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SCHOOL OF SPATIAL PLANNING AND DEVELOPMENT  
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## MADRID CHAMARTIN URBAN PROJECT

### EVALUATION OF PROPOSALS

Project

Joint Workshop

Operación Chamartín

3 Proposals

SPRING 2017

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# **ECONOMIC EVALUATION OF CHAMARTÍN – MADRID PROJECT**



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## **1.1. INTRODUCTION**

Economic Evaluation through urban economic indicators is a determining factor which allow to gauge policies, urban designs and urban projects in general, so as to orient economic development to a more sustainable direction. These economic indicators provide the opportunity to monitor the advantages and the disadvantages of each urban policy or urban project, in particular to monitor the impact of it and how profitable and realistic could be. Chamartin Project, as a Regeneration Project could create an ideal environment for investments and development of local and regional level. These investments could function as funding opportunities in retail, commercial, residential and other uses, which promote and enforce economy. Therefore, the planning and management of economic sector of Chamartin Project constitutes a high priority requirement of its effectiveness, efficiency and sustainability, which is widely established in regeneration projects.

The objective of this economic approach is to provide an integrated economic aspect of the projects Prolongación de la Castellana. Propuesta de DUCH 2011, Prolongación de la Castellana. Propuesta de BBVA 2015 and Madrid, Puerta Norte. Propuesta del Ayuntamiento de Madrid 2016, with a comparative method which evaluates the three projects and in the end, concludes to the most profitable but in the same time, the proposal which is considered to be the most sustainable one.

The following methodology of the economic evaluation was based on data compilation for each project. These data included information about general costs (concerning infrastructures, private and public sector), net incomes, payback periods, urban variety, business and employment demography. Processing the aforementioned data, were created some indicators by the work-team and selected others which were already give, so as to fulfill the objectives of efficiency, effectiveness and sustainability, which generation projects set, and describe the cost-benefit analysis of each proposal. Then, the indicators were classified into three main categories which derived from the indicators' characteristics and they finally are input/financial, output and outcome indicators. Consequently, these indicators were compared and evaluated according their type. Specifically, the quantitative and qualitative indicators were evaluated based on a benchmarking scale, which was created and defined and in the end, the most satisfied rate of this benchmarking rendered the respective proposal the most suitable and economic profitable one.

## **1.2. ECONOMIC INDICATORS**

The economic indicators, which were used to analyze the economic impact of the application of the three regeneration projects in Chamartin area, are presented in the following chapter.

In order to deploy the available economic data, given from the three proposals, for the purpose of extracting results about the most sustainable and realistic project, the data were evaluated with a set of 22 indicators. Ten of them were chosen to be the most important ones for sustainability, effectiveness and efficiency measures, in order to continue the evaluation process. It is worthy to be mentioned that the official and the most important goal of the three projects is to maintain a sustainable environment for Chamartin area. Therefore, the efficiency and effectiveness goals represent the level of sustainability of each project. Regarding that, each one of the ten indicators constitutes a measure of the sustainability level of the three projects.

The 21 indicators were extracted from the "Economy Agents" file which summarizes, compares and evaluates the economic data coming from the three proposals about Chamartin

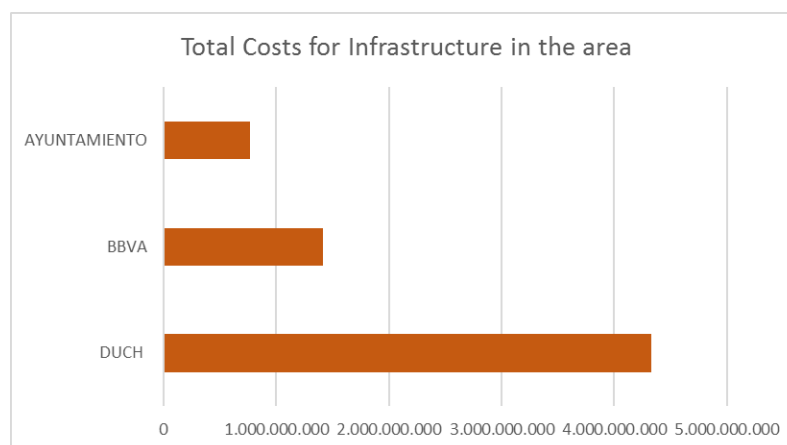
area. The number of startups indicator was included by the Greek team of Economic Indicators because it is considered to correspond in the project's requirements.

As it is already mentioned, the economic indicators that were used are classified in three main categories such as input/financial indicators, output indicators and outcome indicators. To begin with, input indicators measure resources, both human and financial, devoted to a particular program or intervention and can also include measures of characteristics of target populations. On the other hand, output indicators measure the quantity of goods and services produced and the efficiency of production. Last, but not least, outcome indicators measure the broader results achieved through the provision of goods and services.

### 1.2.1 Cost for Infrastructure in the area

The first indicator that was used to evaluate the economic data was the infrastructure cost in the Chamartin district. The indicator defines and compares the total cost for infrastructure (services, economic activities, roads, etc.) made in the area, among the three proposals. It is assorted in the input/financial category of indicators, because it measures the total financial resources for building infrastructures, and the units for the indicator are euros.

The following diagram represents the monetary values of total costs for infrastructure for the three proposals.



*Diagram 1 Total Cost for Infrastructure Comparison in the area, work-team process regarding Aggregate Table of Economic Indicators (see 3.)*

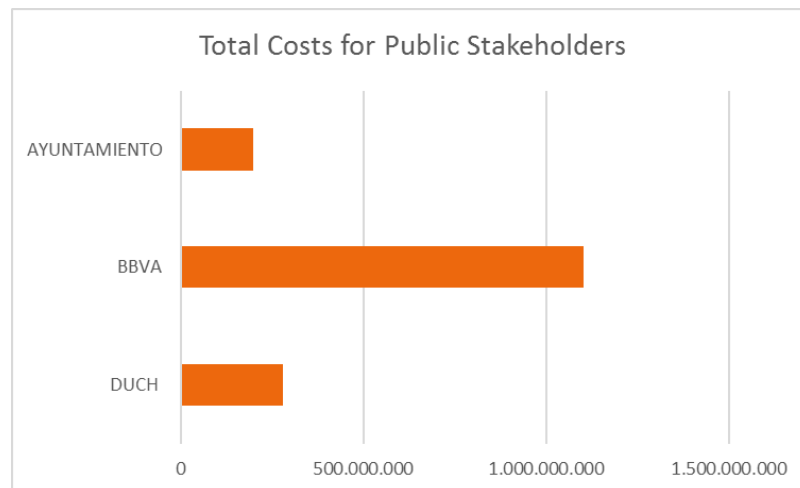
The indicator is based on the assumption that private or public stakeholders have not set limits to the costs for infrastructures and the focus is given on the amount of the money, without knowing how much of them has been spent or proposed. Therefore, the most sustainable and efficient proposal is the one with the lowest monetary value.

### 1.2.2 Total Cost for Private or Public Stakeholders

The next indicators that were taken into consideration in the evaluation process were the total costs for private or public stakeholders which define and compare the total costs made by private or public stakeholders in the area, among the three proposals.

The indicators' type appears to be input/financial, because it measures the total financial resources corresponding to private or public stakeholders, and the units for the indicators are euros.

The diagram below shows the total costs for public stakeholders' classification among the three proposals. In the case of private stakeholders, there was a lack in data and because of that, the corresponding classification could not be proceeded.



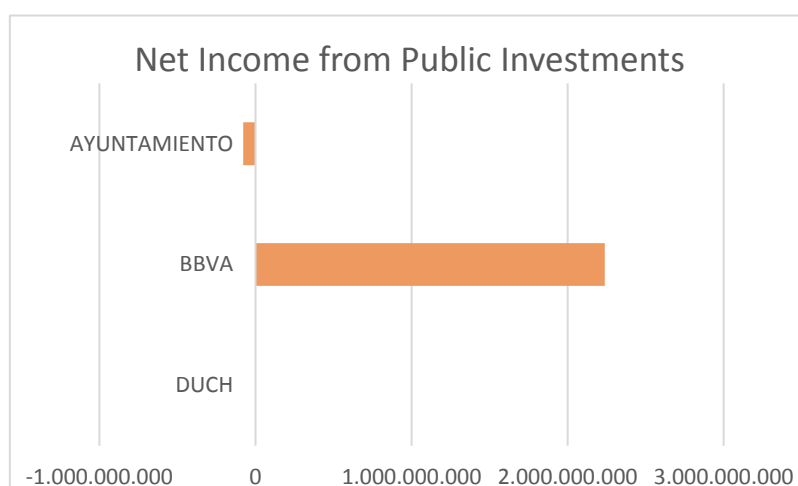
*Diagram 2 Total Costs Comparison for Public Stakeholders, work-team process regarding Aggregate Table of Economic Indicators*

Best proposal, concerning these indicators, is considered to be the one with the lowest invested cost concerning the private or public sector.

### **1.2.3 Net Income from Private or Public Investments**

Net investment income concerning the private or public sector is an outcome indicator that defines an entity's (business or stakeholder) income minus costs of goods, investments and general expenses in the area. The units that are used in order to measure the indicator are euros and it is based on the assumption that high values of variance between gross private or public investments and depreciations, leads to higher productivity. Therefore, the best proposal is considered to be the one with the highest value.

The results from public sector are represented in the following diagram.



*Diagram 3 Net Income Comparison from Public Investments, work-team process regarding Aggregate Table of Economic Indicators*

Additionally, as a result of lack in data, the corresponding classification for the private sector could not be proceeded.

On the other hand, the criteria, which is used to evaluate the net income from public investments indicator, are characterized as low reliable and therefore the result cannot be safely assessed.

It is worthy to be mentioned that net Income is not a measure of how much cash a company earned during a given period. It is an indicator to see profits, expand or reduce operations, determine employee bonuses, and inform investors. Also, negative net income means a loss for a stakeholder.

#### **1.2.4 Payback of Private or Public Costs and Investments**

The indicators following define the length of time required to recover the cost of a private or a public investment. They are, also, outcome type indicators and the units that are used for their measurement are years.

Concerning these indicators, the best proposal is considered to be the one with the shortest payback period as long as the investment proved to be profitable and secure.

It is important to be mentioned that in the case of payback of public costs and investments indicator, there was a lack in data which caused a problem in the evaluation process.

As an example, the card below includes data for the payback of costs and investments indicator concerning the private sector.



Indicator	Payback of Private Costs & Investments
Description	The indicator defines the length of time required to recover the cost of a private investment.
Index Type	Outcome
Units	Years
Spatial Reference	Chamartín District
Sources	<ul style="list-style-type: none"> <li>• Report on financial viability, equity and urban management</li> <li>• Departamento De Urbanismo Y Ordenación Del Territorio</li> <li>• DUCH – 2011</li> <li>• BBVA – 2015</li> <li>• Ayunta_m. 2016</li> </ul>
Notes	The best proposal is considered to be the one with the shortest payback period as long as the investment proved to be profitable and secure. Problem in assessment in case of a lack in data.

Table 1 Index of technical Economic data paradigm for Payback of Private Costs and Investments, work-team process (see more in Appendix)

### 1.2.5 Urban Variety

The Urban Variety indicator defines and compares the area of building economic activities (tertiary, shops, malls, etc.) per building of residential area, among the three proposals. It is an output type indicator, because it refers to the amount of building area corresponding to either economic activities or residential land use. The units that are used for the indicator measurement are m<sup>2</sup> of building economic activities / 100 m<sup>2</sup> of building Housing.

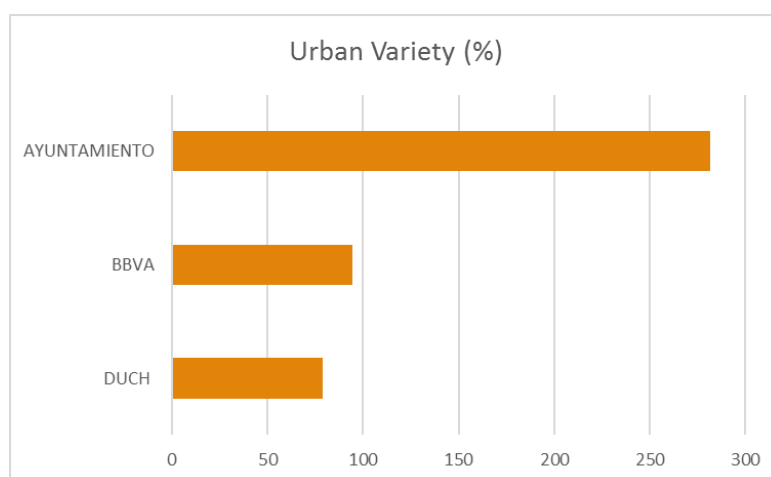


Diagram 4 Urban Variety (%) Comparison, work-team Process regarding Aggregate Table of Economic Indicators

The diagram above represents a classification for the Urban Variety indicator among the three proposals for Chamartín area.

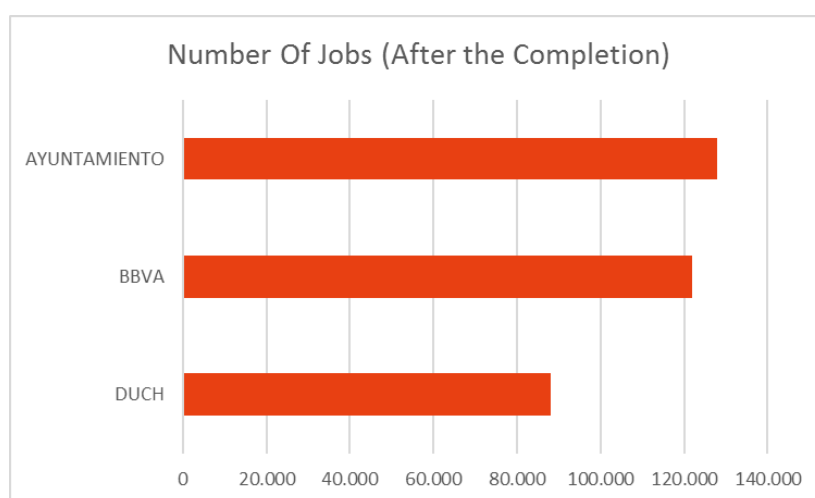
The indicator is based on the assumption that the more surface economic activities occupy in a neighborhood, the bigger the economic impact, to that neighborhood, shall be, without overwhelming the housing area. So, the most effective proposal, considered to be the one in which the economic activities cover the majority of the Chamartin area.

### 1.2.6 Number of Jobs (after the completion of the project)

The Employment indicator defines the number of jobs created after the completion of the project. It is, also, an outcome indicator and its units for measurement are the number of jobs in each project.

Best and most viable proposal of the three is considered to be the one with the largest employment after the completion of the project.

The results for the employment indicator are represented in the following diagram.



*Diagram 5 Number of Jobs Comparison (After the Completion), work-team process regarding Aggregate Table of Economic Indicators*

### 1.2.7 Number of Start Ups

The last indicator is based on business demography and analyses the dynamics and innovation of Chamartin market in the framework of entrepreneurship and contribution of newly-born enterprises to the creation of jobs. It is an output type indicator because it measures the amount of business buildings that are going to be raised in Chamartin area. The indicator is measured by the number of businesses in the area and the most efficient proposal is considered to be the one that contains the largest amount of start-ups. Although, it is worth mentioned that the indicator and the necessary data for the evaluation process are not included in the contents of the three proposal and therefore they are recommended to be contained. All the above, can be shown to the card below which contains the necessary data for the number of start ups indicator.

Indicator	Number of Start-Ups
Description	The indicator analyses the dynamics and innovation of Chamartin market in the framework of entrepreneurship and contribution of newly-born enterprises to the creation of jobs.
Index Type	Output
Units	Number of Businesses
Spatial Reference	Chamartin District
Sources	<ul style="list-style-type: none"> <li>• Eurostat</li> </ul>
Notes	Best proposal is considered to be the one that contains the largest amount of start-ups. / Lack in Data.

Table 2 Index of technical Economic data paradigm for Number of Start-Ups, work-team process (see more in Appendix)

### 1.3. DISCUSSION OF THE EVALUATION PROCESS

In the previous paragraphs, an analysis of the indicators preceded as well as a creation of an evaluation system aka “*benchmarking*” in which specific terms or values are defined for each index (see in Appendix). Through this system, the proposals themselves are going to be evaluated for each index, so as to ascertain which proposal better fulfills our requirements.

Taking the above into consideration, an overall table is created (Table 1), in the last column of which, the outcome of the evaluation is defined. It is specified at this point that the evaluation system is NOT included in the table.

Two (2) interesting results could be exported by quickly reading the table’s last column. Firstly, given a total number of ten (10) indicators, only half of them could be successfully evaluated due to a lack in data that characterizes the proposals. Secondly, an 80% of the evaluated indicators, gave the third project (Ayuntamiento 2016) as the best solution. At this point should be highlighted that the previous outcome was somehow expected. Some first suspicions were starting to be verified when taking the following into consideration: a) the main strategy of the 2016 proposal was concerning a total cost reduction and b) the use of financial indexes that were mainly concerning those costs (costs for infrastructure, costs of public, private stakeholders, etc.).

Finally, it should be highlighted that for brevity, it is not going to be mentioned how we concluded to the result of each indicator.

Generally, as it was previously mentioned, a common feature of the three (3) proposals is the lack in data that characterizes them. It is about data of vital importance without which any evaluation is far too difficult. It is also mentioned that **ONLY** in 5 cases of indicators, a safe result could be extracted.

All in all, in terms of economic viability, it seems that the 2016 proposal foregoes. Though, a safe and overall example of which project is actually the best, could not be extracted for all the previous mentioned reasons, regarding the following Aggregate Table of Economic Indicators.

Sustainability Factor	Group	Indicator	Type of Indicator	Units	Proposals			Evaluation
					DUCH - 2011	BBVA - 2015	AYUNTAMIENTO - 2016	
Economy	Costs	Total Costs for Infrastructure in the area	Input/Financial	€	4,324,000.000	1,416,000.000	764,510,322	AYUNTAMIENTO - 2016
	Cost & Benefit of Private Stakeholders	Total Costs for private stakeholders (investors, developers)	Input/Financial	€	8,724,023,048	4,688,288.000	No data	-
		Net Income from private Investments in the area	Outcome	€	1,255,313,118	1,000,000.000	No data	-
		Payback	Outcome	Years	13,7 approx.	11 approx.	No data	-
	Cost & Benefit of Public Involved	Total Costs for public stakeholders	Input/Financial	€	279,369,619	1,103,000.000	197,851,240	AYUNTAMIENTO - 2016
		Net Income from Investments	Outcome	€	2,923,015	2,237,900.000	-78,852,832	BBVA - 2015
		Payback	Outcome	Years	12 approx.	9,85 approx.	No data	-
	Urban Variety	Urban Variety	Output	m <sup>2</sup> of building / 100 m <sup>2</sup> of building housing	78,70 m <sup>2</sup> / 100 m <sup>2</sup>	94,33 m <sup>2</sup> / 100 m <sup>2</sup>	281,53 m <sup>2</sup> / 100 m <sup>2</sup>	AYUNTAMIENTO - 2016
	Employment	Number of Jobs after the project	Outcome	Jobs	88,000	122,000	128,000	AYUNTAMIENTO - 2016
	Businesses	Number of Start-Ups created	Outcome	Businesses	No data	No data	No data	-

Table 3 Aggregate Table of Economic Indicators, work-team process

#### 1.4. Appendix: INDEX OF TECHNICAL ECONOMIC DATA

Index of technical data: Costs for Infrastructure in the area

Indicator	Costs for Infrastructure in the area
Description	The indicator defines and compares the total cost for infrastructure (services, economic activities, roads, etc.) made in the area of Chamartín, among the three proposals.
Index Type	Input/Financial
Units	Euro (€)
Spatial Reference	Chamartín District



<b>Sources</b>	<ul style="list-style-type: none"> <li>• Report on financial viability, equity and urban management</li> <li>• Departamento De Urbanismo Y Ordenación Del Territorio</li> <li>• DUCH – 2011, BBVA – 2015, Ayunta_m. 2016</li> </ul>
<b>Notes</b>	Based on the assumption that stakeholders have not set limits to the costs for infrastructures and we focus on the amount of the money, without knowing how much of them has been spent or proposed. Therefore, the best proposal is the one with the lowest monetary value/ No problems in evaluating data expected/In case of a lack in data, assessment shall be difficult

#### Index of technical data: Total Costs for Private Stakeholders

<b>Indicator</b>	<b>Total Costs for Private Stakeholders</b>
<b>Description</b>	The indicator defines and compares the total costs made by private stakeholders (investors, developers) in the area among the three proposals.
<b>Index Type</b>	Input/Financial
<b>Units</b>	Euro (€)
<b>Spatial Reference</b>	Chamartín District
<b>Sources</b>	<ul style="list-style-type: none"> <li>• Report on financial viability, equity and urban management</li> <li>• Departamento De Urbanismo Y Ordenación Del Territorio</li> <li>• DUCH – 2011, BBVA – 2015, Ayunta_m. 2016</li> </ul>
<b>Notes</b>	Best proposal is considered to be the one with the lowest invested cost concerning the private sector/ No problems in evaluating data expected/In case of a lack in data, assessment shall be difficult

#### Index of technical data: Total Costs for Public Stakeholders

<b>Indicator</b>	<b>Total Costs for Public Stakeholders</b>
<b>Description</b>	The indicator defines and compares the total costs made by public stakeholders (developers) in the area among the 3 proposals
<b>Index Type</b>	Input/Financial
<b>Units</b>	Euro (€)
<b>Spatial Reference</b>	Chamartín District
<b>Sources</b>	<ul style="list-style-type: none"> <li>• Report on financial viability, equity and urban management</li> <li>• Departamento De Urbanismo Y Ordenación Del Territorio</li> </ul>

	<ul style="list-style-type: none"> <li>• DUCH – 2011, BBVA – 2015, Ayunta_m. 2016</li> </ul>
<b>Notes</b>	Best proposal is considered to be the one with the lowest invested cost concerning the public sector. / No problems in evaluating data expected/In case of a lack in data, assessment shall be difficult

#### Index of technical data: Net income from Private Investments

Indicator	Net income from Private Investments
<b>Description</b>	The indicator defines an entity's (business, stakeholder) income minus costs of goods, investments and general expenses in the area.
<b>Index Type</b>	Outcome
<b>Units</b>	Euro (€)
<b>Spatial Reference</b>	Chamartín District
<b>Sources</b>	<ul style="list-style-type: none"> <li>• Report on financial viability, equity and urban management</li> <li>• Departamento De Urbanismo Y Ordenación Del Territorio</li> <li>• DUCH – 2011, BBVA – 2015, Ayunta_m. 2016</li> </ul>
<b>Notes</b>	Based on the assumption that high values of variance between gross private investments and depreciations, leads to higher productivity. Therefore, the best proposal is considered to be the one with the higher value. / Net Income is <b>NOT</b> a measure of how much cash a company earned during a given period. It is an indicator to see <b>profits, expand or reduce operations</b> , determine employee bonuses, and inform investors. / Negative net income means a loss for a stakeholder.

#### Index of technical data: Net Income from Public Investments

Indicator	Net Income from Public Investments
Description	The indicator defines the total costs made by public stakeholders (investors, developers) in the area among the three proposals.
Index Type	Outcome
Units	Euro (€)
Spatial Reference	Chamartín District
Sources	<ul style="list-style-type: none"> <li>• Report on financial viability, equity and urban management</li> <li>• Departamento De Urbanismo Y Ordenación Del Territorio</li> <li>• DUCH – 2011, BBVA – 2015, Ayunta_m. 2016</li> </ul>
Notes	Based on the assumption that high values of variance between gross public investments and depreciations, leads to higher productivity. Therefore, the best proposal is considered to be the one with the higher value. / Net Income is <b>NOT</b> a measure of how much cash a company earned during a given period. It is an indicator to see <b>profits, expand</b> or <b>reduce operations</b> , determine employee bonuses, and inform investors. / Negative net income means a loss for a stakeholder.

#### Index of technical data: Payback of Public Costs & Investments

Indicator	Payback of Public Costs & Investments
Description	The indicator defines the length of time required to recover the cost of a public investment.
Index Type	Outcome
Units	Years
Spatial Reference	Chamartín District
Sources	<ul style="list-style-type: none"> <li>• Report on financial viability, equity and urban management</li> <li>• Departamento De Urbanismo Y Ordenación Del Territorio</li> <li>• DUCH – 2011, BBVA – 2015, Ayunta_m. 2016</li> </ul>
Notes	The best proposal is considered to be the one with the shortest payback period as long as the investment proved to be profitable and secure. / Lack in data / Specific and same criteria (units) should be used for estimating payback. If not, evaluation is difficult.

#### Index of technical data: Urban Variety

Indicator	Urban Variety
<b>Description</b>	The indicator defines and compares the area of building economic activities (tertiary, shops, malls, etc.) per building of residential area, among the three proposals.
<b>Index Type</b>	Output
<b>Units</b>	m <sup>2</sup> of building economic activities / 100 m <sup>2</sup> of building Housing
<b>Spatial Reference</b>	Chamartín District
<b>Sources</b>	<ul style="list-style-type: none"> <li>• Report on financial viability, equity and urban management</li> <li>• Departamento De Urbanismo Y Ordenación Del Territorio</li> <li>• DUCH – 2011, BBVA – 2015, Ayunta_m. 2016</li> </ul>
<b>Notes</b>	Based on the assumption that the more surface economic activities occupy in a neighborhood, the bigger the economic impact, to that neighborhood, shall be, without overwhelming the housing area.

Index of technical data: Table Number of Jobs (After the Completion of the Project)

Indicator	Number of Jobs (After the Completion of the Project)
<b>Description</b>	The indicator defines the number of jobs created after the completion of the project.
<b>Index Type</b>	Outcome
<b>Units</b>	Number of Jobs
<b>Spatial Reference</b>	Chamartín District
<b>Sources</b>	<ul style="list-style-type: none"> <li>• Report on financial viability, equity and urban management</li> <li>• Departamento De Urbanismo Y Ordenación Del Territorio</li> <li>• DUCH – 2011, BBVA – 2015, Ayunta_m. 2016</li> </ul>
<b>Notes</b>	Best and most viable proposal is considered to be the one with the largest employment after the completion of the project. / No problems faced.



