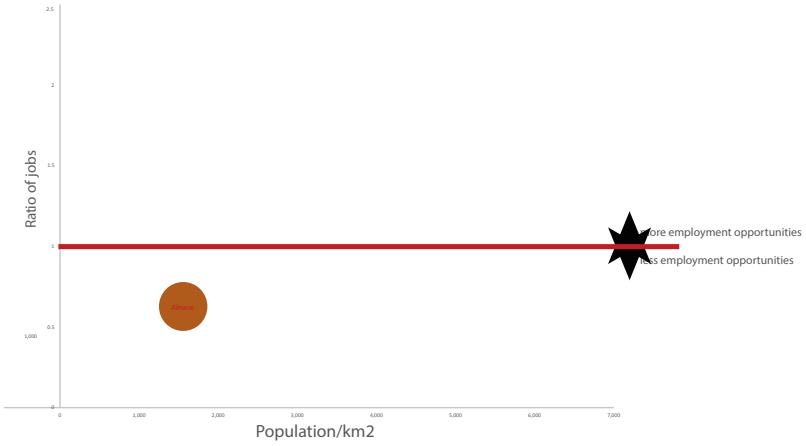
Almere has a medium population density and has a variety of house typologies, seven to be exact.

Unfortunately, not all the house typologies can be densified, such as the neighborhood with villas. However, there are still potential spaces that can improve the quality of space and life and make the transport system more interconnected and efficient.

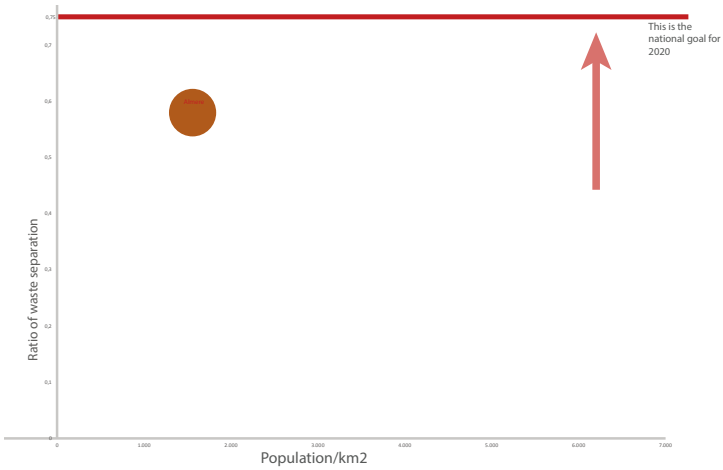




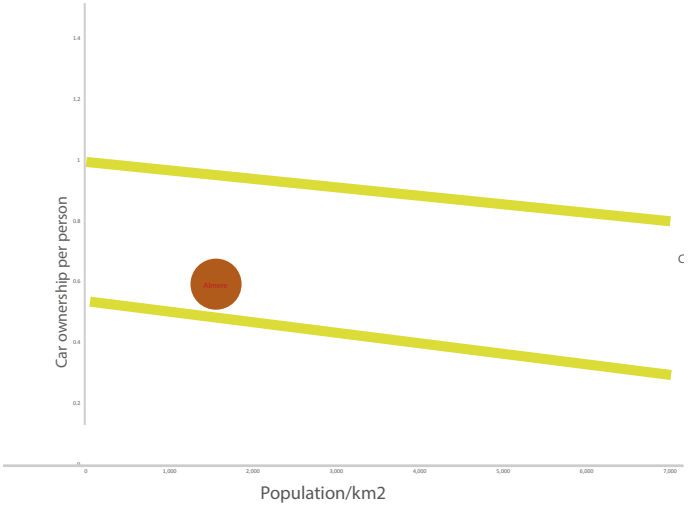
(1) Strategies for the intervention, based on spatial and regional analysis.



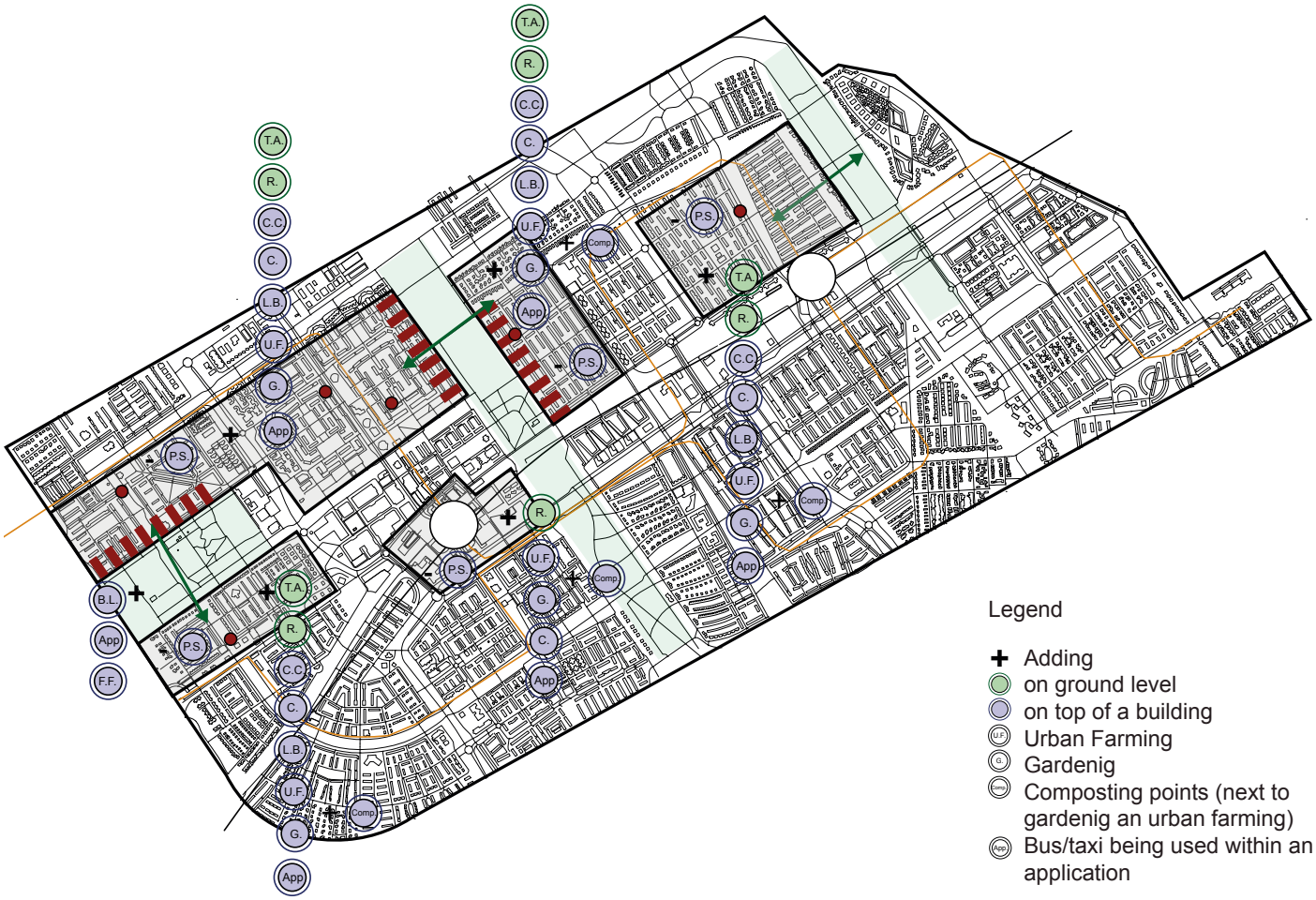
1. Almere has low density of jobs and has the chance to increase the number and the variety of jobs for citizens, therefore decreasing the traveling time to work.



2. Almere is quite strong in waste separation and management, but still needs to increase the amount of waste separation in order to reach the national goals.



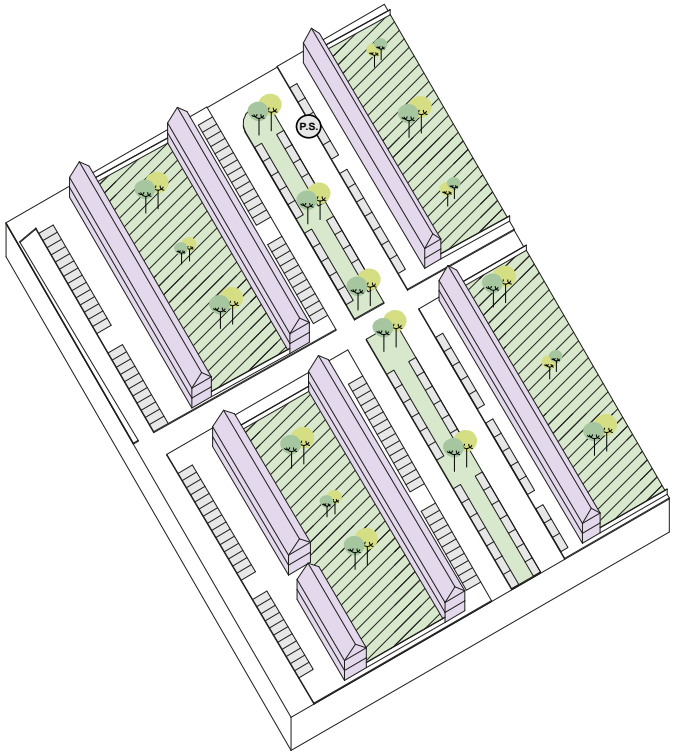
3. Almere is a car oriented city as it can be seen from the car ownership rates in the city. Thus, Almere needs to make public transportation stronger and introduce collective car systems to decrease the amount of cars that are used in and outside of the city.


T.A.
R.
C.C
C.
L.B
U.F.
G.
App
P.S.
Comp
B.L.
F.F.
Legend
Adding
on ground level
on top of a building
Urban Farming
Gardenig
Composting points (next to gardenig an urban farming)
Bus/taxi being used within an application

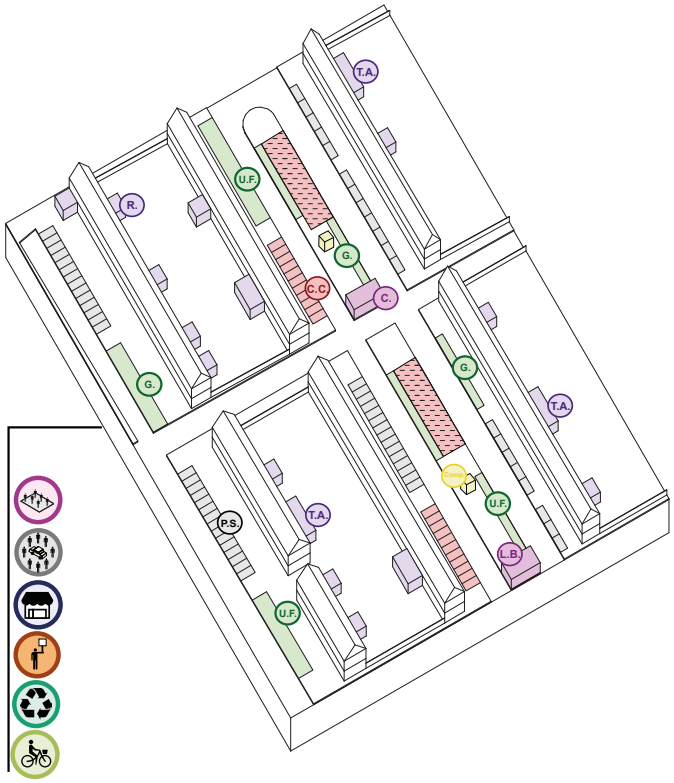
(2) Intervention of two typologies: half closed block & villas.

Half-closed Block

Before



After



The half closed block in Almere has greater opportunity to be developed since there are unused green spaces in-between.

These spaces can be used for collective green such as urban farming and gardening, as well as for other shared facilities.

Commercial function can also be added in the neighborhood for the public's convenience. Since we introduce collective cars, the need for private cars will be reduced and we can reuse it for other purposes, such as squares, playgrounds etc.

People can also densify their own house with community permission either for renting the space to visitors or for themselves.

Legend

- Public green space
- Private green space
- Square/Playgrounf
- P.S. Parking space
- T.A. Tourist accomodation
- L.B. Local business
- C. Commercial
- R. Residential
- C.C. Collective cars
- Comp. Composting points
- G. Gardening
- U.F. Urban Farming

Villa Block

Before

After

Villa neighborhoods in Almere have much lower density. However, there are open green spaces that are not being used and we can develop shared facilities for the inhabitants to increase the livability.

Some of these facilities can be collective green, such as urban farming and shared gardens, or playgrounds.

