The Olympic Adventure

Post-use of the Olympic legacy
PREFACE

In front of you lies the Master Thesis of the Urban Area Development lab of the department of Real Estate & Housing at the Faculty of Architecture of the Technical University of Delft.

It was in the summer of 2011 that I decided to choose mega-events as the subject for my master thesis. It has always been of interest to me to see the mega-events taking place one day and after a few weeks leaving again. Especially since the developments these events leave behind are built for a longer period than a month tops. After exploring the topic, the Olympic Games was going to be the event I would focus on since the Netherlands were considering to bid to host this event in 2028. But what aspect would I like to research specifically? There are many interesting topics to study in the field of the Olympic legacy. After discussing it with my main mentor Yawei Chen, the Olympic main stadium would be the focus of this master thesis.

The Olympic main stadiums of former Olympic host cities seem to be expensive burdens, or so-called “white elephants”, which cannot find a successful use for the post-Olympic period. Studying the Olympic main stadiums of some of the former host cities was to provide lessons to learn of the success and mistakes of these host cities. The cases of Barcelona, Athens and Beijing were chosen and indeed provided some lessons to be learned. In April 2012 I visited the organisation that operates the Olympic stadium of Barcelona. The enthusiastic response of the organisation was wonderful and a lot of information was obtained. In addition, it provided me the chance to enjoy Barcelona for a few days. Together with the lessons of the other case studies an idea about how to create post-use on building level was formed, which resulted in theoretical guidelines to enhance the chance of post-use creation.

Due to the lessons learned from this research the chance of post-use creation is enlarged a bit more, which is relevant for future host cities of the Olympic Games and of other events as well. Creating a legacy that is useful for the residents of the host city and the city itself determines for a part if the Games are seen as successful. The post-use period is the period in which the host should be able to enjoy the hard work it has done to organise the Games and its regenerated city. It should not be the period in which the host city is trying to deal with the expensive burdens developed to host the Games as its main objective. With this research the Olympic main stadiums are one step closer of becoming multi-purpose buildings that are happily used by the residents of its city.

This master thesis is established with the help and support of different people. Without this support and willingness to help, this master thesis would not exist. I would like to thank the people I have interviewed and who have provided me with a lot of knowledge; Teresa Sala, Gemma Mariages, Sigrid Goedhart, Christine Markvoort, Yawei Chen and Willemieke Hornis. Subsequently I would like to thank my mentors from the University, Yawei Chen and Philip Koppels, for their support, ideas, comments and guidance during my graduation project. Finally, I would like to thank my family, friends and classmates for their feedback and moral support during my graduation project.

Kiki Klee
June 2012
ABSTRACT

This report is a master thesis for the Urban Area Development lab of the Real Estate and Housing department of the Master Architecture, Urbanism and Building Science at the Faculty of Architecture, Technical University of Delft.

The Olympic host cities have been facing difficulties with the post-use of the legacy of the Olympic Games. When organizing the Games, big plans for the city arise and during the event, the city shows its beautiful venues. However, after the Games the venues remain empty and unused. The post-Olympic period offers too little demand for the created venues and public space. During the years, the legacy of the Games has become more and more important and host cities are planning their legacy from the initiative phase on. However ‘white elephants’ still occur. Just planning the legacy does not seem to be enough. The mega-event strategy should be connected with the long-term perspectives of the host city’s urban regeneration plan.

The master thesis is to investigate how the aspects of post-use creation are implemented on building level and to what extent the mega-event strategy of the Olympic host city influences this implementation. These aspects of post-use creation are at city, area and building level and contain the; urban planning, stakeholders, social costs & benefits, mobility, program, routing, catchment area, organization, adjustability, architectural value and function factor. The research methods used in this master thesis are a literature study, the case study method and a cross-case analysis. The cases of Barcelona, Athens and Beijing are investigated on the aspects of post-use creation and the cross-case analysis has provided lesson learned of these cases. These lesson learned form the basis of the theoretical guidelines to enlarge the chance of post-use creation on building level, which is the end-result of this thesis. Important is the integration of the aspects of post-use creation in the mega-event strategy, connecting it with the long-term perspectives of the urban regeneration plan of the host city. Especially the aspects of urban planning, program and adjustability are of great influence on enlarging the chance of post-use.

Keywords: Olympic Games, post-use, legacy, Olympic main stadium, case studies, Barcelona, Athens, Beijing, cross-case analysis, theoretical guidelines.
# ABBREVIATIONS

## General

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IOC</td>
<td>International Olympic Committee</td>
</tr>
<tr>
<td>OCOG</td>
<td>Organising Committee Olympic Games</td>
</tr>
<tr>
<td>NOC</td>
<td>National Organising Committee</td>
</tr>
<tr>
<td>OC</td>
<td>Organising Committee</td>
</tr>
</tbody>
</table>

## Barcelona

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>COOB'92</td>
<td>Barcelona Olympic Organising Committee 1992</td>
</tr>
<tr>
<td>OCSA</td>
<td>Barcelona Cultural Activity Organising Committee</td>
</tr>
<tr>
<td>COE</td>
<td>Spanish Olympic Committee</td>
</tr>
<tr>
<td>HOLSA</td>
<td>Barcelona Holding Olímpic, S.A.</td>
</tr>
<tr>
<td>BSM</td>
<td>Barcelona de Serveis Municipals, S.A.</td>
</tr>
</tbody>
</table>

## Athens

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IOC-HOC</td>
<td>International Olympic Committee – Hellenic Olympic Committee</td>
</tr>
<tr>
<td>IMC</td>
<td>Inter-Ministerial Committee</td>
</tr>
<tr>
<td>ATHOC</td>
<td>Athens 2004 Organising Committee for the Olympic Games</td>
</tr>
<tr>
<td>NCOG</td>
<td>National Committee for the Olympic Games</td>
</tr>
</tbody>
</table>

## Beijing

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEPA</td>
<td>State Environmental Protection Administration</td>
</tr>
<tr>
<td>UNEP</td>
<td>United Nations Environment Program</td>
</tr>
<tr>
<td>BOCOG</td>
<td>Beijing 2008 Organising Committee for the Games of the XXIX Olympiad</td>
</tr>
<tr>
<td>BMG</td>
<td>Beijing Municipal Government</td>
</tr>
</tbody>
</table>
LIST OF FIGURES AND TABLES

Chapter 1 Introduction

Figure
1.1 Development model
1.2 Research model
1.3 Possible cases

Table

Chapter 2 Theoretical Framework

Figure
2.1 Intended and realised strategies
2.2 Life-cycle Olympic Games
2.3 Legacy model
2.4 Development ambitions
2.5 Influential aspects of legacy
2.6 Public/Private Participation
2.7 Local event organizer
2.8 Catchment area of Ajax, Feyenoord and PSV
2.9 Organizational systems and relationships
2.10 Project management environment
2.11 Stadiums of Feyenoord and PSV
2.12 Income division Stadion Feijenoord N.V.
2.13 Catering income division Stadion Feijenoord N.V.

Table
2.1 Type of events
2.2 Positive and negative legacy
2.3 Possible social benefits
2.4 Possible social costs
2.5 Amount of supporters per club
2.6 Average travel distance and time

Chapter 3 Barcelona 1992

Figure
3.1 Location Barcelona
3.2 Olympic development locations
3.3 Olympic investment divisions, excl. operational costs
3.4 Organisational model Barcelona
3.5 Employment rates
3.6 House prices Barcelona
3.7 Olympic Ring Montjuïc
3.8 Funicular de Montjuïc
3.9 Teleferic de Montjuïc
3.10 Travel time from Montjuïc by public transport
3.11 Assumed catchment area of Olympic stadium Barcelona
3.12 Population Catalonia 2011
3.13 Palau Sant Jordi
3.14 Olympic stadium de Montjuïc
3.15 Timeline of the Olympic stadium
3.16 Organizational structure BSM
3.17 Income division
3.18 Possible events at Olympic stadium
3.19 Olympic main stadium Barcelona
3.20 Division of events 2011
3.21 Framework Barcelona
Table
3.1 Population
3.2 Social costs and benefits

Chapter 4 Athens 2004
Figure
4.1 Athens
4.2 Olympic parks Athens
4.3 Olympic investments Athens
4.4 Organisational model of Athens
4.5 Tourism Athens
4.6 Gypsy at Faliro
4.7 Graffiti at Faliro
4.8 Bridge at Helliniko
4.9 OAKA area
4.10 Travel times to OAKA
4.11 Catchment area of Olympic stadium Athens
4.12 Olympic stadium Athens
4.13 Events at Olympic stadium Athens
4.14 Olympic stadium Athens
4.15 Framework Athens
Table
4.1 Population Athens
4.2 Social costs and benefits Athens
4.3 Several departments of OAKA

Chapter 5 Beijing 2008
Figure
5.1 Location Beijing
5.2 Location Olympic park
5.3 Olympic venues
5.4 Investments of the Beijing Olympics
5.5 Organisational model of Beijing
5.6 Outdoor gyms in Beijing
5.7 Olympic Green
5.8 Travel times Beijing
5.9 Amusement park behind the Olympic stadium
5.10 Olympic stadium – Bird’s Nest Beijing
5.11 First organisational chart National Stadium Co., Ltd.
5.12 Income division
5.13 Events at the Olympic stadium Beijing
5.14 National Stadium Beijing
5.15 Events from 2008 – 2012
5.16 Plinth Bird’s Nest
5.17 Conference room Bird’s Nest
5.18 Segway tour
5.19 Yuandingyuan restaurant
5.20 Framework Beijing
Table
5.1 Social costs and benefits
Chapter 6 Cross-case Analysis

Figure

Table
- 6.1 Location and climate
- 6.2 Population and surface
- 6.3 Urban planning aspect
- 6.4 Organization
- 6.5 Social costs and benefits
- 6.6 Accessibility
- 6.7 Routing
- 6.8 Program
- 6.9 Catchment area
- 6.10 Organization
- 6.11 Adjustability
- 6.12 Architectural value
- 6.13 Functions
- 6.14 Assessment summary

Chapter 7 Lessons Learned and Conclusions

Figure

Table
- 7.1 Theoretical guidelines for post-use creation

Chapter 8 Reflection

Figure

Table

Chapter 9 Recommendation

Figure

Table
CONTENT

ABSTRACT .................................................................................................................. 7
ABBREVIATIONS ......................................................................................................... 9
LIST OF FIGURES AND TABLES ............................................................................... 11

1. INTRODUCTION ....................................................................................................... 19
   1.1 THE OLYMPIC GAMES ...................................................................................... 19
   1.2 PROBLEM ANALYSIS ...................................................................................... 20
   1.3 RESEARCH OBJECTIVES ............................................................................... 21
   1.4 RESEARCH QUESTION .................................................................................... 21
   1.5 RESEARCH RESULT ......................................................................................... 22
   1.6 RESEARCH DESIGN .......................................................................................... 23
      1.6.1 Research Methodology .............................................................................. 24
      1.6.2 Case Study ................................................................................................. 24
      1.6.3 Case Study Selection .................................................................................. 25
   1.7 STRUCTURE OF THE REPORT ......................................................................... 26

2. THEORETICAL FRAMEWORK .................................................................................. 29
   2.1 MEGA-EVENTS .................................................................................................. 29
      2.1.1 The Olympic Games ................................................................................... 32
   2.2 OLYMPIC LEGACY ........................................................................................... 35
   2.3 POST-USE ......................................................................................................... 39
      2.3.1 Post-Use Creation on City Level ................................................................. 40
      2.3.2 Post-Use Creation on Area Level ................................................................. 42
      2.3.3 Post-Use Creation on Building Level ......................................................... 45
      2.3.4 Conclusion .................................................................................................. 49
   2.4 THE DUTCH CONTEXT ...................................................................................... 50
   2.5 CONCLUSION .................................................................................................... 52

3 BARCELONA 1992 .................................................................................................... 55
   3.1 BARCELONA ...................................................................................................... 55
   3.2 THE MONTJUIC AREA ...................................................................................... 61
   3.3 THE OLYMPIC STADIUM OF BARCELONA .................................................. 66
   3.4 CONCLUSION BARCELONA ............................................................................ 72

4 ATHENS 2004 ........................................................................................................... 77
   4.1 ATHENS ............................................................................................................. 77
   4.2 THE OLYMPIC ATHLETIC CENTRE OF ATHENS ........................................ 83
   4.3 THE OLYMPIC STADIUM SPIROS LOUIS ..................................................... 86
   4.4 CONCLUSION ATHENS ................................................................................... 89

5 BEIJING 2008 ............................................................................................................ 93
   5.1 BEIJING ............................................................................................................ 93
   5.2 THE OLYMPIC GREEN .................................................................................... 99
   5.3 THE OLYMPIC STADIUM OF BEIJING ............................................................ 102
   5.4 CONCLUSION BEIJING .................................................................................... 108

6 CROSS-CASE ANALYSIS ......................................................................................... 113
   6.1 ASPECTS OF POST-USE CREATION ON CITY LEVEL .................................. 113
   6.2 ASPECTS OF POST-USE CREATION ON AREA LEVEL .................................. 116
   6.3 ASPECTS OF POST-USE CREATION ON BUILDING LEVEL ........................... 118
   6.4 CONCLUSIONS ................................................................................................. 120

7 LESSONS LEARNED AND CONCLUSIONS .............................................................. 123
   7.1 LESSONS LEARNED & GUIDELINES FOR FUTURE HOSTS ............................. 123
   7.2 RESEARCH CONCLUSIONS ............................................................................ 127
1. INTRODUCTION
This report will begin with an introducing chapter. In this chapter the research subject will be introduced by giving a short overview, paragraph 1.1, which will be followed by the elaboration of the problem analysis and problem statement in paragraph 1.2. From this problem statement the research objectives are derived together with the research question in paragraph 1.4. In paragraph 1.5 the desired research result will be discussed and paragraph 1.6 will elaborate on the research methodology and will discuss the case study selection process. The last paragraph, 1.7, of this chapter will explain the structure of this report.

1.1 THE OLYMPIC GAMES
The Olympic Games is nowadays the most famous and spectacular sporting event in the world. Every four years an edition of one of the Games is held. The Summer and Winter Games, and their Paralympics, alternate every two years, providing athletes the chance to reach national and even international recognition. Nearly every nation is represented in today’s Games and cities are lining up to be the host of an Olympic Games to showcase themselves to the world. This is a completely different picture than the one of the first Olympic Games.

The Games have grown enormously during the centuries. From 776 BC until 393 AD, the Olympic Games were held in the ancient Greek city Olympia where athletes from different Greek cities competed with each other. After a break of fifteen centuries, the Olympic Games were back in 1896. Pierre de Coubertin was responsible for the first Modern Games, naturally in Athens, to which 14 countries took part. Since 1924 the Winter Games are a part of the Olympic Games and since 1960 the Paralympics are a part of the Games as well. This research will focus on the Modern Summer Games and its Paralympics, from now on referred to as the Olympic Games. Since 1896 the Games have grown and grown and in 2008, 204 countries participated. Nowadays, a lot of measures need to be taken in order to become an Olympic host city. A city must have sporting infrastructure to be able to accommodate the events. These accommodations have to provide the technical conditions to induce personal best performances from the athletes, house a sufficient crowd to give the sense of a mega-event, and make good television. In addition, the main stadium should signify newness and monumentality in itself. The city must have the transport and tourism infrastructure to be able to accommodate the visitors and participants. It must have the communication facilities to be able to shoot, package and distribute footage and commentary instantly to the media of over 200 nations (Wilson 1996; Cashman 1998).

For most cities, if not all cities, this means that great urban development is necessary to be able to host the Olympic Games. Since Barcelona 1992, a new motivation to host the Olympics has arisen. Next to enhancing tourism, promoting entrepreneurial goals and gaining recognition as a global city or nation, more cities want to use the Games as a tool for urban regeneration. Barcelona was the first one to successfully use the Games to transform their city. They enhanced their infrastructure, imago and tourist attractiveness and became world famous for their ‘Barcelona model’. Even though cities tried to establish a similar effect, none of them really succeeded on all aspects. Still, hosts are hoping to do use the Olympic Games as a catalyst for a successful urban regeneration one-day. One of them is the Netherlands.