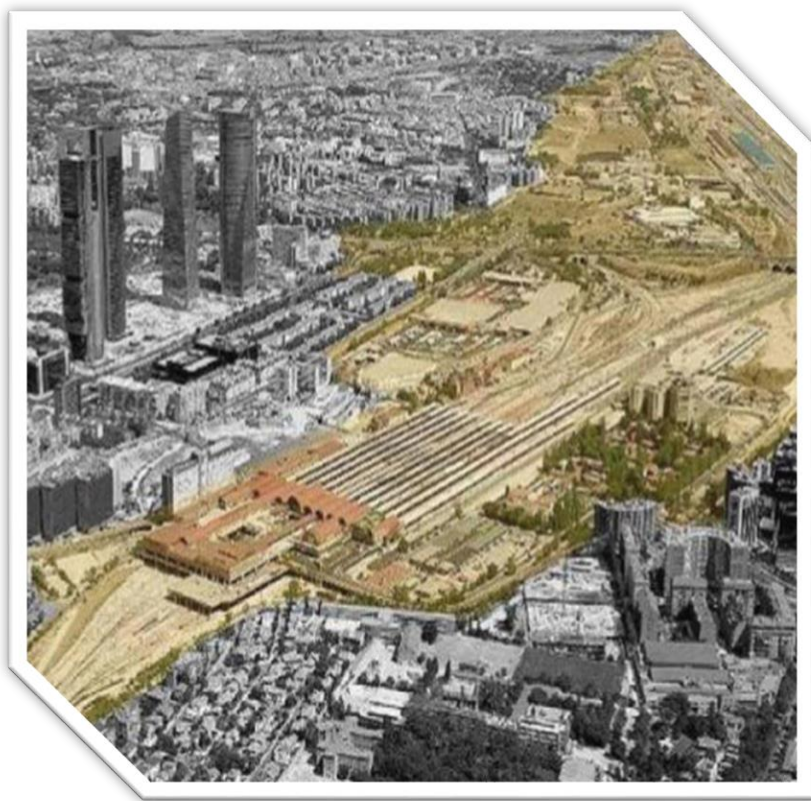
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# SCHOOL OF SPATIAL PLANNING AND DEVELOPMENT

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ECONOMIC EVALUATION OF CHAMARTÍN – MADRID PROJECT

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## **2.1. INTRODUCTION**

The regeneration of an area through projects contributing to significant changes in dealing with major social problems. Basic vision of all the projects is to improve the quality of life that will meet the requirements and the expectations of citizens for a sustainable environment, with health, comfort and usability. Moreover, Chamartin area through the project, is proposed to get developed in the residential sector, and get transformed into an economical center. The 3 proposals give character to the region, with benchmarks and attractions for living and working. The principles of sustainability and sustainability are applied through the services that maintain the social fabric and ensure treat human problems. Also key factors to improve the quality of life, is the insuring of social cohesion and the elimination of social inequalities. Social housing is taken into account in all three projects to cover the necessary needs for housing, of the lower economic strata.

As part of the evaluation of the three proposals, our team worked on the creation and measurement of social indicators. Generally, a common system of urban sustainability indicators enables us to observe in detail the evolution of urban systems in time. The evaluation index system that we have chosen was based on indicators which will be able to assess whether the three projects were designed to meet the principles of urban sustainability, and if will be promoted through them equality, social cohesion and social inclusion. Furthermore, we selected the specific indicators that in our view promote equality, social cohesion and urban sustainability (people-oriented). Some of our most significant indicators are social housing and social diversity which help us to understand the social profile of each project. Specifically, the indicators that we have chosen are: social housing, urban diversity, social diversity, accessibility to services, jobs, public space, level of participation and population density. The selection and measurement of these indicators are the result both of the available data, and the possibility for further evaluation of the project.

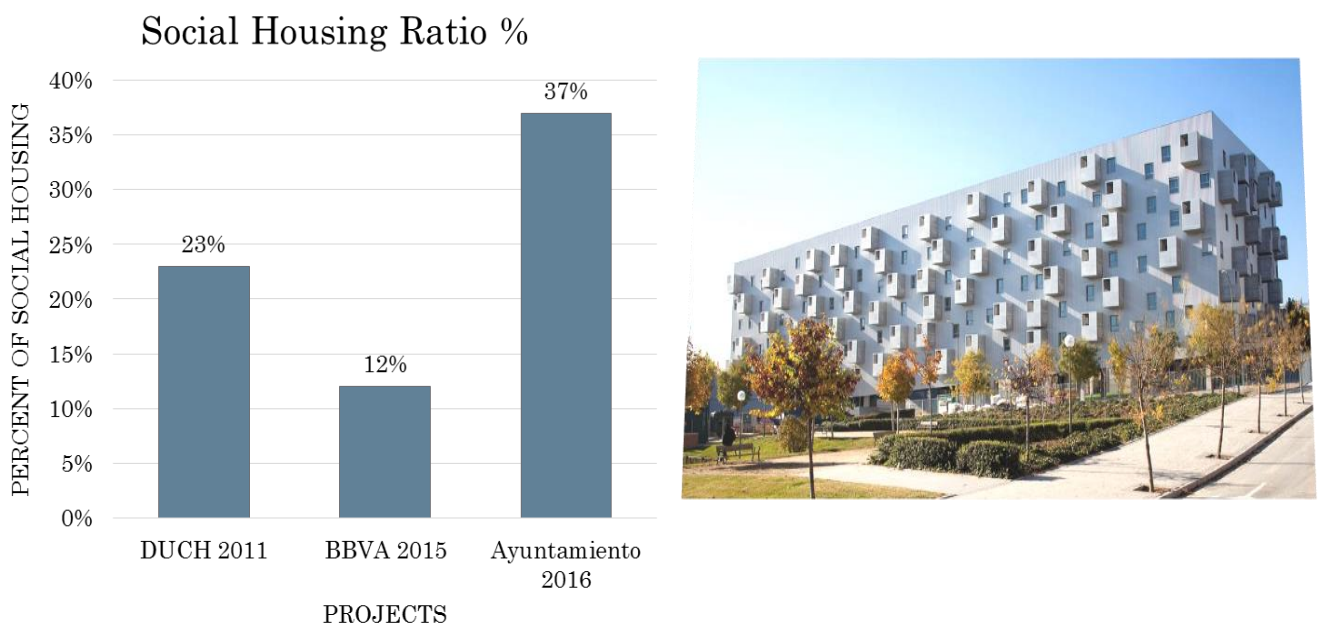
However, there was lack of basic data for calculating space-social indicators, such as the distribution of age groups and social groups, and the calculation of unemployment rate. Therefore, there is lack of basic conclusions regarding the organization of social groups in the area (if the organization of social groups is been effected by land uses), social networks (equality in social accessibility), and much more important conclusions about unemployment rates (by age groups or for the whole of the district).

## 2.2 Indicators Analysis`

As we have already mentioned, our indicators are social housing, urban diversity, social diversity, accessibility to services, jobs, public space, level of participation and population density. Below will be a detailed analysis for each indicator separately and the results of the measurements and their evaluation among the three project. More specific:

### 2.1. Social Housing

The social housing concerns the provision of housing with limited costs for low-income citizens. Therefore, the existence of adequate social housing rate ensures strengthen disadvantaged groups, eliminate geographical divisions, the social mix in housing and the improvement and strengthening social cohesion.



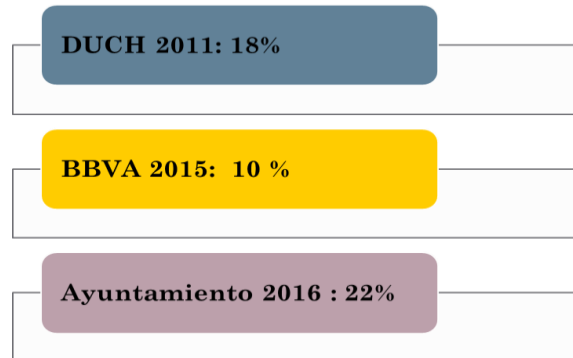
Source: 2011 PP CAST1 MEMORIA –APR-0803-14 NOVIEMBRE2010 PG 52 , Memoria pg 7 , 24 ,52

The existence of social housing means that the projected area is friendly and open in all groups of people, even if they are poor or rich, young or elder. Generally, in the first and second proposal the land use of residence is planned towards the prolongation of de la Castellana and other main roads. Although the third proposal differs from the others because the residential area is widespread in the whole projected area. It is very important to say that in the first and second proposal, the houses are over 17.000 ,while in the third proposal are almost 6.000 houses.



## 2.2 Social Diversity

The social diversity index based on the heterogeneity of social classes and housing. Each proposal is characterized by huge diversity rate, and each proposal is also appropriate to ensure the viability and durability of the area.



Source: Summary pg 40

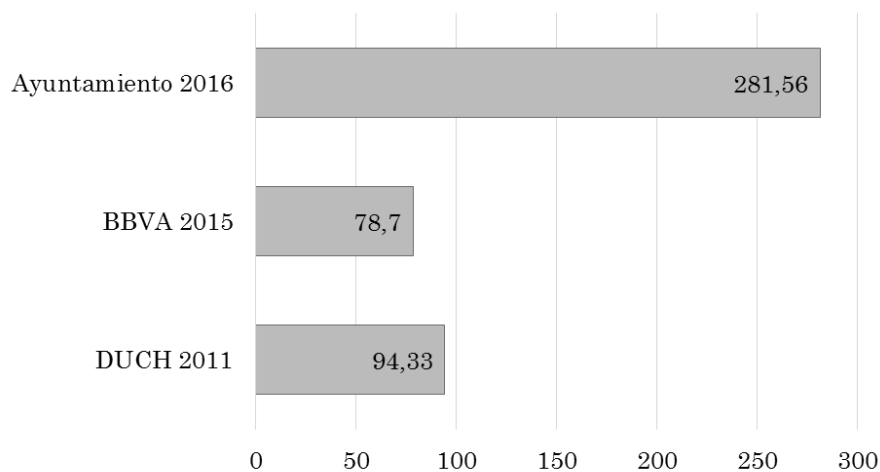


From the evaluation indicators system could not be missing the index of urban variety, since depending on how large the number of index in each sentence, the more mixed uses secured. For this reason the index was quantify and diversity of activities proposed to every project, while additional data obtained as a productive use and housing. With regard to evaluation, the second proposal is a deficit in terms of ensuring social diversity (10%). On the contrary, the third proposal provides mixed uses and this is apparent from the indicator (22%) and is the ideal percentage of the other two proposals.

## 2.3 Urban Diversity

It is a complicated index because it shows us the match between the percent of residence and the business development (manufacturer to consumer -m<sup>2</sup>c).

As much as higher is the number of urban variety, means that the land uses are mixed and complicated. This is more obvious at the third proposal (281.53 m<sup>2</sup>c/100m<sup>2</sup>c) and less at the second (78.70 m<sup>2</sup>c/100m<sup>2</sup>c).



Source: Summary pg 42 - Edited by Madrid team

## 2.4 Provision of services

Provision of services index measures the accessibility to basic services and has a purpose to check what extent ensure quality lives for each project, as well as the measurement results, we can conclude whether any proposal allowing citizens to identify with their area. The identification of citizens with their home region, contributes to increase of social cohesion and interdependence between the city and its inhabitants.

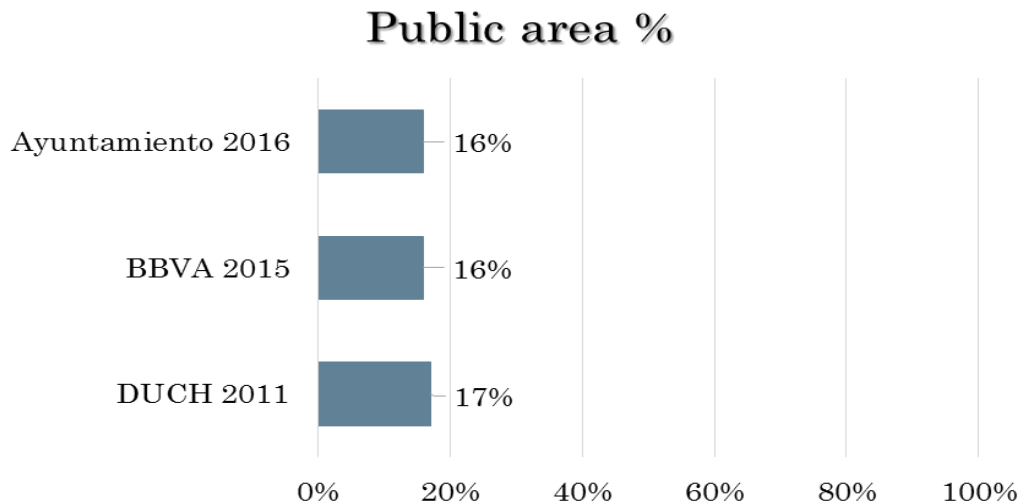
For this evaluation we lack of empirical data (as the projects are not yet conceived), we use and indirect data that may promote a social diversity.

Considering the three proposals, the third one lacks to ensure accessibility to basic services. On the other hand the first project focuses more on that particular piece.

Source: Summary pg 40

## 2.5 Public area

The public area index measures the percentage of public space proposed by each proposal. Specifically, the public spaces compose the urban fabric is a mesh that structures the city itself, the hierarchy of giving form, life, diversity and meaning. Therefore, this ratio indicator has great significance if the public regards all people as a whole and the existence of reasonable rates, contributes to social collectivity.

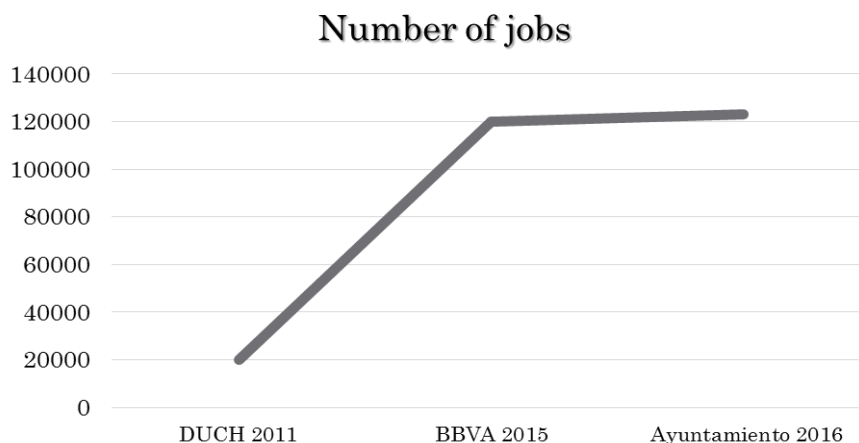


All the proposals provide almost the same percent of public area to the residents of Chamartin. It is one of the main priority for every project to provide open, public spaces to the people. They need to communicate and interact each other. Viable public spaces improve at the same time the sustainability of people's lives.

Source: Documentation provided by the proposals

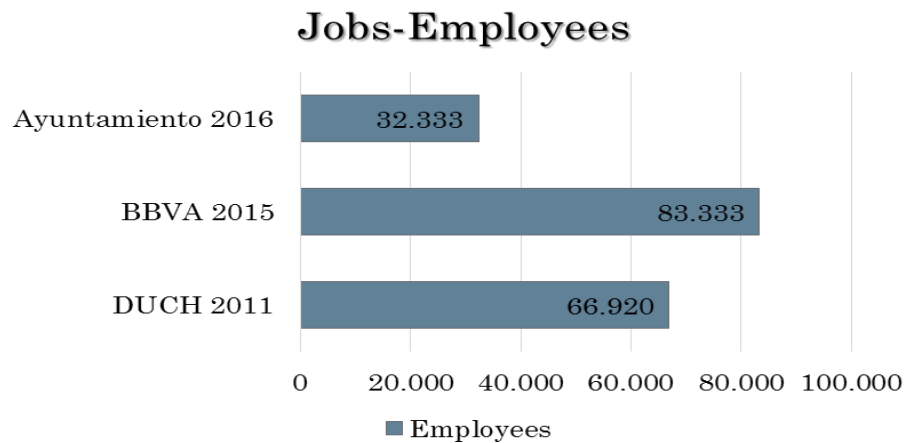
## 2.6 Number of jobs

The number of jobs which will be offered in each proposal concerning the number of employees down to be absorbed by the labor market. The more jobs provided in each proposal, the more will ensure mixing of the social group, while social inequality will decrease. Moreover, the social profile of the region will be improved provided that new jobs will reduce unemployment.



As we can see , the second and third proposal provide many jobs (120.000) in different fields. These proposals tend to imagine Chamartin as a new business center with a big variety of facilities , businesses and operations. In contrast , the first proposal could provide work only to 20.000 new workers.

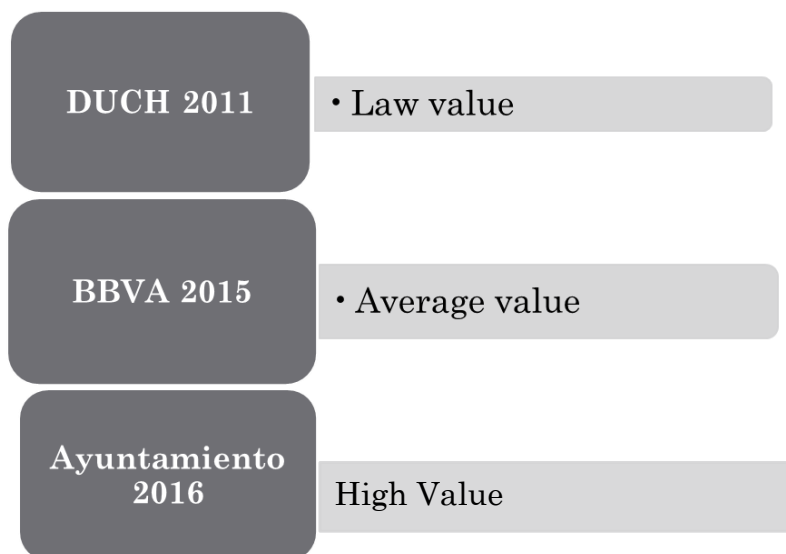
Source: Summary pg 50



This index shows us the number of employees that would probably be attracted by the application of each project. The second proposal will attract more workers (83.333) than the others. Source: Summary pg 50

### 2.7 Level of participation

The index which measures the level of participation of citizens in each proposal concerns an integration of citizens in the region, but also in neighboring areas, to create the various proposals. The study is based on a quality index that evaluates the subject. This indicator is quite important to measure as it is necessary for people living in a community or region to take part in the proposed changes to be implemented, as this kind of changes affecting their lifestyle.



According to the diagram, we can conclude that the residents of Chamartin are becoming more and more interesting for the planning of their region through the proposals. In the first proposal they didn't participate enough, in contrast with the third proposal.

Source: Summary pg 42

## **2.8 Population Density**

In the end, we considered it important to include in our indicator system the population density as a secondary index in our index list, though it works complementarily to the assessment as the mapping of a general picture of the population density envisaged for each proposal.

The choice of the population density index was made because it provides us with an initial insight into the territorial organization of the city, while the analysis gives rise to an estimate of the extent of urban sprawl in the region and whether this region has organized urban design for each of proposals. This indicator is able to help us understand the population and the social profile of the area. It is obvious, however, that this price does not accurately reflect the actual distribution of the inhabitants across the country because people tend to concentrate on areas that offer them more employment opportunities and therefore survival.

The results of the evaluation show that the third proposal has the lowest population density(9,5), while the first proposal is the largest(30,9).

Source : Memoria1 pg 12 , Summary pg.50

### 2.3. EVALUATION OF PROPOSALS

	INDICATORS	MEASUREMENT UNIT	EVALUATION		
			DUCH 2011	BBVA 2015	Ayuntamiento 2016
1.	Social housing ratio	Percentage of Social housing	23%	12%	37%
2.	Social Diversity	Percentage of Social housing	18%	10%	22%
3.	Urban variety	Productive uses per housing	94.33 m <sup>2</sup> c/100m <sup>2</sup> c	78.70 m <sup>2</sup> c/100m <sup>2</sup> c	281.53 m <sup>2</sup> c/100m <sup>2</sup> c
4.	Provision of Services	no data	16	15	12
5.	Public area	Percentage of public area	17%	16%	16%
6.	Number of Jobs	employees	66.920	83.333	32.333
7.	Level of participation	Qualitative	Low value	Average value	High value
8.	Population density	Inhabitants per hectare	30,9	28,0	9,5

In this part of the project, were studied in details some social indicators, (which we described above), while there was a clarification and broader study of the Chamartin district. At first proposal in 2011 a clear division of land use is observed, while at the proposals of 2015 and especially 2016, mixed land uses are less visible and understandable. According to existing data, and numerical study of social indicators, we decided to choose the first project as the optional, because the primary importance is given in human beings, while the third respectively promotes the business activity. Specifically, the proposal of 2011 is focused on people and vulnerable social groups as well as proposes sufficient number of residential and social housing areas. On contrast, the proposals of 2015 and 2016 suggest less number of residential and emphasize on the provision of services, activities, jobs and promote the Chamartin district as a business center. The most important argument between proposals is that in the 2011 proposal land uses are grouped and organized by the cross of roadways, while the proposals of 2015 and even more strongly in the 2016 proposal, land uses are spread out. In this case, projects 2015 and 2016 ensure the accessibility of all social groups in a variety of proposed services and activities.

## 2.4. APPENDIX

INDICATOR	SOCIAL HOUSING RATIO	
<b>Definition</b>	This indicator measures the social housing percentage in relation with the total number of houses existing in the project area.	
<b>Measurement Unit</b>	<b>Absolute figures</b>	<b>Comparative figures</b>
	Census of housing (number and type of houses)	Social houses ratio = (Number of social houses / Total number of houses) • 100
<b>Spatial units of reference</b>	European Union, Spain, Madrid, Chamartin Region	
<b>Sources</b>	2011 PP CAST1 MEMORIA-APR-0803-14NOVIEMBRE2010 pg 52 , Memoria pg 7 ,pg 24 , pg 52	
<b>Observations</b>	At the first proposal in 2011 the percentage of social housing seems to be more elevated compared to the same indicator in 2015 respectively. At the third proposal, the percentage increases sharply.	

INDICATOR	SOCIAL DIVERSITY	
<b>Definition</b>	Heterogeneity of social classes in the context. Being the most socially diverse the optimum that will secure resilience and sustainability.	
<b>Measurement Unit</b>	<b>Absolute figures</b>	<b>Comparative figures</b>
	Heterogeneity of social classes, Percentage of social housing	No data
<b>Spatial units of reference</b>	European Union, Spain, Madrid, Chamartin Region	
<b>Sources</b>	Summary pg. 40	
<b>Observations</b>	For this evaluation we lack of empirical data (as the projects are not yet conceived), we use and indirect data that may promote a social diversity.	



INDICATOR	URBAN VARIETY	
<b>Definition</b>	Indicator according to its context: Value for the quantification of the diversity of the planned activities, taking in consideration that it must have the sufficient dimension for a positive impact on the land use and its surrounding neighborhoods.	
<b>Measurement Unit</b>	<b>Absolute figures</b>	<b>Comparative figures</b>
	Productive uses, Housing	Thresholds of Assessment: 1. 0 – 17 m2c/100m2c 2. 17 – 34 m2c/100m2c 3. 34 – 51 m2c/100m2c 4. 51 – 68 m2c/100m2c 5. >68 m2c/100m2c
<b>Spatial units of reference</b>	European Union, Spain, Madrid, Chamartin Region	
<b>Sources</b>	Summary- Edited by Madrid team	
<b>Observations</b>	As much as higher is the number of urban variety, means that the land uses are mixed and complicated. This is more obvious at the third proposal and less at the second.	

INDICATOR	PROVISION OF SERVICES	
<b>Definition</b>	Accessibility to basic services in project area is essential for the citizens' quality of life. Allows the population to identify with their closest urban space, increasing the social cohesion and the interrelation between the city and its inhabitants.	
<b>Measurement Unit</b>	<b>Absolute figures</b>	<b>Comparative figures</b>
	Land uses ,means of transport	No data
<b>Spatial units of reference</b>	European Union, Spain, Madrid, Chamartin Region	
<b>Sources</b>	Summary pg 40	
<b>Observations</b>	For this evaluation we lack of empirical data, and we don't even know the measurement unit of this indicator (as the projects are not yet conceived), so we use and indirect data for the provision of services.	

INDICATOR	PUBLIC AREA	
<b>Definition</b>	This indicator measures the percentage of public area <u>wich</u> is proposed by each proposal.	
<b>Measurement Unit</b>	<b>Absolute figures</b>	<b>Comparative figures</b>
	Public space	No data
<b><u>Spatial</u> units of reference</b>	European Union, Spain, Madrid, <u>Chamartin</u> Region	
<b>Sources</b>	Documentation provided by the proposals	
<b>Observations</b>	Public areas are important for people's everyday life. There are places where they can entertain and generally improve the quality of their lives. The third proposal tends to minimize these areas.	

INDICATOR	JOBS	
Definition	Population proposed to be employed	
<b>Measurement Unit</b>	<b>Absolute figures</b>	<b>Comparative figures</b>
	Number of jobs	Calculation by Madrid team
<b><u>Spatial</u> units of reference</b>	European Union, Spain, Madrid, <u>Chamartin</u> Region	
<b>Sources</b>	Summary- Pg 50	
<b>Observations</b>	In this part, it is perceived that the number of jobs in 3d proposal has been increased significantly compare to the number of jobs in 1 proposal. About the population proposed to be employed in 2015 we have no data.	

INDICATOR	LEVEL OF PARTICIPATION	
Definition	Integration of the neighbors for the establishment of the different proposals. The study is based on a qualitative index which assesses the subject.	
Measurement Unit	Absolute figures	Comparative figures
	No data	1-Minimum value: Total absence of citizens in the process. 2-Low value: Participative process based on information and explanation of the project. 3-Participative Process based on the articulated objections on the already developed plan. 4-High value: Integration of <u>neighbours</u> during the presentation of the proposals in the different stages of the development of the project and the adaptation of articulated needs and demands. 5-Maximum value: the integration of <u>neighbours</u> during the process started off with the first stage of the initiative.
<u>Spatial</u> units of reference	European Union, Spain, Madrid, <u>Chamartin</u> Region	
Sources	Summary pg. 42 Apr 08.C	
Observations	It is important for the people who live in a community or region to take part in proposed changes that are going to be applied. This kind of changes affects their way of living.	

INDICATOR	POPULATION DENSITY	
<b>Definition</b>	Population density is defined as the number of inhabitants per hectare, calculated only within the consolidated urban area which is, in most cases, smaller than the surface area of the entire municipality	
<b>Measurement Unit</b>	<b>Absolute figures</b>	<b>Comparative figures</b>
	Urban area limits, Population census (number of inhabitants)	Population density = Number of inhabitants / Urban area.
<b>Spatial units of reference</b>	European Union, Spain, Madrid, Chamartin Region	
<b>Sources</b>	Memoria1 p.12, Summary p.50	
<b>Observations</b>	The values of densities on proposals of 2011 and 2015, ranging in relatively acceptable levels, as net densities are between 100-400 people per hectare which are used in urban areas for permanent residence. In the proposal of 2016, the index shows something jacked up which means that the region will face lighting problems, mobility and ventilation difficulties.	



## Project Chamartin - Environmental Indicators



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### 3.1. INTRODUCTION

The aim of this project is the study and the evaluation of nine environmental indicators involving:

- green space
- green space per person
- green space cohesion
- soil permeability
- total water demand
- water self-sufficiency
- energy demand
- emissions by traffic/impact of mobility
- acoustic comfort

in the area of Chamartin, which is located northeast of Madrid. This project is based on the three projects/proposals for the urban regeneration of Chamartin which were carried out from DUCH in 2011, BBVA in 2015 and Ayuntamiento in 2016. These indicators were selected according to an amount of data that was available from the studies of the three projects mentioned before. Two of them, green space per person and acoustic comfort, were calculated with our own data processing and a third one was added by our own choice, because it is a very significant index for the evaluation of the projects. Also, they were divided into 6 categories which: are green, soil, water, energy, air quality and noise. Although, there are other minor environmental indicators that they were not included in this project due to the absence of data.

### 3.2. INDICATORS

#### 3.2.1 Green space

The first indicator is green space. It refers to the area covered by grass, trees and other vegetation set apart for recreational or aesthetic purposes in an urban environment. The measurement units are square meters ( $m^2$ ) and the percentage of the green space of a specific area. According to the Table 1, the indicator for the first project (2011) is  $552.642 m^2$  or 17,4% of the whole area, for the second proposal (2015)  $566.826 m^2$  or 18,2% and for the third project (2016)  $274.251 m^2$  or 15,72%. Hence, the best proposal is the 2015-BBVA because it has more  $m^2$  of green in the whole study area than the other two.