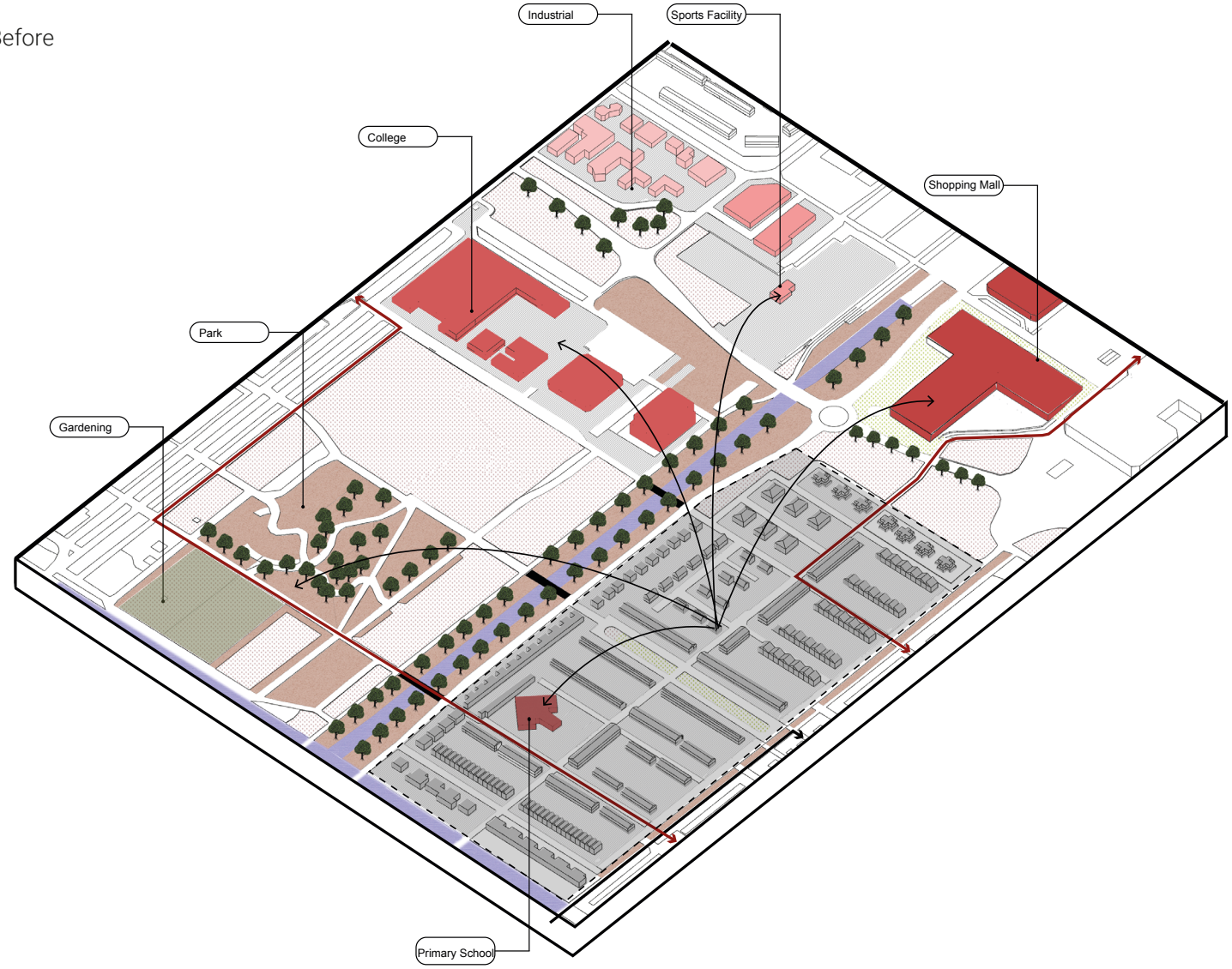
These developments can stimulate communication in the neighborhood. Collective cars can be developed properly in the neighborhood combined with waste collection points to encourage a more sustainable lifestyle and spread awareness for waste separation.

Legend

- Public green space
- Private green space
- Square/Playgrounf
- P.S. Parking space
- T.A. Tourist accomodation
- L.B. Local business
- C. Commercial
- R. Residential
- C.C. Collective cars
- Compo Composting points
- G. Gardening
- U.F. Urban Farming

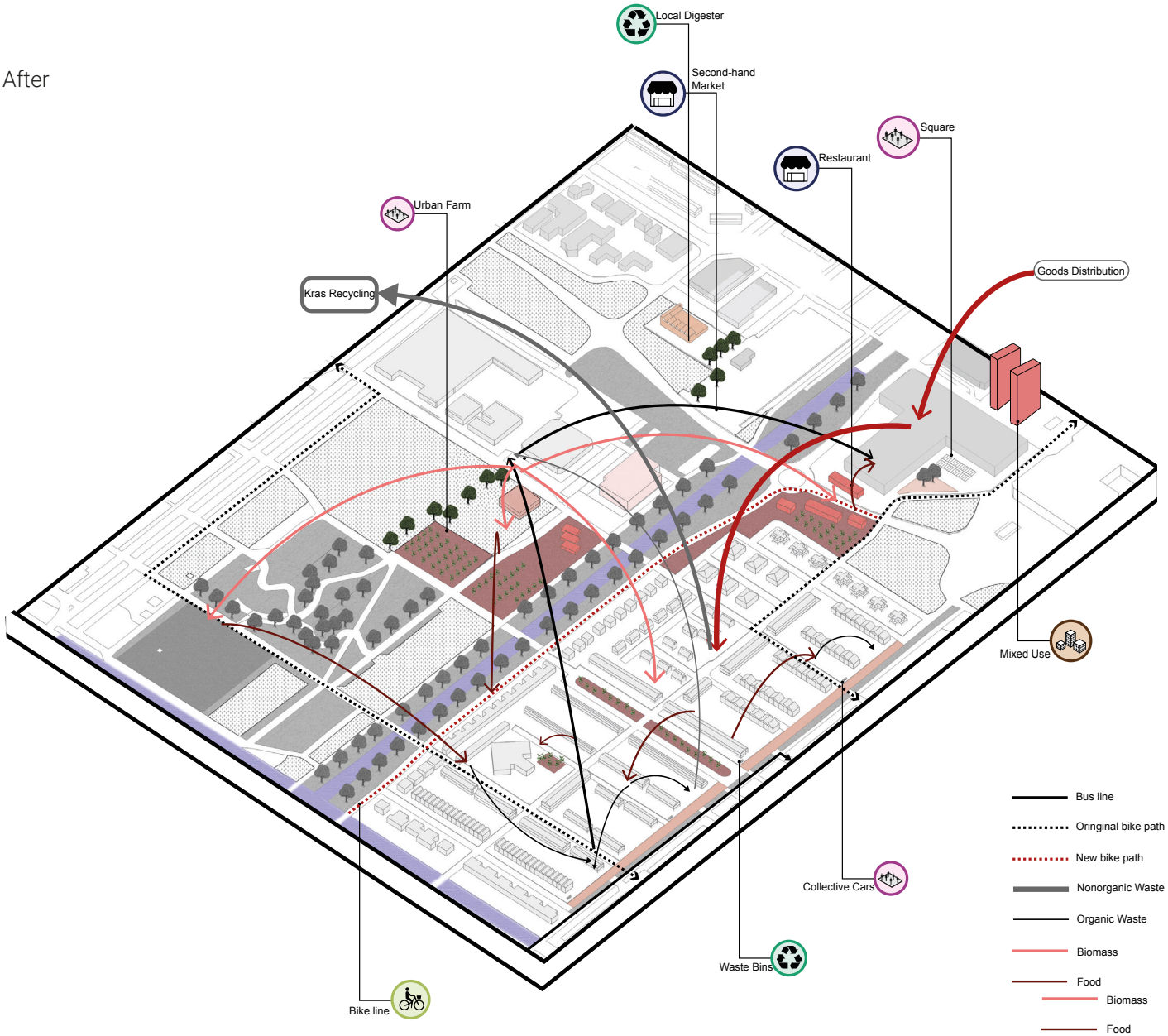
(3) Interventions reflected in the spatial context of the neighborhood.

Before



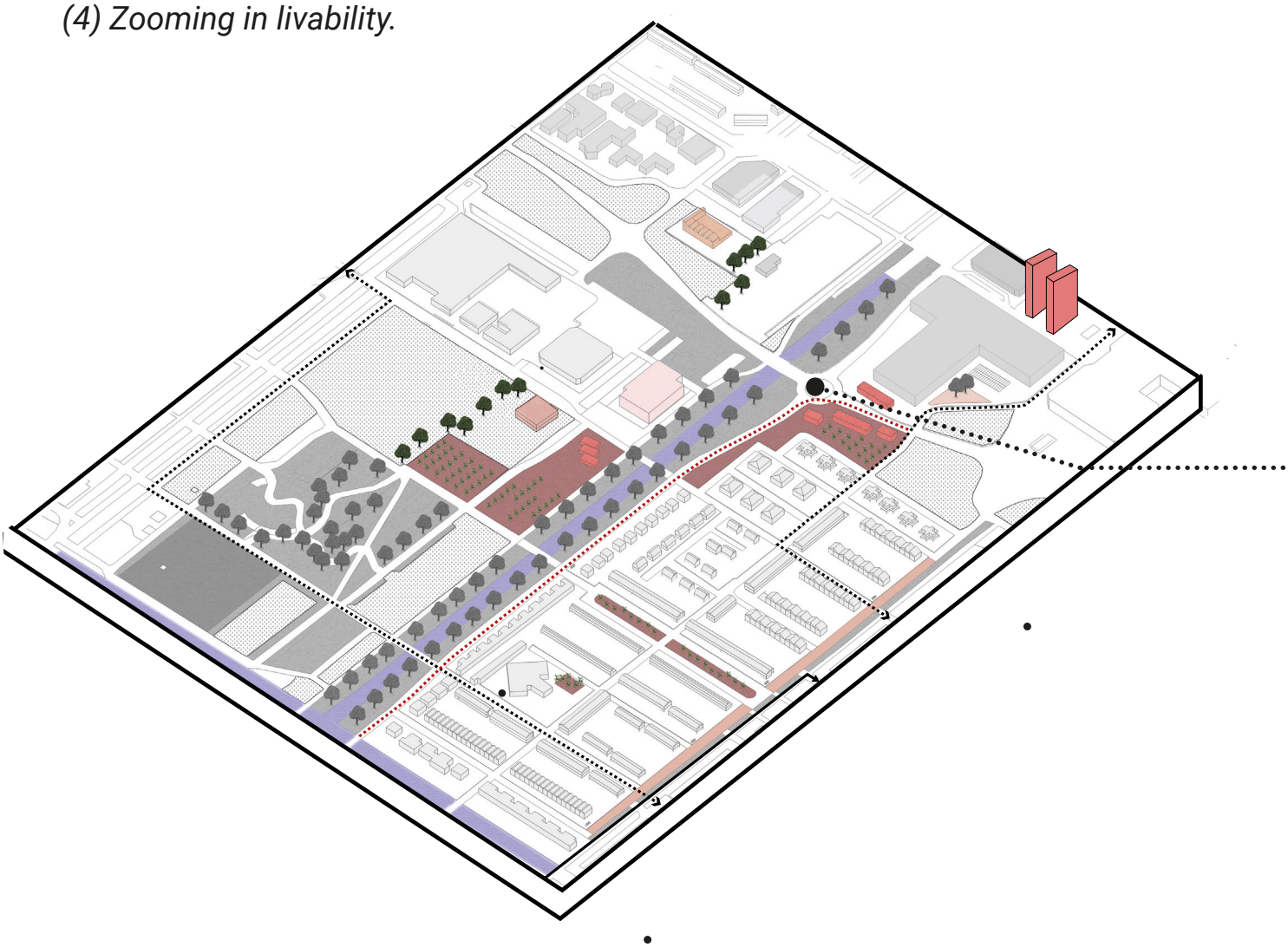
The district area that we choose includes mostly closed blocks and villa blocks. Also, there are other facilities such as commercial spaces, parks in-between, and a college. This area has the opportunity to be densified with various facilities to improve life quality.

After



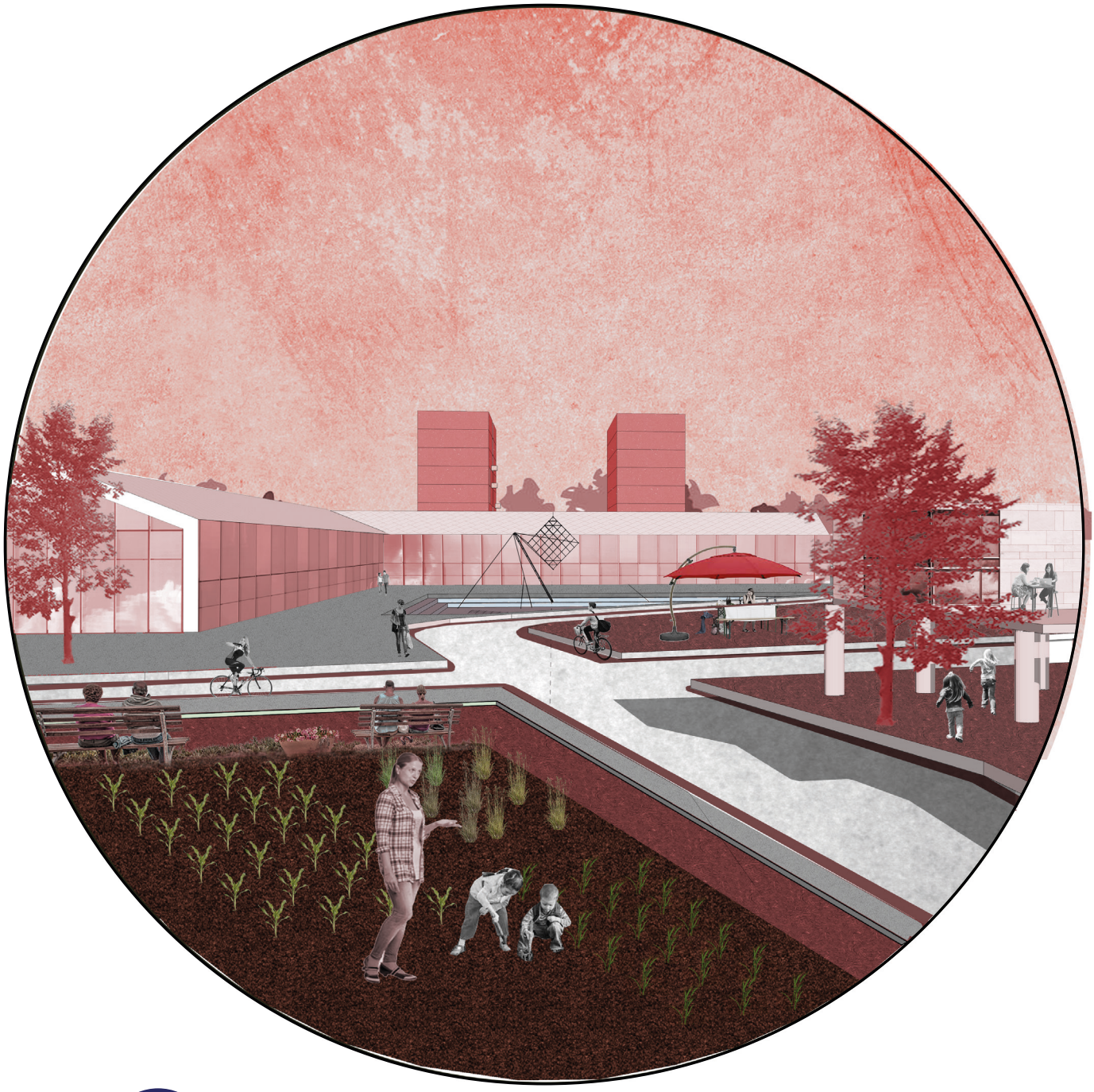
By developing green collective spaces, such as urban farms and shared garden, different groups can participate in these activates and bring the community close, but also can stimulate the circulation of biomass. At the same time, the commercial area has the potential to be densified with mixed functional apartments to increase the capacity of the city center and attract more people.