Since a couple of years the Dutch are thinking about placing a bid for the Olympic Games of 2028. The final decision to place a bid will be made in 2016. Until that time, researchers are exploring the possibilities and risks. The idea of organizing the Olympics is supported in the Netherlands. The Government and the sport institutions are very exited. However, the question remains if the Netherlands can host an event as huge as the Olympic Games and if there will be any demand for the venues and accommodations of the Games in the post-Olympic period. All kinds of concepts are made for the Dutch Olympics, for different cities and regions. However, which city or region is going to be the Dutch candidate is not known yet. Eventually, if the Dutch decide to bid, the International Olympic Committee (IOC) will decide if they are elected host city of the Olympics in 2028.
The IOC is responsible for selecting the host cities, overseeing the planning of the Olympic Games, approving the sports program, and negotiating sponsorship and broadcasting rights. In addition, the IOC is the authority of the Olympic Movement. The Olympic Movement consists of international sports federations (IFs), National Olympic Committees (NOCs), and Organizing Committees for the Olympic Games (OCOG). The Olympic Movement, as well as the host city, needs to act by the rules of the Olympic Charter. The host city is responsible for organizing and funding the Games consistent with the Olympic Charter. The Olympic Charter is a set of rules and guidelines for the organization of the Olympic Games, and for governing the Olympic Movement (IOC 2009).

1.2 PROBLEM ANALYSIS

Every four years a city hosts the Olympic and the Paralympic summer Games. While the bid and the preparation of the Games and the Games themselves are very well organized, this is not always the case for the period after the Games. Since the Games of Barcelona in 1992, which were unquestionably the first in using the impact of hosting the Games to successful regenerate the city, this post-Games period has become more and more important. Still, post-use of the venues produced for the Games is sometimes poor. Mainly the clustered venues in the Olympic Parks, like the main stadium, stand the chance to be ‘white elephants’.

According to the Oxford University Press (2011) a ‘white elephant’ is defined as “a thing that is useless and no longer needed, although it may have cost a lot of money” and it finds its origin in a story about a Thai king who would give a white elephant as a present to somebody that he did not like. This person would have to spend all its money on looking after the rare animal. These ‘white elephants’ make it difficult for the city to use its piece of land or area to develop a new building or area that is usable or necessary for the city in a short period of time. In other words, when a city spends good money on the realization of, for example, an Olympic Stadium for which they cannot find a purpose after the Games have left town, the city is stuck with the maintenance of an expensive building with no revenues. Demolishing the brand new building is not an option, financially seen, and the location of the building cannot be used for other purposes any more. The ‘white elephants’ are hence not only financial burdens but spatial burdens as well. The most negative legacy and a shared problem for most Olympic host cities, when ‘white elephants’ are concerned, is the Olympic main stadium. Since the main reasons for cities to host the Olympic Games are mostly, enhancing tourism; promoting more rapid infrastructure investment; promoting entrepreneurial goals; and/or gaining recognition as a global city or nation (Baim and Misch 2008), ‘white elephants’ are the last thing they can use. Yet, even the latest Olympic Stadium (Beijing 2008) has not been in significance use after the Games. But why do these ‘white elephants’ occur? It used to be due to the lack of planning of and interest for the legacy (Cashman 1998) but nowadays the Olympic legacy is an important aspect of the bid and without a plan for the legacy a bid will certainly not win. Hence the planning of the legacy alone seems to be not enough to prevent ‘white elephants’ to occur. Cities have started to see the Olympic Games as a starting point to fast-track urban development but not always as a part of the urban regeneration plan of the city. Urban developments can only be successful if the measures taken support the long-term perspectives of the urban regeneration strategy of the city. If the Olympic mega-event strategy connects with the urban development strategy in a proper way, will these ‘white elephants’ still occur?

When taking the Dutch case in to consideration the question arises if there is sufficient demand for the huge Olympic venues, like the main stadium, in the relatively small cities/region of the Netherlands and hence if the long-term perspectives of the urban regeneration strategy can be translated in to the Olympic mega-event strategy. It is stated that the challenges the Dutch will have to face are the spatial pressure in the suburban areas, the overcrowded infrastructure and the problematic ratio considering the green areas (Hoorn et al, 2006). Furthermore, there is no experience of organizing this kind of events in the Netherlands. These are challenges that are additional to the ones concerning the legacy, such as the financially support of the venues before the Games and the demand for the venues after the Games.
The problem statement that can be derived from this problem analysis is:

*Due to inadequate attempts to connect the Olympic mega-event strategy to the long-term perspectives of the urban regeneration strategy of the host city, ‘white elephants’ arise in the host cities in the post-Olympic period.*

### 1.3 RESEARCH OBJECTIVES

The research subject of this master thesis is closely connected to the research subjects of the master theses of Bakker (2009) and Prooye (2010). Bakker (2009) designed a development model (figure 1.1) that will support and guide in urban accommodation strategy making, connecting the Olympic assignment to the post-Olympic goals.

![Figure 1.1 Development model (Bakker 2009)](image)

Prooye (2010) focussed on the link between the first phases of the Olympic development and the final consequences in the post-Olympic phase of the choices made during these phases. In addition Prooye implemented and tested the final results of his research to the Dutch situation. However, more research on this topic could be done concerning the mega-event strategy and the post-use on building/area level, by which is meant the competition venues (building level) of the Olympic Games, mostly clustered in the Olympic Park (area level). The research objective of this research can be formulated as follows:

*Investigate different cases on the post-use aspects of the Olympic legacy on building level and use the lessons learned to create theoretical guidelines for post-use creation, which can be used by future host cities.*

### 1.4 RESEARCH QUESTION

The problem analysis has made it clear that ‘white elephants’ are still a challenge for Olympic host cities, especially the Olympic main stadium. The main research question will hence have to provide more insight on how post-use of the legacy can be created. In addition, the focus of this research will be on the building level of the Olympic Games, the competition venues. Huijsmans (in Bakker 2009) categorized these facilities in the following way:

- Specific stadiums (Olympic Stadium, Football, Velodrome, etc.)
- Complexes (Hockey complex, Tennis complex, Aquatics centre, etc.)
- Indoor halls (Volleyball, Handball, Judo, etc.)
- Landscapes (Rowing, Marathon, Sailing, etc.)
The below mentioned venues are generally seen as main venues and are mostly being centralized in the Olympic Parks [VROM et al., 2008]:

- Olympic Stadium (Athletics, opening and closing ceremony)
- Aquatics centre (Swimming, Diving, Water Polo and Synchronized Swimming)
- Velodrome (Track cycling)
- Indoor halls (Basketball, Handball, Volleyball, etc.)
- Olympic Village (Athletes housing)

Obviously, this means that the Olympic Park, as the direct surrounding and hence location of the main competition venues, will also be researched. This is why the research question is formulated as follows:

How are the aspects of post-use creation implemented to the Olympic competition venue, the main stadium, on building level and to what extent has the mega-event strategy of the Olympic host city influence on this implementation?

The terms used in the research question are elaborated in the theoretical framework in chapter 2.

1.5 RESEARCH RESULT

By answering the above research questions, the final result of this research can be achieved.

Connect the aspects of post-use creation on building level to the mega-event strategy of the Olympic host city and create theoretical guidelines for enhanced post-use creation on building level, which can be used by future host cities.
1.6 RESEARCH DESIGN

In this paragraph the research design will be explained by means of a research model. A research model is a schematic representation of the purpose of the study and the general steps that need to be made in order to achieve this goal (Verschuren & Doorewaard 2003). As shown in figure 1.2, the research exists out of 4 phases. The intermediate products of these phases all contributed to the final result of the research and hence were of importance to the research. Each phase will be discussed separately below.

Phase I
During the first phase of the research the theoretical framework was created. This framework is the foundation of the research and explains the concepts relevant to the research and the aspects they are direct and/or indirect related with. In this case the main concepts are mega-events, mega-event strategy, the Olympic Games, its legacy and the post-use of Olympic legacy. For the theoretical framework, these concepts are researched and their related aspects explored.

Phase II
The second phase is the empirical framework. This phase includes the case-study research. Different cases are selected. The case studies mainly exist out of a literature study on the different cases. The topics that are researched are the objectives of the host cities, their mega-event strategies and the aspects of post-use creation of the legacy on building level. Furthermore, an analysis of the context of the cities at the time of the Games is made. In addition, interviews are held with the experts who were or are involved with the cases. The objective of these interviews is to obtain information that is not found during the literature study.

Phase III
In the third phase, the findings of the case studies are analysed by means of a cross-case analysis after which conclusions and recommendations are drawn. The lessons emerged from this analysis are the base for the theoretical guidelines set up in the next phase.

Phase IV
During the fourth phase of the research the theoretical guidelines for post-use creation of the Olympic legacy on building level are developed. These guidelines will be useful for future host cities of the Olympic Games. Finally, the conclusions of the research and recommendations for further research will be provided.
1.6.1 Research Methodology

This research project is an empirical research. Empirical research is to determine what occurs in reality by means of observation (Baarda & De Goede 2006). This can be done in different ways. The research method of the research depends on the research question and the research objectives (Baarda & De Goede 2006). In descriptive research the objective is to accurately map a situation or a series of events to describe what occurs precisely (Leiden University 2011). However, in this descriptive research project the focus is on generating conjectures and hence the research can be defined as an exploratory one. The purpose of exploratory research is to form ideas about possible connections (Leiden University 2011). In this case, possible connections between the mega-event strategy and the post-use of the Olympic legacy on building level are researched. There are different ways to investigate the possible connections and for this research project a literature study, interviews and case studies are conducted. The literature study exists of reading and processing different literature sources about relevant topics. These literature sources can be scientific articles, books, websites, newspapers, scientific magazines, master theses and so on. The different sources are used to create a more or less complete overview of the literature on a particular topic. Later on in the research, interviews were held with experts who are/were involved in the cases that were studied. The interviews were prepared in advance and exist of open questions. After the interviews, the collected data is transcribed and analysed. The last research method that is used during this research is the case study method. This method is the most extensive one and will hence be discussed in paragraph 1.6.2.

1.6.2 Case Study

In this paragraph, the case study method will be discussed. As explained in the previous paragraph, case studies may be descriptive or exploratory. In this research project the case studies will be exploratory since they will be used to explore causation in order to find underlying principles. With the case study method a phenomenon of one case, or at most a few cases, is intensively studied. With intensive research, the origins, further changes and the whole complex structure of a phenomenon will be described and explained by reflecting a large number of variables simultaneously (Swanborn 2000). However, a clear distinction must be made between the central phenomenon and the carriers of that phenomenon, the aspects by which the phenomenon is studied. That this distinction is needed is shown by the fact that a phenomenon is never studied in its totality, simply put, not everything can be examined: always a selection is made (Swanborn 2000). Case studies provide a systematic way of looking at events, collecting data, analysing information, and reporting the results. As a result a sharpened understanding of why the instance happened as it did, and what might be important to look at more extensively in future research becomes clear. For this research project, this result is desired. In addition, Yin (2003) states “the case study is the method of choice when the phenomenon under study is not readily distinguishable from its context”. This holistic character of the case study method is precisely what is needed in this research project. Additionally Yin (2003) states, “such a phenomenon may be a project in an evaluation study.” Now that it is clear that the research project will be an evaluation study with exploratory case studies, it is time to choose a variant. There are two variants of case studies; a single case or multiple cases. The main difference between the two variants is that with multiple cases not just one case is studied but that it studies different cases by mutual comparisons (Swanborn 2000). For this research project the latter one will be used. There are two types of multiple case studies; the hierarchic method and the sequential method. In this research project, the hierarchic method will be used which means that the cases will be studied separately and independently but in a certain pattern and that the results will be analysed and compared in a second phase (Swanborn 2000). This cross-case analysis searches for patterns. The cross-case analysis divides the data by type across all cases studied. Then the data of that type is examined thoroughly. When a pattern from one data type is validated by the evidence from another, the finding is stronger. When evidence conflicts, deeper exploratory of the differences is necessary to identify the cause of conflict (Soy 1997). In the next subparagraph, the selection criteria to which the cases must apply before being selected for the research project are elaborated.
Since not all cases are useful to contribute to the final result of this research project, some choices have to be made. It is important to select cases that can support the research objective of making a theoretical guidelines on creating post-use of the Olympic legacy for the future hosts of the Olympic Games. For this purpose selection criteria are established. In addition, it is chosen to select the cases based on the Dutch decision to bid for the 2028 Olympic Games, so that in the future, the guidelines can be implemented in the Dutch context.

1.6.3 Case Study Selection

The first criterion is the fact that the selected cases need to be cases of Summer Olympics. The reason for this, is choice of the Netherlands to organise the Summer Games of 2028 and hence the Winter Games cases will not be comparable enough for this research project. The second criterion has to do with the changes in Olympic movement concerning urban regeneration. Since the Games in Barcelona in 1992 the Olympic Games have been regarded as an opportunity to solve existing urban problems (Chen & Spaans 2009). This is why the Games that took place prior to 1992 will not be selected. The third selection criterion concerns the objective of the host city by organizing the Olympic Games. This objective must be more or less in compliance with the Dutch objective, due to the fact that different strategies are created when the objectives are completely different. At the moment, the main objective of the Netherlands is to improve the sports facilities and to significantly improve the high dense and crowded infrastructure (NOC*NSF 2009). The fourth selection criterion is the location possibilities of the Olympic development. The Netherlands is planning to spread the Olympic development over more than one location. In order to provide useful information for the Dutch case, the selected case studies should also have a divided Olympic development.

When summarising these criteria, the following cases make a match (figure 1.3):

- Barcelona 1992
- Atlanta 1996
- Sydney 2000
- Athens 2004
- Beijing 2008
- London 2012

Selected Case Studies

Due to the limited time available for this research project, not all cases can be studied intensively. The choice is made to investigate three cases intensively. This does not mean that the other three cases are not looked at though. These cases will be studied explorative to make sure no important information is left out of the research project. The cases that will be studied intensively however are:

- Barcelona 1992
- Athens 2004
- Beijing 2008

Barcelona is, as stated above, the first edition of the Games in which urban regeneration was so important and successful. It is a classic example for urban regeneration by means of hosting the Olympic Games and hence is an important case to learn from. In addition, Barcelona’s main stadium has known a successful post-use in the post-Olympic period. The reason Athens is selected is because Athens has improved its infrastructure tremendously but has issues with the post-use of the legacy, especially with the main stadium. Beijing is a case in which the post-use of the Olympic legacy was very important from the early start on and which included the post-use in the master plan. However, some parts of the legacy have not been used since the Games have left town (other parts gladly are in use though) and hence this case also forms a good learning example. For this research project these are believed to be important cases. The cases are all former cases, this means that the approaches that will be used are ex post evaluations. The three other cases will in turn be examined in an explorative way. The reason why they have not been chosen is different for each case. For the Atlanta case, the economic thrive for organising the Games is this reason. The Atlanta Games were organised by mainly private parties and had as main goal, economic growth. This is very different from the Dutch motivation to host the Games and hence this case is not elected. When the case of Sydney is concerned, the reason for
not being selected is the location of the Olympic development. Sydney has chosen for one location and, as stated before, this is not comparable with the Dutch situation. Since it will not be feasible for the Dutch to create a single location development, this case is not a perfect match. For the London case the main reason is the fact that the Games, at this moment in time, still have to take place and hence it is difficult to predict and investigate the post-use of the legacy.

Figure 1.3 Possible cases

1.7 STRUCTURE OF THE REPORT

In this paragraph the structure of the report is provided as a reader's guide. It will explain the configuration of the report. In the next chapter (2) the theoretical framework of the research is specified. In paragraph 2.1 mega-events will be discussed as well as the role of the events in urban regeneration, mega-event strategies and their impact on the host city. Then, the Olympic Games, its history, venues and life cycle will be reviewed. In the second paragraph (2.2), the term legacy will be defined and analysed and its influential aspects mapped. In the third paragraph (2.3) the definition of post-use and the aspects involved are further elaborated. The Dutch context is elaborated in paragraph 2.4 followed by the conclusion in paragraph 2.5. In chapter 3 the case of Barcelona 1992 will be discussed and analysed, and in chapter 4 and 5 the cases of respectively Athens 2004 and Beijing 2008 will be discussed and analysed. In the 6th chapter a cross-case analysis is provided after which, in chapter 7 the conclusion and theoretical guidelines are provided. Finally, in chapter 8 the reflection and in chapter 9 the recommendations for future research are provided.
2. THEORETICAL FRAMEWORK

In this chapter the theoretical framework is elaborated upon. Different aspects of the research subject are clarified and relations between the aspects analysed. In this way a certain basis for the research is set up. In the first paragraph mega-events will be discussed as well as the role of the events in urban regeneration, mega-event strategies and their impact on the host city. Then, the Olympic Games, its history, venues and life cycle will be reviewed. In the second paragraph, the term legacy will be defined and analysed and its influential aspects mapped. In the third paragraph the definition of post-use and the aspects involved are further elaborated. In the fourth paragraph the Dutch context will be discussed. The fifth paragraph will be the conclusion of this chapter.