#### 3.2.2 Green space per person

The next indicator is green space per person which refers to the relation between the total green surface and the number of inhabitants in urban soil. It is defined as the square meters of green space over the number of inhabitants. According to the specifications, the minimum value of it should be  $10 m^2$ / person, but the desirable value has to be bigger than  $15 m^2$ / person. According to table 1, the index for 2011 is  $11,6 m^2$ / person, for the second project  $16,55 m^2$ / person and for the last one  $8,01 m^2$ / person. Therefore, the second proposal (2015) is more suitable.

#### 3.2.3 Green space cohesion

The third indicator is green space cohesion. It is the connectivity between green spaces among pedestrian areas and sidewalks, bicycle lanes and small groups or lines of trees. This is a qualitative indicator, so the evaluation method depends on the amount of pedestrian areas and sidewalks, bicycle lanes and small groups or lines of trees. According to the Table 1 and the green space maps, it is concluded that the project of DUCH-2011 is the best proposal.

### 3.2.4 Soil permeability

The soil permeability is the only indicator in the soil category. The spread of impermeable surfaces as a result of urbanization, changes in land uses and the resulting loss of edaphic resources are among the major environmental challenges that Europe is facing today. The goal is to achieve a low impact urbanization by reducing the sealing and waterproofing of the soil. The permeability index indicates the relationship between the functionally significant surfaces in the natural cycle and the total area of a plot. For this indicator, it is necessary to know the permeability factor, the surface waterproofed, the super-permeable surface, the green spaces without connection to natural soil, the green spaces with natural flooring and finally the total area of intervention. Furthermore, the calculation of the soil permeability index is:  $BIS(\%) = \Sigma(\text{Surface} * PF) / \text{Total Area} * 100$ , where BIS is the biotic index of soil and PF is the permeability factor. Moreover, the minimum value for this indicator is 20%, but the minimum desirable value is 30%. According to the Table 1, the indicator for the first project (2011) is 5%, for the second one (2015) 26%, and for the third one (2016) 30%. Therefore, the best proposal is the Ayuntamiento (2016).

### 3.2.5 Total water demand

The first water indicator which was used is the total water demand. It shows the estimation of water demand by uses (domestic, public and commercial). Application of criteria for saving and recycling marginal water in a building. The results also account for the losses in the distribution and transportation networks. To calculate the total water demand, the following data were used as assumptions: correspond 2.75 people per house, the average housing 100 square meters (m<sup>2</sup>), correspond 1 employee per 18m<sup>2</sup> commercial and 2500 m<sup>2</sup> per person. Also, the measurement unit is liters per day. According to the specifications, the minimum value for this indicator has to be less than 100 liters per person and day of potable water, but the desirable value has to be less than 70 liters, respectively. From the Table 1 and after comparing the results of indicator, the best proposal for this indicator is the Ayuntamiento (2016), because it has the lowest total water demand.

### 3.2.6 Water self-sufficiency

The second water indicator which was used is the water self-sufficiency. This indicator represents the part of the water supply to a city that does not come from external sources and can be expressed in absolute values (lpd) or relative values (%). The water self-sufficiency in the new developments is conditioned by the potential of the use of local water sources. The water self-sufficiency is defined as the marginal and pre-feasible usable water by the gross total water demand (potable and non-potable). Also, the minimum value for this indicator has to be more than 35% of water self-sufficiency for urban water demand and the desirable value has to be 100% water self-sufficiency for urban water demand, respectively. According to the Table 1, the indicator for the first project (2011) is 29%, for the second proposal (2015) 6%, and for the third project (2016) 9,82%. Hence, the best proposal is the first one, the DUCH-2011.

### 3.2.7 Energy demand

Another indicator that we believe is significant is the energy demand. Unfortunately, there was no data available in order to calculate this indicator. It shows the energy consumption that is needed by the population when carrying out its activities. The main areas (residential sector, services sector, transport, primary sector) of consumption are considered, with the exception of industrial use. This indicator is calculated either by dividing the MWh by the number of inhabitants or the MWh by m<sup>2</sup>. The minimum value for the whole city, neighborhood or sector has to be less than 10 MWh per inhabitant (not counting the industrial sector). For the residential sector the minimum value has to be less than 100 KWh per m<sup>2</sup> and for the tertiary sector less than 200 KWh per m<sup>2</sup>. Due to lack of data, we can't evaluate the three proposals in order to choose the optimum.



### **3.2.8 Emissions by traffic/Impact of mobility**

Moreover, the air quality indicator, which we used, is the emissions by traffic / impact of mobility. This indicator shows the environmental impact of transport. This impact is significant, because emissions create air pollution and they contribute to global warming. It is calculated by the emissions of pollutant per kilometer multiplied by the total distance traveled. The pollutants that were used are the SO<sub>2</sub>, CO and NO<sub>x</sub>. After comparing the indicator's results in table 1, we came to the conclusion, that the best proposal for this indicator is the 2016 project, because it has the fewest emissions of SO<sub>2</sub>, CO and NO<sub>x</sub> by far. The second best proposal is the 2015 project and the worst one is the 2011 project.

### **3.2.9 Acoustic comfort**

The last but not least indicator that was analyzed is the acoustic comfort. This indicator shows the undesirable sound produced by human activities that can cause health problems and negatively affect the environment. There are five types of acoustic sensitivity. Type I is a silent zone, which has sanitary and educational uses as well as protected spaces. Type II is a slightly noisy area with considerable acoustic sensitivity, which includes use of accommodation, use of offices or services as well as commercial and sports use. Furthermore, Type III is a tolerable, noisy area, which includes the same uses as Type II. Type IV is a noisy area of low acoustic sensitivity that includes the following land uses: industrial use and public services. On the other hand, Type V is an especially noisy area, a zone of zero acoustic sensitivity which contains rail and airway transport infrastructures and open air entertainment areas. The maximum volume of the noise is 60dB, in order not to cause any problems to human hearing. To come to a conclusion we used the acoustic maps and the land use maps of the three projects. The project selected as suitable is the one which is close to residential use, the volume does not exceed the 60dB. After comparing those maps, we inferred that the optimum proposal is the project of 2016, because the area close to residences has low decibels. The second best proposal is the 2011 project and the worst one is the 2015 project, because there are lots of areas which are categorized as Type V.

### 3.3. CONCLUSION

**Table:** Accumulated results of the 9 environmental indicators

CATEGORIES	ENVIRONMENTAL INDICATORS	UNITS	2011 - DUCH	2015 - BBVA	2016 AYUNTAMIENTO	PROPOSAL EVALUATION
GREEN SPACE	Green Space	m <sup>2</sup> %	552.642 17,4%	566.826 18,2%	274.251 15,72%	2015 - BBVA
	Green Space Cohesion	Qualitative Indicator	YES	YES	YES	2011 - DUCH
	Green Space per person	m <sup>2</sup> of green space / number of inhabitants	11,6	16,55	8,01	2015 - BBVA
SOIL	Soil Permeability	%	5	26	30	2016 AYUNTAMIENTO
WATER	Total Water Demand	Liters/Day	5.134.850	6.263.250	2.397.360	2016 AYUNTAMIENTO
	Water Self-Sufficiency	%	29	6	9,82	2011 - DUCH
ENERGY	Energy Demand	MWh/habitant KWh/m <sup>2</sup>	No Data	No Data	No Data	-
AIR QUALITY	Emissions by Traffic / Impact of Mobility	No data	SO <sub>2</sub> : 6391,21 CO: 3061388,67 NO <sub>x</sub> : 2070751,42	SO <sub>2</sub> : 5901,06 CO: 2826607,77 NO <sub>x</sub> : 1911943,46	SO <sub>2</sub> : 1907,51 CO: 913699,06 NO <sub>x</sub> : 618034,43	2016 AYUNTAMIENTO
NOISE	Acoustic Comfort	Qualitative Indicator	2	3	1	2016 AYUNTAMIENTO

According to the Table 1: a) the project of 2011 - DUCH, is better than the other two proposals, based on the environmental indicators of Green Space Cohesion and Water Self-Sufficiency, b) the project of 2015 - BBVA, is better when it comes to the indicators of Green Space and Green Space per person, c) the 2016 AYUNTAMIENTO project, is better at Soil Permeability, Total Water Demand, Emissions by Traffic / Impact of Mobility and Acoustic Comfort.

In conclusion, according to the above indicators and their values, as well as their evaluation to each project, it is concluded that:

- The project that is selected is the **2016 - AYUNTAMIENTO project**, as the best proposal, after comparing the 3 projects with each indicator separately.
- The project of 2011 is defined as a second best proposal and the worst proposal is the project of 2015.

### 3.4. SOURCES

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### 3.5. APPENDIX

GREEN SPACE	
<b>Description</b>	An area of grass, trees, or other vegetation set apart for recreational or aesthetic purposes in an urban environment.
<b>Units</b>	-m <sup>2</sup> -%
<b>Sources</b>	<ul style="list-style-type: none"> <li>- The cities in the 21<sup>st</sup>, <i>The application of transformation criteria in different projects (Project 2011)</i> (Page 19)</li> <li>- Non Technical Summary (<i>Project 2015</i>)</li> <li>- Basic document and strategies for the formulation of an ordination alternative around the development north of Madrid (<i>Project 2016</i>)</li> </ul>

GREEN SPACE PER PERSON	
<b>Description</b>	Relation between the total green surface and the number of inhabitants in urban soil.
<b>Index</b>	m <sup>2</sup> of green space / number of inhabitants
<b>Values</b>	<p>Minimum value: &gt;10 m<sup>2</sup>/person</p> <p>Desirable value: &gt;15 m<sup>2</sup>/person</p>
<b>Sources</b>	<ul style="list-style-type: none"> <li>- The cities in the 21<sup>st</sup>, <i>The application of transformation criteria in different projects (Project 2011)</i> (Page 19)</li> <li>- Non Technical Summary (<i>Project 2015</i>)</li> <li>- Basic document and strategies for the formulation of an ordination alternative around the development north of Madrid (<i>Project 2016</i>)</li> <li>-Indicadores Gestion agua</li> <li>- Own data processing</li> </ul>

GREEN SPACE COHESION	
<b>Description</b>	Connectivity between green spaces among pedestrian areas and sidewalks, bicycle lanes and small groups or lines of trees.
<b>Criteria</b>	Since it is a qualitative indicator, the evaluation method depends on the amount of pedestrian areas and sidewalks, bicycle lanes and small group or lines of trees.
<b>Sources</b>	<ul style="list-style-type: none"> <li>- The cities in the 21<sup>st</sup>, <i>The application of transformation criteria in different projects (Project 2011)</i> (Page 19)</li> <li>- Non Technical Summary (<i>Project 2015</i>)</li> <li>- Basic document and strategies for the formulation of an ordination alternative around the development north of Madrid (<i>Project 2016</i>)</li> <li>- Own data processing</li> </ul>

SOIL PERMEABILITY	
<b>Description</b>	<p>The spread of impermeable surfaces as a result of urbanization, changes in land uses and the resulting loss of edaphic resources are among the major environmental challenges that Europe is facing today. The goal is to achieve a low impact urbanization by reducing the sealing and waterproofing of the soil.</p> <p>The permeability index indicates the relationship between the functionally significant surfaces in the natural cycle and the total area of a plot.</p>
<b>Index</b>	<ul style="list-style-type: none"> <li>-Permeability factor</li> <li>-Surface waterproofed</li> <li>-Superpermeable surface</li> <li>- Green spaces without connection with natural soil</li> <li>- Green spaces with natural flooring</li> <li>- Total area of intervention</li> </ul>
<b>Calculation</b>	$BIS(\%) = \frac{\sum(\text{Surface} \times PF)}{\text{Total Area}} \times 100$ <p>BIS: Biotic Index of Soil PF: Permeability Factor</p>
<b>Values</b>	<p>Minimum value: <b>20%</b> Minimum desirable value: <b>30%</b></p>
<b>Sources</b>	<ul style="list-style-type: none"> <li>- <i>Directrices sobre mejores prácticas para limitar, mitigar o compensar el sellado del suelo</i>. Comisión Europea de Medio Ambiente. Luxemburgo: Oficina de Publicaciones de la Unión Europea, 2012. [SWD(2012) 101 final/2, disponible en <a href="http://ec.europa.eu/environment/soil/sealing_guidelines.htm">http://ec.europa.eu/environment/soil/sealing_guidelines.htm</a>]</li> <li>- <i>Plan especial de Indicadores de sostenibilidad ambiental de la actividad urbanística de Sevilla</i>. Página 63. [www.ecourbano.es]</li> <li>- European Environment Agency. <a href="http://www.eea.europa.eu/data-and-maps/indicators">http://www.eea.europa.eu/data-and-maps/indicators</a></li> <li>- <i>Sistema de indicadores y condicionantes para ciudades grandes y medianas</i>. Agencia de Ecología Urbana de Barcelona. Página 43.</li> </ul>

TOTAL WATER DEMAND	
<b>Description</b>	Estimation of water demand by uses (domestic, public and commercial). Application of criteria for saving and recycling marginal water in a building. The results also account for the losses in the distribution and transportation networks.
<b>Index</b>	2,75 person/housing Average housing 100m <sup>2</sup> 1 employee/18m <sup>2</sup> commercial 2500m <sup>2</sup> /person
<b>Units</b>	Liters/day
<b>Values</b>	Minimum value: <100 liters / person and day of drinking water  Desirable value: <70 liters / person and day of drinking water  Less than 105 liters of total water consumption (potable and non-potable)
<b>Sources</b>	<ul style="list-style-type: none"> <li>- INE. Encuesta sobre el suministro y saneamiento del agua (2014) <a href="http://www.iagua.es/noticias/espana/instituto-nacional-estadistica/16/10/04/espana-consume-15-mas-agua-que-2014-siendo">http://www.iagua.es/noticias/espana/instituto-nacional-estadistica/16/10/04/espana-consume-15-mas-agua-que-2014-siendo</a></li> <li>- Sistemas de indicadores y condicionantes para ciudades grandes y medianas. Ministerio de medio ambiente y medio rural y marino y Ministerio de fomento. Página 57</li> <li>- 2011. Plan Parcial de Reforma Interior Apr 08.03 "Prolongación de la Castellana" (1.9.4 Agua). Páginas 244-246</li> <li>- 2015: Estudio ambiental estratégico (Página 418)</li> </ul>

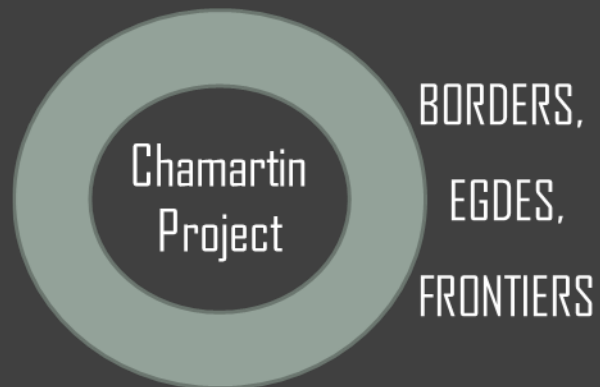
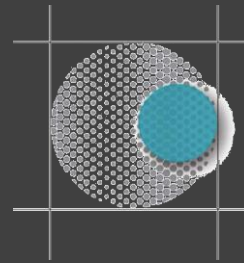
WATER SELF-SUFFICIENCY	
<b>Description</b>	It represents the part of the water supply to a city that does not come from external sources and can be expressed in absolute values (lpd) or relative values (%). The water self-sufficiency in the new developments is conditioned by the potential of the use of local water sources.
<b>Index</b>	Marginal and pre-feasible usable water / gross total water demand (potable and non-potable).
<b>Units</b>	%
<b>Values</b>	Minimum value: > 35% of water self-sufficiency (urban water demand)  Desirable value: 100% water self-sufficiency (urban water demand)
<b>Sources</b>	<ul style="list-style-type: none"> <li>- Sistemas de indicadores y condicionantes para ciudades grandes y medianas. Ministerio de medio ambiente y medio rural y marino y Ministerio de fomento. Página 59</li> <li>- 2011. Plan Parcial de Reforma Interior Apr 08.03 "Prolongación de la Castellana" (1.9.4 Agua). Páginas 244-246</li> <li>- 2015: Estudio ambiental estratégico (Página 418)</li> </ul>

ENERGY DEMAND	
<b>Description</b>	This indicator shows the energy consumption that is needed by the population when carrying out its activities. The main areas (residential sector, services sector, transport, primary sector) of consumption are considered, with the exception of industrial use.
<b>Index</b>	MWh/habitant KWh/m <sup>2</sup>
<b>Units</b>	MWh/habitant KWh/m <sup>2</sup>
<b>Values</b>	Minimum value: <10 MWh / inhabitant (not counting industrial sector). For the whole city / neighborhood / sector.  Residential sector: <100 KWh / m <sup>2</sup> ; Tertiary sector: <200 KWh / m <sup>2</sup>
<b>Sources</b>	- Sistemas de indicadores y condicionantes para ciudades grandes y medianas. Ministerio de medio ambiente y medio rural y marino y Ministerio de fomento. Página 54 <i>Umbral valores deseables</i>

EMISSIONS BY TRAFFIC / IMPACT OF MOBILITY	
<b>Description</b>	The environmental impact of <a href="#">transport</a> is significant because it is a major user of <a href="#">energy</a> , and burns most of the world's <a href="#">petroleum</a> . This creates <a href="#">air pollution</a> , including <a href="#">nitrous oxides</a> and <a href="#">particulates</a> , and is a significant contributor to <a href="#">global warming</a> through emission of <a href="#">carbon dioxide</a> , for sector.
<b>Index</b>	Emission of pollutant per km traveled*Total travel
<b>Sources</b>	- Instruction 2008/50 / EC of the European Parliament and of the council of May 21, 2008 on ambient air quality and cleaner air for Europe, <a href="http://www.ypeka.gr/LinkClick.aspx?fileticket=f9P2nXV7n4A%3d&amp;tabid=493&amp;language=el-GR">http://www.ypeka.gr/LinkClick.aspx?fileticket=f9P2nXV7n4A%3d&amp;tabid=493&amp;language=el-GR</a> - Indicadores (word)



ACOUSTIC COMFORT	
<b>Description</b>	The undesirable sound produced by human activities that can cause health problems and negatively affect the environment.
<b>Criteria</b>	The inference was made by the acoustic maps and the land use maps of each project. The project selected as suitable is the one which is close to residential use where the volume does not exceed the 60dB.
<b>Values</b>	Maximum value: <b>60dB</b>
<b>Sources</b>	<ul style="list-style-type: none"> <li>- Map de ruido DUCH 2011, Indicadores (word)</li> <li>- Map de ruido BBVA 2015, Indicadores (word)</li> <li>- Map de ruido Ayuntamiento 2016, Indicadores (word)</li> <li>- Own data processing</li> </ul>



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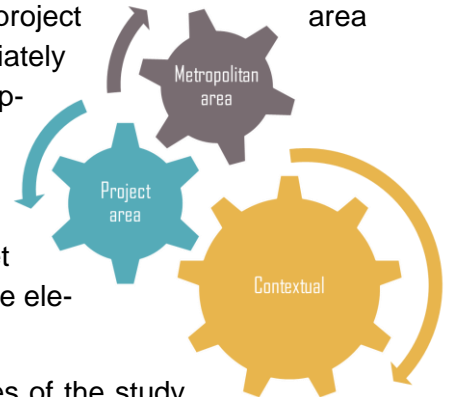
Constantino Antolinez

Laura Picardo Costales

Rolando Duran Cavieres

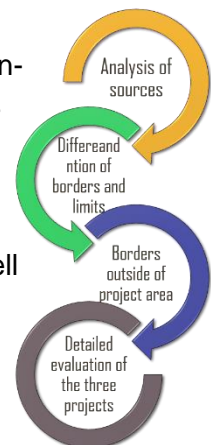
#### 4.1. INTRODUCTION

The Chamartin project area is located on the northern edge of the city of Madrid and extends along the Paseo de la Castellana between the M-11 and M-40 highways. Our subject concerns the borders, barriers and limitations set within the Chamartin project area as well as the ones set between our project area and the immediately neighboring areas connected to it. The analysis of this subject happened on three different scales; the Metropolitan area, the project area and the contextual one. Our group focused on the project area and the neighboring areas directly connected to it, and the study of the cohesion, discontinuities and physical limitations set by the urban and natural environment. The main analysis of these elements happened based on three different factors:



- **The elements of the urban environment** (the land uses of the study area and the surrounding areas, the urban equipment and the general urban structures)
- **The natural environment** (green areas, connection to the NATURA protection network)
- **The connection networks** (pedestrian and bike routes, transportation networks and overall cohesion of the area)

The actual analysis started with us analyzing the data sources that concerned each project in order to set the base of analysis and the differences that were presented among the three proposals. This way, we concluded to the overall differentiations presented on the borders and discontinuities and later on we distinguished the specific elements that would be considered the borders inside the Chamartin project area as well as the ones set in the overall affected area.



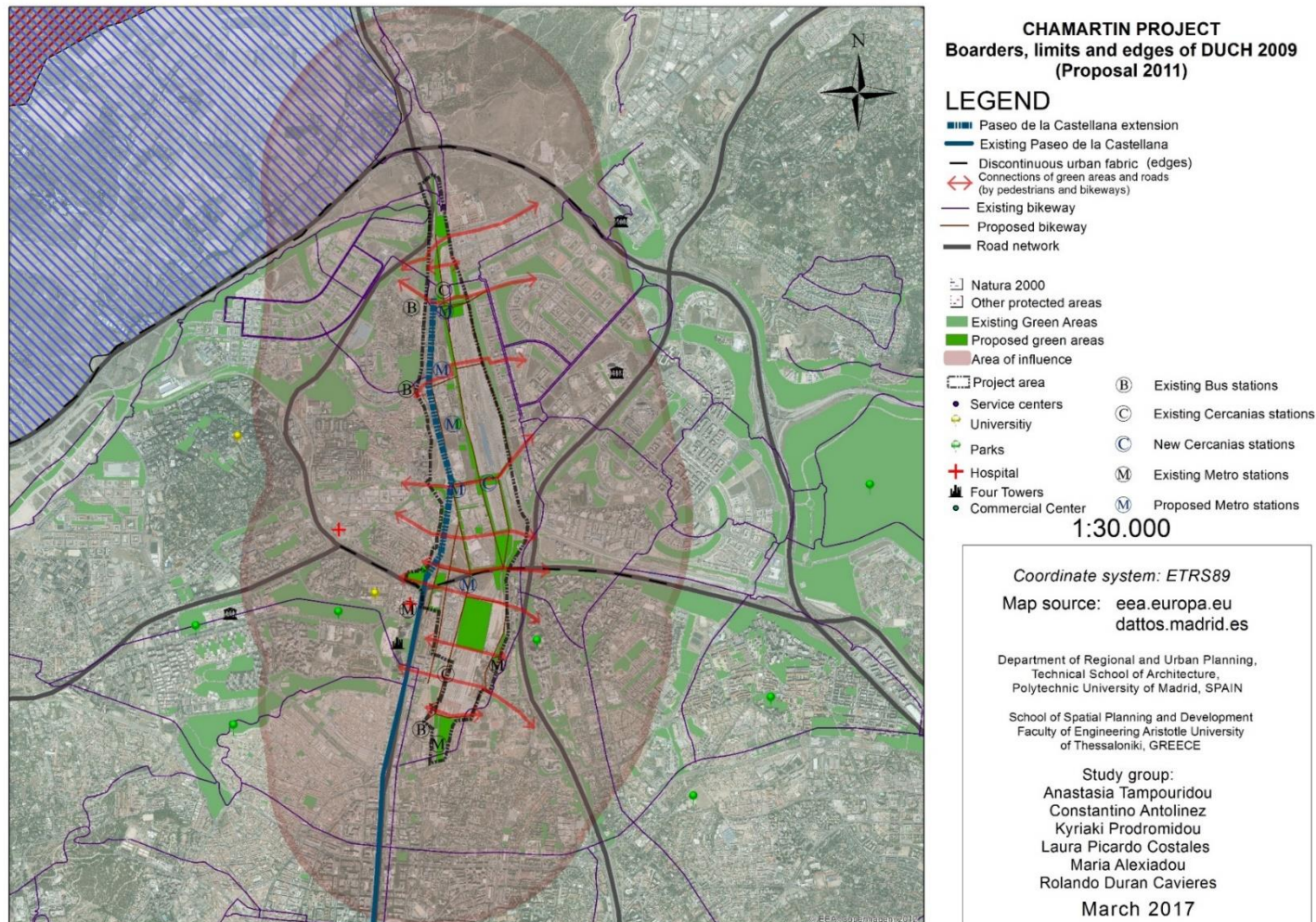
As far as the limits and borders set by the urban environment and the newly planned Chamartin area are concerned, there are two elements that seem to stand out; the first one, which applies to all three of the projects, is the fact that the borders of the city of Madrid coincide with the edge of our study area. This creates a barrier for the future development of Chamartin and raises a question as to whether another expansion of it will be possible. Something that should be taken into account at this point, is the fact that in the North-West part directly outside the borders of Madrid, there is an area which lies under the NATURA 2000 ecological network protection. The existence of this protected natural area creates a physical limitation between the urban fabric and the surrounding district as it sets restrictions on a number of activities, since it constitutes a habitat directive site for rare, threatened or endemic species. The second most distinguishing element, seems to be the extension of Paseo de la Castellana. This extension is included in the two first proposals as an answer to the great traffic junction problem that has been observed in the existing infrastructures. The accumulation of an important number of vehicles there, each day, causes a great issue for the wider Chamartin area. Thus, even though this expansion would solve the aforementioned traffic issues, a new element of urban

discontinuity would emerge inside the project area with a more prominent separation between the eastern and western parts adjacent to the highway.

Another major element that should be taken into account when studying the borders and barriers within the urban fabric, is the cohesion and “communication” between the neighborhoods directly connected to our project area. That includes besides the Chamartin Project area, the following neighborhoods Las Tablas, Sanchinarro, Barrio de Costillares, Barrio de la Paz, Fuencarral and Montecarmelo. The differentiating building characteristics of these neighborhoods create specific “atmospheres” within each one of them, thus producing a more theoretical barrier which, however, can be sensed by the visitors of these areas. At a first look on the time periods each of these neighborhoods was created, one can clearly see that the northern ones (Montecarmelo, Las Tablas and the northern part of Fuencarral) were the most recently constructed, as most buildings are dated after 2000 and only a few of them were constructed after 1995. This sets a different tone to the area as the structures, architecture and the urban planning there seem to be more well-organized to a similar geometric style. The neighborhoods directly southern from that area (central and southern Fuencarral, Costillares and Almenara) are a product of continuous constructions and building additions from 1960 to today (the same pattern is seen in the rest neighboring areas to Chamartin). This causes a denser city structure which emphasizes the difference between the neighborhoods above and below the M-30 and M-11 highways.