(4) Zooming in livability.



Mixed use

The crossing on the edge of the neighborghood will be a new attraction point for people living in the neighborhood.Because of the good connection, a mixed of functions could make the location more attractive. Next to the shopping center an urban farm, local businesses and the square can increase the quality of life in Almere Buiten and the citizens of Almere.

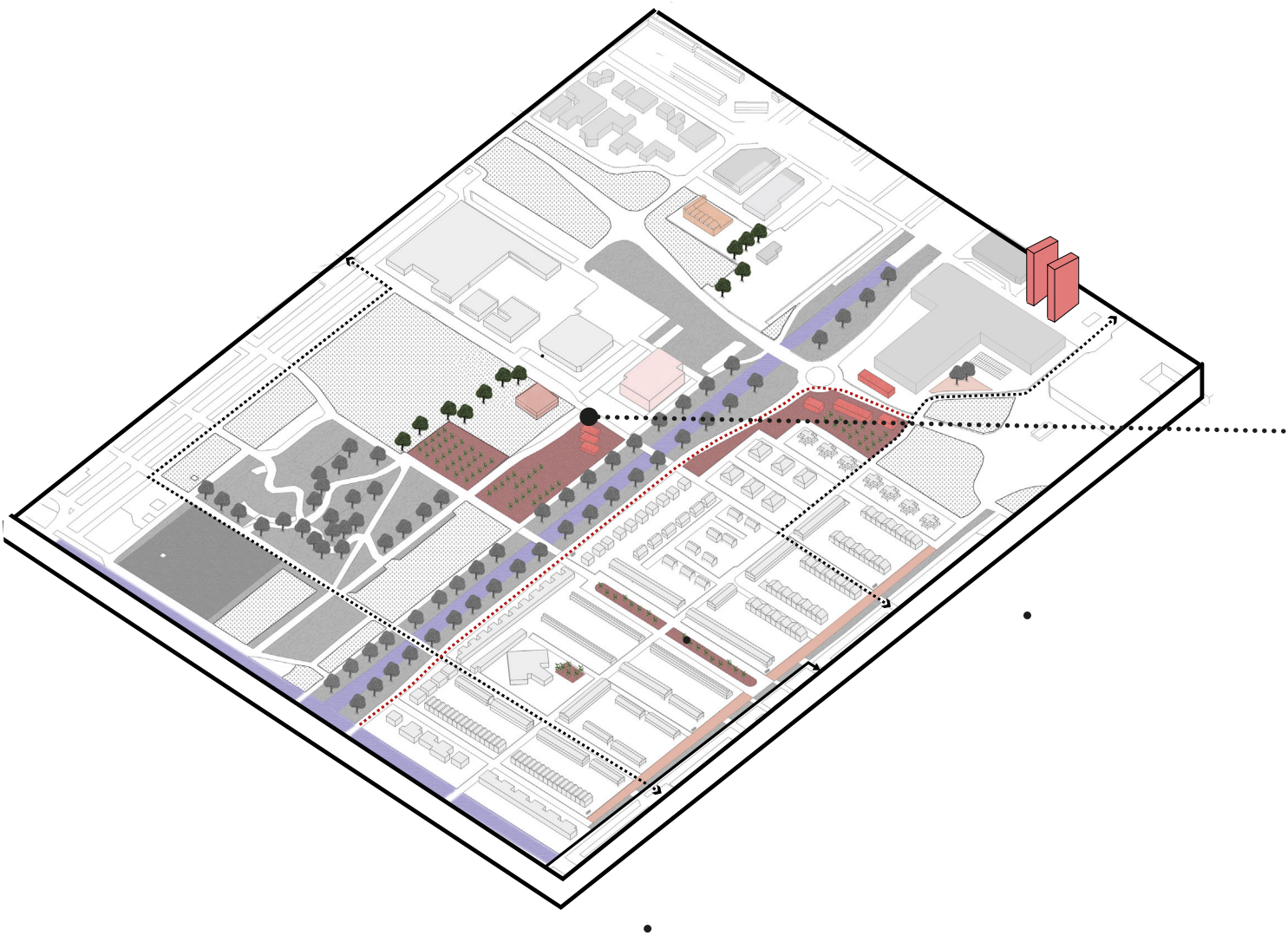


By combining urban farm with restaurants we will encourage people and propose a new way of consuming foods. This way, daily life will be enriched in the neighborhood.

Colletive green space is an important tool to encourage interaction between inhabitants, also provide good view in vacant green space.

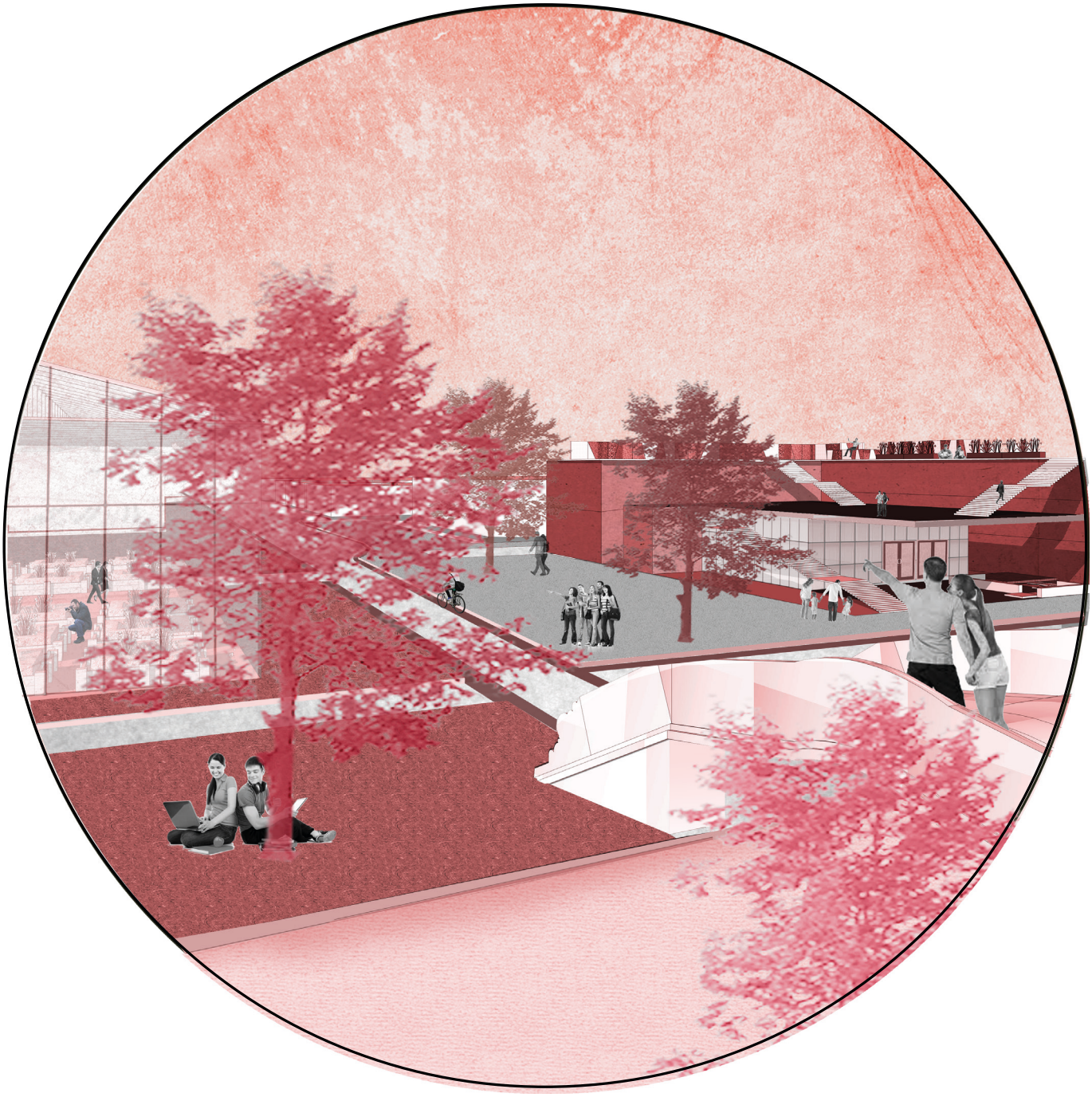
By decreasing the space of parking area, squares and garden can be developed to provide communal space and improve space quality.

Densification will take place in the city center around the shopping mall with mixed used, thus attract more people living and working here.



Place making

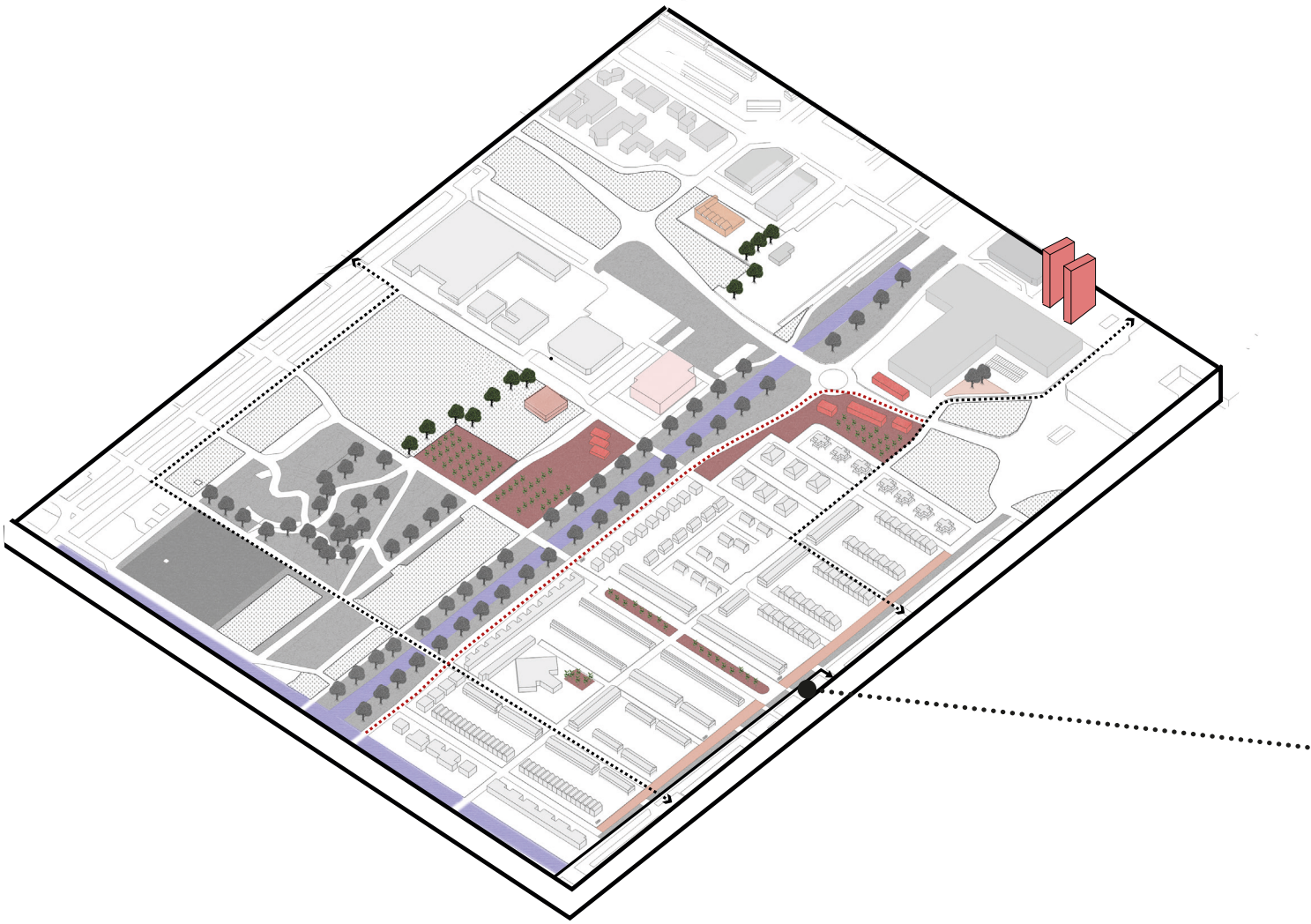
The squarre between two schools in the middle of the neighborghood will be a location where people can meet, share knowledge or visit the organic waste collection center. Because of the schools, this could be a center to learn more about waste recycling and would be a good location to create more awareness among the citizens. At the same time, we can design a place embraced by the neighborhood.