2.1 MEGA-EVENTS

Mega-events are defined in different ways, nevertheless these definitions are built on the same aspects. Accordingly to Roche (2000) “Mega-events are large-scale cultural (including commercial and sporting) events, which have a dramatic character, mass popular appeal and international significance”. In addition, Malfas et al (2004) state, “A mega-event can be viewed in two main respects. First, with regard to its internal characteristics, that is its duration and its scale (i.e. number of participants and spectators, number of individual sessions, and levels of organizational complexity). Second, in respect of its external characteristics, which mainly take account of its media and tourism attractiveness, and its impact on the host city.

Mega-events and Urban Regeneration

What is important for this research is the impact these mega-events have on the urban regeneration. “Urban regeneration is a comprehensive and integrated vision and action which leads to the resolution of urban problems and which seeks to bring about a lasting improvement in the economic, physical, social and environmental condition of an area that has been subject to change” (Roberts & Sykes 2000). According to Vrijaldenhoven (2006) mega-events usually contribute to urban development. He states that “city governments are absolutely right to believe they can take advantage of a global event” but also puts that “it is certainly not correct to believe that they need a global event to improve their competitiveness”. Sometimes a city is much better off by just transforming the city at a slower pace without the whole mega-event (Vrijaldenhoven 2006). Carrière & Demazière (2002) believe in the approach in which urban development includes an event, rather than using an event to encourage urban development. In addition, Smith & Fox (2007) reason that events seem to leave a more positive physical legacy when they are embedded within wider regeneration strategies. Chen & Spaans (2009) add that the greatest challenge of a host city is not to fast-track venue development under time pressure, but what longer-term goals can be achieved and sustained after the event leaves town. Subject to time pressure and without careful consideration of the long-term impact, venues may become ‘white elephants’ after the event has taken place, isolated in their city landscapes (Furrer 2002).

It can be concluded that mega-events are widely seen as a tool for urban regeneration. In addition, it is clearly stated that the mega-events should be used as a tool and should not become the main reason for urban regeneration. Mega-events are the most fruitful for a city when implemented in the urban regeneration policy and master plan. An important aspect for the successfulness of achieving the urban objectives by using the mega-event as an urban regeneration tool is the event forcing parties with different interests to cooperate, and in addition, is the organisation of the event setting wheels in motion more rapidly than normally would be the case (Vrijaldenhoven 2006).

Mega-event Strategy

Before elaborating on the mega-event strategy, the basic theory of strategy by Mintzberg and Waters will be discussed shortly. As Mintzberg and Waters (1985) try to explain with their model of intended and realized strategies (figure 2.1) it is difficult to realize an intended strategy. Most intended strategies are changed during their way of implementation. Influential aspects change
the environment and the intended strategy has to react to these changes and adjust itself. Sometimes it even occurs that an emergent strategy comes along and the intended strategy is rejected. An emergent strategy originates not in the mind of the strategist, but in the interaction of the organization with its environment. Eventually, a strategy can be implemented, the realized strategy. Mintzberg and Waters (1985) defined different types of strategies, which fall within the range of the model (figure 2.1). These strategies are included in the appendix (appendix A).

As stated in the previous section, a mega-event is an urban regeneration tool. The same applies when strategies are concerned. The mega-event strategy is a type of urban regeneration strategy. The mega-event strategy is basically one using the mega-event as an engine for urban development and can therefore be considered as a tool of urban governance (Qu and Spaans 2009). It is important to look at the specific motives of the host in order to implement a successful strategy regarding the mega event (Qu & Spaans, 2009). Mega event strategies have become part of a deliberate urban policy strategy to promote local economic growth and put the host city on the world agenda (Chen & Spaans, 2009). There are certain aspects of mega-events that are important to take in consideration when designing a strategy. Gratton and Preuss (2008) believe these aspects are the six different structures, which are important when developing a strategy for the legacy of a mega event; infrastructure, knowledge, image, emotions, networks and culture. These are the structures, which are left behind after the mega-event and contribute to the urban regeneration.

**The Impact of a Mega-event**

The impact of a mega-event is noticeable also after the event. There are positive impacts obviously, however negative impacts as well. Both Ritchie (1984) and Hall (1997) say that a mega-event, despite its short duration, has impact on and meaning for the host city far beyond the event itself. According to Sola (1998) these impacts are generally seen in one or more of the following aspects: ‘tourist volumes; visitor expenditures; publicity leading to a heightened awareness and a more positive image; related infrastructural and organizational developments which substantially increase the destination’s capacity and attractiveness’. Malfas et al (2004) divide the impact of mega-events in four categories: socio-economic impacts; socio-cultural impacts; physical impacts and political impacts. For all categories positive, as well as negative, impacts are revealed, which are supported by different researches. A socio-economic positive impact is the “possibility the event provides of increasing the awareness of the city or region as a tourism destination and the knowledge concerning the potential for investment and commercial activity in the region. Therefore, the event can attract more investment and visitors, and consequently create new jobs and contribute to the economic growth of the city or region” (Malfas et al 2004; Essex & Chalkley 1998). On the other hand, it is stated that the economic growth generated from mega-events may actually make the life of low-income residents more difficult, exacerbate social problems and intensify existing divides among residents. (Hall & Hodges 1998; Beaty 1999; Malfas et al 2004; Horin 1998, 1999). In addition, the created jobs are mostly part-time and low-paid (Migueléz & Carrasquer 1995; Malfas et al 2004; Schimmel 1995; Hiller 2000). An example of a positive impact in the socio-cultural category is that a mega-event could increase the local interest and participation in sporting activities (Ritchie 19984; Hooper 2001), and also, as claimed by several researchers, they can strengthen regional traditions and values, and increase local pride and community spirit (Malfas et al 2004; Essex & Chalkley 1998; Truño 1995; Stevens & Bevan 1999). Also in this category negative examples of mega-event
impacts exist. Security issues have taken on a higher profile as the need for effective crowd control. However, organizers need to be cautious to ensure that negative psychological impacts do not arise due to too much security. The history of removal of prostitutes and beggars, the homeless and protesters as well as the increased powers of police to detain suspects show the efforts of the organizers to show a good image, conveniently forgetting the civil liberties issues at stake (Malfas et al 2004). In the physical impact category are positive and negative impacts too. The host city of the event will often build new sporting facilities or restructure the existing ones. Furthermore, the event usually requires the construction of new roads and the development of the public transport network to ensure efficient transportation to the sporting venues during the event. In addition, infrastructural development that is not directly related to the event often takes place, such as leisure facilities, commercial centres and open spaces, which aim to improve the physical appearance of the host city or region (Malfas et al 2004). However, when infrastructure projects speed up, other public works can be delayed or displaced (Lenskyj 2000). It also has happened that temporarily venues were demolished after the event since they were not useful for the local community (Ruthheiser 2000). Finally, also in the last category, political impacts, both positive as negative impacts can be described. Harvey (1989) points out that local governments have become comparatively autonomous from central governments, and as a result, they have adopted less bureaucratic and more competitive practices. In addition, Malfas et al (2004) state that individuals can acquire sport-specific managerial experience, which can then be returned as a benefit to the sport administration of the host country. Moreover, the organization of complex events, which often requires business-like management, can improve the practices of the public administration. A negative impact is what Ritchie (1984) refers to as a micro-political factor. This applies to the desire of individuals to utilize the visibility offered by the involvement with an event with a view to enhancing their careers in both political and non-political arenas. Hence, the obtained know-how leaves the political arena for a non-political arena. Next to these impact categories of Malfas et al (2004) there are also different interpretations. An example is the linkage model of Hiller (1998). In this model three linkages are involved. “Forward linkages refer to the effects caused by the event itself. Backward linkages refer to the powerful background objectives, which justify or rationalize the event. Parallel linkages are side effects, which are residual to the event itself and not directly under the control of event organizers. This longitudinal approach also distinguishes between pre-event, event and post-event impacts so that unintended and unanticipated consequences can be identified” (Hiller 1998).

Conclusion
What can be concluded is that there are two sides to every coin. Malfas et al (2004) has demonstrated that nearly all the positive applications of the mega-events have also a negative side. They state “along with organizing a mega-events comes increased city awareness, economic development, job creation and urban regeneration but those have been witnessed along with high inflation, expensive housing, threats to civil liberties of certain groups, terrorist acts and even city defamation after revelations of bribery scandals.” Cashman (2002) states there is a growing contemporary awareness that a mega-event can have many positive and negative impacts on a host city and its environment. In order to minimize the negative impacts and optimize the positive impacts, it is important to integrate the mega-event in the urban regeneration plan or master plan from the early start on so the mega-event can be used as a tool for urban regeneration. In addition, Hiller (1998) concludes impact assessment ought to be part of every mega-event plan and mitigation plan to control adverse affects.
2.1.1 The Olympic Games

As shown in table 2.1, the Olympic Games belong to the mega-event category. The Games are considered one of the most important sporting events in the world. The tradition of organizing the Games once every four years is what makes the event extra special. Athletes and host cities have, in most cases, only one chance to profile themselves (Vrijaldenhoven 2006).

<table>
<thead>
<tr>
<th>Target type</th>
<th>Example</th>
<th>Market</th>
<th>Media interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mega-event</td>
<td>Expo, Olympics, World Cup</td>
<td>Global</td>
<td>Global TV</td>
</tr>
<tr>
<td>Special event</td>
<td>Grand prix, World Regional Sport</td>
<td>World Regional/National</td>
<td>International TV/ National TV</td>
</tr>
<tr>
<td>Hallmark event</td>
<td>National Sport events</td>
<td>National Regional</td>
<td>National TV</td>
</tr>
<tr>
<td>Community event</td>
<td>Rural town events</td>
<td>Regional/Local</td>
<td>Local TV</td>
</tr>
</tbody>
</table>

Cities all over the world want to host the Olympic Games to create a certain image and place themselves on the global map. “Just as individuals and new groups seek to redefine their identity, so too places, particularly de-industrialised cities (or groups of actors within them), seek to re-image the identity of place” (Gratton & Henry 2001). Hosting an Olympic Games has a significant impact on the host city and its community. From tangible infrastructure construction, such as competition venues and transport improvements, through to the evolution of the image of the host city, the event acts as a vehicle and catalyst which leaves a lasting mark on the city, host country and its people through its economic, urban, social or historic influence (IOC 2011).

Since Barcelona has used the 1992 Olympic Summer Games as a tool to regenerate the city and made an enormous success out of it, other host cities are trying to do the same. This is because the “Games provide opportunities to attract inward investment and encourage private-sector land development that are so important to the activity of urban regeneration” (Gold and Gold 2007). Yet, this has not always been the case.

The Olympic Games Through Time

The Games have undergone changes through time and Vrijaldenhoven (2006) has divided these changes in three periods of time.

**Age of Liberalism 1851 - 1914**

Global events came into fashion in the age of liberalism. The first Olympic Games were held at the end of the 19th century and were small in size, sometimes the Games were even part of the World Expo and not an event in itself. The cities that hosted global events in this era were mostly capital cities and many of them were industrial by nature. Though the goal of these cities was the same; to boost the city’s cultural and industrial assets. In very dense cities, granting the people more open space was in many cases a secondary goal. Hence the events were held to either transform the city or to expand it. The locations were mainly good accessible by train and designed as a city park. In the early days of the Olympics the Games were often held on one separate site whereas nowadays it is usual to spread the venues across the city. The size of an Olympic site at that time was around 20 to 30 ha and most buildings were demolished after the Games left. Sometimes only the main stadium was left. The reason the Games were initially held was to bond people of different nationalities and cultures. Cities wanted to attract more tourists and the government had a small say in the events, even financially. Urban development was not a priori to the stakeholders and decisions about the post-use of the site were hardly discussed when planning the event.

**Age of World Wars 1914 – 1989**

In this era, the Olympic Games experienced a great increase in importance and popularity. From a part of the World Expo it turned into an event that every self-respecting city was eager to host. The cities that hosted the Games in this era were for two-third capital cities and national governments had a large say in the organization of the event. In the USA they were often used to
give the local economy a boost but global events were organized in this era for political reasons as well. Berlin 1936 and Moscow 1980 are examples of events in countries that were trying to show their enormous power to the world. In many cases though, the Olympics were organized to advocate sports in the country and to give culture a boost. Also changed was the type of strategic plan that was used. In this era there are numerous cases in which the event site was reused for a follow up global event. Also the site sizes increased in this era. In Seoul 1988 a site of 200 ha was made available for the Olympic Games. The financial impact of the Games was big in this period, in a negative way. Due to the cold international relations, everybody was trying to outdo each other. The stadiums had to be bigger every time and more advanced than ever. The stadium became a landmark for a city.

Age of Neo-liberalism 1989 – 2010

In this era, the Olympics kept on developing and are at this moment by far the most prestigious and popular event in the world. In addition, other cities than the capital cities have stepped up to organize global events. Still the industrial cities are trying to change their image by hosting a global event, like for instance Barcelona 1992. There is much more variation in the goals of hosting a global event though. Atlanta 1996 only hosted the Games for profit making while Barcelona 1992 used the Games to revitalize and transform the city. Yet money making became more and more important in this era. The degree of dedication from a city is high nowadays. Venues are spread across the city to improve the infrastructure etc. and the city will be a mess for a couple of years. However, the event can be seen as a catalyst of the strategic plan in this era. The event is just part of a bigger plan for transforming the city, implemented long before the event begins. Nevertheless, there are also cases in which the commercialisation caused investors to try so hard to make money out of an event that it irritated the public and did more harm than good, as in Atlanta 1996. When a neighbouring country has hosted an event the other city cannot stay behind and has to host an event as well. It seems a bit of a rat race, since long-term perspectives are neglected sometimes. Still, cities cannot host an event without the financial support of private investors anymore. Many cities start a public-private partnership before organizing the event.

It can be concluded that the Games have grown over the years into a spectacular mega-event. Also the motives of the hosting cities have changed over time and are nowadays, as Baim and Misch (2008) concluded, enhancing tourism; promoting more rapid infrastructure investment than would occur without the Olympics; promoting entrepreneurial goals; and gaining recognition as a global city or nation. In addition, funding became more and more important and governments are now often in a partnership with private companies in order to make the Games as (financially) feasible as possible.

The Olympic Venues

Also the Olympic venues have experienced a change; from temporary venues, being part of the World Expo, to venues all across town. The Oxford dictionary defines a venue as “the place where something happens, especially an organized event such as a concert, conference, or sports competition” (Oxford University Press 2011).

The Olympic venues and infrastructure are the visible parts of the Olympic legacy and leave their mark on the host city, in either a positive or a negative way. The next paragraph will elaborate on the Olympic legacy but first a clarification will be given on the venues and infrastructure needed to host the Olympic Games according the International Olympic Committee (IOC). The venues and infrastructure necessary according to the IOC (IOC 2011) are:

- Competition venues
- Olympic Village(s)
- Media accommodation (hotels/village(s))
- Main Press Centre
- International Broadcast Centre
- Main hotel area
- Main transport infrastructure (airport(s), motorways, train/tram/metro lines etc.)
The focus of this research will be on the post-use of the competition venues. Huijsmans (in Bakker 2009) categorized these facilities in the following way:

- Specific stadiums (Olympic Stadium, Football, Velodrome, etc.)
- Complexes (Hockey complex, Tennis complex, Aquatics centre, etc.)
- Indoor halls (Volleyball, Handball, Judo, etc.)
- Landscapes (Rowing, Marathon, Sailing, etc.)