## 4.2. PRESENTATION OF THE ELEMENTS OF EACH PROPOSAL

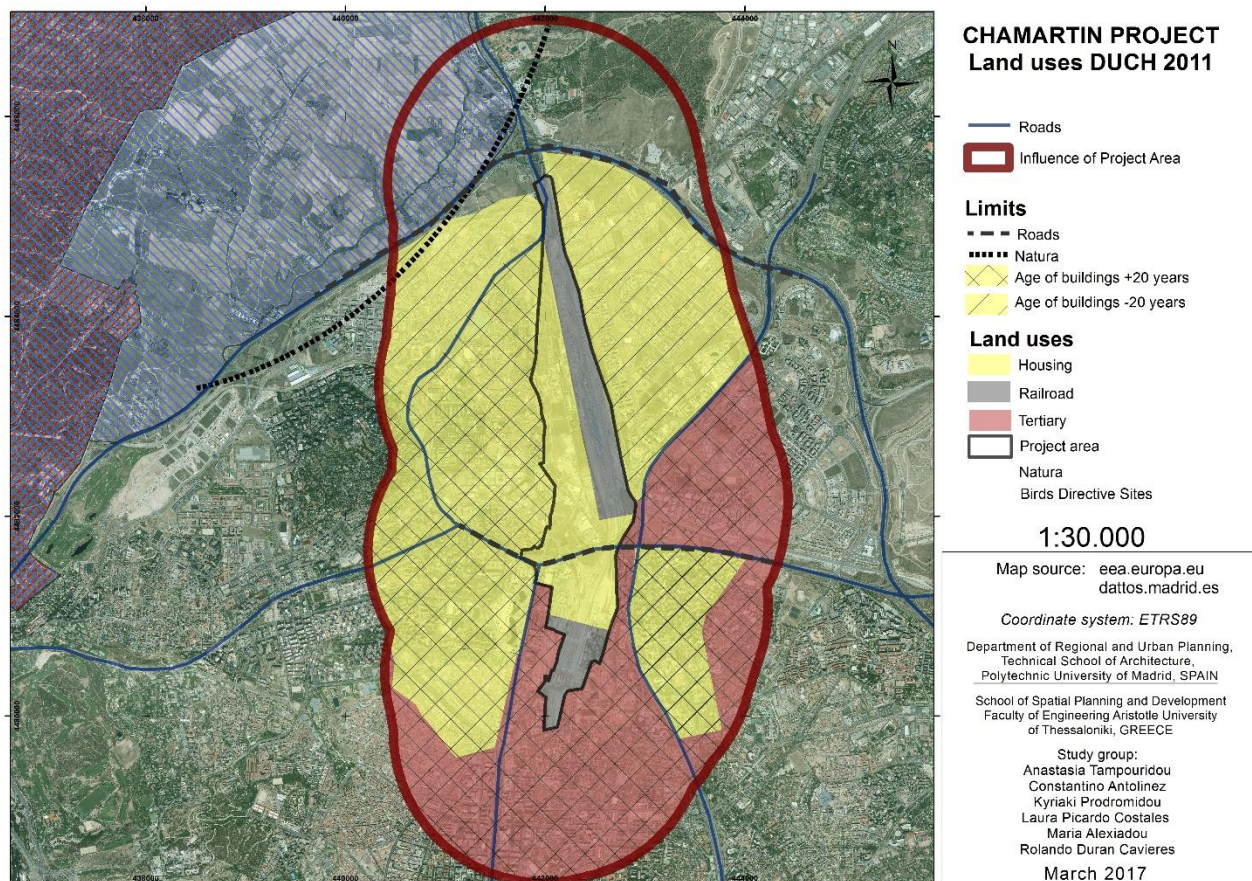
### 4.2.1 DUCH 2011



Map 1: Visualization of the borders, limits and edges of the DUCH 2009 project (Data source: Planos de Ordenacion Pormenorizada)



In the previous map, the red line illustrates the influenced area of the DUCH project, within which all the connections, borders and overall cohesion are presented. More specifically, the eleven red arrows horizontally to the project area show the new connections achieved by the new bikeways and green zones. These green zones and bikeways coexist all over the project area and create a coherent network which eases the access for passersby and will give it a less strict business character. The extension of Paseo de la Castellana is shown with the blue dashed line as it not only consists a new element for the project area, but at the same time creates a new discontinuity for the entire area. Another such barrier is caused by the M-30 and M-11 highways which cross along the southern part of the area dividing it in two parts. A more distinguished border is set by the M-40 on the northern edge of the project area, clearly separating it from the NATURA protected area on the western side and the agricultural area on the eastern side. The proposed five metro stations and one Cercanías station are located vertically along the proposal area. So, if they were in operation at the same time with the already existing stations, they would cover the transportation needs of the area efficiently. This



project aims to incorporate the new redeveloped area in the existing urban fabric, by making it more easily permeable by every means of transportation.

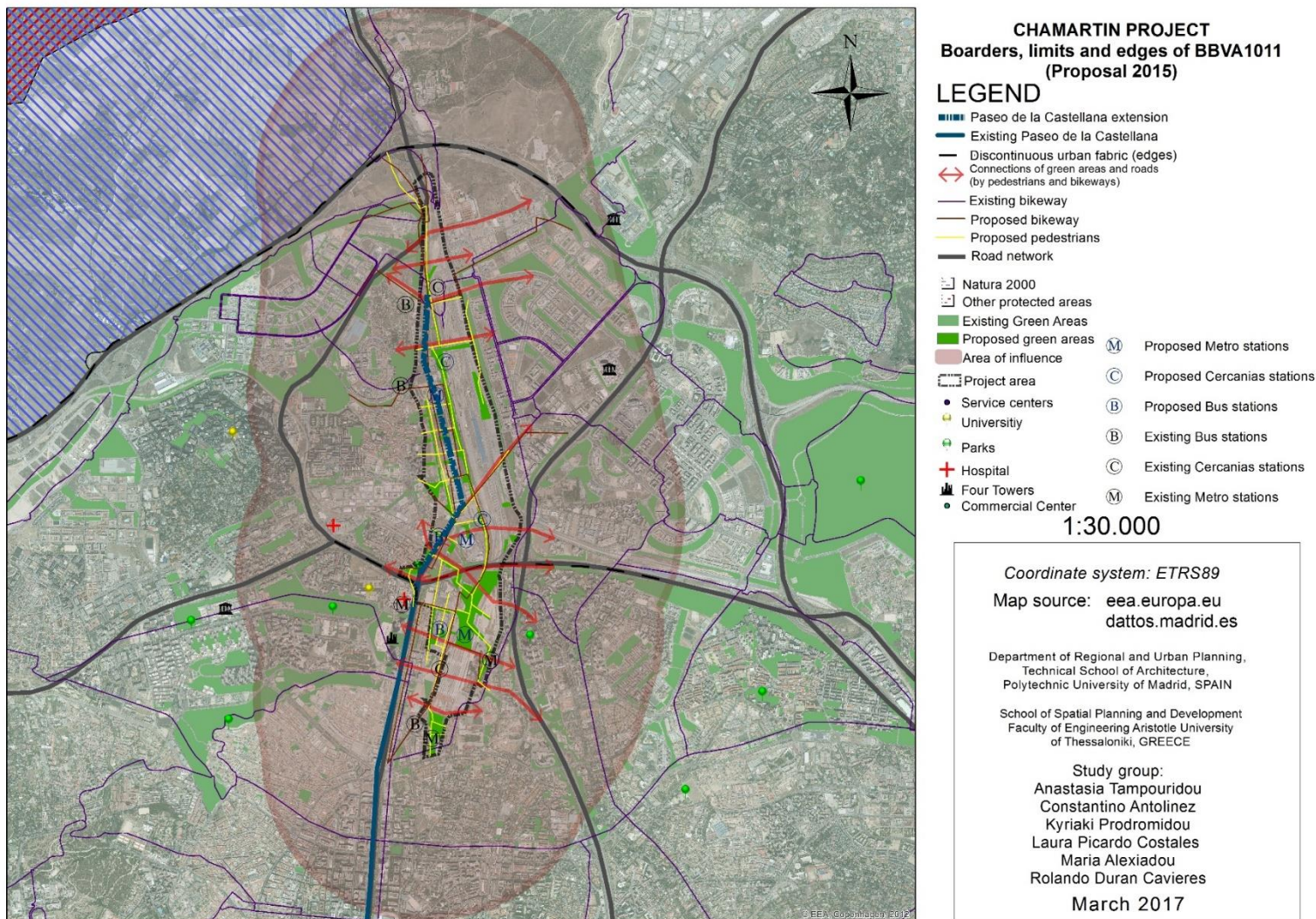
Map 2: Visualization of the land uses of the surrounding area and the DUCH 2009 project (Data source: Planos de Ordenacion Pormenorizada)

On this part of our analysis, we worked on the limits set between the DUCH project and the surrounding area, in the form of the land uses, the age of the buildings, the NATURA protected area and the road system. This specific proposal presents almost the entire Chamartin project



area mainly as a residential one, which suggests a minimum number of discontinuities between the neighboring neighborhoods and the proposed part. However, as the new facilities created in the study area would be new, another element of discontinuity would arise as we know that the southern neighborhoods were constructed over twenty years ago, a problem that would not exist in the same degree with the northern neighborhoods as they are significantly newer (built in the 21st century)

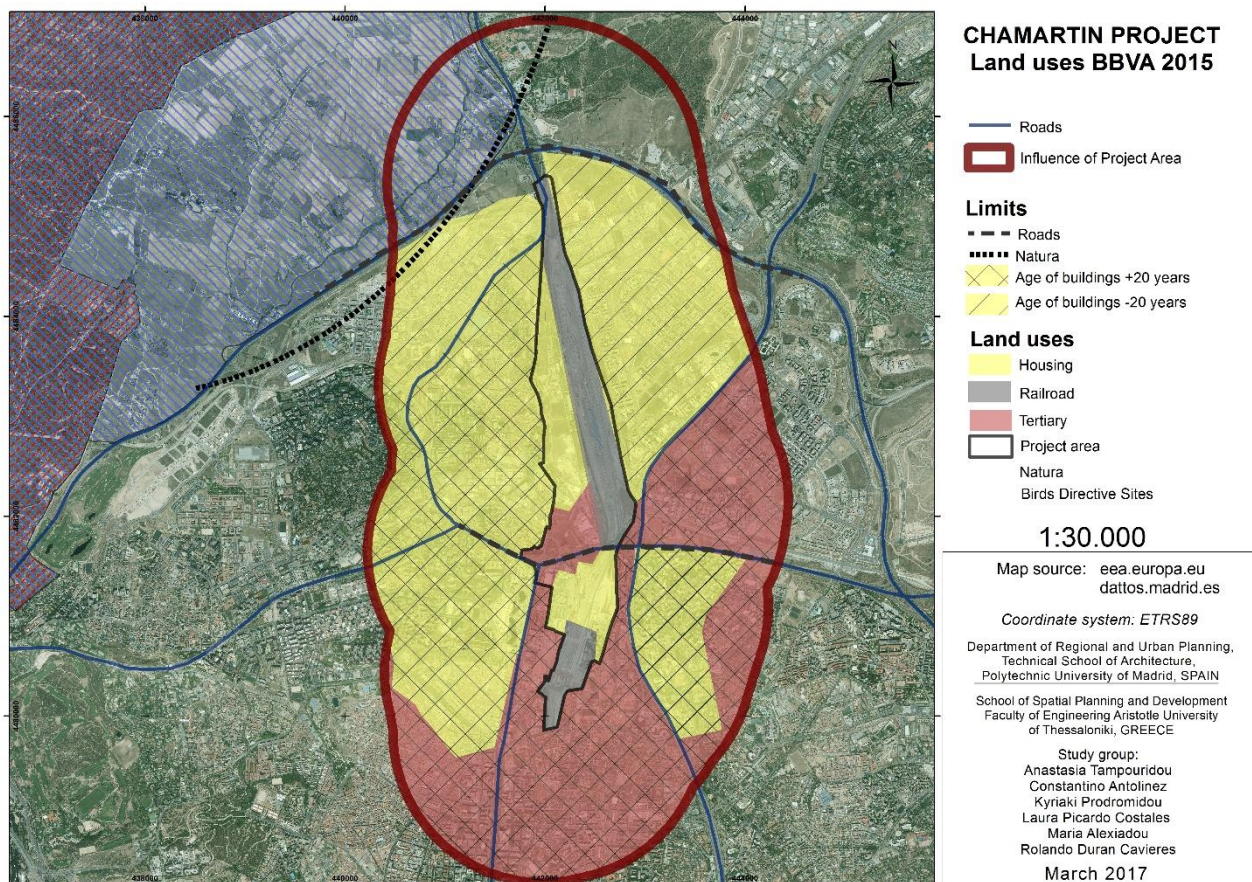
#### 4.2.2 BBVA 2015



Map 3: Visualization of the borders, limits and edges of the BBVA 2015 project (Data sources: 10. EAE - Resumen no tecnico, A I Estudio arbolado completo)



The study of the borders set in place by the second proposed project, is similar to that of the first proposal. However, the key differences are that even though the same number of overall connections is depicted (eleven red arrows), the proposed bikeway system is even more enhanced and complex in order to serve a bigger number of commuters more efficiently, along with the proposal of a pedestrian route system along the entire Chamartin project area which would make it even more transparent and easily accessible. This fact is evidence of the even more distinct attempt to incorporate the Chamartin area to the rest of the urban fabric even more effectively. The main barriers remain the same, as the proposed extension of the Paseo de la Castellana is presented if the BBVA proposal as well, since the decongestion of it would provide a more direct and easy connection to the center of Madrid, along with the new railway station and the proposed new bus stations.

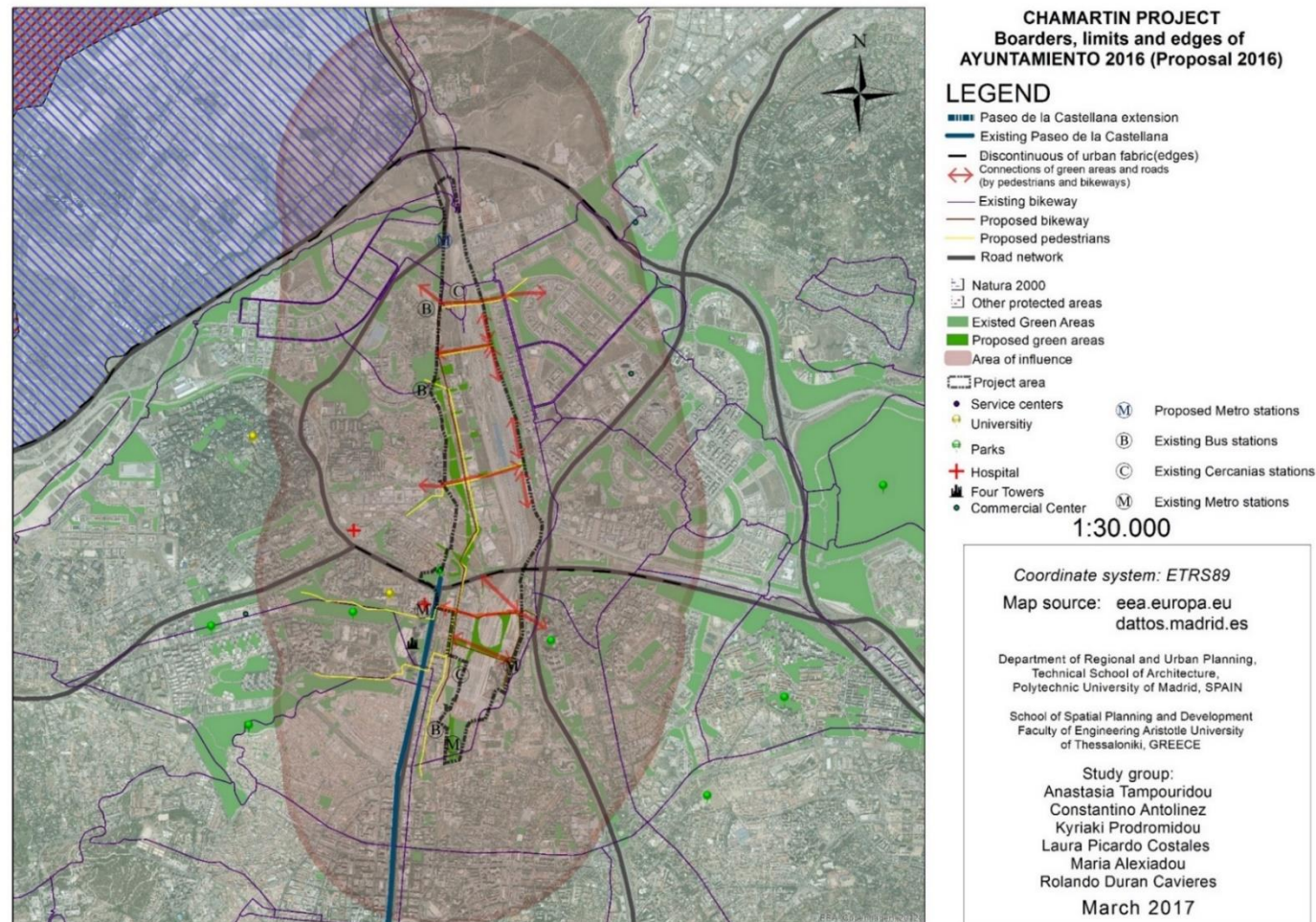


Map 4: Visualization of the land uses of the surrounding areas and the BBVA 2015 project)

This proposal suggests the establishment of the CBD on the central part of the project area, so the only difference that can be seen compared with the 2011 proposal, is the change of land use in that part. As the neighboring areas will remain the same and the proposed land use for the rest of the Chamartin project area is still the residential one, the same discontinuities will persist and the amount of cohesion among the neighborhoods will be the same. This is the case for the age of the buildings in each proposal, as the same facts would be in place in all of the proposals since the buildings in the surrounding areas would remain the same and the ones within the project area would all be new.



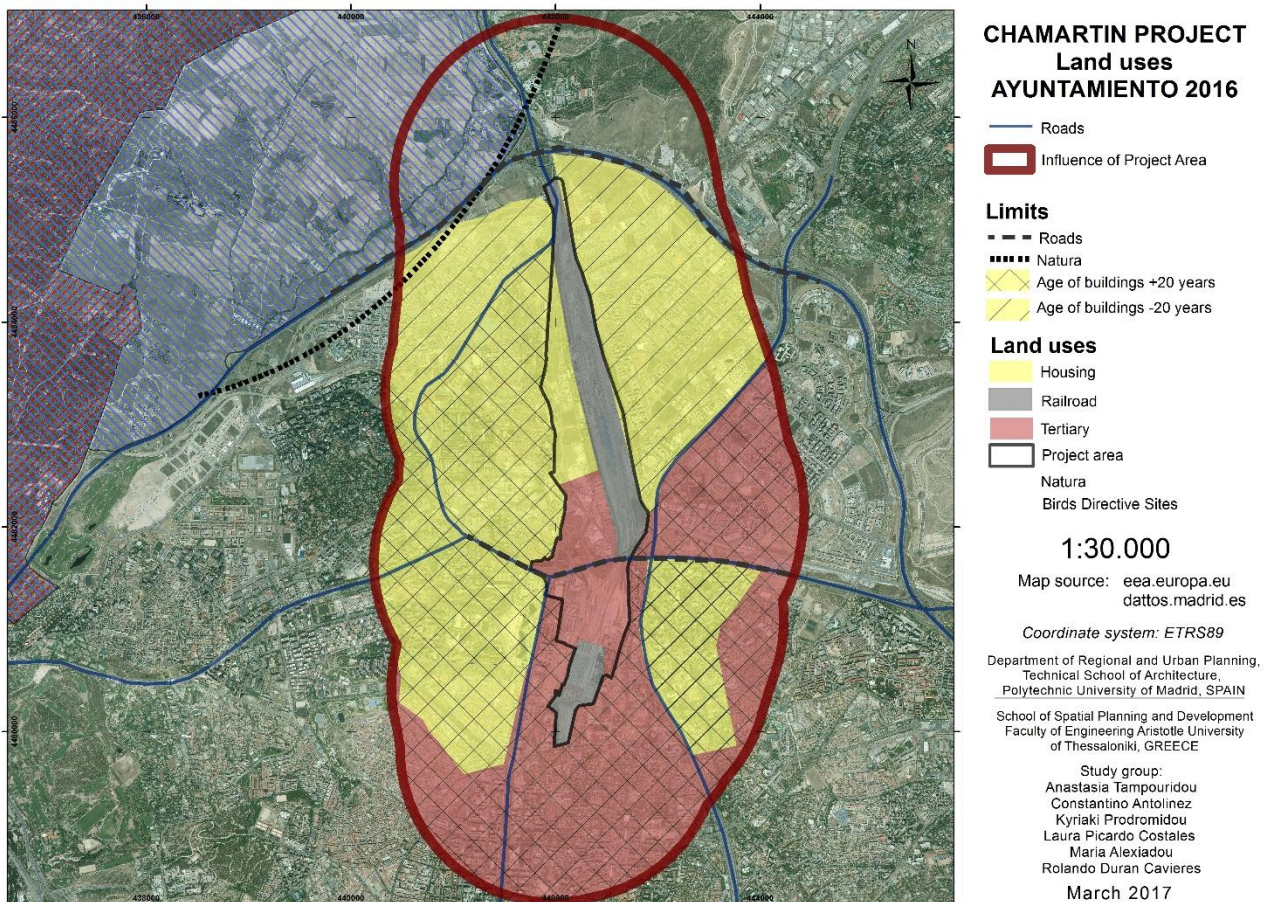
## 4.2.3 AYUNTAMIENTO 2016



Map 5: Visualization of the borders, limits and edges of the AYUNTAMIENTO 2016 project (Data source: Borrador Dossier Castellana completo)



The external barriers remain the same for the Ayuntamiento 2016 proposal as well (the affected area limit, the M-30, M-11 and M-40 roads and the existing transportation infrastructure). It can be easily noticed though, that the proposed bikeway system and the pedestrian routes system covers a bigger area making it easier to pass by and actually connect with the neighboring areas. So, as it can be seen by the red arrows, the overall cohesion is much more transparent in this case making it less difficult to incorporate the plan within the urban fabric. Once again, the main barriers remain the same, with the only major difference being that in this case, there is no proposed extension of the Paseo de la Castellana. So, as that fact arose, it removed a significant factor of discontinuity which was prominent in the previous proposals. However, something that can be noticed here is the lack of a dense enough pedestrian and



bikeway system, compared to the BBVA2015 project.

Map 6: Visualization of the land uses of the surrounding area and the AYUNTAMIENTO 2016 project (Data source: Borrador Dossier Castellana completo)

Once again, the land uses can be considered a measure of discontinuity in this proposal as well. The 2016 Ayuntamiento project tries to maintain the residential and service character of the area, but dedicates a bigger percentage of it to the transportation infrastructures and tertiary uses in the center of the project area, where the Central Business District would be established. The age of the buildings would be another measure of the overall cohesion, but these facts remain the same in all three of the proposals so the same barriers exist here, as in the DUCH and BBVA projects.

As an overall note, it is really important to mention the fact that the first two proposals gradually increase the percentage of green areas inside their borders (2011 DUCH suggests 552.642 m<sup>2</sup> of green areas while the 2015 BBVA proposal suggests 566.826 m<sup>2</sup>), but the third proposal introduces a significantly smaller green area (274.251 m<sup>2</sup>). Other aspects connected to these “green zones”, are the cycling and pedestrian routes that are suggested in these plans. The first one (2011 DUCH) does not include, as a separate part of its proposal, a pedestrian path network, however the cycling network is almost completely developed along the green zones, so it can be assumed that the necessary accommodations for pedestrians, would be in place. The 2015 BBVA project suggests an increase of the green areas, while at the same time developing an elaborate new bike lane system along with the pedestrian routes. This would lead to a more efficient and eco-friendly connection of the new Chamartin area to the surrounding ones in an effort to incorporate this new development in the wider environment of northern Madrid. In the 2016 Ayuntamiento proposal, the suggested bike and pedestrian networks seem more restricted. Despite the fact that the length of these routes might be less than what the 2015 plan proposed, as well as the general percentage of green areas, the connections and links with other green areas in the northern part of Madrid is more prominent.

### 4.3. EVALUATION

In the final part of the analysis of the borders, discontinuities and limitations, we came up with an arbitrary system of evaluation which includes all the major aforementioned elements. Based on these elements we concluded to which project presents the optimal case for the territory.

In order to complete this evaluation, we created the following table in which based on the 1 to 5 scale (1 being the least appealing and 5 the most) we criticized every element of our analysis.

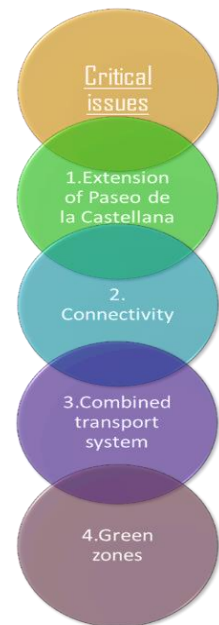
Table 1: Evaluation board of the elements affecting the cohesion of the project.

	CONNECTIONS				EDGES					COHESION		SUMMARY
	ROADS	GREEN ZONES	BIKEWAYS	PEDESTRIANS	PASEO DE LA CASTELLANA	M30-11 ROADS	M40 ROAD	AGE OF BUILDINGS	LAND USES	GREEN ZONES	TRANSPORTATION SYSTEM (METRO,BUS)	
DUCH 2009	4	2	5	0	2	3	5	5	2	3	5	36
BBVA1011	5	4	5	5	3	3	5	5	2	3	3,5	43,5
AYUNTAMIENTO 2016	2	3	3,5	3	5	3	5	5	2	1	1,5	34

Comparing all the aforementioned elements we can easily conclude that the second proposal, BBVA 1011, is the most favorable for this specific area. It includes the largest extend of green areas, the biggest number of routes for pedestrians and cyclists and overall the most efficient connections for the project area with its surrounding neighborhoods through a more pleasant environment.

Through this evaluation, we came up with the following critical issues which we think would be essential for the success of the future Chamartin project:

1. The extension of Paseo de la Castellana is considered constructive for the decongestion of the northern part of Madrid and the further tertiary sector development along the highway.
2. The efficient connectivity between the eastern and western part of the influenced area is considered crucial for the avoidance of discontinuities, as far as the land uses are concerned.
3. Another important issue is the existence of a combined transport system for the affective
4. connection of the project area with the rest of Madrid and the better quality of services provided to the users.
5. The enhancement of green zones is necessary for the improvement of the quality life of the residents, the aesthetics of the overall area and the better coexistence with the NATURA protected area.



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**Similar Cases / Best Practices**  
**Operación Chamartín Madrid**

Gkiza Antigoni  
Drevelegka Kyriaki Maria  
Kazantzi Georgia

## **5.1. INTRODUCTION**

The main aim of this project is a report about the international cases of similar characteristics. The analysis of report is separated into two parts.

The first part is about the Greek cases. In these cases is presented information such as general information about the spatial placement, the master plan and the vision as well as press articles. In the second part is being analyzed the classification of the international cases. This classification is a strategic method of evaluation that helps us to discriminate the best similar cases in comparison to the case of study "Operación Chamartín Madrid". Furthermore, is presented an analysis of the objectives of each international case based on the previous classification. To conclude, the international cases' aims are being analyzed in relation to the aims of the three proposals of the Chamartín Project in order to conclude to the best proposal for "Operación Chamartín Madrid".

## **5.2. GREEK CASES**

### **5.2.1. The Hellinikon - Urban Development Project, Athens**

#### General information

Elliniko is a suburb of Athens, Greece. It is part of the municipality Elliniko-Argyroupoli, of which it is a municipal unit. It is situated near the Saronic Gulf coast, 10 km south of Athens city center. The former Elliniko International Airport is in the western part of the municipal unit.