By densifying green space with shared square and multi-functional institution bulidings, we want to stimulate communication between students and inhabitants

Collective green space and green houses can bring students together, while they will take care of the space.

Local shops and cafes can add value between neighborhoods.



Re-using space

The parking lots between neighborhoods will create some “left-over” space, due to the use of shared cars. This space cam be re-used, for the benefits of the citizens. They should also be involved in this development next to their doorstep. The new development could be a playground or collective gardens for example in combination with source separation bins. This way the neighbors benefit from the development, but also stimulate them more to take care after their waste.

Collective cars can be developed with proper amount to save more parking area in the villa neighborhood, and also this could strengthen the social relationship between neighbors.

Increase the amount of bike paths and surrounding facilities to encourage people have outdoor activities just near their home

Local businesses are necessary to decrease car use and make villa neighbourhood more livable and convenient

Collection bins for waste separation can be more connected with public space to make it more convenient for people to participate.

7.6 INCLUSIVE PROCESS | QUESTIONING MARKET LED DEVELOPMENT

In the previous chapter we have shown you how our strategy can be used at different density typologies into circular design development. Furthermore, we have analysed how different densities could be transformed spatially to increase sharing of mobile vehicles and decrease the amount of residual waste. These actions will create space, within we can develop further in the future. This way we design within the existing building envelope and are increasing the livability of the neighborhoods.

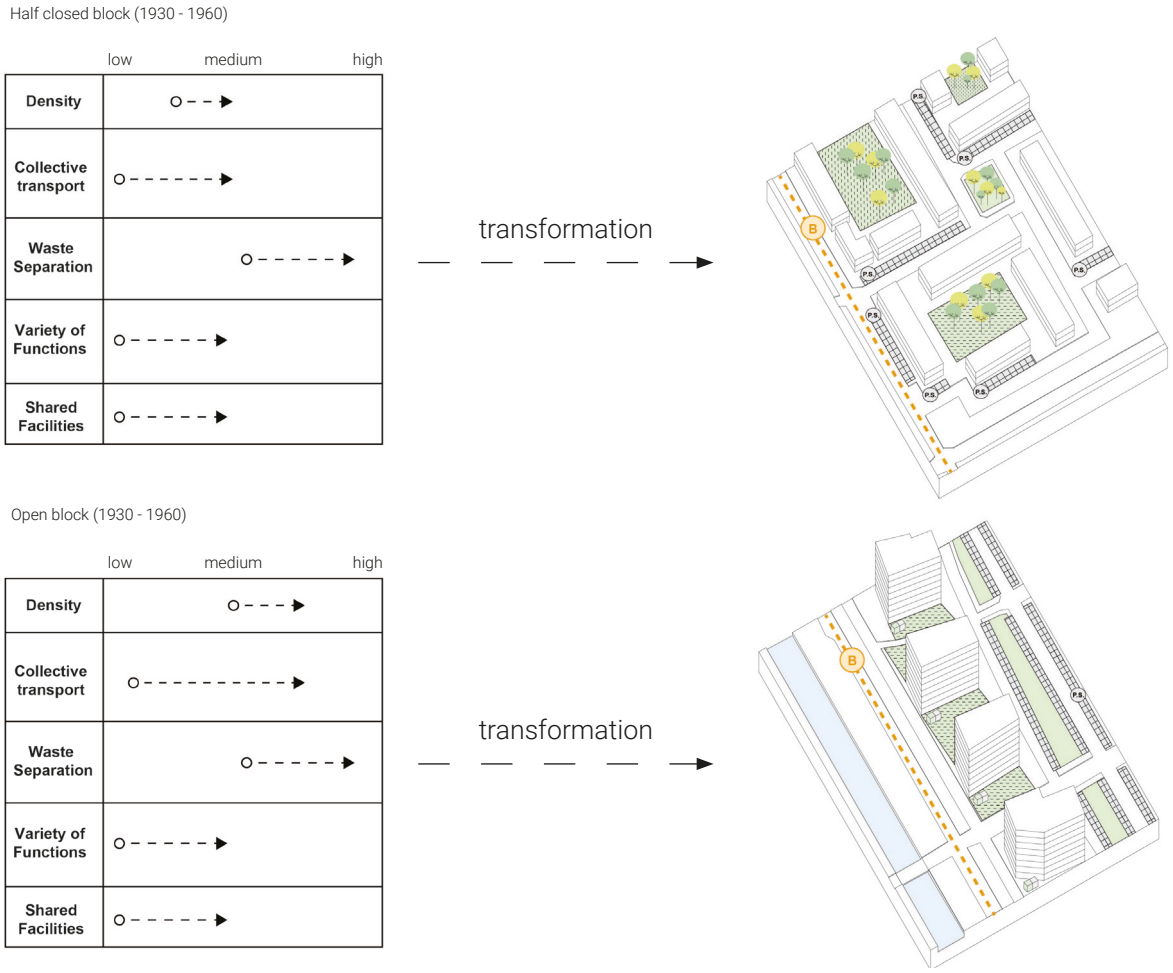


Figure 37.
Route maps to transform space towards a circular system, using the existing spatial context.

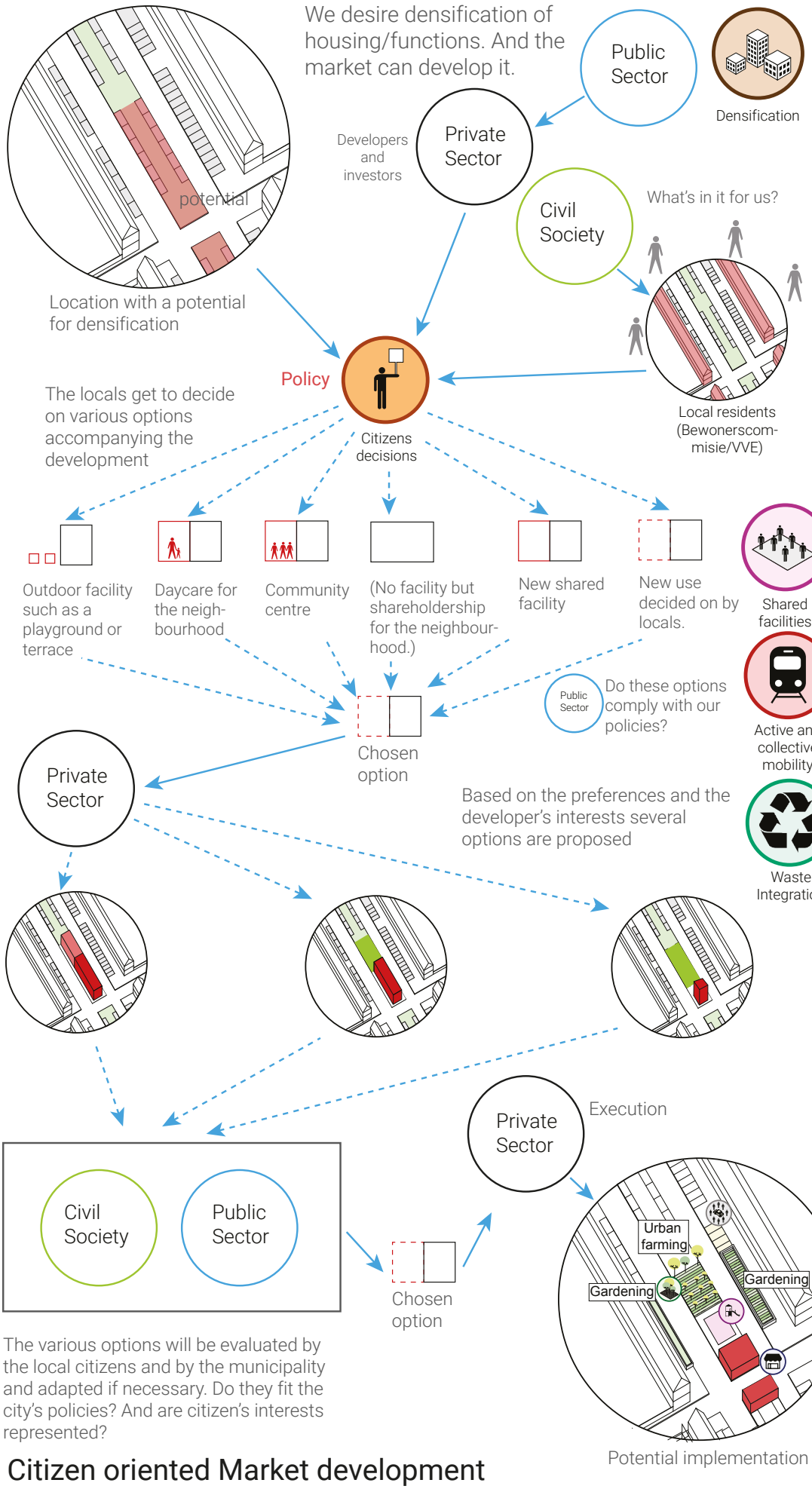
But between strategy and development, a lot of decision making and management is involved.

We believe that citizen participation is paramount to achieve sustainable development of the AMA, as it is a way to reduce the distance of power. The context of the “participatiemaatschappij” lends itself as an opportunity to develop new processes in order to have true citizen participation instead of mere consultation.

In the following pages we have set out how we propose to integrate this true citizen participation in the early stages of project development.

Citizen oriented market development.

In order to include the citizens in the local development plans we propose the model of citizen-oriented market development. This model proposes creating additional value for the neighbourhood in order to both increase citizen acceptance of the project and to stimulate the sense of ownership in the area. As we have seen that the interest for participation in development correlates with education level(Gemeente_Amsterdam, 2013), we have decided to primarily work via renters' and owners' organisations in the surrounding areas.
This distinction also determines whether the local citizens can choose for the shareholder option in the new development, as it is then tied to the property.
The public sector will fulfill an advisory role in this type of development and will check whether the development complies with their policies.
In this development the project definition phase will be longer in order to accommodate the decision making process



Citizen oriented Market development

Initiative

Project definition

Preliminary design

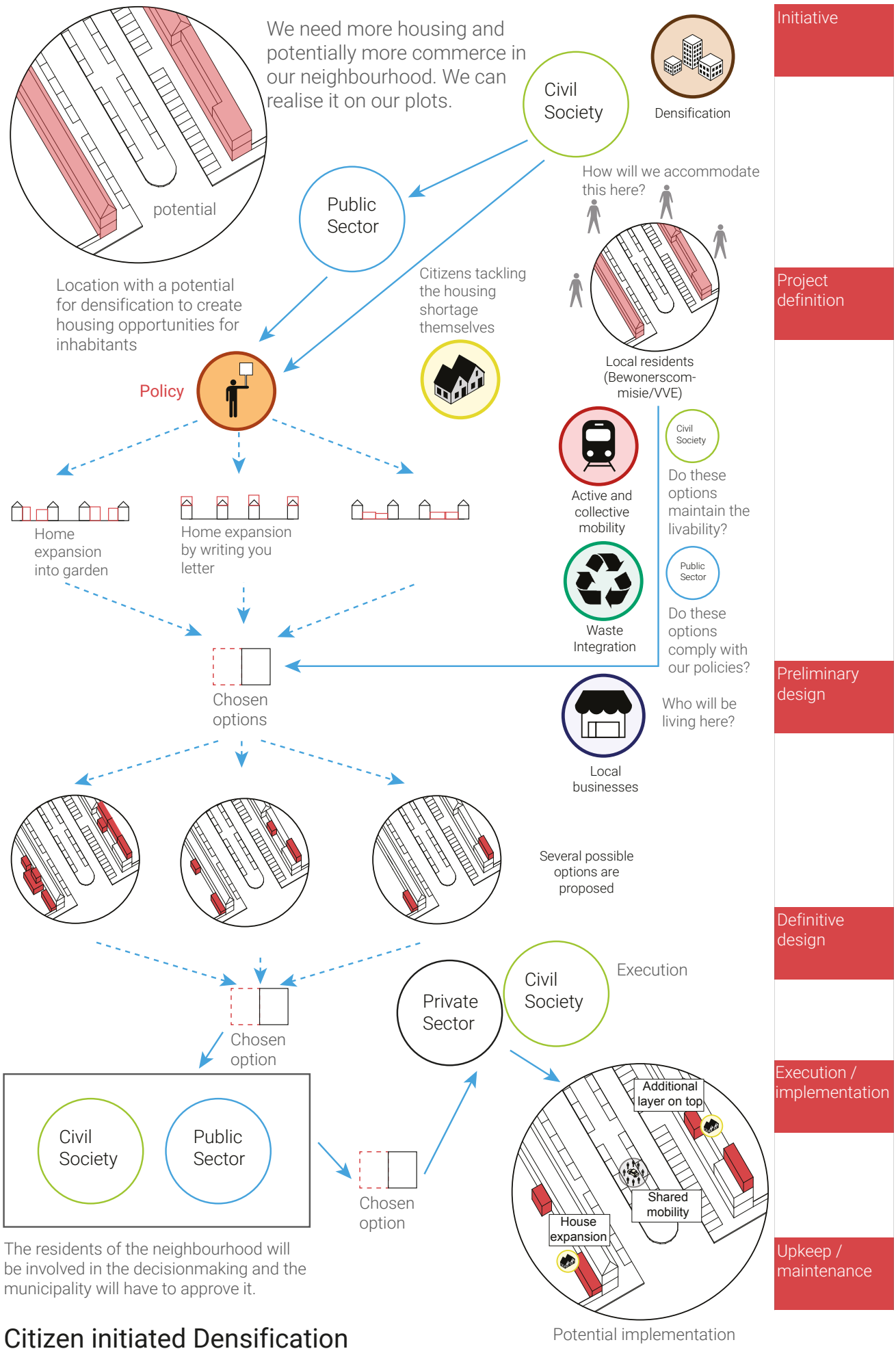
Definitive design

Execution / implementation

Upkeep / maintenance

Citizen initiated densification.