The below mentioned venues are generally seen as main venues and are mostly being centralized in the Olympic Parks (VROM et al., 2008):

- Olympic Stadium (Athletics, opening and closing ceremony)
- Aquatics centre (Swimming, Diving, Water Polo and Synchronized Swimming)
- Velodrome (Track cycling)
- Indoor halls (Basketball, Handball, Volleyball, etc.)
- Olympic Village (Athletes housing)

The Olympic park is a sports campus for hosting the Olympic Games. Although not all Olympic host cities have centralized the venues at one site, it typically contains the Olympic Stadium and the International Broadcast Centre. In addition, sometimes the Olympic Village or some of the other sports venues, such as the aquatics centre are located in the Olympic park. The Olympic Park is part of the Olympic legacy and as such it may subsequently include an urban park and a museum of the games that are hosted there. The Olympic Village is not a competition venue but is necessary to house the athletes and will mostly, after the Games have left, house others like a new neighbourhood. Since the focus is on the competition venues and there is quite a time restriction to the research, the Olympic Stadium will be studied by means of a case study.

The Olympic Life Cycle

Another important aspect that is of importance is the life cycle of the Olympic Games. In the figure below (figure 2.2) the life cycle of the Olympic Games is shown in a schematic way.

![Figure 2.2 Life cycle Olympic Games](image)

The figure is based on literature of Cashman (2002) and the website of the IOC (2009). The first phase is the bidding phase. In this phase the procedure for the host city election is applied and ends with the host election by the IOC. In the second phase, the organization of the Games takes place. First the foundation planning and Games-wide organization, than the organizers evolve progressively through detailed plans for Games operations and finally organizers and stakeholders achieve full preparedness prior to commencement of Games operations. In the third phase, the Games are taking place and after the Games, the fourth phase begins, which is by far the one with the most years. It has been a neglected phase but is nowadays just as important (or even more important) as the other phases. Beijing 2008 included the Olympic legacy in the city’s master plan and London 2012 has started an entire legacy company to make sure the legacy is used after the Games have left town. It can be concluded that the organization of the Olympic Games takes several years and that the post-event phase exists of many years and has impact on the host city since the legacy of the Games can be used by the local community at that time.
Conclusion
It can be concluded that the Games have grown into a spectacular mega-event. The motives of the hosting cities have changed over time and are nowadays, as Baim and Misch (2008) concluded, enhancing tourism; promoting more rapid infrastructure investment than would occur without the Olympics; promoting entrepreneurial goals; and gaining recognition as a global city or nation. In addition, funding became more and more important and governments are now often in a partnership with private companies in order to make the Games as (financially) feasible as possible. The facilities necessary for the Olympic Games can be divided into seven categories. One of these categories is the category ‘competition venues’. Mostly these venues are, together with the Olympic Village, concentrated in the Olympic Park and exist out of the Olympic stadium, aquatics centre, velodrome and the indoor halls. The life cycle of the Olympic Games starts far before the event is held with the planning and organization of the event and ends decades after the Games have left town (or perhaps never) with the legacy of the Games.

2.2 OLYMPIC LEGACY
In this paragraph a clarification of the definition legacy will be provided. The IOC states “legacy is a concept that has gained importance over the past few years. Today no event, whatever its size and complexity can avoid a vision of its legacy. The Olympic Games integrate this concept from the early stages of the bid phase, encouraging the bid cities to develop a unique vision for the legacy of their Games. Legacy aspects are considered and part of the decision making process. The IOC monitors the legacy vision, its management and the post-Games effectiveness of it” (IOC 2011). From this statement it can be concluded that legacy is of great importance but it does not clarify its definition. What exactly is legacy and how can it be defined?

Definition
The Oxford dictionary defines legacy as “something left or handed down by a predecessor” (Oxford University Press 2011). In principal this is a right definition. The Games leave ‘something’ behind for the host city. However, what this ‘something’ is, is more difficult to grasp. Gold and Gold (2007) state, “legacy is being associated with impact, impact on physical and non-physical levels”. During the international symposium on Olympic legacy the IOC specified that “the effects of the legacy have many aspects and dimensions, ranging from the more commonly recognized aspects – architecture, urban planning, city marketing, sports infrastructures, economic and tourist development– to others that are just as, if not more, important but that are less recognized. In particular, it is necessary to point out the importance of so called intangible legacies, such as production of ideas and cultural values, intercultural and non-exclusionary experiences (based on gender, ethnicity or physical abilities), popular memory, education, archives, collective effort and voluntarism, new sport practitioners, notoriety on a global scale, experience and know-how” (IOC 2002). Preuss (2006) makes a distinction between positive and negative legacy (table 2.2):

<table>
<thead>
<tr>
<th>Positive legacy</th>
<th>Negative Legacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>- new event facilities,</td>
<td>- high construction costs,</td>
</tr>
<tr>
<td>- general infrastructure,</td>
<td>- investments in non needed structure,</td>
</tr>
<tr>
<td>- urban revival,</td>
<td>- indebtedness of public sector,</td>
</tr>
<tr>
<td>- international reputation,</td>
<td>- temporary crowding problems,</td>
</tr>
<tr>
<td>- increased tourism,</td>
<td>- loss of permanent visitors,</td>
</tr>
<tr>
<td>- improved public welfare,</td>
<td>- property rental increases,</td>
</tr>
<tr>
<td>- additional employment,</td>
<td>- only temporary increases in employment</td>
</tr>
<tr>
<td>- local business opportunities,</td>
<td>and business activities,</td>
</tr>
<tr>
<td>- corporate relocation,</td>
<td>- socially unjust displacement</td>
</tr>
<tr>
<td>- renewed community spirit,</td>
<td></td>
</tr>
<tr>
<td>- inter-regional cooperation,</td>
<td></td>
</tr>
<tr>
<td>- production of ideas and cultural values,</td>
<td></td>
</tr>
<tr>
<td>- popular memory,</td>
<td></td>
</tr>
<tr>
<td>- education, experience and know-how</td>
<td></td>
</tr>
</tbody>
</table>
Legacy Analysis

The by the IOC used terms tangible and intangible legacies are synonyms for the terms used by Gold and Gold (2007) namely, physical and non-physical impacts. These tangible and intangible legacies can be divided into several categories: economical impact, cultural considerations, social debate, sporting legacy, political legacy, spatial and environmental legacy and the value of Olympic education (IOC 2002; Chen et al, 2010; Preuss & Solberg 2006; Prooye 2010). In his research Bakker (2009) combines these categories and states legacy comprehends three different pillars, which are known as the social-cultural, financial-economic and physical-environmental pillar. Literature mostly describes and assesses legacy on these pillars as well (Preuss 2004; Gold and Gold 2007; Cashman 2002; Ritchie 2000) yet on different scales. Legacy in terms of financial – economic aspects grasps the sustainability of economic benefits in a long-term perspective, economic effects, which would not have occurred without the Games (Preuss 2004). The social-cultural pillar includes the legacy that is to be created on social and cultural aspects, like a higher level of public facilities and social housing (Cox et al, 1994), community cohesion (Ritchie 2000), experience and know-how (IOC 2002), and urban renewal and cultural inclusion (Roche 2000). The physical-environmental pillar encompasses the more tangible aspects within legacy creation. This means new infrastructure, accommodations/venues and urban space, which include large-scale urban renewal (Gold and Gold 2007; Roche 2000). Apart from these different pillars, Bakker (2009) distinguishes different scales. For each pillar the levels are slightly different interpreted. The spatial-environmental pillar comprehends the levels of country, city, area and building. The economical pillar focuses on economic scales being, (national) economy, city economy, local economy and business scale. For the last pillar, the social-cultural pillar distinguishes society, public, visitors, and users. The scales within the social–cultural pillar are the people and users of a city ranging from the city level to the building level.

![Legacy model (Bakker 2009)](image)

It can be concluded that the Olympic legacy can be anything created by or for the Games, in a positive or negative way. In all cases, the legacy is tangible or intangible and operates within the social-cultural, financial-economic and physical-environmental pillars and on different levels. According to Bakker (2009) good balance between these levels determines the success of the legacy creation. In figure 2.3 a schematic translation of this theory is presented. Bakker explains, "The legacy model displays the three pillars legacy contains. Legacy, as described, operates on multiple levels.

Comparable to Bakker (2009) is Adams (2006). Adams defines three dimensions, economic, social and environmental. Adams states these three dimensions are not in balance and shows the current situation and the change necessary in figure 2.4.
Next to the tangible, intangible, positive and negative legacy, Gratton and Preuss (2008) also distinguish planned and unplanned legacy. Legacy is then defined, “legacy is planned and unplanned, positive and negative, intangible and tangible structures created through a sport event that remain after the event” (Preuss 2006). Planned legacies are the developments, which are realized based on existing plans and policies. Unplanned legacy is interpreted as developments, which are not mentioned in previous plans and policies and are realized due to new chances created by the event. To this category another type of development can be added, namely: developments only built for the Olympics. Sometimes a host city chooses to develop structures specifically designed for the Olympic Games, the so-called ‘festival project plans’ (Preuss 2004). In this way hosts try to increase the chance of organizing the sporting event, but few take into account the spatial legacy (Preuss 2004). Since this research is focussing on the competition venues with an economic perspective on building level, the spatial – environmental pillar as well as the financial-economic pillar will be of relevance. It must be said that this is even though the intangible aspects and the social-cultural pillar have quite an impact as well. From this point on, tangible legacy will hence be referred to as legacy.

**Influential Aspects of Legacy**

Prooye (2010) in his research created a schematic model of the four aspects that may influence legacy, specified to the tangible legacy creation (figure 2.5). He based this model on the conceptual legacy model of Van Beek (Beek 2007). The aspects that may influence the legacy creation are the organisational structure, the investment structure, the host cities objectives and the national/regional state of affairs. By the organisational structure is meant the organisational structure of the Olympic Games, which is different every Games since every host is different but exists of a mix of Olympic Organising Committees, such as the International Olympic Committee (IOC), the National Organizing Committee (NOC) and the Organizing Committee Olympic Games (OCOG), governmental bodies and private parties (Prooye 2010). The investment structure of the Games also differs per host city. Sometimes the Games are more publicly funded while other Games are more privately funded (figure 2.6). This more or less depends on the objectives of the host city, which is the third aspect. Public parties will most likely fund the Games with mainly urban regeneration objectives for a great part. The national/regional state of affairs has influence on the legacy since they have influence on the strategies of the urban development plan. The same applies for the objectives. The latter two aspects hence are in
close relation with each other (Prooye 2010). As stated above, the stakeholders are related to the objectives of the host city for the Olympic development. To understand the motives behind organizing the Olympic Games, the initiatives within the whole network of stakeholders should be mapped. Solberg (2005) distinguishes the stakeholders, which have effect on the local event organizers in figure 2.7.

Figure 2.7 Local event organizer (Solberg 2005)

Prooye (2010) distinguishes the stakeholders into three categories; public, private and informal parties. Each stakeholder has its own motivation for participating the Olympic development and has its own means and resources available. The stakeholders that are considered public are the three governments (national/federal, regional/state and local/municipal), public enterprises and the Organizing Committee Olympic Games (Prooye 2010). The public parties have a large influence on the developments made, Olympic and non-Olympic, due to the fact that, in most cases, they invest more than the other stakeholders involved (Prooye 2010). The governmental stakeholder can play an active or a passive role. Active roles would include the stakeholder in developments, risks and financial responsibility. Passive roles would only put them around the negotiation table to support public-private partnerships (Prooye 2010).

The second category is the private party group. This group includes the local businesses, the sponsors and the Organizing Committee Olympic Games. The local businesses are interested in the economical impact the Olympics has on the city and region (Prooye 2010). The corporate sponsors have connections on the national and global market and are divided into three groups, which are in order of most to least commercial rights; The Olympic Program (TOP) sponsors, the Olympic Partners and the national NOC sponsors (Prooye 2010). In some cases, as stated above, the Organizing Committee Olympic Games is founded as a private body. One main characteristic of a private Organizing Committee Olympic Games is that the state does not financially guarantee the organization or will only do so to a certain point. They will then have to find their funding from private investors (Prooye 2010).

An informal party is a term that is devised for the parties that are involved in Olympic development, but cannot be categorized in private or public. These are the media, the international federations (IF), the tourists or visitors and the civic society (Prooye 2010). The international federations are the most influential in this group of sport organizations (Prooye 2010). The leading body in the international federations is the IOC, the juridical owner of the event (Solberg, 2005). Also the national Governing Bodies of Sport and the NOC’s are ordered in this group. They are all responsible for the sports side of the Olympic event (Prooye 2010).

The British Property Federation & Urban Land Institute (2007) state, “a clear governance structure is required to deliver a viable physical legacy”. By governance structure they mean the
organizational structure of the Olympic Games (Prooye 2010). The organizational structure consists of a mix of Olympic Organizing Committees, such as the IOC, NOC and the Organizing Committee Olympic Games, the three levels of governmental bodies and parties from the private sector. The mix however, differs every time the Games are held due to the fact that every host city is unique (Prooye 2010).

Conclusion

It can be concluded that the Olympic legacy can be anything created by or for the Games, in either a positive or negative way. In all cases, the legacies are tangible or intangible, planned or unplanned and operate within several categories, namely economical impact, cultural considerations, social debate, sporting legacy, political legacy, spatial and environmental legacy and the value of Olympic education. Bakker (2009) have combined these categories in three pillars, the social-cultural, financial-economic and physical-environmental pillars, and on different levels. The degree of balance between the three pillars determines the successfulness of the legacy. Adams (2006) defines a comparable theory (figure 2.4). In the general context and adjusted to the relevancies of this research report legacy can be defined as:

*Legacy, in the tangible, physical-environmental pillar, is the positive and negative implication and effect of planned and unplanned development realised to host the Olympic Games on the host city.*

In the literature it is expected that whenever Olympic developments are connected with the existing plans and policies, the legacy will have a more positive impact on the host city. The analysis of this research will ultimately reveal whether this is indeed the case. In addition, Prooye (2010) defined the influential aspects of legacy, namely organisational structure, the investment structure, the host cities objectives, the national/regional state of affairs and the stakeholders involved. Since legacy is a now defined term, it is time to focus on the aspect of legacy this research concentrates on, namely post-use.

2.3 POST-USE

As mentioned in the previous paragraph, Bakker (2009) states that the degree of balance of the social-cultural, financial-economic and physical-environmental pillars determines the degree of success of the legacy. This degree of success lies within whether or not the legacy is usable for the local community. Since this research concentrates on the tangible aspects of legacy and the competition venues of the Olympic Games, this actually means if post-use of the venues of the Olympic Park is possible. The existence of ‘white elephants’ proves that post-use is not possible in all cases. "A `white elephant' is a facility that is built at great cost and after its initial use for a particular event becomes less and less used and therefore the cost of it out-scales what it gives back to society" (Barney in Mathieu 2010). But what is the reason these ‘white elephants’ occur? Cashman (1998) stated “the post-Games period is by far the longest; it stretches for decades after the Games. However, it is clearly the least-planned period.” This statement is quite out-dated yet it does make a point. As mentioned before, Chen and Spaans (2009) state, the greatest challenge of the host city is not to fast-track Olympic venue development under time pressure, but what longer-term goals can be achieved and sustained after the Games leave town. For example, host cities are forced to build state-of-the-art venues, many for sports that are popular only during the Games. When the Games leave town, these venues often are barely used or attract crowds that fill only a fraction of the seats. For the Summer Olympics, a city must build a main stadium that tends to seat between 70,000 and 110,000 people. When these stadiums have no primary tenant after the Games, they cost cities millions of dollars every year in maintenance (Cummings 2009). It can be concluded that the post-use of these venues should be planned carefully from the initiative phase of the bid on. But which aspects are important to take in to consideration when discussing the post-use of sport facilities? In the next subparagraphs, different aspects of post-use on city, area and building level will be elaborated. Later on, the selected cases will be assessed on these aspects.
2.3.1 Post-Use Creation on City Level

The context of the sport facility is of influence to the post-use of this facility in certain ways. The developments start at city level and decisions made here, effect the developments at the other levels. The degree in which the developments match the urban regeneration plan of the city determines the success of the development in the long term. The involved stakeholders will have different objectives and hence different priorities. This can influence the urban planning factor described before. However, in the end, the social costs and benefits of the inhabitants of the host city will determine a great part of the success of organizing the event. In this subparagraph the urban planning factor, the stakeholders involved and the social costs and benefits will be discussed.