The Hellinikon Project is about the area of the former airport which had been abandoned for fourteen years. The former airport occupied an area of 6.200.000 sq.m. but the project will cover an area of 2.600.000 sq.m., 42% of the total surface area. Right now, the contract has been signed by the HRADF for the investor (Global Investment Group: Fosun Group, Eagle Hills and Latsis Group) and it will last for 99 years. The project has been signed in order to pay part of the Greek dept.

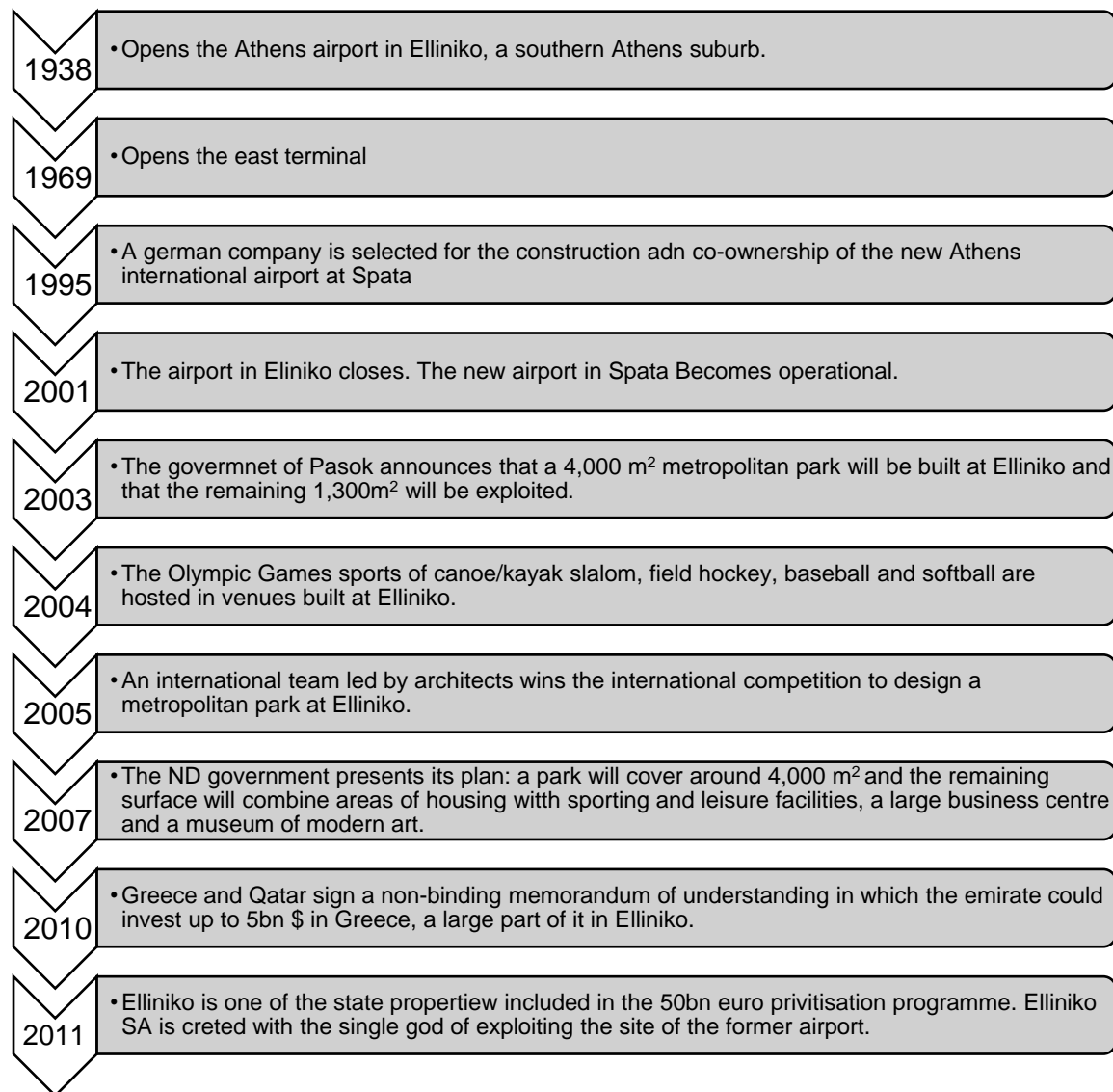


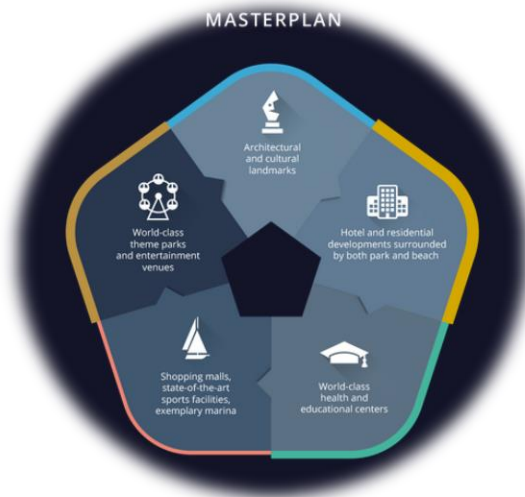
Diagram 1: Significant facts of the Hellinikon

“In 1938, the private properties of the residential development in the 6.200.000 sq.m. Hellinikon site were condemned for the establishment of the then Athens airport. In 2000, the airport was relocated 25 km away in Spata and even since the Hellinikon site is basically empty. The relocation initiated a number of studies, proposals and political statements for its future development and a variety of perspectives and, sometimes, strong sentiments amongst the public. From the very beginning and until 2012, the political leadership promoted the idea of creating in Hellinikon the largest metropolitan park of Europe, which would be twice as large as the Central Park of New York, addressing the thirst of the public for green spaces. However, such political promises were unfounded, paying no attention to the lack of water, fertile soil, and limited access to the site from the rest of Athens and the need for a large security workforce. A few years later, the needs for the 2004 Olympic Games led to building temporary facilities, introducing a gradual fragmentation. In 2004, with an impasse of what to do with the site, an international ideas competition was held for its development, which was never materialized. A variation of the first award of the competition was proposed in 2008 by the government but was also not implemented.”(Pollalis, 2013)



## The vision

This project concerns a big metropolitan park which is part of a larger area of the former International area of Athens with an easy accessibility. The aim of this project is to emphasize the world class identity of the park as well as make the coastal front fully accessible to the public. The designs are separated in three parts, the Metropolitan Green and Recreational Park, the coastal front and the former Hellinikon airport.”



The concept of the designs include uses such as exhibition center, museums, green space, sports facilities, stadiums, marine infra-

Picture 1: The masterplan of the Hellinikon, source: <http://www.thehellinikon.com/en/the-project.html#cat1>

structure, public beach, aquarium, hotels, commercial uses, residential uses, architectural landmark tower, educational institutions, campus with housing facilities, health and research institutions, business park, convention center and a golf course.

The development of the Hellinikon will bring about benefits, on both national and local level, in sectors such as environment, society and economy. More specifically, as far as the environment is concerned the projects consists of renewable sources with “green” constructions and bioclimatic solutions, a prototype urban development with a low building coefficient, additional 1.600.00 m<sup>2</sup> public spaces and green asset with 33.000 trees and more than 565.000 of low vegetation . This park will be a creation of one of the largest parks worldwide 20 times the size of Athens National Park and 1.4 times the size of the Hyde Park. This park will be the heart of the development, it will be of free access to all, the neighboring municipality inhabitants will have direct access to both park and beach and it will have over 50km of pedestrian and cycle routes.

The benefit to society will be the reduction of unemployment, which mainly affects Athens. It will immediately create 10.000 new jobs, 75.000 by the end of the projects, it will give employment to thousands of specialized Greek Scientists, it will upgrade the quality of life of the Athenian inhabitants and of the neighboring municipalities in particular, there will be free access of all citizens to a upgraded coastal front of 3km that is harmoniously integrated into the city and not cut off as it is today and it will highlight the history of the old airport and its contribution to the social and economic development of the country. The sports facilities will be within the country’s largest sports park (tennis court, athletics stadium, swimming pools, football stadiums 11x11, 7x7).



Picture 2: Acres, source: <http://www.thehellinikon.com/en/the-project.html#cat1>

The main benefit to the economy is that the project will attract over 1.000.000 additional tourists annually. More, there will be a 2.4% contribution to the GDP, it will attract direct total foreign investment over 8.000.000.000 euros, there will be revenues from taxes and employment contributions and the state will participate in profits.

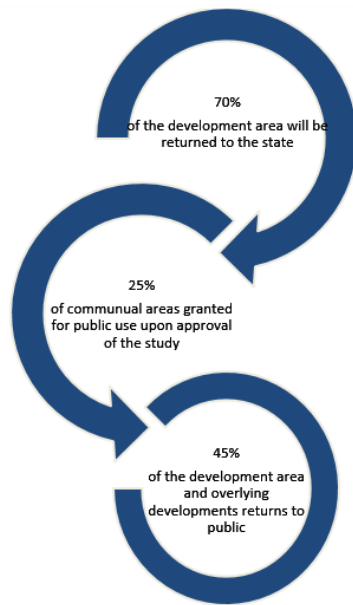
#### Press articles

In articles all over the net have, from time to time, been expressed various opinions about the case of the Hellinikon. Some examples of these articles, either in national press or in Greek press, are being cited right after.

- The investment of more than 7 billion that promises to bring on a 12 year horizon 90.000 jobs, has been “unstuck”. Fifteen years of abandonment, four and a half years of competitive processes, mutual accusations and recriminations have come to an end with the resolution of the bill on the ratification of the Convention exploitation of the former airport in Greek.

The historic agreement for the great project of Hellinikon. By signing the MoU between HRADF and Lamda Development was the first step in a large investment that will transform the Greek "Athenian Riviera". This signing marks not only completely change the image of the entire wider region, but, according to the study IOVE- it will strengthen by 2% in the country's GDP and provide 70,000 new jobs. The President of the HRADF mentions: "With the signing of the new agreement for the Greek routed the implementation of an investment, which will seal the new country's development."

"Elliniko will become much more than a park. Elliniko is the crown level of properties available in the Greek market right now and the one which has the most potential. It should be treated a little differently. Elliniko is at the corner of Athens not well connected to the northern suburbs. Even the metro cannot transport at full capacity in ideal conditions more than 40,000 people per day. Does it make sense to have a single park so big in that particular location?" These are some thesis expressed in Athens News by Spiro Pollalis written by Costas Papachlimintzos.



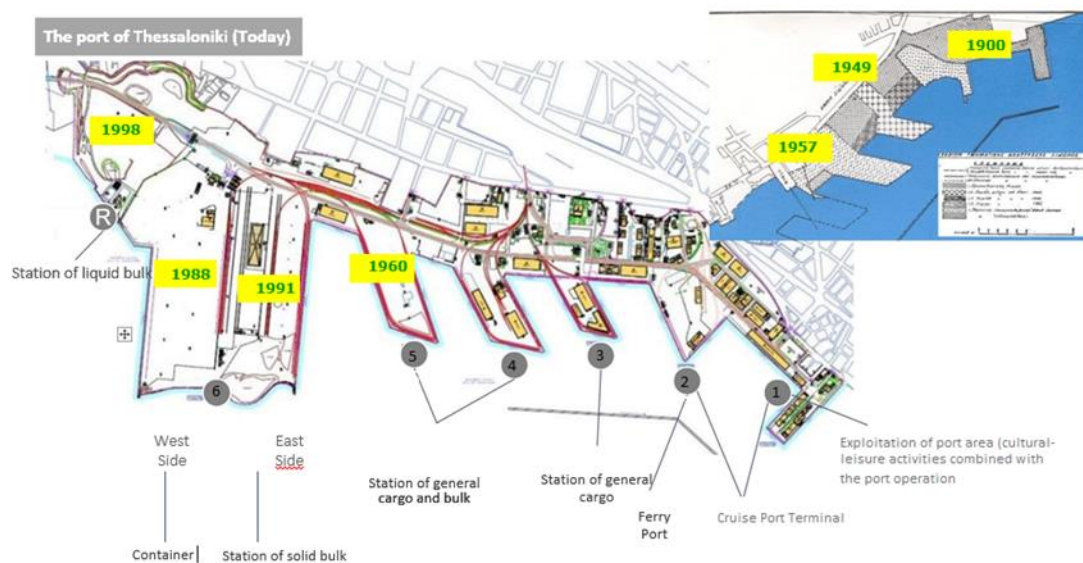
Picture 3: Percentages of the area, source: <http://www.thehellinikon.com/en/the-project.html#cat1>

Follows the link for video of the proposal: <https://www.youtube.com/watch?v=4Zn-3UnaCtc>

### 5.2.2. Port of Thessaloniki

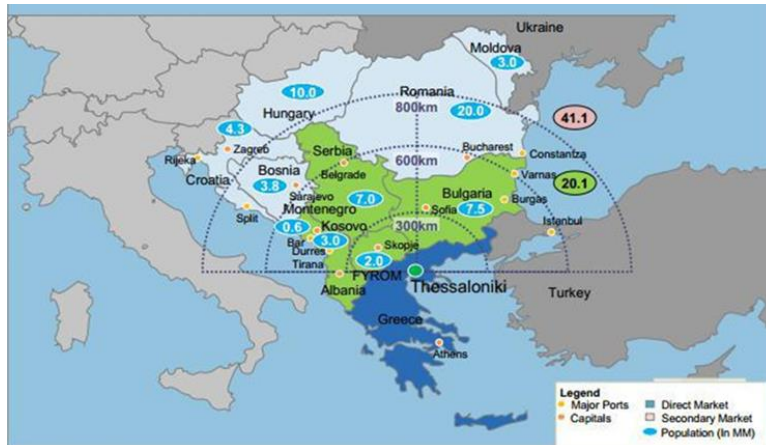
#### General information

It is located on the inner part of the Bay of Thermaikos, on the northern section of the Eastern Mediterranean Sea, to the west of the center of the city of Thessaloniki. The construction of the port of Thessaloniki has started from the first dock to west. The installations include 6 piers spreading on a 6200 meter-long quay and a sea depth down to 12 meters, with open and indoors storage areas spreading on a total of 600,000 square meters, suitable for servicing all types of cargo as well as passenger traffic. The function of the port is very important for the local economy because as microeconomic production facility enhances employment and entrepreneurship. At the port of Thessaloniki point out basic infrastructure such as: container station and passenger terminal (cruise), conventional port (mainly distributes bulk and general cargo) and other activities (warehouses, sheds, outdoor spaces, commercial non-port facilities and parking).



Picture 4: Port of Thessaloniki (Today), source: data of THPA SA

Annually, from the port are trafficked more than 7, 5 million tons of cargo in trucks to PATHE and Egnatia. Daily the trucks that arrive at port are more than 1000. It's important to complete the construction of junction point for the 6th dock in connection with PATHE Motorway and Egnatia Motorway. According to the competent body "Egnatia SA", the studies for the auction of the project will be completed by the first quarter of 2017.



Picture 5: Potential Inland ThPA (served population of 20 million), source: data of THPA SA

The comparative advantages were the significant factor for the master plan of the port of Thessaloniki. Obviously, the location of the port characterizes strategic because of the connection to the European road and rail network. The subsistent free zone facilitates the “in transit” cargo approaching all of major navigational companies. Last but no least the operation hours of container station and conventional cargo in combination with the offering prices are considerable (container station: 24 hours operation with same prices for 3 shifts and a full computer system, conventional cargo: 24 hours operation with the same prices in two shifts and overtime rates in the third shift).

The redevelopment of the old port (OPPETH'97 initiative) is a project with an impact on cultural and social life of the city, as was a substantial extension of the center (5% of surface) with metropolitan scale uses. The operation is the largest of OPPETH'97 redevelopment project in the historic heart of Thessaloniki, and the first redevelopment project of a historic port in Greece. The port is located at the southwest edge of the historic shopping center in direct contact with the urban place and long linear coast of the city, while on west and north develops diverse contacts on the zone of industries and their main communication axes, road and rail. The choices in planning: a. the port area is treated as a live part united functional, historical and urban planning urban with mixed urban uses and compatible port uses, b. restoration the historic urban organization of the old port and maintaining the particular morphology, c. avoid new demolition to protect the stock and suggest strictly controlled construction. So, the area of the historic port attributed to new urban uses, with public and cultural character (Hastaoglou, 2006).

#### The vision

The investment plan of the master plan includes: 1. the extension of 6th dock (Station Container and station of solid bulk). The aim is to increase the container terminal capacity to 1,360 thousand. TEUs and capacity of the Solid Bulk Terminal in 8m. Tons, including special handling charges, 2. Unification of 4th and 5th dock (station of general load). The 4th & 5th docks offer handling and storage services especially general cargo, also are serviced and some types of bulk solid. Both docks are proposed to integrate into a larger, with increased storage capacity and deeper scaffolding in front of the consolidated dock. 3. Upgrade of 2nd dock (cruise terminal and tourist shelter “mega yacht”) and 3rd dock (station of ferry-coasting). The total investment plan, amounting to € 833 million extends until 2050, while 37% of the investment planned for the years 2017 - 2021. Most of the investments in port projects Container Port and the Ferry Port.

At the moment are employed 341 people (over 608 seats provided). It is estimated that by 2021 the number will gradually increase by 200 people. Also, the related to the port of Thessaloniki are estimated at (approximately) 2.500 people regularly.

Press articles

This project is an up to date project because of the upcoming sale of the port of Thessaloniki. For this reason, as a controversial project, it influenced the public opinion.

- The Hellenic Republic Asset Development Fund (HRADF) decided the sale of the port of Thessaloniki, the second port of Greece. Searching for potential purchaser about the 67% of the shares of Thessaloniki Port Authority S.A. (THPA), which belongs to Hellenic Republic. This sale will be applied for the purpose of paying off a part of Greek debt.
- The Municipality of Thessaloniki, Chambers, Federation of Industries of Northern Greece, Greek International Business Association etc. believed the rapidly sale of the port that aims at its developing.
- The final plan of HRADF restricts the developing of the port, specifically the total of extension of 6th dock as it is shifting. The project will be started in two years just after the completion of the sale. The total completion will be after 2025.

### **5.3. ASSESSMENT OF INTERNATIONAL CASES INTO THREE LEVELS OF ANALYSIS**

#### **5.3.1. First level of analysis: Classification of the International Cases in relation to Chamartin project**

It is a common fact that by enlightening differences on projects helps on discriminating their useful content. More specifically in the case of Chamartin project area, approximately to other international examples of large urban renovation projects, there are multiple ways to compare the projects and, of course, there are plenty of combinations to classify their characteristics.

To start with, we list a number of criteria which will better define the proper international project examples in comparison to ours (Chamartin). First, wider placement of the project area in the city should be considered, meaning where the project area is located in the city, whether it is on the same location as ours in Madrid (edge of the continuous urban fabric) and whether the city on which the project is being done is of the same size of Madrid. Second, the dimensions of the project area that we are looking for should be taken under serious consideration in terms of not having large divergences from ours ( $\approx 450$  Ha). Third, while searching for similar international cases we should opt for projects that contain means of transport, if it's possible railways, etc., or at least projects that are adjacent to railway stations in order to be similar to Chamartin project area which contains a railway station, a metro- rail station and railway lines. Fourth, from a more general aspect, the area of the project or the nearby area, or both, should be at some point downgraded such as our area near Chamartin is. We should look for regeneration areas that combine land uses. Last but not least, the four previous criteria are not absolute at any case but they could be useful as far as the more they are the better the result.

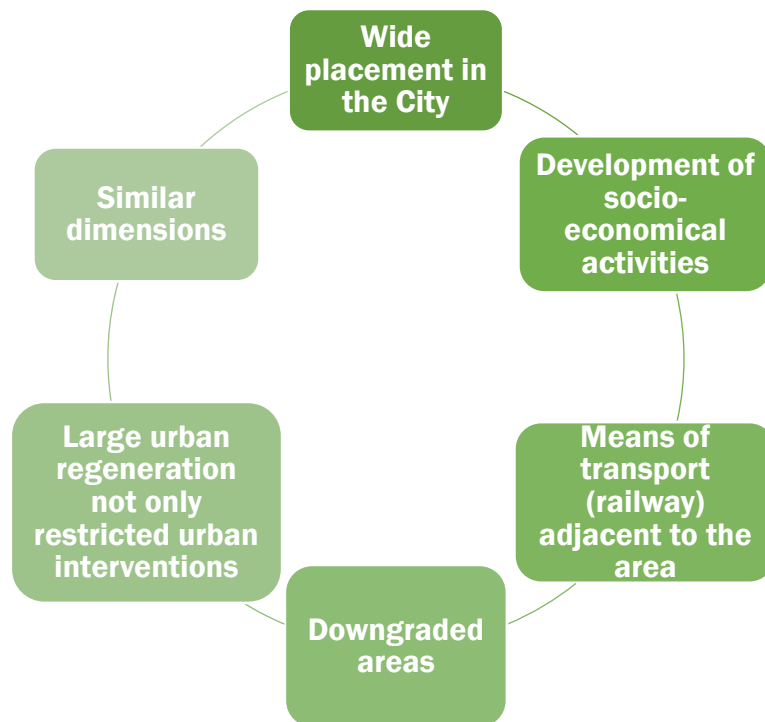


Diagram 2: Distinctive features, source: personal treatment, source: personal treatment

Taking into consideration the above classification, we present an analysis of the five international cases according to the distinctive features they fulfill. The bullets represent the objectives of the projects that have the same purpose as the proposed characteristics. It is important to state that each case does not acquire all of the distinctive features but a number of them.

### King's Cross

- The project addresses both local and international interests.
- It was a downgraded area with underused industrial wasteland.
- The site is situated adjacent to the stations and it is surrounded by rail lines.
- The project aims to a socio-economical development by accommodating facilities such as commerce, residence, retail etc.

### New centre of Lodz

- The project area covers the direct neighborhood of the railway station (Lodz Fabryczna).
- The site consists of former industrial fringe.
- The main purpose of the plan is to create a district of dominant "cultural" function which will be supported by innovative facilities.

### Santa Fe

- It is a business district settled over fills and mines.
- The site is crossed by many roads, highways as well as by a fast train station.

- There is a mixture of land uses.
- Basic characteristic ⇒ large number of skyscrapers.

### Seine Rive Gauche

- The main ambition is to create a Parisian district with regional and international dimensions.
- Reconnection of the local communities to the river.
- The master plan was proposed to enhance the economic sector and to promote the development of amenity spaces and the provision of renewable power.
- Regarding the transport sector there is access to regional and international networks.

### Porto Maravilha

- The site covers a wide extent of the adjacent boroughs.
- The project aims to the redevelopment of the post district areas for commercial and residential purpose.
- The main goals are the renewal of the existing infrastructure, the attraction of visitors, the installation of new sewage networks.
- The traffic flow will be completely reorganised and there will be an expansion of a rail tunnel so as to include the road traffic.




However, it would be quite useful to take into consideration the reasons we are studying these examples and in which parts they can assist our research.

This is the reason why we composed one board for each case and associated their main objectives with the ones of the three phases of the Chamartín project.






### 5.3.2. Second level of analysis: Classification of the aims of the International Cases in relation to the three proposals of the Chamartín Project.


Panel 1: King's Cross, source: personal treatment

International Cases		Aims of the regeneration projects		Project Chamartín 2011	Project Chamartín 2015	Project Chamartín 2016
<div>  <p><b>Urban Workshop</b></p> <p>Operación Chamartín Madrid Similar Cases / Best Practices</p> </div> <div> <p><b>King's Cross</b></p> </div> <div> <p>YEAR DIMENSION TYPOLOGY REGION</p> </div> <div> <p>2000 27Ha  EUROPE</p> </div> <div> <p>London United Kingdom </p> </div>	King's Cross	1. Restoration/preservation of historic buildings		✗	✗	✗
		2. Office space and retail		✓	✓	✓
		3. Residential units		✓	✓	✓
		4. Cycling routes		✓	✓	✓
		5. Free/Leisure space		✓	✓	✓
		6. Educational and community facilities		✓	✓	✓
		7. Access to Underground lines, national train stations, high-speed rail		✓	✓	✓
		8. Proximity to public transport		✓	✓	✓
		9. Structures/Hotels		✓	✓	✓
		10. Favoring of the adjacent boroughs		✓	✓	✓
		11. Zoning of the area		✓	✓	✓
		12. Green spaces		✓	✓	✓
		13. Sustainability innovations		✗	✗	✗

Panel 2: New Centre of Lodz, source: personal treatment

International Cases		Aims of the regeneration projects		Project Chamartín 2011	Project Chamartín 2015	Project Chamartín 2016
<div>  <p><b>Urban Workshop</b></p> <p>Operación Chamartín Madrid Similar Cases / Best Practices</p> </div> <div> <p><b>New Centre of Lodz</b></p> </div> <div> <p>YEAR DIMENSION TYPOLOGY REGION</p> </div> <div> <p>2016 90Ha  EUROPE</p> </div> <div> <p>Lodz Poland </p> </div>	New Centre of Lodz	1. Construction of Special Zone of Arts		✗	✗	✗
		2. Residential buildings		✓	✓	✓
		3. Offices and retail		✓	✓	✓
		4. Service and Education facilities		✓	✓	✓
		5. Underground railway station/fast speed railway		✓	✓	✓
		6. Redevelopment of the multimodal transportation node		✓	✓	✓
		7. Revitalisation of valuable heritage edifices & post-industrial buildings (EC1)		✗	✗	✗
		8. Open spaces, parks, green areas and leisure areas		✓	✓	✓
		9. Bio-climatic architecture		✗	✗	✗
		10. Modernization of tracks		✗	✗	✗
		11. Zoning of the area		✓	✓	✓

Panel 3: Santa Fe, source: personal treatment




**Urban Workshop**


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**Operación Chamartín Madrid**  
**Similar Cases / Best Practices**

**Santa Fe**

YEAR	DIMENSION	TYPOLOGY	REGION
1994	800Ha		LATAM

**Mexico City**  
**Mexico**



International Cases	Aims of the regeneration projects	Project Chamartin 2011	Project Chamartin 2015	Project Chamartin 2016
Santa Fe	1. Preservation of historic areas and buildings	✗	✗	✗
	2. Commercial and retail <u>infills</u>	✓	✓	✓
	3. <u>Drainage wetlands</u>	✗	✗	✗
	4. Multi-use pedestrian and bike trail	✓	✓	✓
	5. Create a cultural conservation district to protect the neighborhoods.	✗	✓	✓
	6. Alternative modes of transportation to lessen dependence on the car.	✓	✓	✓
	7. Park and open/green space	✓	✓	✓
	8. <u>Zoning areas</u>	✓	✓	✓
	9. <u>Monumental skyscrapers</u>	✓	✓	✓
	10. <u>Attract global investment</u>	✗	✓	✓
	11. <u>Housing units</u>	✓	✓	✓
	12. <u>Convention center</u>	✗	✗	✗
	13. International Airport⇒ most sustainable building in the world	✗	✗	✗
	14. <u>Community services/Education facilities</u>	✓	✓	✓