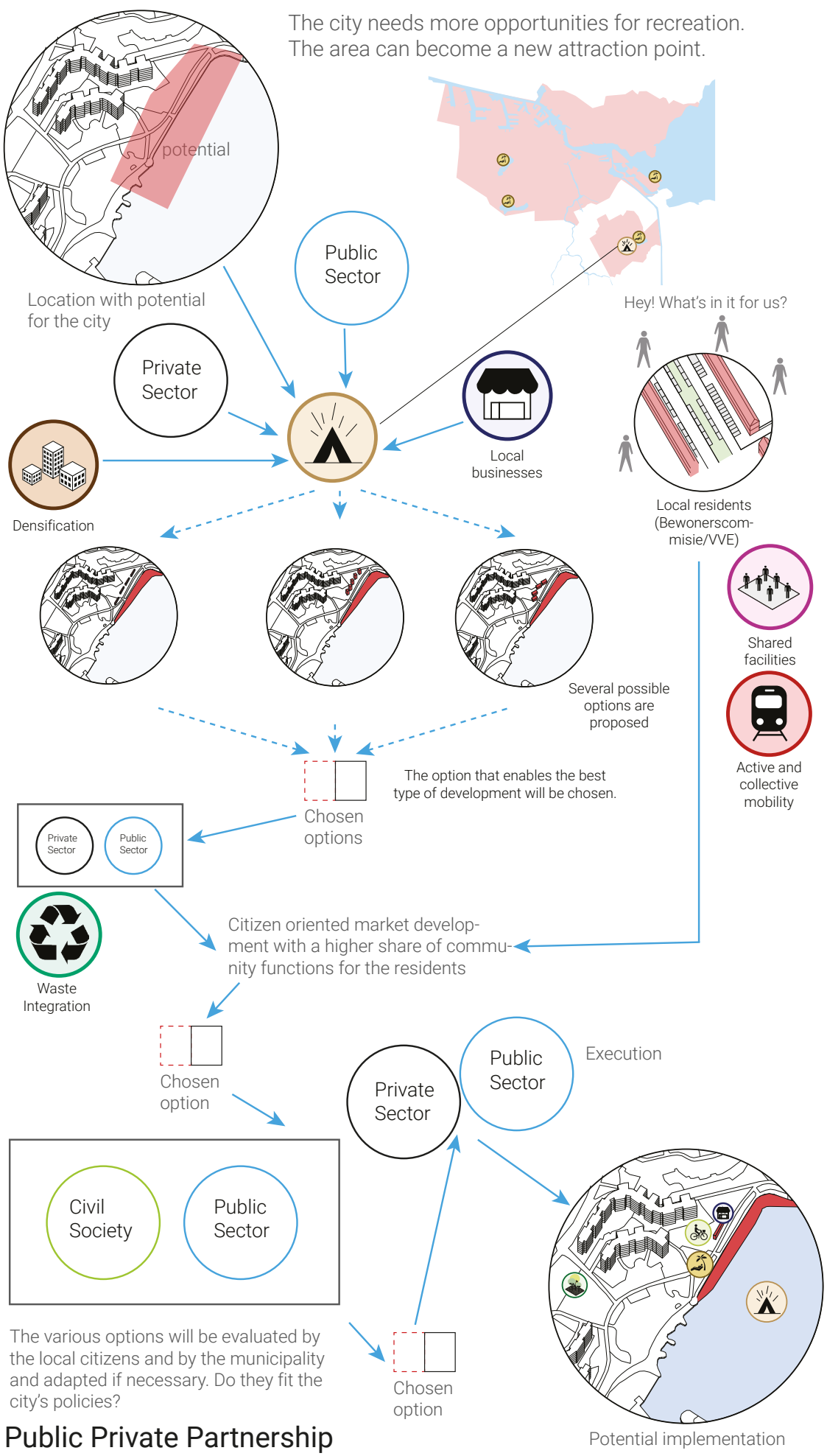
In some locations there may be less of an incentive for the private sector to develop additional housing, but the citizens themselves do desire additional housing to provide for growing numbers of inhabitants. That the number of inhabitants is hinted at in the population projections for Amsterdam(OIS, 2016), but it also fits within the developing trend of having parents(Aedes-Actiz, 2016) or children live with the family. It also creates opportunities to transform the building typologies to reflect the needs of the owner/renter.
After the citizen participation and decisionmaking process, the public sector will evaluate decision.
In this development the project definition phase is relatively short as the citizens already know what it is they want.



Citizen initiated Densification

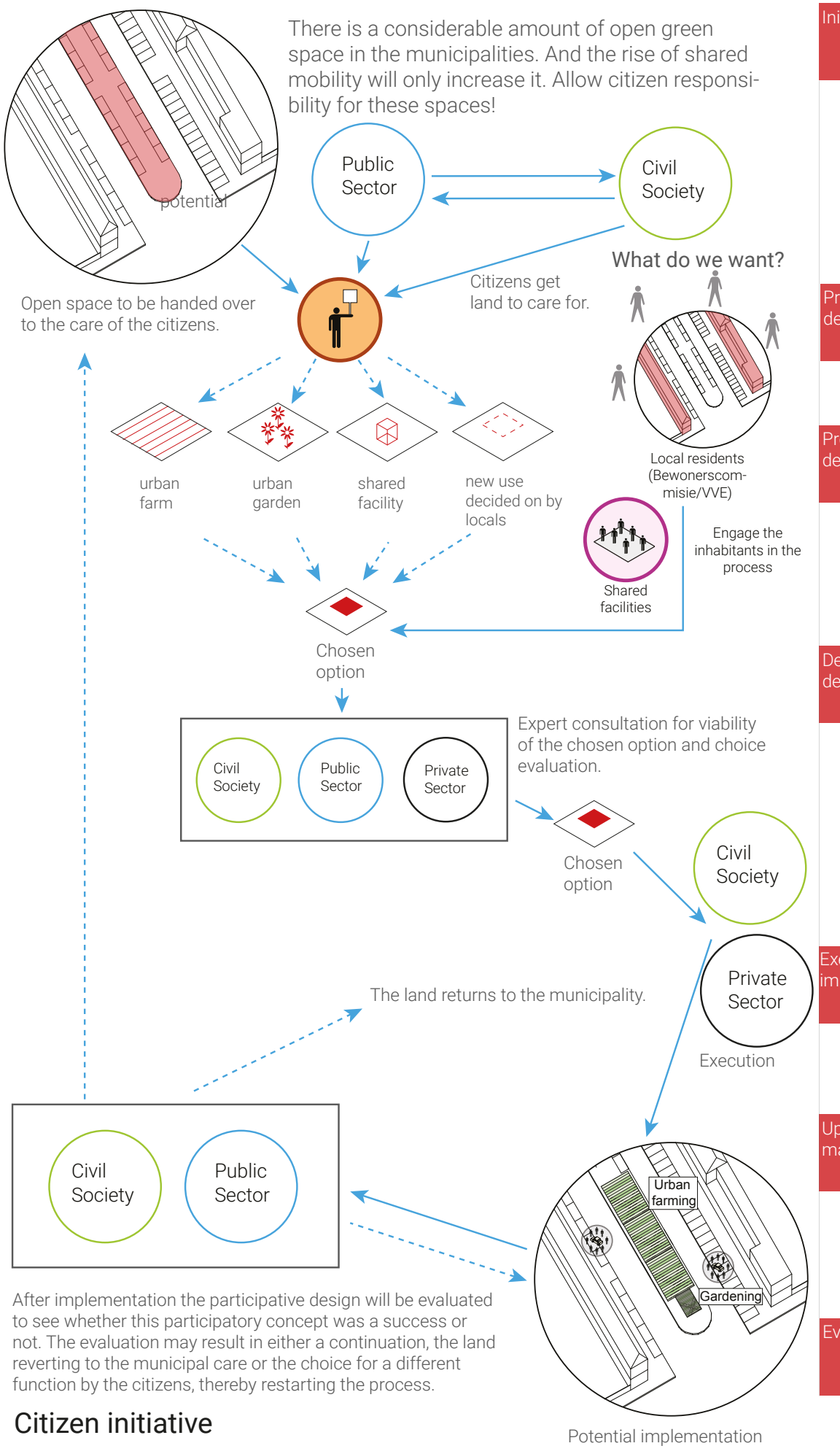
Public Private Partnership

This is an already existing development structure to which we are only adding in the citizen participation. Here we chose to get the citizens involved at a later stage as the development is of importance for the entire city and the municipality itself represents the citizens at that level. We also want to avoid nimby behavior by local residents eager to keep things as they are.
They will be compensated however as they are presented with a higher additional value for their neighbourhood, for which they can apply the Citizen oriented market development strategy.
In this process the definitive design phase is relatively long due to the need to go through the citizen decision process.


The city needs more opportunities for recreation.
The area can become a new attraction point.
potential
Location with potential for the city
Public Sector
Private Sector
Densification
Local businesses
Hey! What's in it for us?
Local residents (Bewonerscom-misie/VVE)
Shared facilities
Active and collective mobility
Several possible options are proposed
The option that enables the best type of development will be chosen.
Chosen options
Private Sector
Public Sector
Waste Integration
Citizen oriented market develop-ment with a higher share of commu-nity functions for the residents
Chosen option
Private Sector
Public Sector
Execution
Civil Society
Public Sector
The various options will be evaluated by the local citizens and by the municipality and adapted if necessary. Do they fit the city's policies?
Chosen option
Potential implementation
Public Private Partnership
Initiative
Project definition
Preliminary design
Definitive design
Execution / implementation
Upkeep / maintenance

Citizen Initiative

With considerable amounts of green space without an apparent function available in the AMA the citizens can have the option to intervene and decide how to develop these areas. As this carries the risk of faulty implementation this strategy includes the addition of expert consultation. This is to ensure a high-quality execution of the ideas of the citizens and to ensure the organizational structure is even. (Igalla & Meerwerk, 2017)
Depending on the intervention a trial period will be determined after which the situation will be evaluated by both the inhabitants and the municipality. They can decide to either abandon the project completely, thereby handing control back to the municipality, continue the current use or propose to change the function.


There is a considerable amount of open green space in the municipalities. And the rise of shared mobility will only increase it. Allow citizen responsibility for these spaces!
potential
Public Sector
Civil Society
Open space to be handed over to the care of the citizens.
Citizens get land to care for.
What do we want?
urban farm
urban garden
shared facility
new use decided on by locals
Local residents (Bewonerscommisie/VVE)
Engage the inhabitants in the process
Shared facilities
Chosen option
Civil Society
Public Sector
Private Sector
Expert consultation for viability of the chosen option and choice evaluation.
Chosen option
Civil Society
Private Sector
Execution
The land returns to the municipality.
Civil Society
Public Sector
Urban farming
Gardening
Potential implementation
After implementation the participative design will be evaluated to see whether this participatory concept was a success or not. The evaluation may result in either a continuation, the land reverting to the municipal care or the choice for a different function by the citizens, thereby restarting the process.
Citizen initiative
Initiative
Project definition
Preliminary design
Definitive design
Execution / implementation
Upkeep / maintenance
Evaluation


New developments created based on collective and active mobility options
policies stimulating shared facilities
Creating more shared facilities
Improve walkability of the neighbourhood
Improving cycling infrastructure to stimulate cycling
spatial development
policies making development dependent on collective and active transport opportunities
Route maps implemented on existing typologies
policies stimulating site and building reuse after vacancies or function changes.
policies limiting greenfield development
Local businesses allowed through exemptions in zoning plans
policies stimulating mixed functions in neighbourhoods
policies stimulating mixed functions in neig
Creating multifunctional mobility nodes
policies stimulating active mobility and walkability
policies destimulating private mobility
policies stimulating shared mobility
mobility
BRT Almere
Growth dependent expansion of the Almere BRT
Possible upgra
High frequency rail transit programme rail expansion and implementation
Amsterdam Centraal station construction
Integration of transit modalities in Amsterdam for a transit region
Poss
accessible separate collection points for all citizens
Waste
implement waste integration policies
Increase awareness about waste separation
procedural changes
Citizen participation frameworks
public private partnerships
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
Ongoing developments
New metro line opens
75% waste separation goal
Zuidas completed

7.7 STEPS TOWARDS LIVABILITY | A COMPREHENSIVE TIMELINE

| 08

REFLECTION ON DENSITY

8.1 CONCLUSION

The Amsterdam Metropolitan Area has an imbalance in many of its aspects; in this project we are only focusing in three of these: mobility, waste separation, and the use of space. Due to the future growth of the region, the need of these three aspects will rise and the region will be even more unbalanced, while the pressure in AMA will keep increasing. The livability vision aims to balance the region and create more inhabitable spaces by balancing the different densities and helping the region to move towards a more sustainable and circular future.