Urban planning

The factor urban planning is important for the post-use because it shows whether the Olympic developments are part of a greater plan. As stated before, “Olympic developments should connect to emerging developments or be part of city planning projects to function as a catalyst instead of being a starting point for new development” (VROM et al., 2008). Urban planning is about organizing the city for optimum use by its users. By choosing a different direction for Olympic developments this optimum use is compromised (Bakker 2009). In other words, are the developments planned and hence are they connected to the long-term perspectives of the host’s urban regeneration plan? It is believed that whenever Olympic developments are connected with the existing plans and policies, they will have a more positive impact on the host city.

Stakeholders and organisation

As stated before, the stakeholders involved in the Olympic development are of great influence to the outcome of this Olympic development. By defining the stakeholders, their objectives and the used organisational structure, a better insight in the development is provided. Stakeholders all have different motivations, means and resources and hence need to be able to cooperate well with each other as a clear structure is required to deliver a viable physical legacy (The British Property Federation & Urban Land Institute 2007). The organisational structure consists of a mix of Olympic Organizing Committees, such as the IOC, NOC and the Organizing Committee Olympic Games, the three levels of governmental bodies and parties from the private sector. The mix however, differs every time the Games are held due to the fact that no host city is the same. The factors, which influence the organisational structure, are mainly the development model the nation or region is used to and the means by which the government wants to achieve its objectives (Prooye 2010). This depends on a nation’s culture and tradition as every nation uses different methods and partnerships, which are adapted to their practice to achieve certain developments (Prooye 2010).

Social costs and benefits

Organising an event like the Olympic Games has a major impact on the host city. These impacts are not only the physical ones. In terms of social impacts of mega-events, one can make a distinction between infrastructural and non-infrastructure, tangible and intangible, or “hard” and “soft” impacts (Minneart 2011). The social costs and benefits are the impacts that influence the lives of the inhabitants of the host city, and in the end, determine if they look back on hosting the Games in a positive or a negative way. Host cities focus on tangible legacy gains like new amenities, enhanced city spaces, new types of land use, and improved infrastructure (LERI 2007; Minnaert 2011). Although the regeneration of urban areas often serves the economic goals of attracting new investment and stimulating the local economy, there are associated social benefits. New sporting infrastructure may improve access to sport; Olympic housing developments may later be used as affordable housing units; and the redevelopment of neglected areas may increase feelings of safety and local pride (Minneart 2011). The Olympics can also be an opportunity to enhance and broaden the profile of the city, and to showcase the city as an attractive place for investment (Hiller 2006). The same applies for tourism. Due to the media attention belonging to hosting the Games, the host city is put on the world map, in either a positive or a negative way. The Olympic Games, being an example in
relation to globalization processes (Weed 2008), can attract businesses and tourists form all over the world. The existence of the generally positive perception of the Olympic Games is certainly a key global contextual influence on travel and business flows to Olympic host cities (Weed 2008). An obvious strategy is to build on both the Olympic Games themselves and the range of sports and cultural events that have been developed in the pre-Games period to develop a continuing portfolio of events. The reward of such an approach is a range of sports and cultural events in the host city in the post-Games period (Weed 2008), putting the host city on the global map as well.

Less noticeable are the non-infrastructural, intangible, impacts of mega sporting events. These impacts are more difficult to record and measure but can be divided in different categories, namely impacts relating to individuals, impacts relating to the community and impacts on the image, status and sense of place (Minnaert 2011).

Sporting events have been linked to individual health improvements via increased sport participation, promoting healthy living, improved physical health and interest in Olympic sport (Haynes 2001; Smith 2009; Minnaert 2011). The same applies to the link between mega sporting events and mental health benefits for the host community members. These benefits are placed within the realm of self-esteem, confidence and well-being (LERI 2007; Smith 2009; Minnaert 2011). In addition, mega-events can be seen as opportunities for developing individual skills and increasing employability. The impacts related to these opportunities are skills, employment opportunities, experience of work, employment prospects, and encouraging volunteering (Smith 2009; Minnaert 2011). Finally, events can provide opportunities to extend personal networks and strengthen communication links, which may help the individual (LERI 2007). An increase in this so-called social capital can also strengthen communities.

The impacts relating to the community are referring to improved links and cooperation, like community cohesion (an outcome of increased social capital), community buy-in, co-operative entrepreneurship, social inclusion, social integration, reinforcing collective identities, uniting people, social interaction, and increased social and cultural understanding (LERI 2007; Smith 2009; Minnaert 2011).

Finally, there are impacts on the image, status and sense of place. This is a social impact due to the positive impact it has on the local residents. Gu and Ryan (2007) underline the role of place attachment for self-esteem and personal growth, such as pride of place, civic pride, sense of spectacle, atmosphere, nationalism, patriotism, feel-good factor, reputation and image and status (Hiller 2006; LERI 2007; Smith 2009; Minnaert 2011). In the table below, the possible social benefits of hosting the Games are summed (Table 2.3).

Table 2.3 Possible social benefits

<table>
<thead>
<tr>
<th>New amenities</th>
<th>City marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved infrastructure</td>
<td>Portfolio and venues for hosting events</td>
</tr>
<tr>
<td>Enhanced public open space</td>
<td>Increase in physical and mental health</td>
</tr>
<tr>
<td>Increase in sport participation</td>
<td>Increase in skills and employment</td>
</tr>
<tr>
<td>Increase in affordable housing</td>
<td>Community cohesion</td>
</tr>
<tr>
<td>Redevelopment of neglected areas</td>
<td>Attract businesses and tourists</td>
</tr>
<tr>
<td>Increase in feeling safety</td>
<td>Cultural understanding</td>
</tr>
</tbody>
</table>

For some groups however, the impacts of hosting the Olympic Games may be negative, for instance via reduced community structures or an inflation of the housing market, which may force people who do not own their homes to move (Minnaert 2011). Olympic housing is often built to high standards to accommodate athletes and the media. Due to the pressure to be sold at high market value to pay for the construction costs and make a profit (Minnaert 2011) it is difficult for low-income groups to reach this kind of housing, which means a decrease in housing accessibility. “After-use might shift to persons of higher income rather than the provision of housing for low-income persons” (Hiller 2006). The Olympic Games impacts real estate values and these changes lead to displacements, evictions, marginalization in the housing sector, loss of
single family homes, increasing demands on shelters, and transformations of the lower income housing stock into short-term rentals (Wynsberge 2008). Another negative impact of hosting the Games is the possibility of rising prices in the city during the Games and, more importantly them remaining high afterwards. Preuss (1998) states that theoretically, price increases are caused by three reasons: first, the Games-related demand exceeds supply. Second, there are Games-related speculations and third, there is a general inflation. The reason for price increases is not always obvious. Games-related speculations mainly concentrate on the acquisition of real estate and the short-term renting of flats (Preuss 1998). “It must be distinguished whether a price increase (index increase) is due to a Games-related increase in demand or to the general inflation. With comparing the consumer price index (CPI) and the rents to the corresponding indices of the country and other major cities, differences become obvious” (Preuss 1998). In his research Preuss (1998) found that the price index would only rise in sectors with a very high demand. Those sectors will not affect the citizens by influencing the CPI or rent price index. Hence in most cases there will not be a long lasting increase in price and rent index. Finally, a negative impact of hosting the Games is the so-called over-indebtedness of the host city. However, according to Preuss (1998) it can be stated, in general, “a real over-indebtedness of a host city is only to be feared if extensive investments in the infrastructure are required. A host city receives a large sum of autonomous means when hosting the Games, which it could use for structural changes” (Preuss 1998). In the table below (table 2.4) an overview of the negative impacts of hosting the Games is provided. It can be concluded that hosting the Games includes possible (economically) negative effects but even more positive chances to offer to the city.

<table>
<thead>
<tr>
<th>Possible Social Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease in housing accessibility</td>
</tr>
<tr>
<td>Increasing CPI index</td>
</tr>
<tr>
<td>Displacement of housing</td>
</tr>
<tr>
<td>Increasing rent index</td>
</tr>
<tr>
<td>Eviction of people</td>
</tr>
<tr>
<td>Over-indebtedness</td>
</tr>
<tr>
<td>Marginalization in the housing sector</td>
</tr>
<tr>
<td>Loss of single family homes</td>
</tr>
<tr>
<td>Increasing demand on homeless shelters</td>
</tr>
<tr>
<td>Transformation to short-term rentals</td>
</tr>
</tbody>
</table>

2.3.2 Post-Use Creation on Area Level
Besides the aspects of post-use creation on building level, which will be discussed in the next subparagraph, some other factors also play a role in the post-use of the Olympic Park, the context of the sport facility. These factors are similar to the ones Bakker (2009) selected to assess legacy creation and are at area level. The factors delivering vitality and liveliness in urban area developments, such as the Olympic Park, are; mobility, routing and program (Bakker 2009). Bakker states that without this liveliness and vitality, no successful legacy will be created and hence there will be no post-use of the venues. In other words, the level of use, economic performance and environmental performance after the Games should be combined in an integrated way, which gives an indication of the level of activity that takes place, the role in the environment and the economic importance of the accommodation. This can be called the level of vitality (Bakker 2009). In addition, the catchment area of the sport facility is added to the aspects of post-use creation on area level.

Mobility
Mobility is the factor that determines the accessibility of and travel time to the Olympic Park. Accessibility and travel time have effect on the performance of a certain area (Trip 2007). When the distance between the city centre and the Olympic Park is too long or the travel time between them too high, there is a lower chance of users or mixed users of the Olympic Park and hence of the venues it contains. The livability of the area becomes low when the area is underused, a consequence of a low mobility factor. For the liveliness of the area it is therefore important that the area is used and hence well accessible.
Routing
The factor routing suggests that the location should be part of a certain route through a city, and not be the end of this route. In the case of the Olympic Park, the Park needs to be on the route of as many people as possible who are going from A to B in their city. When the park would be at the end of the route, people have to especially go to the park. “Badly connected areas and accommodations raise the barrier for potential users” (Bakker 2009). With this factor, the same applies as with the mobility factor. Without the area being part of a certain route, the liveliness and livability of the area is low.

Program
With program is meant the kind of functions, which are present on area level. Trip (2007) states a mix of functions is desired to generate use and liveliness on different times through a normal day. In order to attract a mix of visitors, an area should offer multiple functions. By creating multiple functions in the area, more visitors will be attracted to the area and they will visit it at different times of the day, creating liveliness throughout the day, and even night.

Catchment area
One of the most influential factors of the feasibility of sport facilities is the size and potential of the catchment area (Westerbeek et al., 2005). The catchment area is the area and population from which the facility attracts visitors or customers. The catchment area of the Olympic Stadium during the Games is worldwide, however, more importantly is the catchment area of the stadium after the Games are over. This catchment area is mainly determined by the distance and, more important, the time visitors are willing to travel to the facility by car and by public transport. In other words, the accessibility of the facility is an important factor when defining the catchment area. In the Netherlands research is done to the catchment areas of different soccer clubs in the premier league by Dejonghe et al. (2006). In this research the visitors with a season ticket, approximately one third of the supporters, are used to define the catchment areas. The results of the top three clubs in the Netherlands will be discussed. These are Ajax (Amsterdam), Feyenoord (Rotterdam) and PSV (Eindhoven) (Dejonghe et al., 2006). The supporters of Ajax and Feyenoord are divided over the country as where PSV supporters are more regional. However, an absolute majority of the supporters of Ajax and Feyenoord are also from the region (figure 2.8 and table 2.5).

![Figure 2.8 Catchment area of Ajax, Feyenoord and PSV (based on Dejonghe et al., 2006)](image)

<table>
<thead>
<tr>
<th>County</th>
<th>Ajax</th>
<th>Feyenoord</th>
<th>PSV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zuid-Holland</td>
<td>7,632</td>
<td>30,542</td>
<td>Not regional</td>
</tr>
<tr>
<td>Noord-Holland</td>
<td>25,817</td>
<td>Not regional</td>
<td>Not regional</td>
</tr>
<tr>
<td>Noord-Brabant</td>
<td>Not regional</td>
<td>3,100</td>
<td>28,746</td>
</tr>
<tr>
<td>Total supporters</td>
<td>49,066</td>
<td>41,366</td>
<td>32,848</td>
</tr>
</tbody>
</table>

In their book, Dejonghe et al. (2006) provided the dispersion of supporters by city. The average travel distance and time to these cities is determined for each of the clubs. In the Appendix (B),
the calculations of the average travel time and distance are showed. The table below (table 2.6) provides an overview of the clubs together.

Table 2.6 Average travel distance and time (based on Dejonghe et al., 2006)

<table>
<thead>
<tr>
<th></th>
<th>Ajax</th>
<th>Feyenoord</th>
<th>PSV</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Travel distance by car</strong></td>
<td>53.7 km</td>
<td>32.3 km</td>
<td>40.1 km</td>
<td>42 km</td>
</tr>
<tr>
<td><strong>Travel time by car</strong></td>
<td>44 min</td>
<td>30 min</td>
<td>34 min</td>
<td>36 min</td>
</tr>
<tr>
<td><strong>Travel time by public transport</strong></td>
<td>57 min</td>
<td>60 min</td>
<td>58 min</td>
<td>58 min</td>
</tr>
<tr>
<td><strong>Travel distance as the crow flies</strong></td>
<td>43 km</td>
<td>26 km</td>
<td>33 km</td>
<td>34 km</td>
</tr>
</tbody>
</table>

It can be concluded that the average distance visitors of the different soccer clubs in the Netherlands are willing to travel is 42 kilometres by car. The average time they are willing to spend on traveling to the stadium is 36 minutes by car and 58 minutes by public transport. The average travel distance as the crow flies is 34 km. Feehan et al. (2003) did a comparable study in the United Kingdom. Their paper sheds light on the sign of the income elasticity using a cross-sectional travel cost methodology applied to fan survey data from the English Premiership in 1998/1999. They divided the catchment area of each club into concentric rings defined at 3-mile (±5 km) radial intervals as the crow flies until the zones cover an area of 21 miles (±35 km) as the crow flies. The cut off point of 21 miles (±35 km) permits 74% of fan responses to be included in their analysis (Feehan et al., 2003). The reason for analysing demand within a ring structure is that the population within each ring will have approximately equal travel costs (Feehan et al., 2003). The analysis suggests that soccer supporters are drawn disproportionately from upper-income groups. However, from the results, ticket price may not be the most telling deterrent to attendance by lower-income groups. It may be because poorer people, living in outlying areas of a club’s catchment area, either cannot afford the relevant travel costs to a soccer game (these will account for a high proportion of the generalized cost) or public transport arrangements may not be convenient from such locations (Feehan et al., 2003).

It can be concluded that the in the United Kingdom the catchment area of the premier league soccer clubs can be defined within a radius of 35 km as the crow flies. When comparing these figures with the figures from the Dutch study, there is only a small difference of 1 km. It can therefore be assumed that the catchment area of a stadium is defined within a radius of 35 km as the crow flies. In addition, it is important for the stadium to be well accessible, by car and by public transport.

**Competition & Demand**

The existing population of the catchment area in which the facility is placed determines the demand (Westerbeek et al., 2005). The demographic characteristics of the population are important. A younger and mixed population will visit the sport facility more often than a population of merely elderly people. In addition, the demand for sport facilities is driven by the growth in the number, size, type and attendance at sports events (Westerbeek et al., 2005). In Europe, for example, the majority of the stadiums need to accommodate the needs of the principal spectator sport, soccer. The principal spectator sport will attract the most spectators (Westerbeek et al., 2005). Next to the attractiveness of sports, like soccer in Europe, the intensity of competition should be examined (Westerbeek et al., 2005). For the example, the number of soccer teams and their location give a first impression of the intensity of competition. Melbourne hosts two soccer clubs and has approximately 3.7 million inhabitants, which means that there, in theory, should be sufficient consumers for two soccer clubs (Westerbeek et al., 2005). Demand is also affected by the amount and quality of other facilities offering the same product(s) in the area. This competition may even go beyond the same goods or services. Alternative leisure, recreational, and sporting activities also need to be considered (Westerbeek et al., 2005).

It can be concluded that the population of the catchment area of a sport facility should not exists out of merely elderly people but of a mix of adults and children. The principal spectator sport determines the demand of the facility as well. If the facility accommodates this principal spectator sport the demand will likely be much higher. Another factor that determines the demand of the
catchment area is the level and quality of the competition. Less competition means more demand.