Panel 4: Seine Rive Gauche, source: personal treatment

International Cases		Aims of the regeneration projects	Project Chamartin 2011	Project Chamartin 2015	Project Chamartin 2016
<div>  <p><b>Urban Workshop</b></p> <p>Operación Chamartín Madrid Similar Cases / Best Practices</p> </div> <div> <p><b>Seine Rive Gauche</b></p> </div> <div> <p>YEAR DIMENSION TYPOLOGY REGION</p> <p>1991 130Ha  EUROPE</p> </div> <div> <p>Paris France</p>  </div>	Seine Rive Gauche	1. University buildings	✗	✗	✗
		2. Office development/ Extension of the commercial centre	✓	✓	✓
		3. Attraction of international businesses	✗	✓	✓
		4. Residential buildings	✓	✓	✓
		5. Public transport interchange	✓	✓	✓
		6. Open/Green space	✓	✓	✓
		7. Construction of National Library	✗	✗	✗
		8. Districts with mixed land use (offices, housing, schools, nursery etc.)	✓	✓	✓
		9. Preservation/renovation of industrial buildings	✗	✗	✗
		10. New artery (Avenue de France)	✗	✗	✗
		11. Zoning of the area	✓	✓	✓
		12. Bridging the railway tracks with an artificial grid of streets 9 m above ground level	✗	✗	✓
		13. Building on a new level (offices on platform, housing on embankment)	✗	✗	✗

Panel 5: Porto Maravilha, source: personal treatment



**Urban Workshop**

**Operación Chamartín Madrid**  
Similar Cases / Best Practices

**Porto Maravilha**

YEAR	DIMENSION	TYPOLOGY	REGION
2010	500Ha		LATAM

**Rio de Janeiro**  
**Brazil**



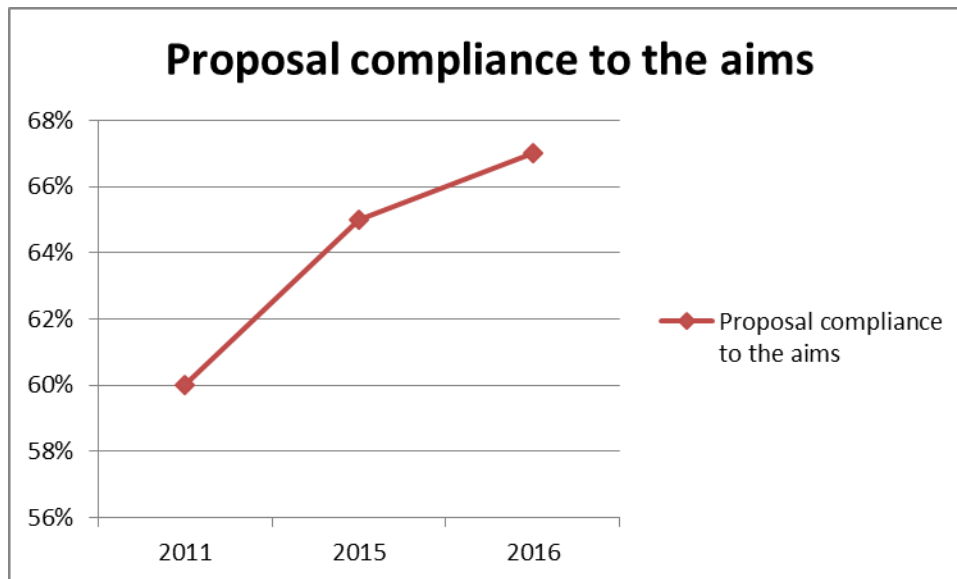
International Cases	Aims of the regeneration projects	Project Chamartín 2011	Project Chamartín 2015	Project Chamartín 2016
Porto Maravilha	1. <u>Mixed-income housing developments</u>	✗	✗	✗
	2. <u>Infrastructure upgrade (port)</u>	✓	✓	✓
	3. Create amenities to attract tourists	✗	✓	✓
	4. <u>Hotels and leisure space</u>	✓	✓	✓
	5. Construction of tunnels and roads	✓	✓	✓
	6. <u>Open/Green space</u>	✓	✓	✓
	7. Construction of Olympic Port Village	✗	✗	✗
	8. <u>Bikeways</u>	✓	✓	✓
	9. <u>Convention centre</u>	✗	✗	✗
	10. <u>Aquarium, Museum of Tomorrow</u>	✗	✗	✗
	11. Upgrade of the train station	✓	✓	✓
	12. Construction of a cable car for connection with the centre of Brazil	✗	✗	✗
	13. Rehabilitation of vacant buildings/Preservation of the cultural heritage	✗	✗	✗
	14. Commercial <u>skyscrapers</u>	✓	✓	✓
	15. <u>Changing traffic patterns</u>	✓	✓	✓
	16. Improvement of water, sanitation, electric, gas and telecom networks	✗	✗	✗

In order to avoid the repetitions of the aims that are common to the above cases we estimated some basic aspects of the five projects:

- Creation of office, commercial, retail, residential, green, open space.
- Zoning of the area.
- The transport sector is relevant to underground lines, high-speed rail, national train, bikeways and the public transport in general.

Nevertheless, there are some objectives of the cases that might not constitute a subject matter of the Operación Chamartín Madrid. Therefore, they could be very useful as a source of inspiration, evaluation and criticism.

- The “adoption” of a cutting edge policy in the sector of architecture such as bio-climatic or environmentally friendly structures could raise the attractiveness of the Area and contribute to the wellness not only of the surrounding ecosystem but also of the residents (New Centre of Lodz).
- Also, great importance should be given to the modernization of the stations and the tracks for security reasons (New Centre of Lodz).
- The construction of sustainable buildings could be a very big source of tourist attraction (Santa Fe).
- The establishment of university buildings will upgrade the framework and augment the number of young and productive people in the area (Seine Rive Gauche).
- The erection of national importance buildings would raise the interest (Seine Rive Gauche).
- Last but not least, the improvements of water, sanitation, electric, gas, and telecom networks could be very beneficial for the living standard of the residents (Porto Maravilha).



Graphic 1: Proposal compliance to the aims, source: personal treatment

The above analysis allows us to draw some conclusions compared to the three Chamartín Projects (2011, 2015, and 2016) and the similar cases. First of all, the King's Cross project is more representative and disposes a wide range of common features in all the phases. Its advantages and disadvantages coincide with those of the project in a general context. The other best practices are more relevant to the projects of 2015 and 2016. More specifically, in the sector of infrastructures all of the projects are in line. Likewise, in the field of the environment the data apply the same. Regarding transport and sustainability the project of 2016 presents more prospects.

### **5.3.3. Third level of analysis: Classification of the aims of the International Cases, of the three proposals of the Chamartín Project in relation to the three pillars of Sustainable Development.**

The aim of this part of analysis is about how sustainable each proposal of the Chamartín Project is, using the aims of the specific regeneration project. Each panel displays the aims of each International Case example compared to one proposal of Chamartin at the time (2011, 2015, and 2016) according to their sustainable characteristics, which are social, economic, environment, culture or the four of them, sustainable development.

Panel 6: King's Cross, source: personal treatment

	Aims of the regeneration projects	Project Chamartín 2011	Social	Economic	Environment	Culture	Sustainable Development
King's Cross	1. Restoration/preservation of historic buildings	✗					
	2. Office space and retail	✓	✓	✓			
	3. Residential units	✓	✓	✓			
	4. Cycling routes	✓	✓	✓	✓	✓	😊
	5. Free/Leisure space	✓	✓			✓	
	6. Educational and community facilities	✓	✓			✓	
	7. Access to Underground lines, national train stations, high-speed rail	✓	✓	✓		✓	
	8. Proximity to public transport	✓	✓	✓	✓	✓	😊
	9. Structures/Hotels	✓	✓	✓		✓	
	10. Favoring of the adjacent boroughs	✓	✓	✓	✓	✓	😊
	11. Zoning of the area	✓	✓	✓	✓	✓	😊
	12. Green spaces	✓	✓		✓	✓	
	13. Sustainability innovations	✗					

	Aims of the regeneration projects	Project Chamartín 2015	Social	Economic	Environment	Culture	Sustainable Development
King's Cross	1. Restoration/preservation of historic buildings	✗					
	2. Office space and retail	✓	✓	✓			
	3. Residential units	✓	✓	✓			
	4. Cycling routes	✓	✓	✓	✓	✓	😊
	5. Free/Leisure space	✓	✓			✓	
	6. Educational and community facilities	✓	✓			✓	
	7. Access to Underground lines, national train stations, high-speed rail	✓	✓	✓		✓	
	8. Proximity to public transport	✓	✓	✓	✓	✓	😊
	9. Structures/Hotels	✓	✓	✓		✓	
	10. Favoring of the adjacent boroughs	✓	✓	✓	✓	✓	😊
	11. Zoning of the area	✓	✓	✓	✓	✓	😊
	12. Green spaces	✓	✓		✓	✓	
	13. Sustainability innovations	✗					

	Aims of the regeneration projects	Project Chamartín 2016	Social	Economic	Environment	Culture	Sustainable Development
King's Cross	1. Restoration/preservation of historic buildings	✗					
	2. Office space and retail	✓	✓	✓			
	3. Residential units	✓	✓	✓			
	4. Cycling routes	✓	✓	✓	✓	✓	😊
	5. Free/Leisure space	✓	✓			✓	
	6. Educational and community facilities	✓	✓			✓	
	7. Access to Underground lines, national train stations, high-speed rail	✓	✓	✓		✓	
	8. Proximity to public transport	✓	✓	✓	✓	✓	😊
	9. Structures/Hotels	✓	✓	✓		✓	
	10. Favoring of the adjacent boroughs	✓	✓	✓	✓	✓	😊
	11. Zoning of the area	✓	✓	✓	✓	✓	😊
	12. Green spaces	✓	✓		✓	✓	
	13. Sustainability innovations	✗					

Panel 7: New Centre of Lodz, source: personal treatment

	Aims of the regeneration projects	Project Chamartin 2011	Social	Economic	Environment	Culture	Sustainable Development
New Centre of Lodz	1. Construction of Special Zone of Arts	✗					
	2. Residential buildings	✓	✓	✓			
	3. Offices and retail	✓	✓	✓			
	4. Service and Education facilities	✓	✓			✓	
	5. Underground railway station/fast speed railway	✓	✓	✓	✓	✓	☺
	6. Redevelopment of the multimodal transportation node	✓	✓	✓	✓	✓	☺
	7. Revitalisation of valuable heritage edifices&post-industrial buildings (EC1)	✗					
	8. Open spaces, parks, green areas and leisure areas	✓	✓		✓	✓	
	9. Bio-climatic architecture	✗					
	10. Modernization of tracks	✗					
	11. Zoning of the area	✓	✓	✓	✓	✓	☺



	Aims of the regeneration projects	Project Chamartín 2015	Social	Economic	Environment	Culture	Sustainable Development
New Centre of Lodz	1. Construction of Special Zone of Arts	✗					
	2. Residential buildings	✓	✓	✓			
	3. Offices and retail	✓	✓	✓			
	4. Service and Education facilities	✓	✓			✓	
	5. Underground railway station/fast speed railway	✓	✓	✓	✓	✓	☺
	6. Redevelopment of the multimodal transportation node	✓	✓	✓	✓	✓	☺
	7. Revitalisation of valuable heritage edifices & post-industrial buildings (EC1)	✗					
	8. Open spaces, parks, green areas and leisure areas	✓	✓		✓	✓	
	9. Bio-climatic architecture	✗					
	10. Modernization of tracks	✗					
	11. Zoning of the area	✓	✓	✓	✓	✓	☺

	Aims of the regeneration projects	Project Chamartin 2016	Social	Economic	Environment	Culture	Sustainable Development
New Centre of Lodz	1. Construction of Special Zone of Arts	✗					
	2. Residential buildings	✓	✓	✓			
	3. Offices and retail	✓	✓	✓			
	4. Service and Education facilities	✓	✓			✓	
	5. Underground railway station/fast speed railway	✓	✓	✓	✓	✓	☺
	6. Redevelopment of the multimodal transportation node	✓	✓	✓	✓	✓	☺
	7. Revitalisation of valuable heritage edifices & post-industrial buildings (EC1)	✗					
	8. Open spaces, parks, green areas and leisure areas	✓	✓		✓	✓	
	9. Bio-climatic architecture	✗					
	10. Modernization of tracks	✗					
	11. Zoning of the area	✓	✓	✓	✓	✓	☺

Panel 8: Porto Maravilha, source: personal treatment

	Aims of the regeneration projects	Project Chamartin 2011	Social	Economic	Environment	Culture	Sustainable Development
Porto Maravilha	1. Mixed income housing developments	x					
	2. Infrastructure upgrade (port)	✓	✓	✓		✓	
	3. Create amenities to attract tourists	x					
	4. Hotels and leisure space	✓	✓	✓		✓	
	5. Construction of tunnels and roads	✓	✓				
	6. Open/Green space	✓	✓		✓	✓	
	7. Construction of Olympic Port Village	x					
	8. Bikeways	✓	✓	✓	✓	✓	⊖
	9. Convention centre	x					
	10. Aquarium, Museum of Tomorrow	x					
	11. Upgrade of the train station	✓	✓	✓	✓	✓	⊖
	12. Construction of a cable car for connection with the centre of Brazil	x					
	13. Rehabilitation of vacant buildings/Preservation of the cultural heritage	x					
	14. Commercial skyscrapers	✓	✓	✓			
	15. Changing traffic patterns	✓		✓	✓		
	16. Improvement of water, sanitation, electric, gas and telecom networks	x					

	Aims of the regeneration projects	Project Chamartin 2015	Social	Economic	Environment	Culture	Sustainable Development
Porto Maravilha	1. <del>Mixed income housing developments</del>	✗					
	2. <del>infrastructure upgrade (port)</del>	✓	✓	✓		✓	
	3. Create amenities to attract tourists	✓		✓		✓	
	4. <del>Hotels and leisure space</del>	✓	✓	✓		✓	
	5. Construction of tunnels and roads	✓	✓				
	6. <del>Open/Green space</del>	✓	✓		✓	✓	
	7. Construction of Olympic Port Village	✗					
	8. <del>Bikeways</del>	✓	✓	✓	✓	✓	☺
	9. <del>Convention centre</del>	✗					
	10. <del>Aquarium, Museum of Tomorrow</del>	✗					
	11. Upgrade of the train station	✓	✓	✓	✓	✓	☺
	12. Construction of a cable car for connection with the <del>centre</del> of Brazil	✗					
	13. Rehabilitation of vacant buildings/Preservation of the cultural heritage	✗					
	14. Commercial <del>skyscrapers</del>	✓	✓	✓			
	15. <del>Changing traffic patterns</del>	✓		✓	✓		
	16. Improvement of water, sanitation, electric, gas and telecom networks	✗					

	Aims of the regeneration projects	Project Chamartín 2016	Social	Economic	Environment	Culture	Sustainable Development
Porto Maravilha	1. Mixed income housing developments	✗					
	2. Infrastructure upgrade (port)	✓	✓	✓		✓	
	3. Create amenities to attract tourists	✓		✓		✓	
	4. Hotels and leisure space	✓	✓	✓		✓	
	5. Construction of tunnels and roads	✓	✓				
	6. Open/Green space	✓	✓		✓	✓	
	7. Construction of Olympic Port Village	✗					
	8. Bikeways	✓	✓	✓	✓	✓	🚲
	9. Convention centre	✗					
	10. Aquarium, Museum of Tomorrow	✗					
	11. Upgrade of the train station	✓	✓	✓	✓	✓	🚆
	12. Construction of a cable car for connection with the centre of Brazil	✗					
	13. Rehabilitation of vacant buildings/Preservation of the cultural heritage	✗					
	14. Commercial skyscrapers	✓	✓	✓			
	15. Changing traffic patterns	✓		✓	✓		
	16. Improvement of water, sanitation, electric, gas and telecom networks	✗					

Panel 9: Santa Fe, source: personal treatment

	Aims of the regeneration projects	Project Chamartin 2011	Social	Economic	Environment	Culture	Sustainable Development
Santa Fe	1. Preservation of historic areas and buildings	✗					
	2. Commercial and retail infills	✓	✓	✓			
	3. Drainage wetlands	✗					
	4. Multi-use pedestrian and bike trail	✓	✓	✓	✓	✓	😊
	5. Create a cultural conservation district to protect the neighborhoods.	✗					
	6. Alternative modes of transportation to lessen dependence on the car.	✓	✓	✓	✓	✓	😊
	7. Park and open/green space	✓	✓		✓	✓	
	8. Zoning areas	✓	✓	✓	✓	✓	😊
	9. Monumental skyscrapers	✓		✓		✓	
	10. Attract global investment	✗					
	11. Housing units	✓	✓	✓			
	12. Convention center	✗					
	13. International Airport ⇌ most sustainable building in the world	✗					
	14. Community services/Education facilities	✓	✓			✓	



	Aims of the regeneration projects	Project Chamartín 2015	Social	Economic	Environment	Culture	Sustainable Development
Santa Fe	1. Preservation of historic areas and buildings	✗					
	2. Commercial and retail infills	✓	✓	✓			
	3. Drainage wetlands	✗					
	4. Multi-use pedestrian and bike trail	✓	✓	✓	✓	✓	☺
	5. Create a cultural conservation district to protect the neighborhoods.	✓	✓			✓	
	6. Alternative modes of transportation to lessen dependence on the car.	✓	✓	✓	✓	✓	☺
	7. Park and open/green space	✓	✓		✓	✓	
	8. Zoning areas	✓	✓	✓	✓	✓	☺
	9. Monumental skyscrapers	✓		✓		✓	
	10. Attract global investment	✓	✓	✓			
	11. Housing units	✓	✓	✓			
	12. Convention center	✗					
	13. International Airport ⇒ most sustainable building in the world	✗					
	14. Community services/Education facilities	✓	✓			✓	

	Aims of the regeneration projects	Project Chamartín 2016	Social	Economic	Environment	Culture	Sustainable Development
Santa Fe	1. Preservation of historic areas and buildings	✗					
	2. Commercial and retail infills	✓	✓	✓			
	3. Drainage wetlands	✗					
	4. Multi-use pedestrian and bike trail	✓	✓	✓	✓	✓	⊕
	5. Create a cultural conservation district to protect the neighborhoods.	✓	✓			✓	
	6. Alternative modes of transportation to lessen dependence on the car.	✓	✓	✓	✓	✓	⊕
	7. Park and open/green space	✓	✓		✓	✓	
	8. Zoning areas	✓	✓	✓	✓	✓	⊕
	9. Monumental skyscrapers	✓		✓		✓	
	10. Attract global investment	✓	✓	✓			
	11. Housing units	✓	✓	✓			
	12. Convention center	✗					
	13. International Airport ⇒ most sustainable building in the world	✗					
	14. Community services/Education facilities	✓	✓			✓	

Panel 10: Seine Rive Gauche, source: personal treatment

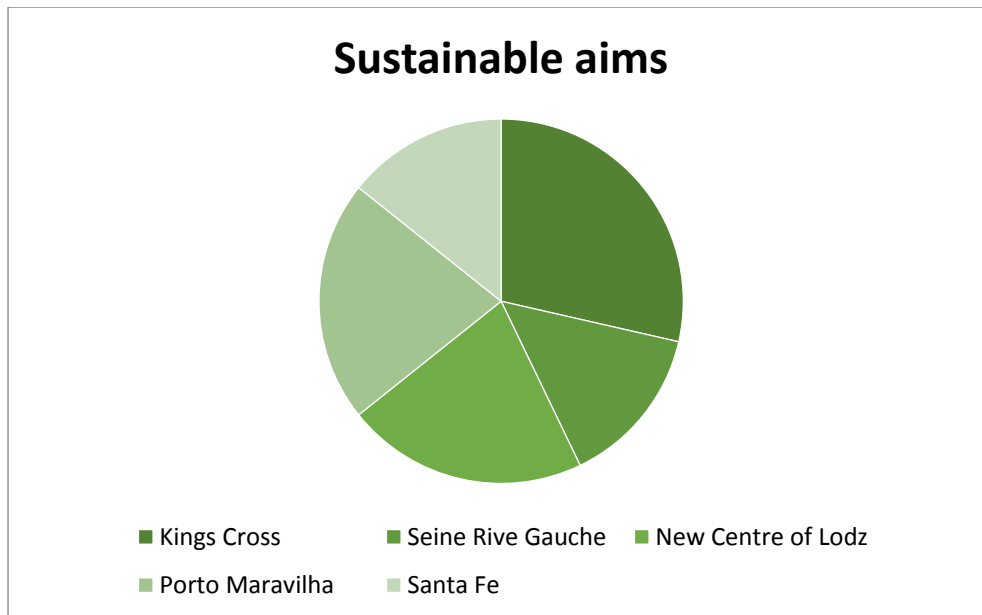
	Aims of the regeneration projects	Project Chamartin 2011	Social	Economic	Environment	Culture	Sustainable Development
Seine Rive Gauche	1. University buildings	✗					
	2. Office development/ Extension of the commercial centre	✓	✓	✓			
	3. Attraction of international businesses	✗					
	4. Residential buildings	✓	✓	✓			
	5. Public transport interchange	✓	✓	✓	✓	✓	😊
	6. Open/Green space	✓	✓		✓	✓	
	7. Construction of National Library	✗					
	8. Districts with mixed land use (offices, housing, schools, nursery etc.)	✓	✓	✓		✓	
	9. Preservation/renovation of industrial buildings	✗					
	10. New artery (Avenue de France)	✗					
	11. Zoning of the area	✓	✓	✓	✓	✓	😊
	12. Bridging the railway tracks with an artificial grid of streets 9 m above ground level	✗					
	13. Building on a new level (offices on platform, housing on embankment)	✗					

	Aims of the regeneration projects	Project Chamartin 2015	Social	Economic	Environment	Culture	Sustainable Development
Seine Rive Gauche	1. University buildings	✗					
	2. Office development/ Extension of the commercial centre	✓	✓	✓			
	3. Attraction of international businesses	✓	✓	✓			
	4. Residential buildings	✓	✓	✓			
	5. Public transport interchange	✓	✓	✓	✓	✓	😊
	6. Open/Green space	✓	✓		✓	✓	
	7. Construction of National Library	✗					
	8. Districts with mixed land use (offices, housing, schools, nursery etc.)	✓	✓	✓		✓	
	9. Preservation/renovation of industrial buildings	✗					
	10. New artery (Avenue de France)	✗					
	11. Zoning of the area	✓	✓	✓	✓	✓	😊
	12. Bridging the railway tracks with an artificial grid of streets 9 m above ground level	✗					
	13. Building on a new level (offices on platform, housing on embankment)	✗					

	Aims of the regeneration projects	Project Chamartin 2016	Social	Economic	Environment	Culture	Sustainable Development
Seine Rive Gauche	1. University buildings	✗					
	2. Office development/ Extension of the commercial centre	✓	✓	✓			
	3. Attraction of international businesses	✓	✓	✓			
	4. Residential buildings	✓	✓	✓			
	5. Public transport interchanges	✓	✓	✓	✓	✓	😊
	6. Open/Green space	✓	✓		✓	✓	
	7. Construction of National Library	✗					
	8. Districts with mixed land use (offices, housing, schools, nursery etc.)	✓	✓	✓		✓	
	9. Preservation/renovation of industrial buildings	✗					
	10. New artery (Avenue de France)	✗					
	11. Zoning of the area	✓	✓	✓	✓	✓	😊
	12. Bridging the railway tracks with an artificial grid of streets 9 m above ground level	✓		✓			
	13. Building on a new level (offices on platform, housing on embankment)	✗					

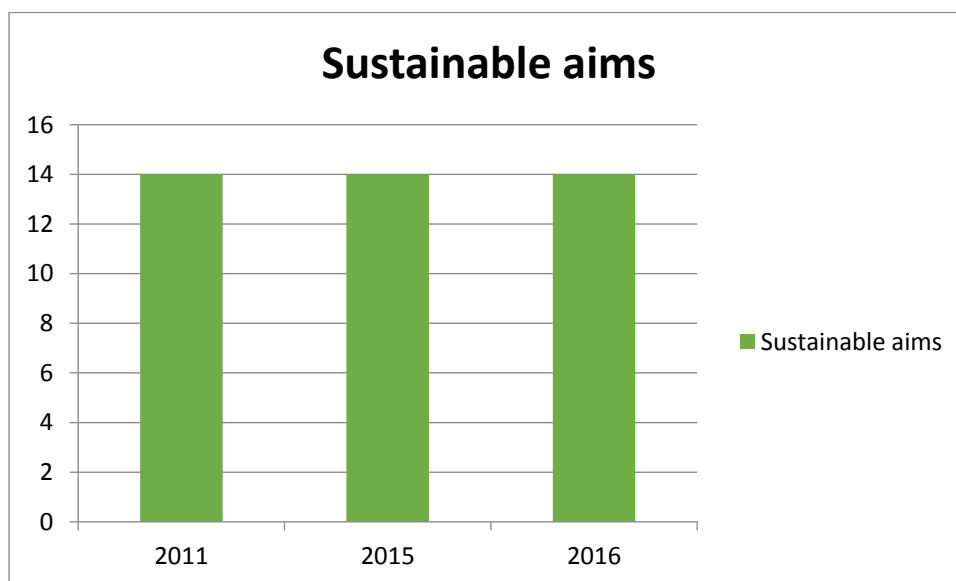
The panels are being assessed in two ways. First, we analyzed the data according to the number of existing sustainable aims on each International Case and second according to the existence of sustainable aims on each proposal of the Chamartin project (2011, 2015, and 2016).

1. The outcome is favoring the regeneration project of King's Cross for all the proposals having the more sustainable aims. Mainly, the most sustainable aims in this project are the construction of cycling routes, the proximity to public transport, the favoring of the adjacent boroughs and the zoning of the area. Following the projects of New Centre of Lodz (Project Chamartin 2011, 2015, 2016) and Santa Fe (Project Chamartin 2011, 2015, 2016). Less sustainable are the aims of projects of Porto Maravilha and Seine Rive Gauche.



Graphic 2: Sustainable aims (1), source: personal treatment

2. All three proposals for the Chamartin project are of the same importance as far as the sustainable development is concerned. In each example for every proposal there were equal numbers of sustainable aims.



Graphic 3: Sustainable aims (2), source: personal treatment

## 5.4. CONCLUSION

To conclude, from these chapters the Greek cases offered a completed version of the presented international cases. The assessment of international cases, materialized into three levels of analysis using the method of classification, helped for a better evaluation of the international cases in general. More specifically, the outcome of the assessment gave some basic aspects of the best five international projects and some objectives of these international projects that might be a source of inspiration, evaluation and criticism to the case of study “Operación Chamartín Madrid”. After some panel analysis of the cases, conclusions have risen up such as the three proposal’s compliance to the aims of the projects, which is the more representative project, which aims are in line in most of the projects and last but not least showed up how much sustainable each proposal is and, of course, which proposal is the most sustainable.

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MADRID

## Chamartin

Urban Renovation Area

Actors & Stakeholders

### GROUP:

VALATIDOU ELDINA 687

EVDU MIRTO 686

KOUKOURIKOU EFTYCHIA 737

### SUPERVISORS:

GIANNAKOU A.

THOIDOU E.

SPRING, 2017

## 6.1. INTRODUCTION

An urban regeneration policy requires many and different actors, who participate in the project in the various stages of the projects implementation. It has been considered necessary to form a collaboration between the public and the private sector. The main reasons that led to these collaborations were the required funding needs, the multidimensional nature of the urban issues and the fact that they constitute a participation field of the residents, as far as their urban district is concerned.