In order to design the vision, an analysis of densities of the region was required but also a more depth analysis of the smaller scale of the neighborhood. This analysis helped us identify what the current qualities of the space are and what densities we can see. Through the analysis, we identify potential areas in the neighborhood scale that can be improved but also what the cities are lacking in the regional scale. However, our goal was not only to make the region more stable by creating a better relationship between cities but also creating a better quality of life for the citizens by introducing diverse environments and a variety of facilities. Through the whole research and analysis of the region we had to include evidence that support our vision and the intervention developments, which can be found in the framework chapter.

To reach a vision for the future and innovations on the city scale, first we had to analyse the three aspects that the whole project is based on and find what the potentials and opportunities of each aspect are in the different cities and typologies according to their characteristics. The project aims to display what the spatial conditions will be in the future according to these three aspects and the different typologies, while strengthening the balance of the region and releasing the pressure. The strategic plan is the element that helps us to achieve the vision. As mentioned, each area has its own characteristics and that means that the approach will change according to them. Despite that, the aim for all the areas will be to strengthen the current identity or introduce a new one that will help to increase the diversity of spaces.

The main development that we are using to design the vision and the strategy is the bottom-up development which gives the right to local communities and citizens to control the plan. From the beginning of the project we had circular economy and the sustainability goals in mind. These two topics are very important for our project since they are related to the livability concept and without them the project would not last for a long time. These two topics help us increase the livability of space by creating healthier environments and smarter developments.

In the next 32 years the livability vision can be used in a number of cities of the region. During this time, the AMA will start being more balanced, the relationship of the cities will become stronger and the pressure will start decreasing while the development of circular economy starts to grow. Finally, the AMA will switch from an imbalanced dense region and linear economy to a more balanced dense region and circular economy while the quality of the spaces will be very high. See you in the livable density!

8.2 ETHICS

As urbanists we have the responsibility to design cities. Cities can influence the wellbeing of people according to their experience, thus urbanists are also carrying the load of the psychology, social behavior, and physical and mental health of everyone within a city. But how can a small square or a neighborhood influence the lives of people so deeply? Iif a city is lacking a waste management system or there is not much awareness on waste separation, then people's behavior will change according to the city planning. Another example is the infrastructure that the city has, such as bicycle or pedestrian lanes that are appealing and can encourage people to have a more active lifestyle compared to cities that are more car oriented. As the architect and humanist Jan Gehl said "we must design cities for people" (Annie Matan, 2016). How can we do that in a strategic metropolitan design?

The "I am DenCity" project, by analyzing and adapting neighborhoods according to the different densities that can be found in the region, creates spaces with high quality and which are more livable for the people. Gehl says that "neighborhoods and cities have to give opportunities to people for social exchange while minimizing the travel needs, enabling people to enjoy lie in public spaces.." (Annie Matan, 2016). In this project we follow the ideas of Gehl, since our belief is to increase the level of livability in the cities of AMA and creating a more balanced region. But how do we apply these ideas into our project?

We came up with principles that define livability in order to help them move towards it. For example, the healthy environment principle refers to the encouragement of a more active lifestyle in order to help people exercise more and be healthier. This can happen when we design more appealing bicycle and pedestrian lanes or by having a better transport system where people still need to walk in order to use it and that way they reduce the use of passive lifestyle which refers to the use of car.

However, an urbanist is not only responsible to design livable cities where people can be physically and mentally healthy. An urbanist is also responsible to balance the inequality that most cities have. How can we do that and what defines equality in urban planning of a region. When we talk about equality in urban planning we mean equal opportunities for all the citizens to the public goods that can be found in a neighborhood or a city. The "DenCity" project tries to densify areas according to their character, density, and facilities in order to create spaces that give a lot of opportunities to citizens. In order to make this developments equal for everyone, regardless of their background, we came up with policies for public spaces and goods which refer to the easy and visible access of public goods in the neighborhood scale. For example, the waste separation collection points are located next to the different types of transport that people need to travel, either public, collective or private transport, thus making it more accessible and visible to everyone.

Another important aspect that urbanists must take into account is the ideas and judgments of the different stakeholders. Of course our main priority should always be the opinion of the citizens since they are the ones that use these spaces every day. That's why in our strategy we come up with four schemes that explain how a development works in the different scales and what is the position of the people in these schemes.

Our main priority is the people so we used a bottom-up approach for the developments, with plans that are mainly controlled by citizens and local communities. This way we engage all the stakeholders into the planning process but the design is more oreinted towards citizen interests, who know their everyday needs better than anyone else.

Moreover, we take into account sustainability, defined as: “meeting our needs without compromising the ability of future generations to meet their own “ (Nations, 2017). In our project we always keep in mind the impact of our design in the future and that’s why we chose to analyse waste separation rates and include it in our strategy planning since is an aspect that will influence the future generations in terms of resource scarcity and climate change. Since the population will keep growing in the future, and the waste that people produce will also keep increasing if the status quo does not change, we need to decrease the general waste produced and, at the same time, encourage waste separation in order to increase material recycle. That way we are not only reducing the amount of waste that is being thrown in the landfill but also we reduce the amount of residual matter from biomass and increasing the quality of the recycled materials. Also, as mentioned in the “Reflecting DenCity” chapter, through our principles and policies, this project can help towards achieving some of the sustainable developments goals (SDGs).

Last but not least, through our intervention we are trying to show respect on existing spaces, by making the existing identities stronger.
Overall our main priority is how people’s lives are affected, that is why our vision and strategy are oriented on how we can improve the daily lives of people, and we achieve that by using the density as a tool to improve the quality of the different spaces.

8.3 REFLECTION AND EVALUATION

The idea for this project was born after the first visit that we had to the region. Seeing areas that were in poor condition made us wonder how the inhabitants experience this space. An example we vividly remember was a person cycling on a bicycle lane with a dirty canal on one side and the AEB factory, that was meanwhile producing a very bad odor, on the other. Considering the effects of the high tourist pressure on the city of Amsterdam, we were driven to learn about the growth of the region and how it affects the livability of space. This was our main motivation for using the density of different aspects of the region as a tool for the research, and define which ones affect the livability, the healthy environment and circular economy. In order to conduct our research, we used scatter plots, and the analysis of the spatial qualities of the neighborhood. The research started by analyzing five different aspects in terms of density, which were then reduced down to three to eliminate errors on data analysis caused by lack of relevant data and time restrictions. The three topics that we finally chose to focus on, were more relevant to the everyday lives of people, since they were more connected to the living, moving and playing part of people's lives. From the analysis we were able to identify what were the potentials and opportunities for each neighborhood and what aspects were lacking. Afterwards, and according to the analysis and the conclusions that we made, we came up with some strategies which were developed to realise the maximum livability in the different spaces.

During the research phase, some of the topics that we were analyzing and thought were very promising, had to be based on assumptions according to the data that we had available or completely excluded from our analysis. During the data collection phase, we had to make sense of and properly process the given data, and then come up with clear formats to present the outputs. An example of this is our use of scatter plots. The main source that we used for the scatter plot analysis was CBS and it was a very helpful tool that supports our project and ideas with real evidence.
This project helps us to further understand how a region works and how different aspects can influence a region in different ways and magnitudes. A region is akin to a living organism that functions smoothly when all its parts are well interconnected and related to each other. Understanding the individual part does not inherently mean understanding the whole organism, since one must understand all the interactions and processes between the parts. It was a new project for all of us since we haven't worked on such scale before. However, we think that this project will also help us in further projects, mainly in paying more attention in all characteristics of an urban space, whether it is a city, neighborhood, or even in smaller scale.

Nonetheless, we think that if we had to take this project a step further, we could learn much more. For example, how we can relate more aspects that might not be clearly related to the daily lives of the citizens, such as the construction material cycle.

For further research, we recommended to look further into the waste cycle from cradle to grave. Therefore, for further analysis, we could research what the main products that the inhabitants use more often are, where these products come from and how can we adapt the packaging of these products to better be able to reduce and reuse the materials. Eventually, the only way to reach circularity is to create a cradle to cradle process for all products and services within the boundaries we set. We believe that our method, using density as a tool for analysis and design can also be applied in the context of different regions. For our design and policies however, we think that they may need an additional translation to the local context with its cultural and legislative characteristics

The image below shows a schematic reflection of our project. How we achieved some of the sustainability goals through our strategy and the principles that we set for a livable space. This scheme also shows what the indicators of this project are and how they are related to the principles; actions that we need to take in order to achieve the livability vision and, finally, our stakeholders.

Sustainability (Global)

Livability Goals

Stimulation of active transport

Participation of citizens

Equal access to public goods

Smart Density

Awareness of reuse of resources

Mixed use of land

Practicality of sustainable behaviour

Participation of citizens

Equal access to public goods

Awareness of reuse of sources

Sharing of goods

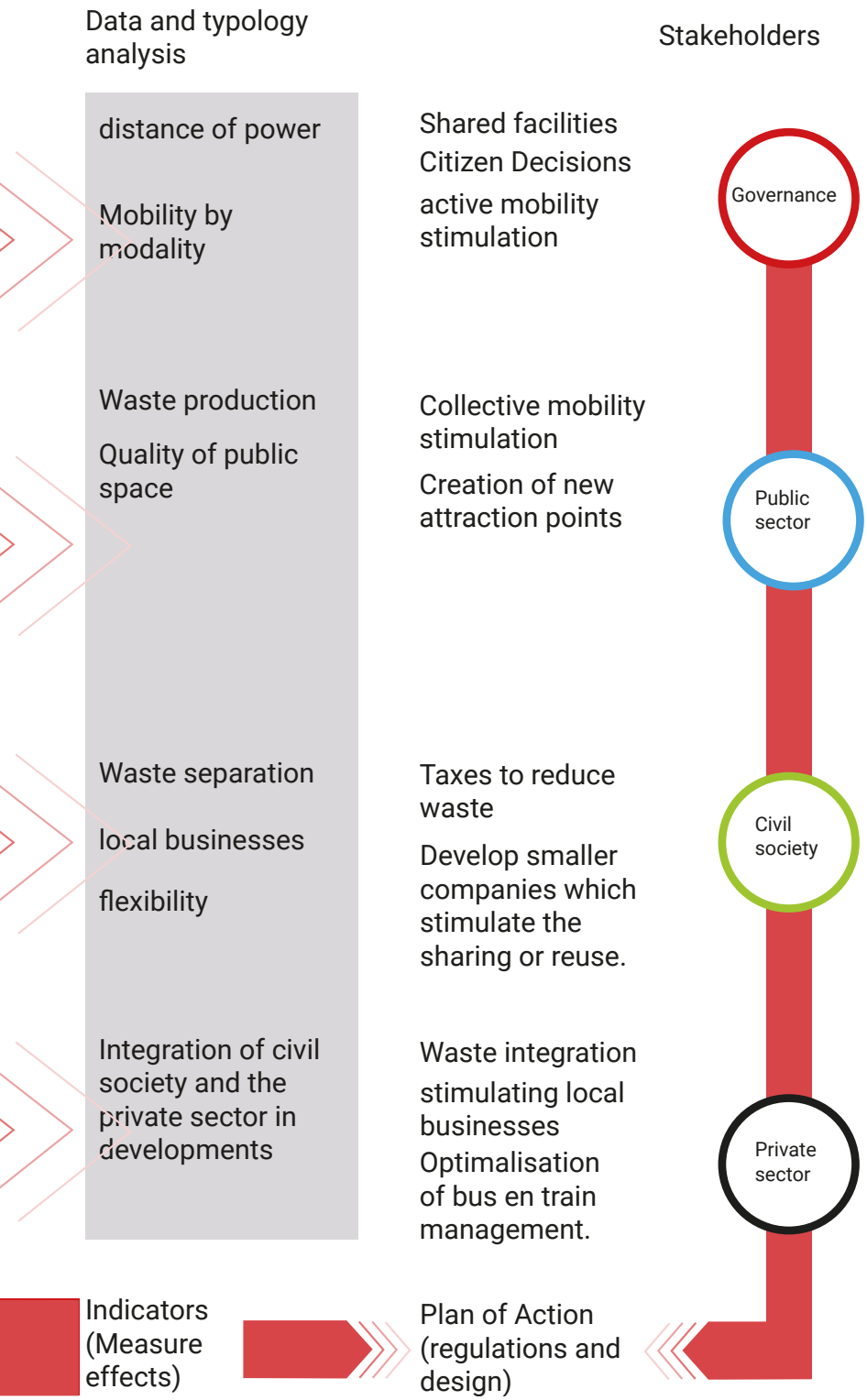
Visibility of source separation

Practicality of sustainable behaviour

Norms

Policy objectives

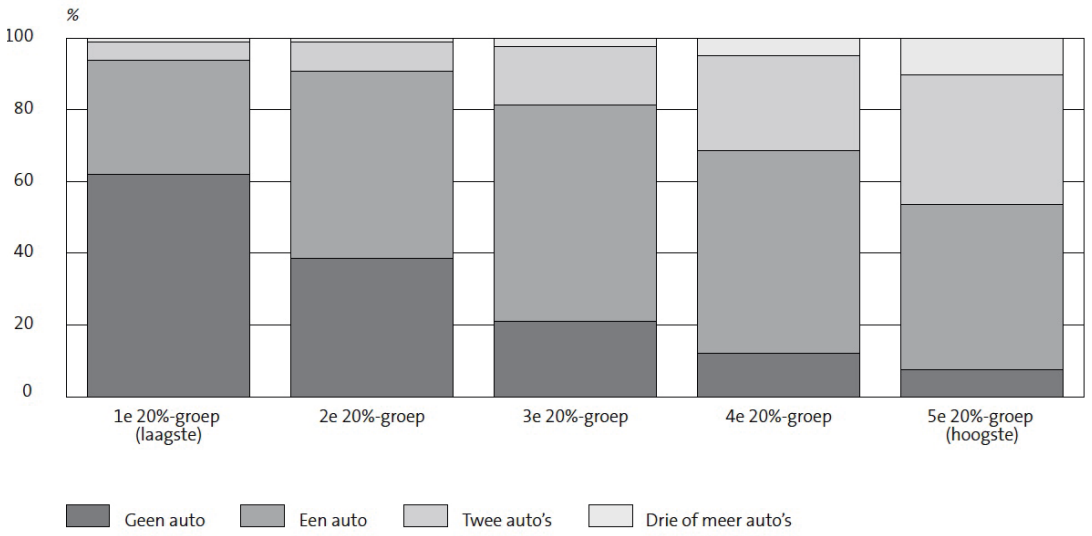
Are we doing to the right thing to achieve these objectives?