**Location**

Important when considering the facility’s potential customers, as stated above, is its geographic catchment. Aspects like location, climate and transport have their effect on the facility (Westerbeek *et al.*, 2005). The location of the facility is an aspect that has a lot of impact on the perceptions from the occupants and customers of the facility such as how to get there, visual attractiveness of surroundings, availability of essential services and costs of construction and maintenance (Westerbeek *et al.*, 2005). The first question location consideration poses is how people will get there. City locations offer the benefit of existing and extensive transport infrastructure, but the downside is the heavy traffic and congestion common to ‘downtown’ city areas. The access with public transport is often of excellent quality whereas access by car requires extensive parking areas, while land is scare in the city (Westerbeek *et al.*, 2005). Suburban or country locations are on the other hand well accessible by car but not by public transportation. The emphasis needs to be on issues of traffic, such as travel time, access to transport systems, willingness to travel, and transport capacity considerations related to the size of the catchment areas the facility serves (Westerbeek *et al.*, 2005). In addition, one can assume that the closer a facility is to the largest cluster of potential users (the central business district) the higher the cost of the land to be built on and the more expensive the leasing of existing facilities (Westerbeek *et al.*, 2005; Geltner *et al.*, 2007). As stated above, the climate of the location has influence on the facility as well. The constant humidity in the South would require the incorporation of cooling systems and a roof covering all the seats, given the frequent tropical thunderstorms. In the North on the other hand, the likelihood of freezing winters might suggest the inclusion of a retractable roof and heating systems (Westerbeek *et al.*, 2005).

It can be concluded that the location is of great influence on the possibilities of the stadium. A choice has to be made between countryside and city centre, each with their advantages and disadvantages. In both cases however, the emphasis needs to be on issues of traffic, such as travel time, access to transport systems, willingness to travel, and transport capacity, which in the end, determine the catchment area. In order for the stadium to compete with its components, the stadium should offer a high service quality. It can be assumed that by adjusting the stadium to the climate of the location, this service quality is enhanced.

**2.3.3 Post-Use Creation on Building Level**

The previous subparagraph makes it clear that the context of a building is of great influence on the post-use of this building. However, there are also aspects on building level that have influence on the post-use of the venue. Without taking these aspects in to consideration, finding a suitable post-use is more difficult. The aspects that are believed to enhance the post-use on building level are the adjustability of the stadium, architectural value, function, organisation and finance. The selected cases will be assessed on these aspects during the case study.

**Adjustability of the Stadium**

As stated before, not all Olympic sports are equally popular and most host cities are not able to fill the seats of the stadiums after the Games. “One of the key reasons why facilities are often left to deteriorate, unable to attract investment or alternative tenants, is because the venues were not designed with another use in mind and so they are difficult to adapt, not aided by the use of permanent construction methods” (Swaddle 2010). Adjustability comes in many forms. In the past it focused on the changeable, on movable partitions and variation in the internal layout (Leupen 2006). Present studies however, focus on the permanent. This is the durable component of the building, the frame within which the change can take place (Leupen 2006). In addition, Priemus distinguishes three categories, adjustability by moving, through alteration and through use. The second category, adjustability through alteration is divided in three subcategories of which the first one is interesting for this research, the ability to expand or shrink, in other words, the ability to alter the size of the building (Priemus in Leupen 2006). This is also referred to as spatial adjustability (Van Elsdonk and Fassbinder in Leupen 2006). Additionally, Hertzberger states that adjustability can mean the capacity of a building’s interior to adapt but that the term
also is used to show that a building can be extended without difficulty (Hertzberger in Leupen et al., 2005). With adjustability is meant a ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland Commission in Leupen et al., 2005). The degree of adjustability of the stadium is what makes the difference between a usable building and a ‘white elephant’. A good example of an adjustable Olympic stadium is Atlanta 1996. As there was a smaller athletics stadium nearby, after 1996 the Centennial Olympic Stadium became Turner Field baseball stadium, home to the Atlanta Braves, a conversion organized and funded before the Olympics (Swaddle 2010; Cummings 2009). The same applies for other Olympic facilities of Atlanta 1996, which are managed by the university for their sports programmes and student housing. Another form of adjustability is redevelopment. Rather than maintaining the sport function, many venues raise investment by planning commercial redevelopment after the Olympics. For example, there are plans to turn the Olympic stadium of Beijing 2008 into a shopping centre/entertaining complex, which may prove very popular (Barney in Mathieu 2010; Swaddle 2010). In addition, London 2012 has build a new stadium but is able to remove the top ring to reduce the amount of seats after the Games, making post-use as attractive as possible. This is also a form of adjustability. Another way of limiting the chance of ‘white elephants’ is to make use of existing buildings as much as possible. Renovation and extension of buildings saves the need for new venues. In order for a new stadium to be used by next generations, it is important to use durable materials that endure time.

Architectural Value
Next to adjusting the stadium design, the design of the facility should be localized. Localizing the design of a new facility will greatly enhance the architectural identity of the place and will put the venue on the map. Localizing a facility design can be achieved by the use of unique design elements reflecting the character of the city or country. Used as a promotional tool, a strong architectural identity can facilitate media coverage, local community pride and international attention (Westerbeek et al., 2005). In addition, it can contribute to the development of tourism and business. The design of the facility should be usable for television or photographic purposes and stimulate multi-purpose use.

Function
The post-use of sport facilities is dependent upon many aspects. One of those aspects is the amount of functions the venue can accommodate. A multi-functional building will have a better chance to be used than a mono-functional building. In addition, a facility, which can be used for a variety of events, like business conferences, one-off tourist events or other major events are more likely to attract visitors from other geographic regions (Westerbeek et al., 2005). These spend money on such items as lodging, transport, food and beverages, and merchandise, increasing the economic growth of the city. Without the multi-functional purpose the chance of the stadium becoming a ‘white elephant’ increases.

Organisation & Finance
Each organization possesses its own unique purpose and attempts to measure its success by the achievement of its goals, regardless the nature of involvement in sports or events (Westerbeek et al., 2005). According to Westerbeek et al. (2005) these goals are achieved through an ongoing interaction with the organization’s general and specific macro-environment. In their book Managing Sport Facilities and Major Events, they illustrate the concept of effective sport management by using the figure below (figure 2.9).
They explain this effective sport management by “each organization (within the orange area) obtaining and utilizing inputs from its environment, and implementing systems (referred to as conversion processes or throughputs) to produce and discharge outputs (services and short-term objectives) and outcomes (impacts and long-term aims) into the environment” (Westerbeek et al., 2005). According to Westerbeek et al. (2005), this figure is increasingly being used to understand the many complexities of sport facility and event management performance measurement. “It can be seen that each sport organization operates in an open systems environment, with each external and internal subsystem dynamically influencing one another” (Westerbeek et al., 2005). Organizations need to clearly identify their priorities, as well as the inputs and processes they have most control over, if they are to fulfill their performance requirements. In particular, this means identifying the key drivers of project success. Westerbeek et al. (2005) summarized this according to the project management literature in figure 2.10.

The outer ring in figure 2.10 represents some of the key influences on the decision makers; the inner ring identifies the golden triangle or project drivers for successful management, the essential and critical performance measures of quality, cost (human or financial) and time (Westerbeek et al., 2005). Westerbeek et al. (2005) state that when interpreting this model from a sport event or venue management perspective, it is argued that each project or subproject needs to establish its goals and key performance requirements from the outset. Dependent on the unique demands of the project, the individual stakeholder perspective and the lifecycle development phase, one of the project drivers is likely to dominate management actions and become the primary limiting factor for success (Westerbeek et al., 2005).
In order to be able to make any statements about the financial part of managing a stadium, interviews are conducted with the management of two stadiums from the Netherlands. These are Stadium Feijenoord Rotterdam and Philips Stadium Eindhoven (figure 2.11). Both stadiums host football matches of respectively Feyenoord Rotterdam and PSV Eindhoven but are used for other events as well. However, quite some differences are found between the stadiums when management is concerned.

In Rotterdam, Stadion Feijenoord N.V. manages Stadium Feijenoord and football club Feyenoord rents the stadium for their home matches. Revenues from ticket sales, season tickets, skybox rentals, business seats, media rights, sponsorship and merchandising are hence for football club Feyenoord. The revenues from the rent, restaurants and security on the other hand are for the stadium (Goedhart 2012). In the figure below the income division of Stadion Feijenoord N.V. is shown (figure 2.12).

The football matches and the catering of food and beverages together form 80% of the stadium’s income. It must be stated however, that events other than the football matches are necessary to operate the stadium profitably (Goedhart 2012). The income of catering can be subdivided in two categories (figure 2.13). The stadium has, next to the bars inside the stadium, a restaurant, which is open during the week for the public.
Figure 2.13 Catering income division Stadion Feijenoord N.V. (Goedhart 2012)

This restaurant and the congress centre of the stadium together provide 35\% of the catering income. This means that 65\% of the catering income originates from food and beverages sold during matches or other events (Goedhart 2012).

In Eindhoven, PSV N.V., which is the organisation of the PSV football club, manages the stadium and hence the football club owns the stadium (Markvoort 2012). All revenues from the stadium are for PSV N.V., which has no separation in its accounts (for the stadium and the football club). A catering company arranges the catering during the matches and other events and PSV receives a fee for the sold food and beverages (Markvoort 2012). Other events are necessary to profitably manage PSV. Markvoort (2012) states the number of events necessary depends on the results of the football club. If PSV for instance plays in the Champions League, a lot of money is earned and fewer events are necessary, if they do not play in the Champions League, more events are necessary to cover the expenses.

It can be concluded that through applying the lifecycle concept and systems theory it is possible to simplify the reality experience and be able to manage the relationship between inputs and performance outputs or outcomes at any particular moment. Whereas lifecycle analysis highlights the important link between the present and the future, systems analysis provides the more immediate micro management focus on the key drivers of operational success. In addition, Westerbeek et al. (2005) stress that in the case of effective and efficient sport facility or event management, the key to success, regardless of project scale and scope, could be said to be dependent on balancing the constraints of quality, cost and time within the unique and complex environmental demands of both internal and external political pressures.

The two Dutch stadiums show that there are multiple methods to operate a stadium and that different forms of ownership can apply. However, it is crystal clear that events other than the football matches are necessary to successfully operate a stadium, financially seen. It can hence be concluded that multi-functionality is an important aspect of a stadium.

2.3.4 Conclusion

In this paragraph the aspects of post-use creation on city, area and building level are discussed. It can be concluded that the post-use of the Olympic venues should be planned carefully from the initiative phase of the bid on and that success lies within if the legacy is usable for the local community. By examining the mentioned aspects of post-use creation, the case studies can be assessed and lessons can be drawn. On city level it is believed that whenever Olympic developments are connected with the existing plans and policies, and hence the long-term perspectives of the city, they will have a more positive impact on the host city and that the stakeholders involved in the Olympic development are of great influence to the outcome of this Olympic development. By defining the stakeholders, their objectives and the used organizational structure, a better insight in the development can be provided. In addition, the social costs and benefits of the Olympic development are of importance to the post-use of the Olympic legacy on
city level. The social costs and benefits are the impacts that influence the lives of the inhabitants of the host city, and in the end, determine if they look back on hosting the Games in a positive or a negative way.

On area level the mobility, routing and program factor play an important role in the livability of the area. Accessibility and travel time have effect on the performance of a certain area and for the liveliness of the area it is therefore important that the area is used and hence well accessible. The same applies for routing and program. If the area is not on a daily route and/or there is only one function in the area, the use of the area will be low and hence so will be the livability of the area. Next to these aspects, the catchment area of the area determines the geographical region from which the users of the area are coming from. It can be assumed that the catchment area of a (football) stadium is defined within a radius of 35 km as the crow flies. In addition, the population of the catchment area of a sport facility should not exist out of merely elderly people but of a mix of adults and children. The principal spectator sport determines the demand of the facility as well. If the facility accommodates this principal spectator sport the demand will likely be much higher. Another factor that determines the demand of the catchment area is the level and quality of the competition. Less competition means more demand.

On building level, the degree of adjustability of the stadium determines if the stadium can be used by different functions in the future. With adjustability is meant a ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland Commission in Leupen et al, 2005). The degree of adjustability of the stadium is hence what makes the difference between a useable building and a white elephant. Next to adjusting the stadium design, the design of the facility should be of architectural value. Localizing the design of a new facility will greatly enhance the architectural identity of the place and will put the venue on the map. In addition, the function of the stadium is essential. A multi-functional building will have a better chance to be used than a mono-functional building. In addition, a facility, which can be used for a variety of events, like business conferences, one-off tourist events or other major events are more likely to attract visitors from other geographic regions (Westerbeek et al., 2005). These spend money on such items as lodging, transport, food and beverages, and merchandise, increasing the economic growth of the city. The last aspect of post-use creation is the organization and finance of the building. It can be concluded that in the case of effective and efficient sport facility or event management, the key to success, regardless of project scale and scope, could be said to be dependent on balancing the constraints of quality, cost and time within the unique and complex environmental demands of both internal and external political pressures (Westerbeek et al., 2005). In addition, it is crystal clear that events other than the football matches are necessary to successfully operate a stadium, financially seen. It can hence be concluded that multi-functionality is an important aspect of a stadium.

2.4 THE DUTCH CONTEXT
The Netherlands is thinking about organizing the Olympic Games of 2028. Chen et al (2009) state the Games have a great impact on the host city and its surroundings spatially, socially, ecologically, functionally, politically and/or economically. Former host cities provide lessons for the Netherlands to avoid missed spatial opportunities and bad assessments of spatial effects and implications, such as the post-Olympic use. However, it is not wise to implement these lessons one-on-one to the local context (Chen et al, 2009). Each host has its own context and these contexts all have other conditions for success. Chen et al (2009) in their research discuss the Dutch context and introduce four aspects regarding the Dutch Olympics: the international profile, important spatial dilemmas, new opportunities for the economic sectors and spatial planning and governance issues.

The international profile of the host city is the way the imagination of global audiences is captured and helps establish a city’s image in people’s minds in a short period of time (Roche 2000). According to Chen et al (2009) Olympic cities should project their unique local features into marketing and branding their city and its region. In addition they state the Netherlands could find this unique local features in water management. “Spatially, the Netherlands is well known in the world for its successful struggle with the North Sea. The Rhine and Meuse rivers and the wet polder landscape, exemplified by the Delta Works, the land reclamation efforts, the Amsterdam
canals and the Rotterdam harbour” (Chen et al, 2009). This makes water a very interesting and legitimate theme of the Dutch Olympics to express itself to the world.

The spatial impact of the Olympic Games on the host city and nation is immense. The space necessary for the sport venues is 500-550 hectares, the Olympic Village needs 50-100 hectares, 5-10 million visitors will need hotel beds and parking places in the three weeks of the Games and the infrastructure must bring the athletes to their destination in maximal 45 minutes (VROM et al, 2008; Chen et al, 2009). This is also the reason the IOC prefers to organize compact Games. The Netherlands, as a small country, has the advantage that no matter how the Games are organized, compact they will be. However, the challenge for the Netherlands is to implement the Olympic developments in their own spatial ambitions.

The Olympic Games can be an useful tool to achieve tangible and intangible results in short and long term periods. The Games of Los Angeles 1984 is the example of the event providing new opportunities for the economic sectors. It is important for the Netherlands to consider “what kind of economic sector has the potentials to develop in the post-Olympic stage? To whom are these new sectors attractive? If so, what kind of economic strategies should be established to stimulate the development of these sectors? How can these new emerging sectors be well incorporated within the local environment?” (Chen et al, 2009).