## 6.2. ACTOR & STAKEHOLDER DEFINITION

In **2011**, the Consorcio Urbanístico disappears, and the project is bought up by BBVA. DUCH presents the Project for “Prolongación de la Castellana”, led by BBVA, Adif and the govern-



ment of Madrid, is created to generate a new development in Chamartín; the project goes after creating a great business around the Chamartín Station with a huge development in height. Later, in **2013** the Tribunal Superior de Justicia de Madrid issues a judgment against the modification of PPRI “Prologación de la Castellana”, because this Plan goes against the Ley del Suelo of the Comunidad de Madrid. According to this law, the maximum height allowed is four heights. In **2015**, new BBVA project: “Castellana Norte”. The projects is developed in three administrative levels presented together with DCN, successor of DUCH and with BBVA as investor, a new project: Distrito Castellana Norte. Finally, in **2016**, with the new left wing government in Madrid, Manuela Carmena, proposes a new plan to redevelop Chamartin where the amount of lucrative space diminishes from the proposal of BBVA.

ACTORS & STAKEHOLDERS	DESCRIPTION	SECTOR		
		PUBLIC	PRIVATE	POLITICAL
DUCH (Dessarollo Urbanistico Chamar-tin)	Main urban developer and urban contractors of ADIF and RENFE	*		
iMadrid!				
Comunidad de Madrid	political party ruling over Madrid region			*
RENFE (Red Nacional de Ferrocarriles Espanoles)	Public company attached to the Ministerio de Fomento, provides transport services	*		
ADIF	State owned company, administrator of railway infrastructures	*		
Ministerio de Fomento	Ministry of Development with responsibilities in public projects, transport and communications	*		
Ahora Madrid	Spanish political party, self-defined as "citizen candidacy of popular unity"			*
Podemos	Left-wing political party in Spain			*
AA.VV (Asociaciones Vecinales Federation Regional Madrid)	Organization that brings together hundreds of citizens of the Community of Madrid and focuses much of its activity on the struggle for decent housing, the promotion of citizen participation, social welfare, respect for the environment, defense of public transport and access to culture			*
Distrito Castellana Norte	Company organized to promote the project of urban regeneration in Madrid and one of the most important in Europe		*	
ERNST&YOUNG	Worldwide consulting firm that approves the opportunity to improve the image of Madrid		*	

BBVA (Banco Bilbao Vizcaya Argentaria)	Multinational Spanish banking group		*	
Ayuntamiento	political party ruling over Madrid town council			*
Federal Government	political party ruling over Spain			*

As we can see from the table above, many actors or stakeholders, specifically four, belong to the public sector of Spain whereas four more actors or stakeholders belong to the political sector. The private sector appears to have the least participation in the three projects, with three actors or stakeholders. As we can understand, the public and political initiative are strong in the three proposals while the private sector participates but not as strongly as the two others. In the table above, we can also see a small description for each actor or stakeholder in order to be able to understand thoroughly their role and their participation in the project of each proposal.

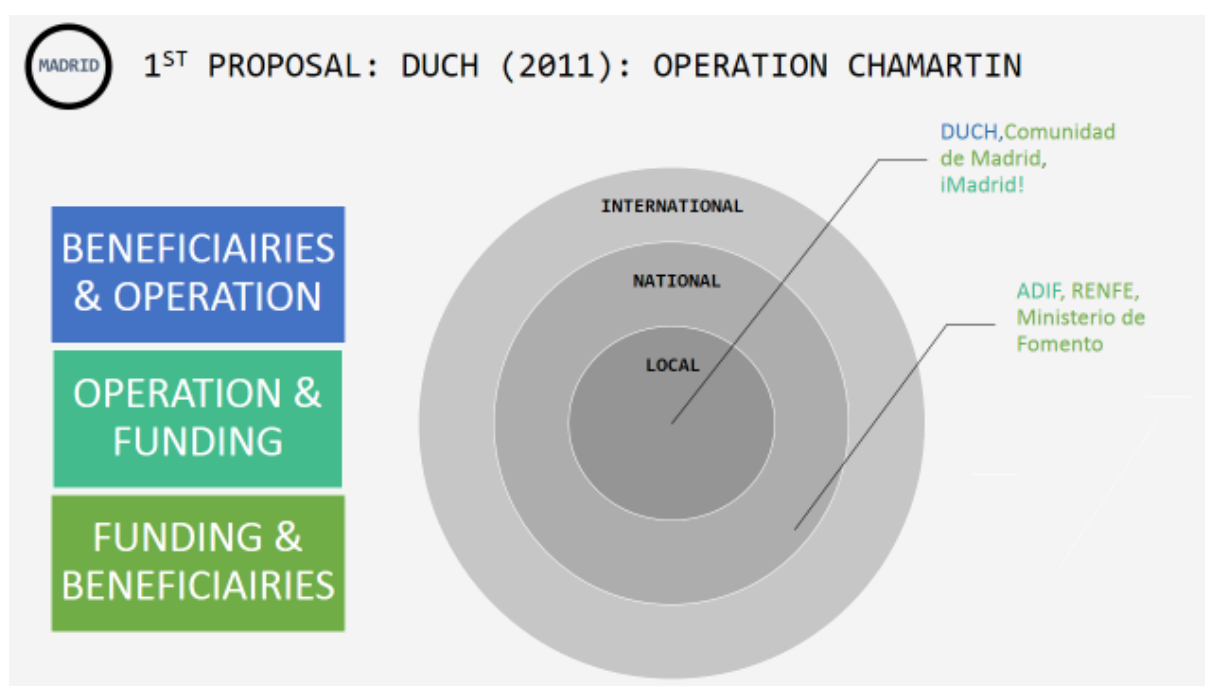
### 6.2.1 Additional Stakeholders Without Great Influence

1. Subdirección · General of Quality and Environmental Assessment of the City of Madrid
2. Ecologists in Action.
3. Canal of Isabel II.
4. Hydrographic Confederation of the Tagus.
5. General Direction of Urbanism and Territorial Strategy of the Ministry of Environment Environment and Spatial Planning.
6. Planning and Waste Management Area of the General Evaluation Directorate Environmental Department of the Ministry of Environment and Spatial Planning. 7. Livestock Area, General Directorate of the Environment of the Ministry of Environment and Spatial Planning.
8. General Direction of Roads of the Community of Madrid,
9. General Direction of Roads of the Ministry of Public Works,
10. General Direction of Historical Heritage.
11. Civil Aviation.
12. Environmental Health Service.
13. Regional Transport Consortium, Area of Studies and Planning.
14. Red Eléctrica España; S.A. OR

### 6.3. Actors & Stakeholders Groups

#### 1<sup>st</sup> Proposal\_Duch\_2011

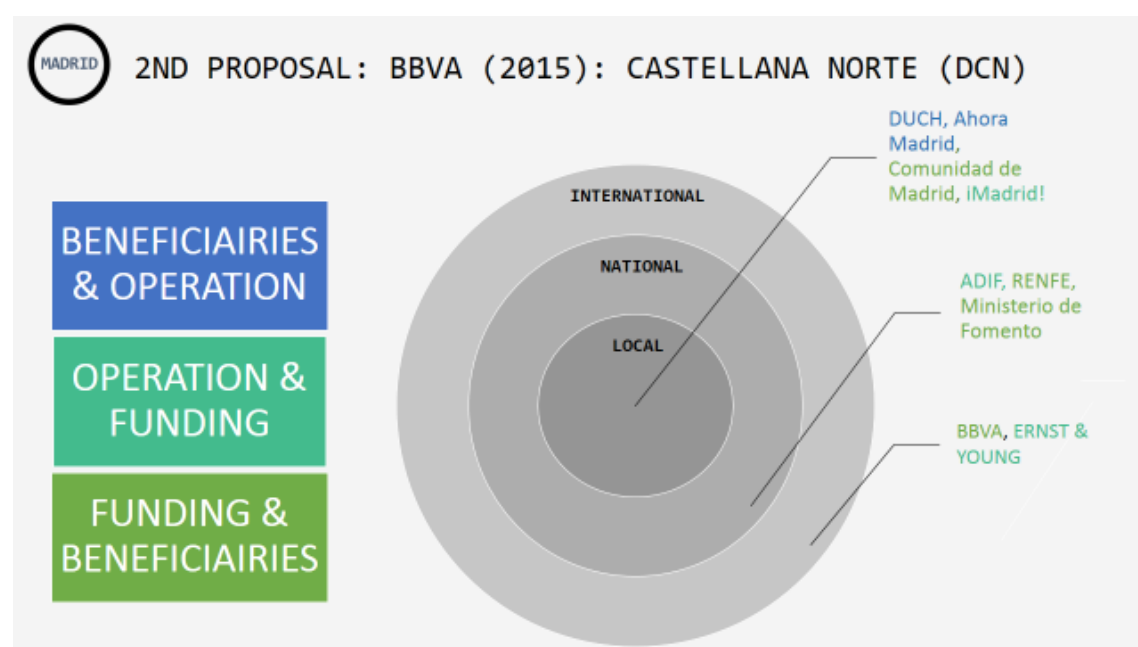
	BENEFICIARIES	OPERATION	FUNDING
LOCAL	DUCH	DUCH	iMadrid!
	Comunidad de Madrid	iMadrid!	Comunidad de Madrid
NATIONAL	RENFE	ADIF	RENFE
	Ministerio de Fomento		Ministerio de Fomento ADIF
INTERNATIONAL	-----	-----	-----



As seen on the first pie chart of the first proposal, presented by DUCH (2011) there are no stakeholders on **International level** (gray area). On **National level**, the majority of the actors is Funding & Beneficiaries along with one Operation & Funding actor (ADIF). Specifically, we are counting 3 in the first category (RENFE, Ministerio de Fomento, Comunidad de Madrid). Regarding the **Local level**, there is an equal number for all three categories (Funding & Beneficiaries: Comunidad de Madrid, Operation & Funding: iMadrid!, Beneficiaries & Operation: DUCH).

## 2nd Proposal\_Bbva\_2015

	BENEFICIARIES	OPERATION	FUNDING
<b>LOCAL</b>	DUCH Comunidad de Madrid Ahora Madrid AA.VV	DUCH iMadrid! Ahora Madrid AA.VV DCN	iMadrid! Comunidad de Madrid DCN
<b>NATIONAL</b>	RENFE Ministerio de Fomento Podemos	ADIF Podemos SAN JOSE	RENFE Ministerio de Fomento ADIF SAN JOSE
<b>INTERNATIONAL</b>	BBVA	ERNST & YOUNG	ERNST & YOUNG BBVA



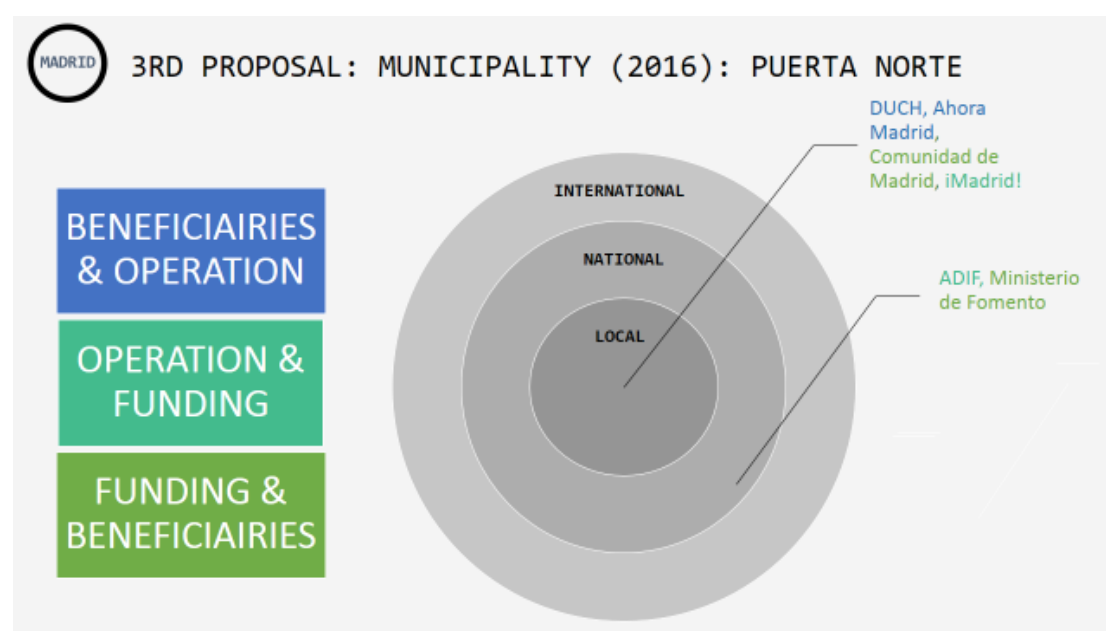
Furthermore, on the second proposal, by BBVA (2015) there are spotted actors not only on Local and National level, but also on International level. Remarkable is the fact that, despite the International character, Local range actors prevail.

In depth, on **International level** there are only two actors (Beneficiaries & Funding: BBVA, Operation & Funding: ERNST & YOUNG). Moreover, **National** actors are 5 in total, divided in all three categories (Beneficiaries & Funding: RENFE, Ministerio de Fomento, Operation & Funding: ADIF, San Jose, Beneficiaries & Operation: Podemos). Last but not least, **Local level** is counting the most actors (6). Most of them belong to the Operation & Beneficiaries group (AA.VV, DUCH, Ahora Madrid). Therefore, there are stakeholders who belong to both of the other groups (Beneficiaries & Funding: Comunidad de Madrid, Beneficiaries & Operation: iMadrid!, DCN).



### 3rd Proposal\_Ayuntamiento\_2016

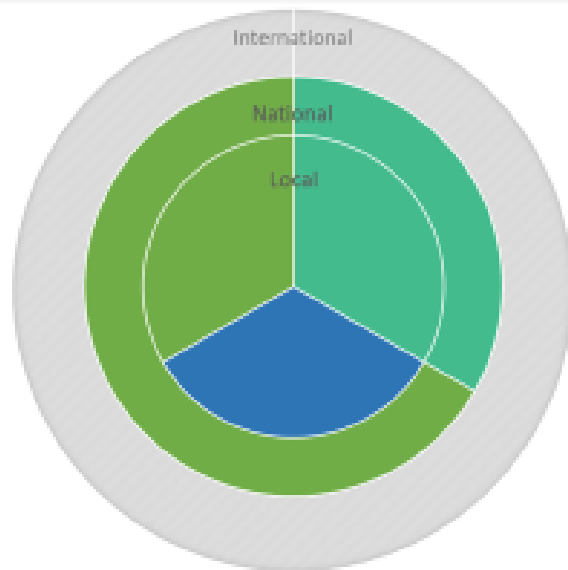
	BENEFICIARIES	OPERATION	FUNDING
LOCAL	DUCH	DUCH	iMadrid!
	Comunidad de Madrid	iMadrid!	Comunidad de Madrid
	Ahora Madrid	Ahora Madrid	
NATIONAL	Ministerio de Fomento	ADIF	Ministerio de Fomento
			ADIF
INTERNATIONAL	-----	-----	-----



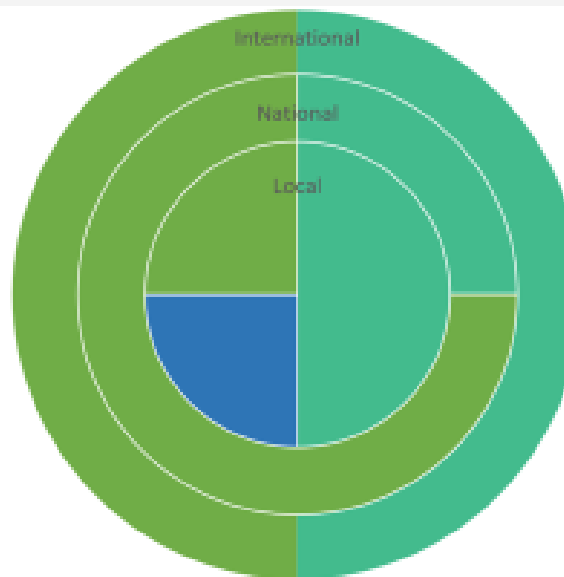
Last but not least, the third proposal, presented by Ayuntamiento (2016), expands on National and Local level, with the absence of International actors. On **National level**, there is an equal number of actors in both Beneficiaries & Funding (Ministerio de Fomento) and Operation & Funding (ADIF). On **Local level**, where most of the actors appear, there are 4 of them. More specifically, the majority belongs to the Operation & Beneficiaries group (DUCH, Ahora Madrid). Also, Operation & Funding (iMadrid!) and Beneficiaries & Funding (Comunidad de Madrid) have one actor each.



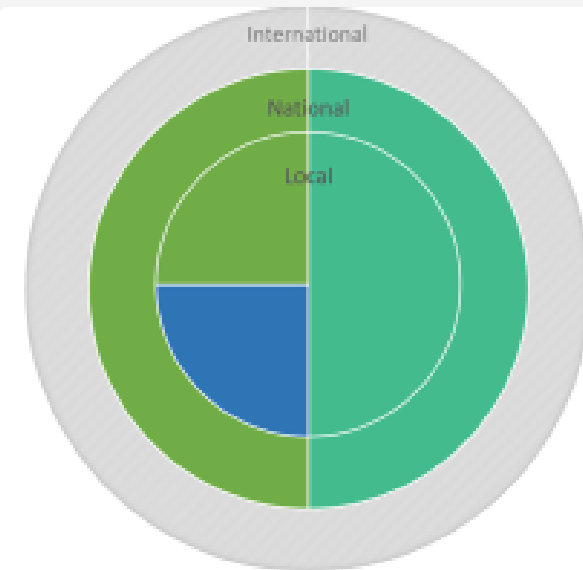
### 1<sup>st</sup> PROPOSAL (DUCH, 2011)



### 2<sup>nd</sup> PROPOSAL (BBVA, 2015)



### 3<sup>rd</sup> PROPOSAL (AYUNTAMIENTO, 2016)



BENEFICIARIES &  
OPERATION

OPERATION &  
FUNDING

FUNDING &  
BENEFICIARIES

NO STAKEHOLDERS

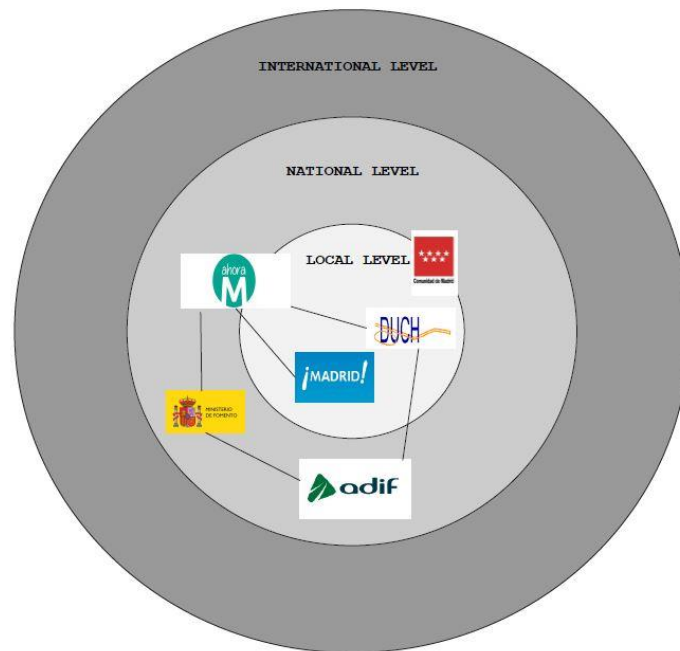
#### 6.4. Actors & Stakeholders Evaluation

(using the original documentation)

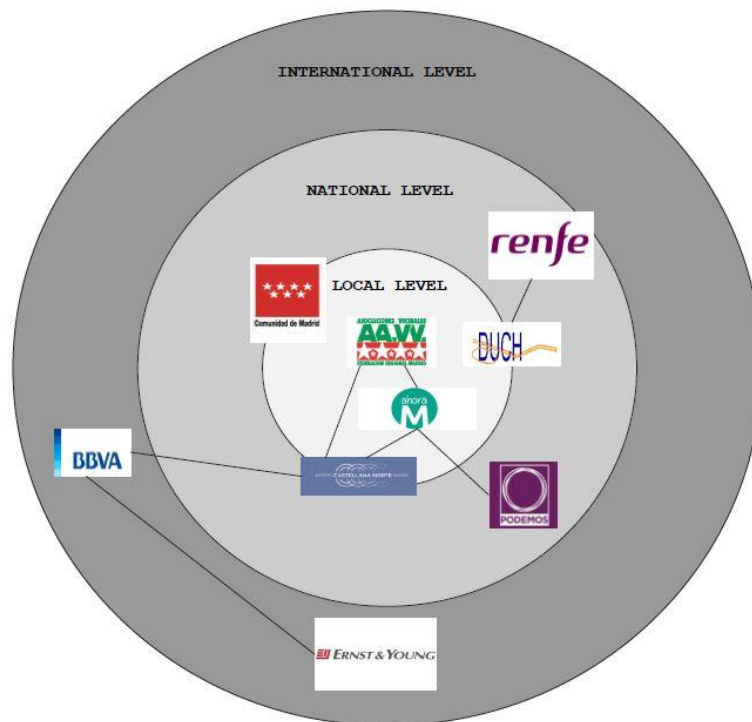
CRITERIA	SCALE	1 <sup>st</sup> PRO- POSAL DUCH_2011	2 <sup>nd</sup> PRO- POSAL BBVA_2015	3 <sup>rd</sup> PROPOSAL AYUNTAM_2016
Stakeholders	Num.	6	13	6
Funding Stakeholders	Num.	5	9	4
International Character	YES/NO	NO	YES	NO
Local Social Involvement	YES/NO	YES	YES	NO
Political Parties' Involvement	YES/NO	NO	YES	YES
Compliance With Legal Systems	YES/NO	NO	NO	YES
Urban Agreement	YES/NO	YES	NO	NO
Process Barrier		High Court Of Justice	Major Of Madrid	-
Proposal Initiative	1-5	Public - 1	Private - 1	Public - 3
Participation Level	1-5	1	3	4
Influence	1-5	4	3	3
Interest	1-5	3	3	4

## 6.5. SOCIOGRAMS

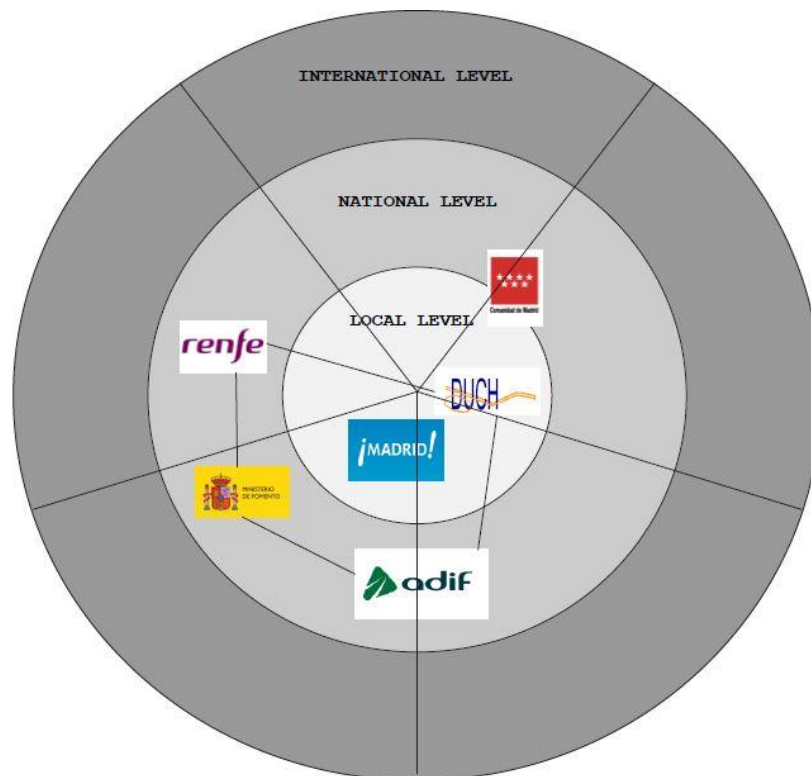
### 1<sup>ST</sup> PROPOSAL\_DUCH\_2011



### 2<sup>ND</sup> PROPOSAL\_BBVA\_2015



### 3RD PROPOSAL\_AYUNTAMIENTO\_2016



## 6.6. CONCLUSIONS

1<sup>st</sup> proposal:

- No international level
- Mostly local
- Not complied to legal systems
- Great influence of urban agreement
- Public character of stakeholders
- Low participation of stakeholders on the project
- Great influence

2<sup>nd</sup> proposal:

- Many stakeholders cooperate-biggest number comparing to the other proposals
- A lot of funds
- The only with international character with parallel involvement of the public community
- First important involvement of political parties
- Not complied to legal systems
- Lack of public character and urban agreement
- The only proposal with private initiative
- Participation level increases
- Influence of stakeholders is decreased

3<sup>rd</sup> proposal:

- Stakeholders come back to the number of the first proposal
- Not enough funding by stakeholders
- No international character
- Political parties' involvement remain
- The only proposal that is not corrupted by the legal system
- The public initiative is retreated
- Highest participation level and interest

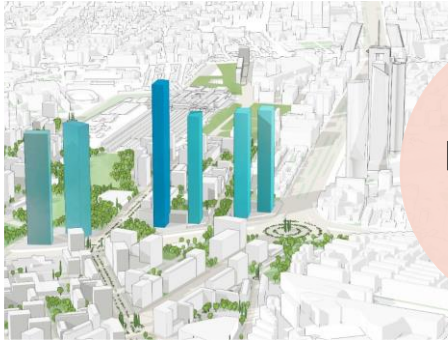
After using the multicriteria analysis, we got the following results:

- 2nd Proposal (BBVA, 2015): 0,46799381
- 1st Proposal (DUCH, 2011): 0,304602228
- 3rd Proposal (AYUNTAMIENTO, 2016): 0,225786

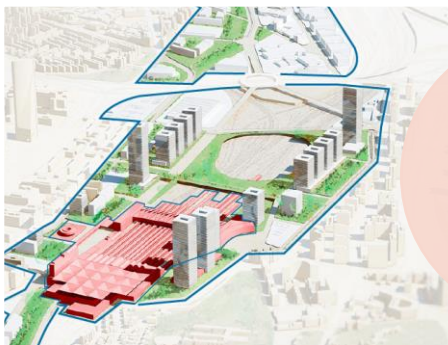
The numbers above indicate that the 2<sup>nd</sup> Proposal has the lead among the other three proposals as it appears to have the most elevated indicator. In the process of the multicriteria analysis, we observe that the 2<sup>nd</sup> and the 3<sup>rd</sup> proposal are both considered important in 4 criteria. Nevertheless, the 2<sup>nd</sup> proposal came first in criteria with higher importance while the 3<sup>rd</sup> in criteria that were lower in our classification. More specifically, the 2<sup>nd</sup> proposal appears to be the best one in the criteria “number of stakeholders”, “number of funding stakeholders”, “political parties involvement” and “international character”. The 3<sup>rd</sup> one appears to be the best in some lower classified criteria: “compliance with legal systems”, “participation level”, “interest” and “proposal initiative”.