Data and typology analysis
Stakeholders
distance of power
Mobility by modality
Waste production
Quality of public space
Waste separation
local businesses
flexibility
Integration of civil society and the private sector in developments
Shared facilities
Citizen Decisions
active mobility stimulation
Collective mobility stimulation
Creation of new attraction points
Taxes to reduce waste
Develop smaller companies which stimulate the sharing or reuse.
Waste integration
stimulating local businesses
Optimalisation of bus en train management.
Governance
Public sector
Civil society
Private sector
Indicators (Measure effects)
Plan of Action (regulations and design)

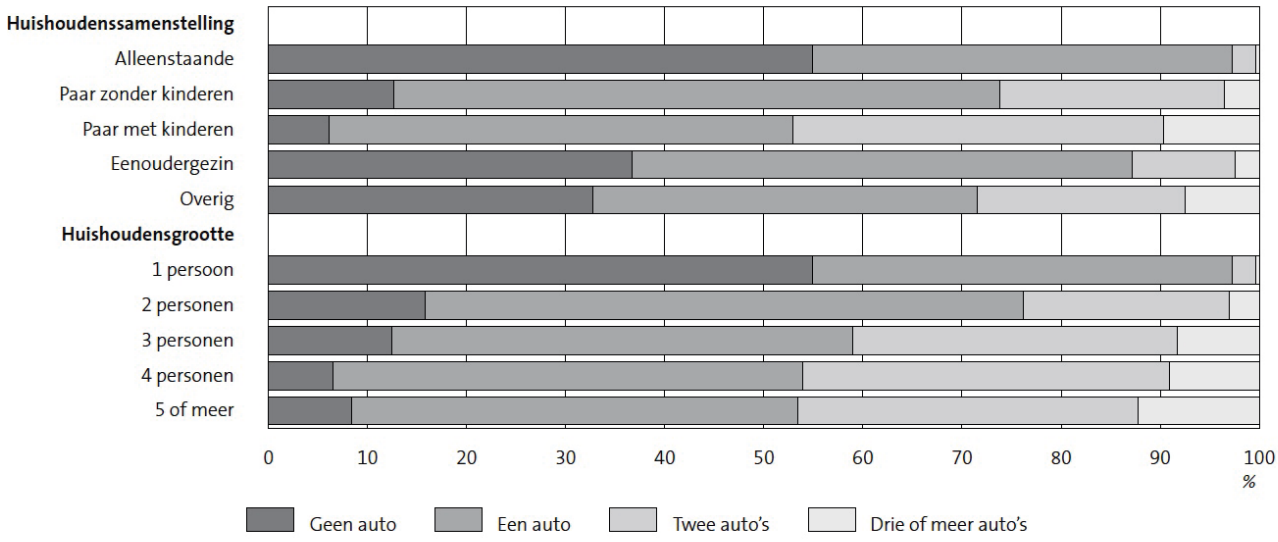
appendix
IV

I. OTHER FACTORS CAR OWNERSHIP

Car ownership of household, per income (2010)

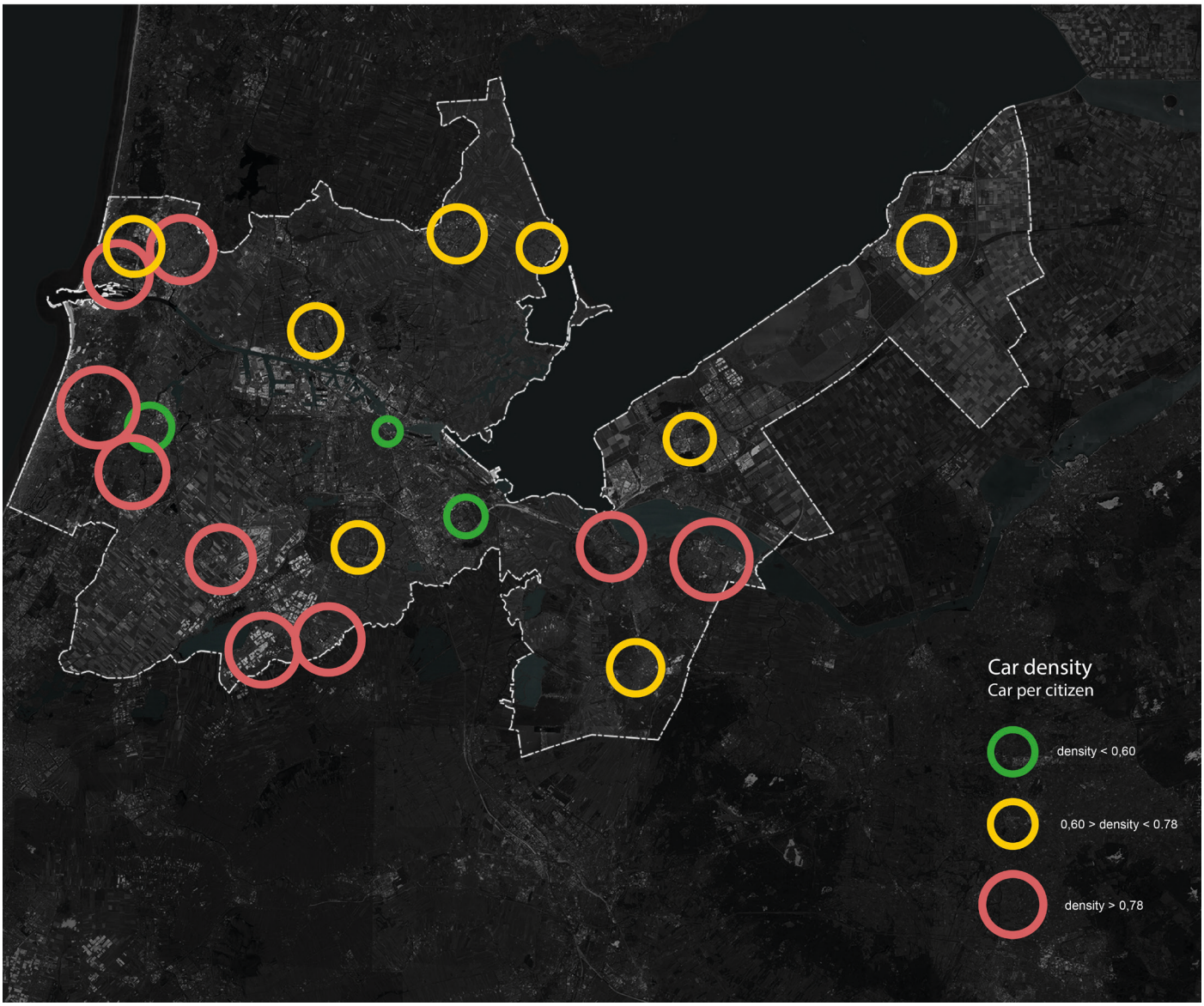


Car ownership of households, in terms of houshold size and composition (2010)



CBS. (2012). ***Personenautobezit van huishoudens en personen***. Den Haag/Heerlen/Bonaire: CBS.

II. CAR ORIENTED CITIES



III. WASTE SEPERATION OF AMA CITIES

IV. RESIDUAL WASTE OF AMA CITIES

V. LEGEND OF ICONS USED IN RESEARCH

Bus/Taxi application

Bus line

Tram line

Train line

Collective cars

Beach

New attraction points

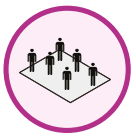
Airport

Jobs

Marine activities

Playgrounds

Squares



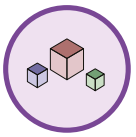
Shared facilities

Collective green space

Bike lines

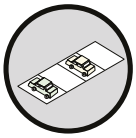
Densification

Residential



New facilities

Local businesses



Car park

Waste managments

Citizens decisions

National Railway network

Participants
Market leader at public transport on national and regional level.

Influence/Impact
Connection of cities and villages on regional and national level.

Goals
Development of stations, with commercial facilities, and the optimalisation of travel time/ experience (from door-to-door).

https://www.ns.nl/en/about-ns/who-are-we/strategy.html

ProRail

Participants
ProRail is a independent company which takes care of the maintenance of the railways.

Influence/Impact
They influence the travel time and logistics of the NS.

Goals
Make traveling by public transport safe and sustainable (materials, energy, durability).

https://www.prorail.nl/reizigers/wat-doet-prorail/onze-ambities

Housing cooperation

Participants
This is an independent organisation, but which has to oblige many regulations regarding the quality and effordability from the government.

Influence/Impact
Each year their spatial plans will be discussed in the counsil of the municipality. Most of the time, the municipality already included some wishes/regulations in a "housing vision".

Goals
Build (social) housing, and investing the profits into maintanance and projects.

https://www.rijksoverheid.nl/onderwerpen/woningcorporaties/afspraken-woningcorporaties-gemeenten-huurders

Greenweels

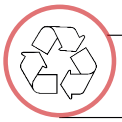
Participants
Greenweels is an initiative of NS and Volkswagen. They have two investors: Volkswagen and Pon.

Influence/Impact
Influence on national level, especially in Amsterdam, Utrecht, Den Haag and Rotterdam.

Goals
Maximalisation of rented cars per day and expand their idea of shared cars.

https://www.greenwheels.com/nl/

VI. STAKEHOLDERS | ADDITIONAL INFORMATION



Renewi

Participants
This company is a fusion of many waste management companies.

Influence/Impact
They operate on diverse topics like, commercial waste, soil contamination, waste-to-product recycling and monostreams.

Goals
Upscale recycling of waste.

http://www.renewiplc.com/en/our-divisions

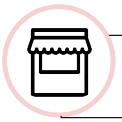
AEB/powerplant

Participants
Organisation divided in 5 units:
Extraordinary waste, Collection and Recycling, Biomass, Energy, Management.

Influence/Impact
Biggest energy supplier of the region (equal to 200 windmills, 3MW).

Goals
Optimalisation of renewable resources and energy production.

http://www.aebamsterdam.nl/over-aeb/

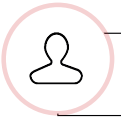


Small bussinesses

Participants
This will be grocery shops, restaurants etc. whom are present in the neighbourhood.

Influence/Impact
They have an influence on the local citizens in the neighbourhood and have a lot of concentrated waste.

Goals
Want to attract locals and citizens to their shop and want to make profit.



Citizens

Participants
All the inhabitants that live within the municipality border.

Influence/Impact
Together we can achieve more.

Goals
Save costs and effort to achieve a certain goal.

The MRA

Participants
They are the 32 municipalities that form the Amsterdam Metropolitan region

Influence/Impact
These represent the interests of 2,5 million citizens.

Goals
Creating compact cities to create a competative, international region.

https://www.metropoolregioamsterdam.nl/pagina/20170226-mra-agenda

The National Government

Participants
The national government.

Influence/Impact
Representing the 17 million inhabitants of the Netherlands.

Goals
Ensure economical growth for the Netherlands and protect the interests of the citizens.

Banks and investors

Participants
Banks and investors.

Influence/Impact
The citizens and businesses of the Netherlands. They are highly regulated.

Goals
Accepts deposits from the public and creates credit. Invest and lending activities.

Multi National Businesses

Participants
Multi national companies from all over the world.

Influence/Impact
Citizens and businesses.

Goals
Continue profitability and growth.

Tech Companies

Participants
Consisting of various technological companies (small and big).

Influence/Impact
Citizens, businesses and society.

Goals
Creating value for social and technical disparities.

Municipality

Participants
Local government of a city, village or area containing multiple villages.

Influence/Impact
Represent the citizens of the municipality.

Goals
Prosperity of city or village while maintaining/ creating a attractive environment for the inhabitants.

VII. PERSONAL REFLECTION

| Anne Sophie Kortman (4274997)

According to Tillie, N. et al. (in ***Urban Metabolism, sustainable development in Rotterdam*** (2014)) urbanism has long had the character of thinking in terms of inner worlds, including the characteristic behavior of passing on problems. Since our human needs coincides with the urban landscape, this way of thinking needs to change in order to solve urban problems. Therefore, a new way of thinking has been found by Sevaldson, B. and Ryan, A. J (2014), called 'Systems Oriented Design'. They believe that we, as urbanists, should have a set of skills and tools rather than a body of theories and methodology. Their intention is to maintain attention to design even as we integrate the systems idea. When systems thinking, they say, is not just grafted onto design processes, but truly integrated into design, we expect the potential of this union may finally be realized. (Sevaldson, B. an Ryan, A. J (2014)). I believe we need both theories in order to become urban specialists. Urban design is not about chosing one theory: it is a multidisciplinary design process, where we have to combine theories, design, methods and systems into one strategy.