When the Olympic Games are used as a catalyst for planned urban development, they add more value to the market than Games used as an impulse to start unplanned developments. Chen et al (2009) state “the risks of the large investments needed for building the sports venues, real estate, and transport and media infrastructure can be decreased if the Netherlands adopts intelligent strategies for post-Olympic use”. In addition, they state the Netherlands is well known for its extensive planning culture. The planning of large-scale urban developments takes about 10-15 years. This means that the planning of the Games has started in time. Another challenge is to convince and motivate stakeholders and the Dutch society the Olympic developments will benefit the country, the host city and the individual (Chen et al, 2009).
2.5 CONCLUSION
What can be concluded is that there are two sides to every coin. Malfas et al. (2004) has demonstrated that nearly all the positive applications of the mega-events have also a negative side. They state “along with organizing a mega-events comes increased city awareness, economic development, job creation and urban regeneration but those have been witnessed along with high inflation, expensive housing, threats to civil liberties of certain groups, terrorist acts and even city defamation after revelations of bribery scandals.” Cashman (2002) states there is a growing contemporary awareness that a mega-event can have many positive and negative impacts on a host city and its environment. In order to minimize the negative impacts and optimize the positive impacts, it is important to integrate the mega-event in the urban regeneration plan or master plan from the early start on so the mega-event can be used as a tool for urban regeneration. In addition, Hiller (1998) concludes impact assessment must to be part of every mega-event plan and mitigation plan to control adverse affects.

The Olympic Games have over the years grown into such a mega-event. The motives of the hosting cities have changed over time and are nowadays, as Baim and Misch (2008) concluded, enhancing tourism; promoting more rapid infrastructure investment than would occur without the Olympics; promoting entrepreneurial goals; and gaining recognition as a global city or nation. In addition, funding became more and more important and governments are now often in a partnership with private companies in order to make the Games as (financially) feasible as possible. The facilities necessary for the Olympic Games can be divided in to seven categories. One of these categories is the category 'competition venues'. Mostly these venues are, together with the Olympic Village, concentrated in the Olympic Park and exist out of the Olympic stadium, aquatics centre, velodrome and the indoor halls. The life cycle of the Olympic Games starts far before the event is held with the planning and organization of the event and ends decades after the Games have left town (or perhaps never) with the legacy of the Games. This Olympic legacy can be anything created by or for the Games, in either a positive or negative way. In all cases, the legacies are tangible or intangible, planned or unplanned and operate within several categories, namely economical impact, cultural considerations, social debate, sporting legacy, political legacy, spatial and environmental legacy and the value of Olympic education. In the general context and adjusted to the relevancies of this research report legacy can be defined as:

Legacy, in the tangible, physical-environmental pillar, is the positive and negative implication and effect of planned and unplanned development realised to host the Olympic Games on the host city.

It is expected that whenever Olympic developments are connected with the existing plans and policies, the legacy will have a more positive impact on the host city. In order to assess the cases on the post-use of their legacy, the aspects of post-use creation on city, area and building level need to be examined.
3 BARCELONA 1992

In 1992 Barcelona hosted the Olympic Games. Ever since, other host cities are trying to level the successes Barcelona gain from organizing this event. The Games did not only provide international recognition for the city, an enhanced image and an improved local economy, it left behind a legacy of huge added value to the city. The link between urban regeneration and major sporting events is now called the “Barcelona Model”. In this chapter, the case of Barcelona 1992 will be elaborated and analysed. The Olympic main stadium will be of great importance since it is the point of focus of this research. In the first paragraph, Barcelona on city level will be discussed. The second paragraph will provide an analysis on area level, concentrating on the Olympic Ring and the Montjuïc area. The third paragraph will elaborate on building level, namely the Olympic main stadium. Finally, the fourth paragraph will conclude the lesson learned from this case.

3.1 BARCELONA

In this paragraph, the city of Barcelona and the Olympic developments will be elaborated on city level. Barcelona is, next to Madrid, the biggest city of Spain and is the capital of the region Catalonia. The city is located (figure 3.1) in the county Barcelonès, at the coast of the Mediterranean Sea, south of the Costa Brava, and has an important port. The population of the city (table 3.1) is 1,6 million people, which is slightly less than in the previous years. The Gross Domestic Product (GDP) of Spain is $29,400 per capita. The GDP is the value of all final goods and services produced within a nation in a given year (Indexmundi 2011) and it is an indicator for the economic welfare of a country. However, there is a lot of debate over the use of the GDP since it makes no distinction between economic activities that really improve the living standard of people and the economic activities that do not. According to the International Monetary Fund Spain has a GDP above the world GDP per capita, currently $10,700, and hence it can be stated that Spain has an economic welfare above the world’s average.

Table 3.1 Population (Statistical Institute of Catalonia 2011)

<table>
<thead>
<tr>
<th>population in 2011</th>
<th>Surface in km²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalonia (region)</td>
<td>7,539,618</td>
</tr>
<tr>
<td>Barcelonès (county)</td>
<td>2,246,280</td>
</tr>
<tr>
<td>Barcelona (city)</td>
<td>1,615,448</td>
</tr>
</tbody>
</table>

Barcelona was the first Olympic host city to use the mega-event to accelerate urban developments. The city already had some experience in organizing events of this level. In 1888 and 1929 they organized the World Expo and in 1982 the World Football championship was held in Barcelona. However, the success of this edition of the Olympic Games lies within the urban plans. The Olympic plan was just a part of the urban regeneration plan that Barcelona had ready for quite a while. The Games provided the right moment to put these plans in to action.

In the beginning of the 20th century Barcelona was an important economic, political and cultural city. Barcelona was connected with surrounding villages and by means of the development of the neighbourhood Eixample, urban extension took place. Barcelona was growing in industry as well, and workmen came to the city to work. In July of 1936 the Spanish civil war made an end to the growth of Barcelona and in 1939 the nationalistic dictator Francisco Franco overpowered the city. In the beginning years of his regime, Franco used Barcelona as an industrial engine and hence the city increased tremendously. From all over Spain, people came to Barcelona to find a job, many of them living in barracks. The considerable demographic growth led to a shortage of
open spaces and public facilities. Franco also put an end to the Catalan culture and those who defended it were locked up in the castle of Montjuïc. In the sixties the economy began to increase again. Tourists visited the city more often; they stayed in the villages around Barcelona, the Costas, and made day trips to the city. When Franco passed away in 1975, Barcelona was finally completely free of isolation and suppression. The king, who replaced Franco, provided the city with the chance to redevelop itself and the Catalan culture. In the mean time, the growth extended to the Barcelona metropolitan area whose population increased from two million to more than three million between 1960 and 1975. In the eighties, Barcelona was more stable and had transformed from an industrial city to a more service related city. However, the entire coastline of Barcelona was repossessed by industrial buildings (Marschall 2004). In 1986 it was decided that the city was elected to host the Olympic Games of 1992 and finally Barcelona was provided the chance to get rid of the past. An enormous transformation began. The metro network was modernised, the ring road was realized and so on. In the next subparagraph, the Olympic development will be further elaborated.

The Olympic Development

Now that Barcelona had a democratic municipality, the problems created by the lack of an urban planning policy in the Franco era, like massification and the shortage of land for infrastructure and leisure activities in the city, needed to be solved. Therefore, in 1980 a programme of constructing public spaces was introduced. During the Franco period, old industrial and warehousing sites had been acquired. The programme was to convert these sites into sports and leisure areas and use historic buildings for popular use (Barcelona’92 Olympic Organising Committee 1992). In addition, some infrastructure work was resumed, for example on the second ring road, which had been in abeyance for more than thirteen years. A number of specific plans were drawn up for the transformation of the general urban infrastructure systems, like transport, communications, lighting, and sewerage (Barcelona’92 Olympic Organising Committee 1992). In 1988 the construction of the ring roads was speeded up. This work followed the provisions of the 1976 General Metropolitan Plan, but abandoned the concept of "urban motorways", since these were out-dated already (Barcelona’92 Olympic Organising Committee 1992). During the years the services district of Barcelona has shifted from the historic centre to the neighbourhood Eixample and the upper part of the Diagonal. In order to reduce the trend of activity to focus on the south west of the city, large-scale projects for the Games were concentrated in the peripheral and relatively inactive areas of Barcelona (Barcelona’92 Olympic Organising Committee 1992). Due to this, Barcelona suggested a number of projects in four areas strategically located around the city: Montjuïc, Diagonal, Vall d’Hebron and Parc de Mar. These Olympic areas have been the subjects of extensive redevelopment for use after the event (Barcelona’92 Olympic Organising Committee 1992). Hereby the areas demanding development were identified; the intention was to restore the balance of the city and open up the main accesses. The decision to bid for the 1992 Olympic Games have been the catalyst for improvements in the general infrastructure of the metropolitan area and for large scale planning projects (Barcelona’92 Olympic Organising Committee 1992).

It can be concluded that the Olympic developments were all part of a bigger plan. The aim of the Games was to create more centres of activity, open up the city to the sea, complete the ring road, create a network of public space and improve the sport infrastructure. Barcelona used 43 existing sports facilities, 10 facilities were completely renovated and 15 new facilities were realized for the Games (Essex and Chalkley 1998). The urban regeneration plan kept the Olympic developments insight the city centre of Barcelona, at different areas. The intention of the different Olympic areas was to avoid packing all the sports facilities into a single place, which would have created little social value afterwards. The remaining sports on the official programme would be played at various sites in the metropolitan area or in other parts of Catalonia, chosen because they had ideal facilities and natural settings (Barcelona’92 Olympic Organising Committee 1992). In the figure below (figure 3.2), the four Olympic main locations are shown.
1. Parc de Mar
2. Montjuïc
3. Diagonal
4. Vall d’Hebron

Parc de Mar
The first development on the map is Parc de Mar. This former polluted, industrial area housed the Olympic Village and Olympic Harbour. One of the promises of hosting the Olympics was to connect the city with the sea. Parc de Mar was undergoing a process of deindustrialisation; the beaches were in an extremely degraded state and railway lines separated the district from the sea (Barcelona’92 Olympic Organising Committee 1992). Barcelona demolished the industrial buildings, developed artificial beaches and realized the Olympic port. The now to the sea connected area was the perfect place for the Olympic Village, which is now a residential area. The Olympic Harbour is now a popular yachting harbour. The function of the location shifted from industrial to living, working and recreational.

Montjuïc
Montjuïc is the second development on the map and is located on a hill. Before being used for the Olympics of 1992, Montjuïc was the location of the World Expo in 1929 and in 1933 a racing track for the Formula 1 was realized, which has been used until 1975. With a history of sports and culture, this was the location of the Olympic main stadium and other competition venues. The main stadium was realized in 1929 to house the World Expo and was renovated completely for the Games of 1992. Also other existing accommodations were modernized and expanded if necessary. To the area a few icons were added; the communication tower by Calatrava and Palau St. Jordi by Isozaki. After the Games the football club Espanyol used the Olympic stadium until 2009 and the Palau Sant Jordi is also used for sport events. The aquatic centre was downsized after the Games and is now a public swimming pool and fitness centre. Also the wrestling centre has a post-use and is part of the university. The baseball pitch still exists however the spectator seats are removed.

Diagonal
The Diagonal area is the third location on the map and is located next to a main road of the city, which connects the west of the city to the east. In this location already several private sports facilities existed, including the stadium of FC Barcelona. The Olympic development of Diagonal focused on the modernization and extension of the existing accommodations; Camp Nou, Palau Blaugrana, the (in 1997 demolished) RCD Espanyol stadium and the Real Club the Polo de Barcelona.

Vall d’Hebron
The fourth location on the map already had a number of major sports facilities before the Games. In addition, an important landmark in the form of the communication tower by Foster was realized. The area hosts the Velòdrom, an archery facility, a tennis complex and the Pavelló de la Vall d’Hebron for Volleyball.
Investment
As described above, Barcelona has undergone a complete transformation for and thanks to the hosting Olympic Games. However, transformations need to be paid for and as a result Barcelona organized the most expensive Games in history at that time. With the transformations came along high investments which can be divided into different categories; operational costs for organizing the event, costs for venues and accommodations and costs for telecommunications, infrastructure and others (figure 3.3).

Barcelona has spent a total of almost US$ 13.7 billion on directly and indirectly Olympic related investments (Prooye 2010). The investment for the event itself was only US$ 2.3 billion, which is nothing compared to the investment in infrastructure, almost US$ 11.4 billion (Brunet 2005; Barcelona’92 Olympic Organising Committee 1992). In order for the investments to be feasible, the public parties financed 70% of the investments. The private parties invested 30%, by means of revenues of the marketing sales, like TV rights, and private investments (Brunet 2005).

Urban Planning
In this subparagraph, the urban planning of the Olympic Games will be investigated. Are the developments planned and hence are they connected to the long-term perspectives of the host’s urban regeneration plan? It is believed that whenever Olympic developments are connected with the existing plans and policies, they will have a more positive impact on the host city. As stated in the previous paragraph, Spain was free of its dictator in 1975. Barcelona had been important as an industrial city during and for this dictatorship. After the dictatorship, the democratic municipality of Barcelona made plans to modernize the city for the first time in decades. The industrial sites had to make place for recreational ones, connecting the city with the sea. In addition, the infrastructural network had to be modernised, especially the road and communication networks. Also the public spaces had to be improved and the sport facilities renewed. Barcelona realized these goals by strategically implementing the Games in the existing master plan. Olympic locations were realized along the future ring road of Barcelona in order to realize the infrastructural assignment and achieve the Olympic regulations. In this way, Barcelona did meet the IOC regulations as well as the objectives of the city. In addition, the selected locations created areas of new centrality (Marshall 2004). In this way the Olympic development supported the urban renewal program Barcelona was already working on.
It can be concluded that Barcelona used the Olympic Games as a catalyst to execute the existing urban master plan and to realise objectives that were determined before the Olympic Games. They connected the long-term perspectives of the city to the Olympic development and created a positive impact on the city. The urban planning aspect of post-use creation can hence be labelled as very well integrated for the Barcelona case.
Stakeholders & Organisation

The stakeholders involved in the Olympic development are of great influence to the outcome of this Olympic development. In case of the Barcelona Olympic development, great transformations and investments were needed. The public parties were not able to finance these investments by themselves. A public private partnership (PPP) was necessary to finance the Olympic developments. Beek (2007) states the municipality reached out to the private parties for help with the investments while remaining in control of what was to be developed. In addition to the private parties, the civic society was an important stakeholder. After the dictatorship of Franco, the democracy was very important and without the support of the civic society, the Olympic developments were lost (Beek 2007). In figure 3.4 the relationship of the stakeholders is presented. Remarkable is the amount of stakeholders involved. Prooye (2010) states the model can be described as ambitious and extensive with governmental control, private involvement, and societal involvement. The government's attitude can be described as active (Prooye 2010).

The used model is called the “Barcelona-Model” and is known as a flexible, more practical planning approach, under control of the public parties (Gold and Gold 2007; Qu and Spaans 2009).

It can be concluded that the organisation of the Barcelona Games has made its remarks on Olympic host cities. The Barcelona-Model is famous in the world of urban regeneration since it is a whole new approach to urban design. Working together with the private parties but maintaining control over the developments is characteristic for the Barcelona Model, as well as the involvement of the civil society. The organisational model of Barcelona can hence be described as effective.

Social Costs and Benefits.

Organising an event like the Olympic Games has a major impact on the host city. These impacts are not only the physical ones. The social costs and benefits are the impacts that influence the lives of the inhabitants of the host city, and in the end, determine if they look back on hosting the Games in a positive or a negative way (see chapter 2.3.1). In case of the Barcelona Games, the social benefits are enormously and still affecting the city today. The renewing of the sport facilities for example is one of these benefits. Barcelona had 36% of the population in 1983 do some kind of physical or sporting activity at least once a week and saw that number rise to 47% in 1989 and to 51% in 1995 (Truño 1995). This means that by hosting the Games, Barcelona successfully made its inhabitants conscious of practising sport. This improves the health of the residents and hence it is a great social benefit. Another example of a social benefit of the Barcelona Games is the growth of employment rates. Before and during the Games, the employment rate grew enormously (Brunet 1995; Brunet 2005; Qu and Spaans 2009). Between 1986 and 1992 the employment rate decreased from 18,4% to 9,6%. In figure 3.5 the total employment generated by the Olympic Games is shown. Even though it is clear that the employment decreased again after the preparations for the Games were finished, Brunet (1995) states there is “a permanent effect of the Olympic Games (additional employment arising from capitalization and changes in economic structures) that could be calculated to be 20,000 people”.