- None of the proposals have clear view of the stakeholders' actions and involvement, since the goal is to create an environment that attracts private investors to fund it and encourage the private sector to revive a degraded urban area
- Local problems are not collected and taken into consideration by the supervisors
- Difficulties on the centralization of the authorities and the fragmentation of the competences
- Disadvantage occurs to be the misconception of the responsibilities of each actor
- Public initiative and involvement is considered to be the most efficient
- Private actors are necessary for the funding and structure sector
- Only the third proposal seems to be complied with legal system





proposal of  
BBVA



proposal of  
municipality

# ECONOMIC EVALU- ATION OF CHAMAR- TÍN – MADRID PRO- JECT

## INTRODUCTION

The following text aims to the comparison of the two proposals that concern the area of Chamartin in Madrid and how people from Madrid and Greece view the two projects.

## Team

Antonia de Michele  
Henar Diez Villahoz  
Eleni Evangelidou  
George Skourtis  
Nikos Sirmakezis

## **7.1. INTRODUCTION**

The purpose of the assignment of public opinion is to compare the projects of BBVA (2015) to Municipality (2016). In order to achieve a great comparison between the two projects it is necessary to conduct a study about the area of interest and then draw up the questionnaires. Two questionnaires have been created by both teams (Spanish and Greek) and their aim is to interview citizens and employers/employees of the area of research. Moreover, the Greek team created an online questionnaire so that to have a different view about the subject. The target group of that questionnaire is people that has an expertise in urban plans and urban regenerations, such as students that are senior or have graduated of School of Spatial Planning and Development. The following essay is dealing with causes and the results of the Greek questionnaire.

## **7.2. WORKING PROGRESS**

Our area of research was mostly to create the socioeconomic characteristics of the two areas, those being Fuencaral and Chamartin. After searching some links of the municipality of Madrid, that our fellow members from Spain sent to us, we found many graphs and charts that gave us information about the age, the economic activities of the two areas, the unemployment and the level of education. One thing that we thought it was crucial, in order for us to understand better the acceptance of the two proposals (BBVA 2015, Ayuntamiento de Madrid 2016) by the people of Madrid, was to find some voting results of the past municipality elections. That way we could realize if people who voted for the current municipality, also agree with the proposal of 2016 and furthermore or do if they choose the proposal of BBVA. In that wavelength, we could also get information about people who did not vote the current municipality (e.g. are they compatible with the idea of the municipality, or do they choose the proposal of the BBVA? And why?).

In the meantime, with the guidance/advice (since they know the area better than us) of the Spanish members, we created two interview models that concerned the citizens of the area and also people who work there. The next step, is that the Spanish members will try to extract some conclusions about how do the citizens understand and care about the upcoming renovation or in what level do they accept it. Also, some of the questions are meant to help us understand what are the priorities of the citizens (e.g. more green zones or residence). To continue, about the interviews that aim employees/employers in the area, target to give us a more spherical view to the way in which a businessman sees the area that is to be renovated. One interesting, in our opinion, that we want to observe, is that due to the renovation, many shops might lose customers, or even be lead to closing. In addition, it would be nice to collect some information about what kind of customers would shop owners choose to have. Would they prefer standard customers (proposal of municipality) or people who happen to relax in the green areas and occasionally visit the shops (proposal of BBVA)?

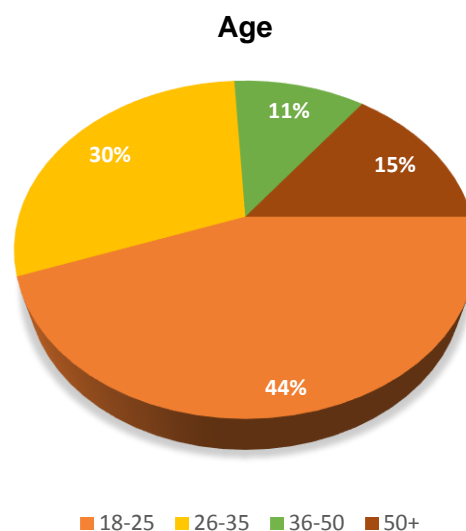
One thing that occupied us here in Greece, was that we didn't quite know the area of Chamartin, so we should learn some more things to understand the whole proposal-choice dilemma better. To do that, we asked for some photos of the area as it is today from our fellow Spanish members and also some videos of what exactly are the two proposals planning to do and what do they try to achieve. After collecting all those pieces, we obtained a clearer image of the area as it is today and what is to become. So, we decided to create a short video, in order all of us to understand better what will change and what will possibly stay the same in the future, after the renovation is done. So, using our little knowledge of creating a video, we came up with a pretty decent result, which we also uploaded in the group of our school in Facebook,

with the hope that it will be watched not only by the members of the program but also people who might have some interest in renovations of that kind and scale.

Moreover, our professor suggested that we make a questionnaire for Greek people to answer as possible citizens, visitors or businessmen in the area of Chamartin, to collect information from such a different and external factor. The goal of it was to see how people from another country would feel about the renovation in Madrid and if that has any different result in the way they see the city. Of course, the difficult part of this, was that this questionnaire should be answered by people with more extensive and expert knowledge on matters of planning and development of an area and also to somehow show those people the situation of today and the two proposals. In this part, we used the video that we made previously to guide those people and to give them a sight idea of how the area is planned to become. The number of the people who answered the questionnaire was not as high as we expected, but it surely gave us an idea of how Greek people see the renovation of the area of Chamartin. First of all, as you can see at the following pie, more women answered it rather than men.

As far as the ages of the people who took part on the survey is concerned, the highest percentage was at the age 18-25.

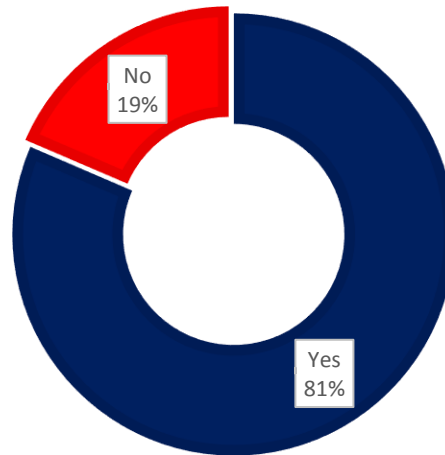
Diagram 3:



81% of the whole, as it is shown at the following pie, answered that they would visit Chamartin after the renovation due to many reasons, such as: curiosity, general interest, or even to compare it with the situation as it is today. However, there were some people who said that they would not visit the area after its renovation, because it would be more important to them to get to know the culture of Madrid and see the museums and monuments instead of visiting a renovated area, or they are not interested in such actions, even though it seems like a remarkable plan.

Diagram 4:

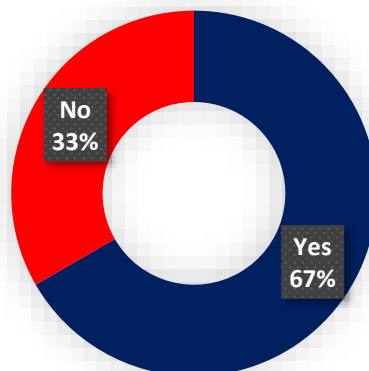
**IF YOU WERE TO VISIT MADRID, WOULD YOU  
ALSO CHOOSE THE RENOVATED AREA OF  
CHAMARTIN TO VISIT AS WELL?**



To continue, we asked if there was any interest of the people who answered the questionnaire to live in the renovated area. 67% answered that they would, because a good renovation of that scale creates opportunities of better quality of life and increases the value of land or because it would become a pole of attraction that would also be augmented by the existence of green zones and better connection with public transportation. The rest 33% chose that they would not want to live in the renovated area, mostly because it is supposed to target to the creation of a business district instead of residence.

Diagram 5:

**If you were a citizen, would you choose the renovated  
area of Chamartin to live in?**

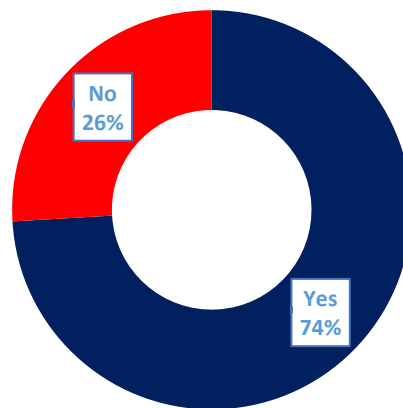


To examine the new area from the point of view of businessmen, we asked if there was any chance of them moving or starting their business in the new area. The majority of them (74%)

replied that they would, because it would become a pole of attraction for many other businesses to collaborate with, it connects the north with the south so its position is very advantageous and of course because due to the creation of a business district, it would be very beneficial for new businessmen to aim to the area. The remaining 26% chose to not start or move their business at the area, mostly because it seems to be away from the city center.

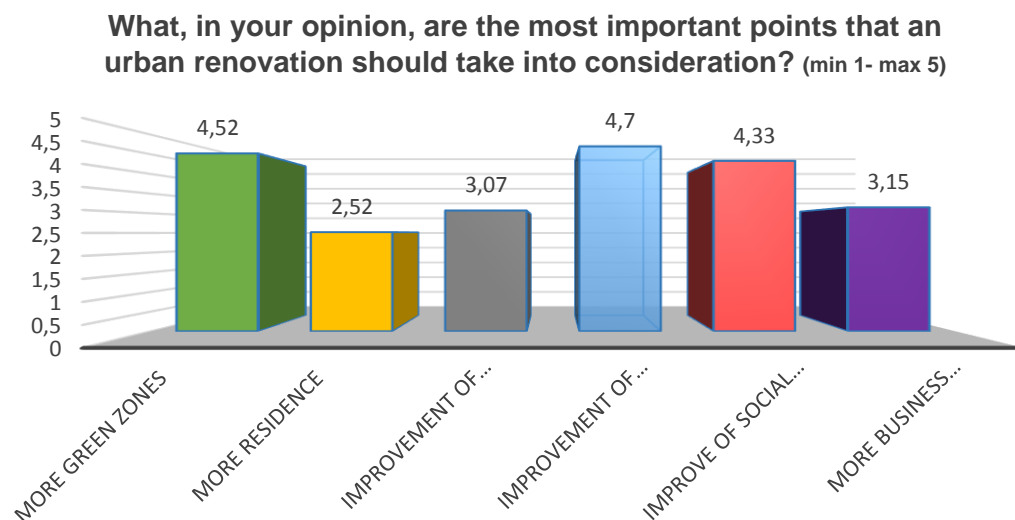
Diagram 6:

**IF YOU WERE A BUSINESSMAN, WHO TARGETS ABROAD, WOULD YOU CHOOSE THE RENOVATED AREA OF CHAMARTIN TO START OR MOVE YOUR BUSINESS?**



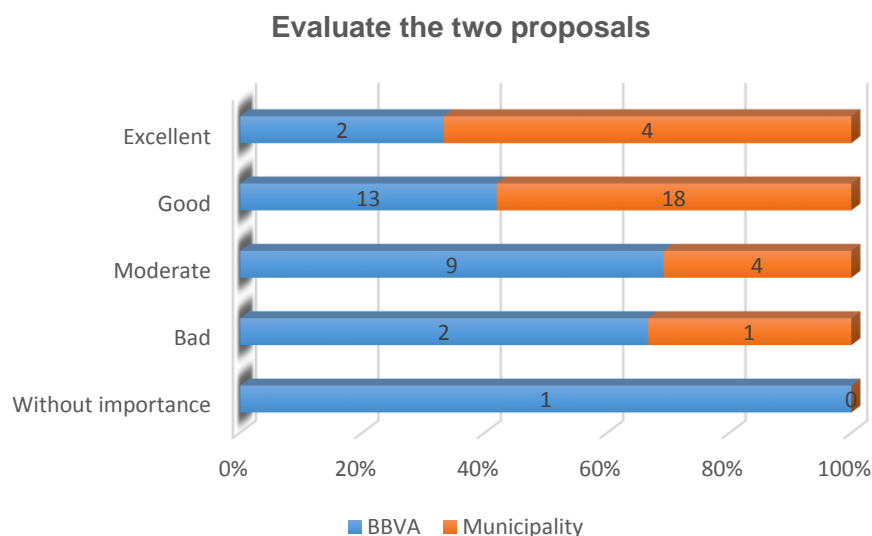
In addition, we asked the participants to give us other examples of renovations of such scale, in case they knew some. The answers we received were mostly about the Temple Bar in Dublin, the Port of Rotterdam and the King's Cross Station and of course the unity of the archaeological sites and the historical center of Athens. A part we thought it was very interesting to take information from, was to ask, what are the most important points, that an urban renovation should take into consideration. As you can see at the following graphic, the majority of the participants replied that they found more important the improvement of the public transportation and right after that, the augmentation of the green zones. Less attention was given to the creation of more residence.

Chart 1:



Before closing, we asked their opinion about the two projects. The results were that the project of the municipality was more accepted by Greek people and took way better critics in comparison to the project of BBVA.

Chart 2



To close this part, we wanted to get the opinion of the people on the question, if they had something to add to any of the proposals. Some thought that there was nothing to add, others replied that the combination of the two proposals would be the ideal solution and some of them gave some examples, such as installation of sports centers or systems of promotion recycling in order to tone up the more environmental aspect of the renovation. A very interesting answer, concerned the second proposal, in which there is no underground railway, which as someone said, might lead to visual or acoustic pollution.

Last but not least, we were asked to compose some questions that were to be used by Antonia and Henar in their interviews with the associations that they planned to interview. This was way too difficult for us though, since we had no clue on what they wanted to ask, or how risky

was to ask something about the two proposals in an association that prefers a different proposal than the one we might had planned that it would support. Also we did not know where should the questions be aimed and so we were not able to contribute in that part.

To sum up, the deduction of results assumes that the best project out of the two is Municipality's. The causes of that might be the strategies that 2016's project aims at. The project of Municipality emphasizes to public transportation, social equipment and job vacancy better than the project of BBVA, even though BBVA suggest more green zones.



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**Department of Regional and Urban Planning, Technical School of Architecture, Polytechnic University of Madrid, SPAIN**

## **Framework of Six Strategies for Urban Regeneration Projects and their Indicators**

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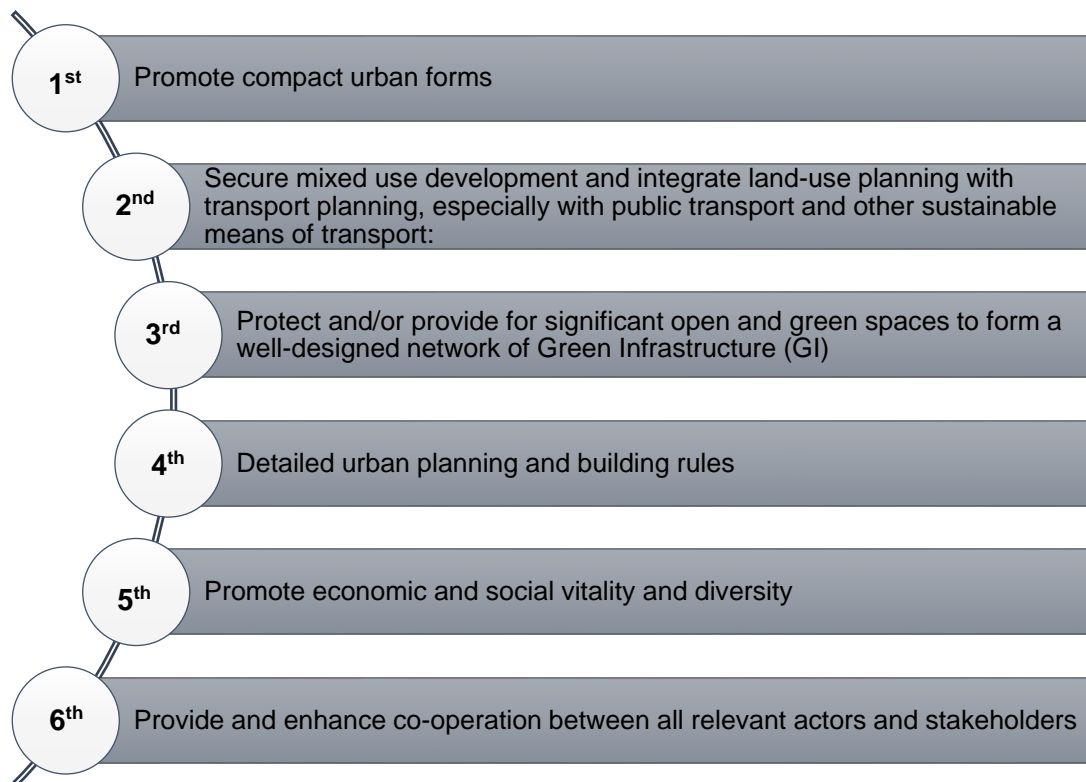
Tzekakis Giorgos 706

## 8.1. INTRODUCTION

In the following text there will be a presentment of the six Sustainability Strategies for Urban Regeneration Projects that we were assigned to take under consideration in order to create an indicator list in order to evaluate the three regeneration projects and decide which one is better to implement according to this evaluation. Also there will be an explanation about the main substance of these strategies and about the reasons we picked the indicators that compose the indicators list. At the end of the text there will be an apposition of which project we picked and the reasons behind this selection.

First of all we should mention the 6 strategies that we took under consideration. The first strategy has as a target to “Promote compact urban forms”, the second one’s is to “Secure mixed use development and integrate land-use planning with transport planning, especially with public transport and other sustainable means of transport”, the 3rd Strategy’s is to “Protect and/or provide for significant open and green spaces to form a well-designed network of Green Infrastructure (GI)”, the 4th Strategy’s is “the creation of a friendly micro-environment with well-designed urban areas and good quality of public/open spaces and building”, then the 5th Strategy’s target is to “Promote economic and social vitality and diversity”, and finally the last strategy wants to “Provide and enhance co-operation between all relevant actors and stakeholders”.

## 8.2. THE FRAMEWORK



In order to compose the following text, we considered six strategies that were given to us, as a source of information, so that we could create a proper text to explain the substance of these strategies.

### 1<sup>st</sup> Strategy

#### Promote compact urban forms

The first strategy's aim is to create compact urban forms by adjusting residential density, and specifically to increase it. These adjustments can also create a more sustainable and functionally cohesive environment. In addition, there is the need of a more efficient use of land in order to reduce urban sprawl and to allow the effective implementation of public transport and other infrastructure systems. The tools to achieve these goals are primarily basic policies to increase densities, including building on undeveloped urban land and also increasing density standards in areas that have previously been built with low density, etc.

However, this strategy points to the risk of reducing vital open spaces and new needs for open space and public amenities as an urgent issue if the strategy's policies will be executed carelessly.

		Indicator	Units measurement	2011 DUCH	2015 BBVA	2016 Ayuntamiento
1 <sup>st</sup> STRATEGY	1.1:	Structure density/Structure area	Numeric	0.65	0.67	0.54
	1.2:	Effectiveness of public transport	Qualitative	Average	High	Low
	1.3:	Population density	Inhabitants/hectare	30.9	28	9.5

## 2nd Strategy

**Secure mixed use development and integrate land-use planning with transport planning, especially with public transport and other sustainable means of transport:**

According to the second strategy, by promoting of the area's accessibility under regeneration and applying the appropriate land-use policies that contribute to the mixing of urban functions and the use of public transport, mixed use development and integrate land-use planning with transport planning can be secured, especially with public transport and other sustainable means of transport. Also, a critical factor is to achieve the balance between all types of land-uses. Finally, there is a need of fulfilling traffic flows and minimize the need for new routes by offering good public transport as well as promoting more sustainable forms and car-free solutions such as a wide network of bicycle lanes and walkways.

	Indicator	Units measurement	2011 DUCH	2015 BBVA	2016 Ayuntamiento
2nd STRATEGY	2.1: Bicycle lanes and walkways	km	15.38/0	12.91/13.52	0/0
	2.2: Level of accessibility in the area and integration in the city environment	Qualitative	Average	High	Low
	2.3: Land uses-zoned or mixed across the area	Mixed/Zoned	Zoned	Mixed	Mixed

### 3rd Strategy

#### **Protect and/or provide for significant open and green spaces to form a well-designed network of Green Infrastructure (GI)**

The third strategy intends to protect open and green spaces so as to form a well-designed network of Green Infrastructure. Considering the strategy's plan this can be achieved by paying particular emphasis to the formation and protection of green corridors linking the urban area to natural areas which surround it. In addition, urban design should increase the multifunctional role of Green Infrastructure as a tool for addressing climate change adaptation of urban and an improvement the local urban environment's quality.

### 4th Strategy

#### **Detailed urban planning and building rules (that create a friendly micro-environment with well-designed urban areas and good quality of public/open spaces and buildings, reduce energy consumption, increase the efficiency of natural and energy resources, and secures detailed urban forms to address adaptation to climate change)**

The main interest of the fourth strategy is to create a friendly micro-environment with well-designed urban areas and good quality of public/open spaces and building. Another component of this strategy is to reduce the energy consumption and increase the efficiency of natural and energy resources and achieve a better adaption to the climate changes and increase the city's resilience levels. These can be achieved by taking under consideration regulations on detailed urban planning and building rules.

		Indicator	Units measurement	2011 DUCH	2015 BBVA	2016 Ayuntamiento
3 <sup>RD</sup> & 4 <sup>TH</sup> STRATEGIES	3.1:	Green spaces ratio compared to total area	m <sup>2</sup> /%	552.642/17,4	566.826/18,2	274.251/ 15,72
	3.2:	Green spaces ratio compared to residents	m <sup>2</sup> /number of inhabitants	11,6	16,55	8,01
	3.3:	Green Space Cohesion	Qualitative	YES	YES	YES
	4.1:	Water Demand	Liters/Day	5.134.850	6.263.250	2.397.360
	4.2:	Air Quality	SO <sub>2</sub> : g/km CO: g/km NO <sub>x</sub> : g/km	SO <sub>2</sub> : 6391,21 CO: 3061388,67 NO <sub>x</sub> : 2070751,42	SO <sub>2</sub> : 5901,06 CO: 2826607,77 NO <sub>x</sub> : 1911943,46	SO <sub>2</sub> : 1907,51 CO: 913699,06 NO <sub>x</sub> : 618034,43

### 5th Strategy

#### Promote economic and social vitality and diversity

The next strategy focuses on promoting economic and social vitality and diversity. This can be managed by promoting new forms of urban economy that are linked to the basic principles of sustainability, that will simultaneously increase job opportunities for a variety of social groups. Also this should provide social mixing and cohesion, identity, sense of place and culture and, in general, for the well-being and quality of life of the local community.

### 6th Strategy

#### Provide and enhance co-operation between all relevant actors and stakeholders

The last strategy aims to enhance co-operation between all relevant actors and stakeholders. Considering this there is a need to promote synergy and shared roles to form a viable -financially and socially- intervention. Also it is considered important to enhance the advantages of the active participation of the local population to the challenges facing their community.

	Indicator	Units measure- ment	2011 DUCH	2015 BBVA	2016 Ayuntamiento
5 <sup>th</sup> STRATEGY	<u>5.1</u> : Proximity to basic services	<b>Qualitative</b> (No data)	16	15	12
	<u>5.2</u> : Employ-ment/Number of jobs	<b>Numeric</b>	108.000	120.000	128.000
	<u>5.3</u> : Social Cohesion-Diversity	<b>Percentage</b>	17,86%	10%	21,70%
6 <sup>th</sup> STRATEGY	<u>6.1</u> : Citizens Partici-pation	<b>Qualitative</b>	Low	Average	High
	<u>6.2</u> : Transparency and Information	<b>Qualitative</b>	Low	Low	High

## 8.2. INDEX EVALUATION

	Indicator	Units measurement	2011 DUCH	2015 BBVA	2016 Ayuntamiento
1 <sup>st</sup> STRATEGY	<u>1.1</u> : Structure density/Structure area	Numeric	0.65	0.67	0.54
	<u>1.2</u> : Effectiveness of public transport	Qualitative	Average	High	Low
	<u>1.3</u> : Population density	Inhabitants/hectare	30.9	28	9.5
2 <sup>nd</sup> STRATEGY	<u>2.1</u> : Bicycle lanes and walkways	km	15.38/0	12.91/13.52	0/0
	<u>2.2</u> : Level of accessibility in the area and integration in the city environment	Qualitative	Average	High	Low
	<u>2.3</u> : Land uses-zoned or mixed across the area	Mixed/Zoned	Zoned	Mixed	Mixed
3 <sup>RD</sup> STRATEGY	<u>3.1</u> : Green spaces ratio compared to total area	m <sup>2</sup> /%	552.642/17,4	566.826/18,2	274.251/ 15,72
	<u>3.2</u> : Green spaces ratio compared to residents	m <sup>2</sup> /number of inhabitants	11,6	16,55	8,01
	<u>3.3</u> : Green Space Cohesion	Qualitative	YES	YES	YES
	<u>4.1</u> : Water Demand	Liters/Day	5.134.850	6.263.250	2.397.360
	<u>4.2</u> : Air Quality	SO <sub>2</sub> : g/km CO: g/km NO <sub>x</sub> : g/km	SO <sub>2</sub> : 6391,21 CO: 3061388,67 NO <sub>x</sub> : 2070751,42	SO <sub>2</sub> : 5901,06 CO: 2826607,77 NO <sub>x</sub> : 1911943,46	SO <sub>2</sub> : 1907,51 CO: 913699,06 NO <sub>x</sub> : 618034,43
5 <sup>th</sup> STRATEGY	<u>5.1</u> : Proximity to basic services	Qualitative (No data)	16	15	12
	<u>5.2</u> : Employment/Number of jobs	Numeric	108.000	120.000	128.000
	<u>5.3</u> : Social Cohesion-Diversity	Percentage	17,86%	10%	21,70%
6 <sup>th</sup> STRATEGY	<u>6.1</u> : Citizens Participation	Qualitative	Low	Average	High
	<u>6.2</u> : Transparency and Information	Qualitative	Low	Low	High



In this paragraph we will line up the reasons behind the indicators' selection. At first we picked indicators from sites relevant to our interests such as the European Environmental Agency which contains a list of indicators for environmental issues and other sources of information such as books or readings that were given to us as a study material. So the first feature that the chosen indicator had to fill was to be able to be used as a tool for the strategy that it was picked for. Then we took into account the other teams' indicators choices and we basically matched our choices with theirs. That brought out the second feature which was the correlation of our choices and the other teams' choices. At last after an interaction with our professors and a detailed research on the three projects' information we figured which indicators' data existed. The last feature then was each indicators' sufficiency according to the information we could get for each one of them. To sum up the reasons behind the indicators' selection were firstly their relevance on the strategies' subjects, their usefulness according to our target and the level of information we could find for each one of them.

### 8.3. PROJECT EVALUATION

The next task our team had to complete was evaluating the three projects by taking their results based on the indicator list we created. In order to rank these indicators and evaluate the three projects we used the multi-criteria decision analysis. This method helped us to classify the indicators according to their importance and how each indicator responds to every regeneration project. After the results were revealed we checked each project and made clear which project was better in each sector of interest. Firstly we saw that the 2011 DUCH project had the edge over improving the city's cohesion and focused more on the citizens' problems rather than solving economical or environmental issues so it had a good level of social problems regulation. Secondly we noticed that the 2015 BBVA project had a precedence in transportation and the accessibility in the area and integration in the city environment, as well as in the creation of walkways and bicycle lanes. But we made it clear to ourselves that neither of those projects was as effective as the last project (2016 Ayuntamiento). The last project had the advantage over social problems solutions and the best numbers in environmental indicators except green spaces ratio compared to residents and compared to total area. This project had the lowest need in energy and water consumption and also had the best results in matters of air quality. So our conclusion is that the best regeneration project to implement is the 2016 project which aggregates the best score from the indicators, and had an edge over the other two projects even if we didn't use the multi-criteria decision analysis.