To make a regional strategy for he AMA, we first have to explore possible circular futures, by combining knowledge through regional and spatial analysis. According to our analysis, a lot of flows are connected to urban density. Plus, each flow has their own network (Tillie, N. et al., 2014). But to achieve circularity, we believe that start with the behavior of people. This behavior is, of course, highly influenced by the urban environment. The linkage between flows, urban density, and how they influence the behavior of people are at the center of our strategy.

Secondly, we analyse through scale the impact of urban density. We choose the flows that (1) correlates the most with urban density (mobility) and (2) that has the most impact on the circulair economy (household waste). Analyzing these topics in relation with density will give us insides of the challenges and opportunities of the Amsterdam Metropolitan Area. At the same time, we have to consider the fact that the AMA is a dynamic system; the environment will change over time. This is high influenced by politics, which will create policies and regulations in which the urban environment should develop towards to. Secondly, apart from the government, there are other parties involved in urban planning, we call them stakeholders. This, and the fact that we design through scale, makes the project of high complexity. In order to tackle this complexity, we want to achieve two main tasks by our strategy; (1) creating cohesion between urban flows, (2) taking advantage of the urban landscape's "spatial order" (Tillie, N. et al., 2014). This all within the context of the circular economy.

Thirdly, we have to understand how we can use the power and interest of each stakeholder. Our ambition is to integrate the stakeholders fully into the design of the region, and could been seen as a 'System Oriented Design' approach. While degining a new systematic way of thinking, we agrue the quality of the market led development. Since the road to circularity is led by citizens, why shouldn't they get more power in the design process? The interest of new developments, circular systems and participation will then increase.

Since a vision and strategy have to be logic and convincing, we put high value into the transformation of a complex story into simple diagrams. The methods and techniques of the SDS lectures contributed to this process. The strategy is developed into several parts; principles and stakeholders, and two case studies, showing the strategy in its spatial context. The two representative cities in the AMA, Amsterdam and Almere, whith their very different characteristics, densities and behavior, are influenced by the same strategy, but due to their spatial context this could result into different developments.

[1] Selvaldson, B. & Ryan, A.J. (2014). ***Relating Systems Thinking and Design.*** Retrievd from TU Delft, Faculty of Architecture.
[2] Tillie, N., Klijn, O., Frijters, E., Borsboom, J., Looije, M.,Sijmons, D. (2014). ***Urban Metabolism, sustainable development in Rotterdam.*** Retrievd from TU Delft, Faculty of Architecture.

| Yue Song (4737083)

Regional design is an interactive process through various scales which requires a structured approach for complex systems. As urbanists, it is fundamental to be able to keep this approach with clear and logical thinking, at the same time use different tools to support the analysis and create a proposal on different scales and components. In the project for the Amsterdam Metropolitan Area, the organic interaction among different scales and the parallel analysis methods show the importance of taking different steps in the analysis of the current situation. These steps will lead us to proposal visions and strategies and finally make spatial innervations and come up with conclusions.

The project starts with research in AMA region and identifies the problem. The unbalanced distribution of the population in the region causes pressure of the space and resources in some cities of the region but especially Amsterdam city. By analyzing different factors in the region in terms of density, we built up our vision with multiple methods. Firstly we choose live, work, play and mobility aspects in term of density to understand AMA. At the same time, we highlight the circular economy which is another crucial aspect of the project. From this aspect, we choose the household waste which is directly affected by population growth. Thus, we combine multiple densifications with circular economy as solid foundation to build up the vision. In the mean time, we choose the collective and high dense model in regional scale by building four different scenarios within SDS lecture. Also, we come up with our indicators, under this principle, and finally create our regional vision. For the strategy, we analyzed the spatial typology by linking social, economic and environmental factors through scales. Later we develop 9 specific principles for interventions which also indicate the stakeholders. Then in the small scale we reflect our regional vision and also design a road map to guide future developments. This is what made the project more challenging and meaningful. In conclusion, the whole project combines different scales and keeps zooming in and out the region, in all the steps of the project in order to make it more coherence and logical. Meanwhile, we tried different methods to get into useful conclusions and link them together, without giving up. Firstly we develop the regional vision in more abstract way, and then we worked and developed the strategies in more concrete way and make more visible designs in the neighborhood scale while keeping the regional vision in mind.

The SDS lectures are very relevant of how to deal with circular economy and related issues; we do address the waste management in local scale, to find out the positive action in order to close the loop such as the use of biomass. I still think that this is not enough since we are not considering non-organic waste. Apart from that, the spatial design is also lacking since it only depends on regulations and awareness. On the other hand, we also looked into the local scale of waste separation and the reuse of waste but we didn't consider the waste management among cities, due to the lack of knowledge and the preference to spatial design. But this concept really reminds us the responsibility of the urbanist. We don't consider only the spatial intervention, but also the social, economic and environment aspects that play an important role for a region. We are responsible to make the city more sustainable and livable; therefore we need to look in depth for more relevant aspects.

Last but not least, an urbanist should have its own view, but without forgetting the obligations to all stakeholders. An urban project it is a corporation, thus we are required to manage the process and meet the interests. Also, it is important to think of the ethical part of a vision and strategy and explore how these can affect all groups in a society. The project of AMA involves many stakeholders; the local communities are mainly responsible to achieve the vision by organizing activities and improve awareness. Besides, with SWOT analysis, that plays an important role in the project, we take into consideration the vision, strategy, and even interventions, to check if they work with the different stakeholder, which makes the spatial design more meaningful. Overall, our group tried to create an objective view and vision on different situations hopping that can lead to a more sustainable and livable lifestyle with even higher density for the AMA.

| Sara (4744195)

As an urbanist, I believe that in a strategic spatial planning the focus should not only be on the global aspects for a region to be balanced but, also, looking more in depth into the neighborhood scale to see what can influence people's everyday lives and use that as a guideline for the regional scale. That being said, it is important to take into account how the strategic planning will influence the spatial qualities of the neighborhood space and try to develop a plan that will not only improve the circularity of the region but can also improve the smaller scale. Thus, it is important to understand the character and dynamics of a space and if there are inequalities.

In the project we identified some issues of the region that were created from the smaller scale. The first problem was the low waste separation rates which is linked with the waste management of each city and the awareness of the citizens. The other trend was that some areas had very strong transport systems, while others very weak. That results to an imbalance in the transport system of the region were some people use only public transport and others only cars.

The main vision was to create high quality spaces where people will enjoy living. Spaces that will include mixed uses, collective green spaces, and have a strong transport system or/and shared cars. In these spaces we combine waste separation points with multimodal transport nodes to encourage and remind people to use the collection points and separate more. This aims to create a routine for the inhabitants linking waste management to their daily commute. Thus, we minimize the use of cars and repurpose the car parks, spread awareness on the importance of waste separation, and create more sustainable spaces.

As the architect and humanist Jan Gehl says "we must design cities for people" (Annie Matan, 2016) This is my number one priority in all my projects. Thus, my main concern through the whole project was how I can improve those spaces to make them more livable, inclusive, and attractive for the citizens, through including circular economy and sustainability. Throughout the whole analysis and design point of the strategic planning I was trying to direct our goals towards livability; hence why I was mostly focusing on the analysis of the different neighborhood typologies to understand what the potentials of the different spaces are. This bottom-up approach is the only way to integrate the needs of people in regional design.

The main principles that we used in this project was the sharing of goods and services, reusing wasted space and household waste, encouraging waste separation, and participation of citizens in community activities, while striving for equal access to these for everyone.
Before the strategic planning design, we set some preconditions in order to achieve livability. These preconditions are having a variety of uses and sharing facilities, equal accessibility, and visibility of source separation points for all inhabitants, as well as spreading awareness for reuse and separating waste, and reusing existing spaces. Finally, encouraging a healthier lifestyle by introducing active transport, such as cycling.

However, I still think this plan might face some barriers in the future, especially when it comes to making the decision of the development for the district or city scale. To ensure better uptake of the proposed measures, citizens have to be involved in the design process and have their views and opinions integrated in the proposal. Even though we are proposing the bottom-up development, I still believe that the district or city development will see some inefficiency and inequality.

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The four schemes that we introduced correspond to three scales and the main stakeholders of these schemes are public and private sector as well as the civil society. By encouraging and give freedom to the citizens to choose what they want for their neighborhood or house we encourage co-creation and give responsibilities to people that are usually left out, therefore achieving better results since they are the ones that are going to use these spaces. Once the project has been decided and built, if not used as intentioned, it will go back to the municipality for repurposing; this will eliminate any wasted or underutilized spaces. During the development of responsibilities, the SDS lecture were very relevant since most of the time the debates that we had in class remind me how much important is the participation of all the stakeholders in such project.

Finally, the spaces that we chose are in Amsterdam and Almere. Both have great potentials to improve since there is a great transport system in the first city and potential spaces to develop in both cities. However, I think Almere will have some difficulties to absorb the new lifestyle, especially in terms of transportation, since it is a car-oriented city.
Overall, the spatial strategy plan that we are int
roducing will create a lot of opportunities for a livable and sustainable space. Nevertheless, it is still lacking in terms of circularity since the only aspects that we took into account are the reuse of space and the reduction of municipal solid waste (MSW) by encouraging waste separation. I personally believe that, in order for a project to achieve circularity, it needs to take into account all variables and flows, and how these interact and affect people's lives.

| Boaz (4215583)

In order to reflect on the design process it is important to briefly reflect upon the group dynamics and process within the group itself. Personally, I believe that we came up with an interesting approach to increase the liveability and circularity within Amsterdam Metropolitan Area, although I believe that we could have had a stronger in-depth research. During the project we often switched from perspective, which caused uncertainty at some points during the process. Briefly looking back on the SDS lecture series and workshops I felt that the series could have been more useful with guiding us in the right direction. But in the end this cycle of wayfinding possibly brought our project further than it initially would have been with a linear process.

In my opinion, the base of our project is very strong with our scientific approach by starting the measuring of different densities in scatterplots. In this analysis we found that the pressure on Amsterdam is caused by highly dependency of the smaller cities on Amsterdam. In the end it was really interesting that the relevance of data analyses in scatter plots was confirmed in the lecture of Cristopher Kennedy about the Urban Metabolism of Megacities. Especially the scatter plots about the relationship of car ownership and density.

The scatter plot analysis eventually lead us into the direction of defining our main goals of the project; increasing liveability by facing the mobility issues, improve sharing of space and goods and by this increase the circularity of the Amsterdam Metropolitan Area. The neighbourhood and typology analysis were useful analyses which helped us coming up bottom up principles and design interventions.

Personally, this project has been an interesting learning experience, it forced me to work in a very different way than I would normally do. Whereas I normally am a bit of a disorganized person which often results in a creative approach of diving into different subjects, this project was very clear goal oriented throughout the whole process. It gave me new insights of how to tackle a design project with a clear based research. In the future I hope I will find the perfect balance between this creative and research-based approaches.

When reflecting back on the great planning game of methodology course, I see our approach more from the perspective of a process and strategical planner. We involved a wide variety of actors in a way where we try to bring them together and give more power to the people. I am satisfied that we as a group managed to come up with a strong spatial strategy for the AMA. We prove that we, as an urbanists, can achieve a circular economy by tackling social issues in a democratic way and therefore increase the liveability of the AMA. Let's go!

| Thomas (4008618)

Regional strategic design turned out to be a very complex process, in particular due to the many factors and actors involved. In the start of our regional design we were convinced density was a topic we could tackle through data analyses and we were unconvinced by the emphasis placed on the circular economy. We believe that for the circular economy to be a viable option it must be embedded in the current systems for living in the AMA. These systems of infrastructure and built development further constrain our opportunities for changes. I believe this was referred to as path dependence
.
That is why we chose to tackle waste circularity and use of resources as our main themes for the circular economy. Therefore, we were very pleased when our themes for circularity turned out to have a strong correlation with density. Our method of data analysis using scatterplots proved to be a very effective tool to detect which spatial factors strongly influence waste production and resource consumption in the context of the AMA. Seeing the scatterplots in the Megacities lecture only emboldened us.

The SDS lectures proved very helpful in determining the need for strategic planning and the importance of clearly defined policy making. They also exposed the need for external input in the planning process. Especially since planning has yielded mixed results in the past, often depending on the will or moral reasoning of the planner. This we wanted to avoid, especially since we know that we are biased ourselves.

The great management game from the methodology course exposed us to several types of planning apart from the strategy vs design debate in the SDS lectures, while showing how these planning types try to tackle the shortcomings and the possible pitfalls shown in the past due to traditional planning. At first, we were convinced we were located between strategic and management planning as we were mainly focused on the financial feasibility of the project. Our strategy was strongly focused on the economic opportunities that density offers for companies.

My personal conclusion was that although planning is necessary in order to accomplish our goals regarding sustainability, we do need to find a way to include flexibility and real citizen participation in the project. We had lost sight of how to include this most important stakeholder in the process. We needed to tackle the distance of power in order to raise the acceptance of increased flexibility and to work within the new paradigm created by the participation economy.

This shifted our thinking towards the citizen and the way new developments would affect them. In addition, it inspired us to think further about how to integrate the circular economy in the lives of the citizens instead of basing it on the ease of collection.

For this we used strategies and small design interventions to guide new citizen-oriented developments. The challenge would not change, but this would open the door to further innovation and collaboration between civil society, the public sector and the private sector without necessarily giving up too much efficiency. So, we ended up focusing a lot more on process planning instead of management planning.

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