Figure 3.4 Organisational model Barcelona 1992 (based on Prooye 2010)
In addition, there was an overall economic growth and a boost in tourism (Chen et al., 2010). In 1990 Cushman and Wakefield (2012) did a survey among 500 corporations in Europe and since that time the survey has provided an overview of the perceptions that corporates have about cities across Europe and their relative attractiveness, and how perceptions have changed over that time. Barcelona was awarded the eleventh place in 1990. In 2010 Barcelona is listed fifth, competing with the top of European cities (Cushman and Wakefield 2012). In addition, it can now be stated that today Barcelona is one of the most popular cities of Europe. In 2010 Barcelona was visited by 7.3 million people (CNA 2011) while in 1990 only 1.7 million people visited the city (Duran 2005). It can be hence stated that the Olympic development and the city marketing has benefited the tourist sector and the business image of Barcelona enormously. Barcelona gained beautiful public open spaces due to the Olympic developments, as well as a better transportation and communication network. The city was renewed and with it came a huge improvement of the accessibility of the city by enhancing ring roads and public transport systems. The Olympic Ring on Montjuïc provides venues for Barcelona to host international events, like concerts of world artists, and with these venues Barcelona has been able to put itself on the global map. The successful urban regeneration and city marketing made Barcelona the place to be for tourists and businesses. Also the housing market came back to life. However, next to the benefits of the Olympic Games, Barcelona also experienced social costs, some of them related to the housing market. These are in the Barcelona case the increasing real estate prices, the decreasing housing affordability and the decrease in the citizen’s purchasing power (Qu and Spaans 2009; Preuss 2005; Brunet 1995). It is stated that “one of the most notable impacts of the 1992 Barcelona Olympic Games was the growth in housing, due to the increasing attraction of Barcelona, the lack of buildable land, increased construction costs, the rise in available family income, and the difference in prices between the Spanish market and the rest of Europe. The recovery of the real estate market was rapid, from the Olympic nomination in 1986 to the middle of 1990. The economic crisis, and perhaps the availability of housing in the Olympic Village, depressed the market, especially in relation to housing that was not of new construction: the market price of new and previously-built housing between 1986 and 1992 grew, respectively, 240% and 287%” (Brunet 1995). In figure 3.6 the development of the housing prices in Barcelona between 1986 and 1993 is shown.
The social costs mainly result in people not being able to live in the neighbourhood they have always lived in.

### Table 3.2 Social benefits & costs

<table>
<thead>
<tr>
<th>Social Benefits</th>
<th>Social Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in sports participation</td>
<td>Increase in real estate prices</td>
</tr>
<tr>
<td>Increase in employment</td>
<td>Decrease in housing accessibility</td>
</tr>
<tr>
<td>Increase in tourism</td>
<td>Decrease in purchasing power</td>
</tr>
<tr>
<td>Improved public open space</td>
<td></td>
</tr>
<tr>
<td>Improved transportation and communication network</td>
<td></td>
</tr>
<tr>
<td>Improved business image</td>
<td></td>
</tr>
<tr>
<td>Venues to host international events</td>
<td></td>
</tr>
</tbody>
</table>

It can be concluded that the residents of Barcelona benefit from the Games until this day on. The developments and successful city marketing have made the city better accessible, greener and attractive to tourists and businesses. The social costs of the Games are, compared to the gains of the developments for the city, quite low. In table 3.2 the costs and benefits are summarized.

This paragraph provides an idea about Barcelona before and at the time of the Olympic preparations, about the Olympic development of Barcelona and about the aspects of post-use creation on city level. In the next paragraph, the aspects of post-use creation on area level will be elaborated. In the Barcelona case, the area, which will be investigated, is the Montjuïc area. As stated above, Montjuïc houses the Olympic main stadium, which will be investigated on the aspects of post-use creation on building level in paragraph 3.3.

### 3.2 THE MONTJUÏC AREA

As stated in the previous paragraph, the Montjuïc area has a history of sports and culture events. With organizing the Games, this reputation of Montjuïc needed to be brought back to life. Montjuïc housed a deprived neighbourhood and until the early 1980’s an amusement park. The stadium of Montjuïc was abandoned but the residents of Barcelona were still using the park. In order for this area to be on Olympic level, some adjustments were necessary. For starters, the relocation of (illegal) housing was executed. In addition, existing accommodations were modernized and expanded if necessary. To the area a few icons were added; the communication tower by Calatrava and Palau St. Jordi by Isozaki. Montjuïc was to become the main stage of the Games with the Olympic main stadium, the Olympic hall, the aquatics centre, the wrestling centre and a baseball field centralized in the Olympic park, called the Olympic ring (figure 3.7).

In this paragraph the factors of post-use creation on area level will be discussed; mobility, routing, program, and the catchment area.

#### Mobility

As stated before, mobility is the factor that determines the accessibility of and travel time to the Olympic Park. Accessibility and travel time have effect on the performance of a certain area (Trip 2007). When the distance between the city centre and the Olympic Park is too long or the travel time between them too high, there is a lower chance of mixed users visiting the Olympic Park and hence the venues it contains.
The accessibility of the Montjuïc area provides an idea about the use and liveability of the area. There are different ways to visit the Montjuïc area, some better than others however. There are multiple roads leading to the area and from the city centre the travel time is approximately 15 minutes by car. In addition, the Montjuïc area has a sufficient amount of parking places available and hence the accessibility by car is good.

It is also possible to visit the area by means of the public transportation system. However, the accessibility by public transport is moderate. While Barcelona itself has access to tram, train, metro and bus, the Montjuïc area is only accessible by the latter one. The city busses have stops at different point surrounding the Olympic Ring. This in contradiction with the metro stations. The closest metro station is located at a 20-minute walk from the Olympic Ring and it should not be forgotten that the Olympic Ring is on top of the Montjuïc hence it is more a 20-minute climb. On the other side of the Olympic Ring the Funicular de Montjuïc, which is a cable train, connects another metro line with the Montjuïc area (figure 3.8). The Funicular stop is located at a 10-minute walk from the Olympic Ring but on the same level and hence there is no need to clamber. In addition, the Funicular shuttles between the metro station and the Olympic Ring every 6 minutes. Besides these transportation systems, Barcelona has another one available to access the Olympic Ring. Between the Montjuïc area and the city centre the Telefèric de Montjuïc, a cable cart, is connecting the port with the Montjuïc area (figure 3.9). However, this is not a direct line and it will not be used for daily traveling but mostly by tourists. The stop of the Telefèric is located at a 10-minute walk from the Olympic Ring as well.

According to Teresa Sala (BSM 2012) the municipality wanted to expand the metro network to the Olympic Ring since 2008 but there is no money at the moment to do so due to economic crisis. The question remains if the plans will be executed some day.
More important than how to access the area is the time it takes to do so. Bakker (2009) in his research made a travel time appraisal, using the official travel estimates from Transports Metropolitans de Barcelona (Grup TMB 2011). In figure 3.10 these travel time estimations are shown. The city centre is 30 minutes from the Olympic Ring, which is mainly caused by the 20-minute walk from the metro station to the top of the hill. The average time it takes to travel by public transport in Barcelona is less than these 30 minutes since it takes 40 minutes to completely cross the city from west to east (Grup TMB 2011). Within the city centre and its surrounding neighbourhoods, travel times will be around 15 minutes tops (Grup TMB 2011).

It can hence be concluded that the Olympic Ring is not easy accessible by public transportation. By car it is no problem to get to the area and there are enough parking spaces. However, by public transport the area is accessible only by bus. With the other forms of public transport, a long walk is required. This is not contributory to the mobility factor of the area since public transport is the main means of travel for 68% of the Barcelona population (UNESCAP 2011). When looking at the travel time, it can be concluded that the Montjuïc area is accessible within 30 minutes by public transport (Bakker 2009) and within 15 minutes by car. Compared to the travel time by public transport in the rest of the city, it takes long to arrive at the Olympic Ring. It can be assumed that due to this long travel time, people will only go to the area by public transport if they have to be there, which means that the liveability and mixed use of the area is not enhanced by the mobility factor of Montjuïc. Therefore it can be stated that the mobility of the area is low.

Routing

A location should be part of a route through a city, and not be the end of this route, if it wants to create a circulation of users. When the location is at the end of the route, people will only go there for a specific reason. In case of the Montjuïc area, the routing is poor. The Olympic ring is situated on a hill and is not part of a daily route. The combination with the modest accessibility with public transport, people will only go to the area when they want to watch a sport event or concert. On other days, the Olympic ring is not in use. Tourists however visit the Olympic Ring on daily basis according to Teresa Sala (BSM 2012). The route of the Hop-on Hop-off tourist busses crosses the area and brings the tourists to the national museum, the museum of Joan Miro and the Olympic museum. Also the Olympic stadium is open for visits, free. In total there are four stops on the Montjuïc hill.

It can be concluded that the Olympic Ring is not on a certain route for the residents of Barcelona. They will only come if an event is hosted or in the weekend to enjoy the park. For tourists the Olympic Ring is on the route since the tourist busses are trespassing the area. Taking this into consideration, the factor routing will be marked medium.

Program

With the factor program is meant the kind of functions, which are present on area level. In order to attract a mixed group of visitors, an area should offer multiple functions, which will in the end create liveability at different times of the day. As stated before, the Olympic Ring houses five venues, the Olympic main stadium, the Palau Sant Jordi, the Sant Jordi Club, the aquatic centre, and the wrestling centre. The functions of these venues are different yet alike. International events, both sport and cultural related, are hosted at the Olympic main stadium, the Palau Sant Jordi and the Sant Jordi Club while the aquatics centre is a public swimming pool and fitness centre with a daily use. The same applies for the wrestling centre, which is now part of the National Institute of Physical Education of Catalonia. All venues are sport related but some of the venues also relate to culture. In addition, the Olympic main stadium can be visited for free during the day and it is possible to drink and eat something at the stadium bar.

However, Montjuïc has more to offer. Next to the Olympic Ring, it is possible to visit one of the museums that are located nearby. Obviously, one of these museums is the Olympic museum, which provides a look into the world of sports. The other two museums, the national museum of Catalonian art and the Joan Miro museum, provide an idea about the history of Catalonia through art. A large public park is connecting the Olympic Ring and the museums, which offers a nice walk from one site to the other.
There is enough to do to spend a complete day at Montjuïc. However, all functions provided in the area are sport or culture related. Due to this, there is no mixed group of users and the liveability of the area is low. Mainly tourists are visiting the museums and they leave the area as soon as they are done. In the weekends, some residents of Barcelona spend the day at the park though. It can be stated that the program of Montjuïc offers enough to do on a day however, activity is limited to visiting a museum or the swimming pool. The Olympic stadium and Palau Sant Jordi organise events but these only attract people to the area with tickets and as soon as the event is over, they will head home. It can hence be stated that the program of Montjuïc is only sport and culture related, which does not lead to a mixed group of users and hence liveability of the area. The program of the area is therefore labelled mono-functional.

**Catchment area**

The catchment area is the area and population from which the facility attracts visitors or customers. The catchment area of the Olympic Stadium during the Games is worldwide, however, more importantly is the catchment area of the stadium after the Games are over. For the post-use of the stadium, users are necessary. In the pervious chapter, the catchment area for stadiums was set on a radius of 35 km as the crow flies. For the Barcelona Olympic stadium this means a catchment area as displayed in figure 3.11. However, the catchment area of 35 km is based on stadiums that have soccer as their main use. In the case of Barcelona, the main purpose of the Olympic stadium is organising events. These events differ in scale and while some are regional, others are national or international orientated. In the interview with Teresa Sala and Gemma Mariages (BSM 2012) it became clear that there is no standard catchment area for the stadium due to the fact that the events differ too much in scale. They state that regional events mainly attract residents from Barcelona and its direct surroundings. For national events, people from all over Spain are attracted to the stadium, especially when it is the only concert or sport event of that kind in Spain. The same applies for the international events. Artists like Bruce Springsteen have fans visiting him from all over Europe. The same applies for events like the X-Games, for which Barcelona is momentarily in the running to be the next host. If Barcelona is eventually chosen, the X Games will be held at the Palau Sant Jordi, the aquatic centre, on the concourse around the Olympic Ring and at the Olympic stadium (BSM 2012).

**Competition & Demand**

In chapter 2 it is stated that the demographic characteristics of the population are important. A younger and mixed population will visit the sport facility more often than a population of merely elderly people. However, the Olympic stadium of Barcelona does not have a standard catchment area and hence it is difficult to make any assumptions about the demographics of it. Yet, for the regional events Sala and Mariages stated that the visitors were mainly from Barcelona and its direct surroundings (BSM 2012). The population of the region Catalonia is mixed when age is concerned (figure 3.12). Most
of the population is at an age that they will visit a sport or cultural event at a stadium. However, Sala and Mariages also state that the spectators of RCD Espanyol (which is a football club that used the stadium until 2009) existed merely out of people from 50 years and older. “They took their own food with them, and sometimes they even brought their own coffee. A younger public is better for the stadium because they spend more money on food, beverages and merchandise” (BSM 2012). For the events, a mixed group of ages visits the stadium. According to Sala and Mariages it depends a lot on the artist that is performing or the kind of sport event that is organised.

Next to the demographics of the users, the demand of the users is very important. In Barcelona, the main spectator sport is soccer. The Olympic stadium can facilitate this sport, however, the Olympic stadium (± 60.700 seats) is too small to facilitate the main soccer club (FC Barcelona, using Camp Nou with approximately 100.000 seats) and too large for the second soccer club of Barcelona, RCD Espanyol (using the Estadi Cornellà-El Prat approximately 42.000 seats). In addition, the Olympic main stadium has an athlete’s track and players and spectators dislike the atmosphere that is created by this barrier. The stadium is therefore mainly used for concerts and big sport events, as well as corporate events. In figure 3.11, the assumed competition venues of the Olympic stadium are mapped. The pink dots are the venues on the other Olympic locations, including Camp Nou. It was assumed there are three obvious competitors for the Olympic main stadium: Camp Nou, Palau Sant Jordi (approximately 18.000 seats) and Estadi Cornellà-El Prat. However, according to Teresa Sala and Gemma Mariages (BSM 2012) the Olympic stadium does not experience any competition of these venues. They state that the football stadiums organise only one or maximal two concerts a year, in August, because during the other months the stadiums are used for the football competition and trainings. Yet, FC Barcelona is considering building a new stadium. The club wants to build a multipurpose stadium, with enough parking space and good infrastructure. The newly built complex will also house a hotel, restaurants, a cinema and a theatre. But the realization of this complex will not bring more competition for the Olympic main stadium according to Sala and Mariages (BSM2012). They state the old stadium, as well as the new one, will be used for football purposes like trainings and not for organising events. For the second competitor applies that Barcelona de Serveis Municipals manages it, which means that the Palau Sant Jordi (figure 3.13) as well as the Olympic main stadium are managed by the same company and hence Palau Sant Jordi does not compete but complete the Olympic main stadium. The Palau Sant Jordi is the venue next to the Olympic stadium and it organises a lot of sport and cultural events. As Bakker (2009) states “the stadium functions as a multifunctional arena for a wide range of events and uses. The design of the building with a large roof is very flexible and therefore capable of handling multiple functions. Stands can be expanded and every possible floor can be installed, ranging from ice rinks to swimming pools. The stadium functions well as sports arena, music dome and business events accommodation”.

Figure 3.13 Palau Sant Jordi (Google Pictures 2012)

It can be concluded that the Olympic stadium does not have a standard catchment area but that the catchment area depends a lot on the kind of event that takes places. In addition, the Olympic stadium experiences little to no competition from the other stadiums of Barcelona due to the fact
that the Olympic stadium is focussing on hosting big events and not the principal spectator sport; football.

3.3 THE OLYMPIC STADIUM OF BARCELONA

In 1929 Barcelona hosted the World Expo and for this occasion, the stadium of Montjuïc was build. After being abandoned for several years the stadium has become the main stage of the Olympic Games of 1992. The stadium was completely renewed in the late 1980’s, except for its façade, and finally sports returned to Montjuïc (figure 3.14). For the residents of Barcelona, the stadium is important to the city, it belongs to the city since it was always there. In addition, the municipality of Barcelona says about the stadium: “The Olympic stadium is more than just a sports ground. The Estadi Olímpic de Montjuïc Louis Companys is Barcelona’s stadium, a stadium for all”. Its main objective is to attract international events to the city and to put Barcelona on the global map. In this paragraph a more in-depth analysis of the Olympic stadium will be provided.

Figure 3.14 Olympic stadium de Montjuïc (Google Pictures 2012)

Organisation & Finance

The amount of sport facilities necessary for the Olympic Games is immense since more than 25 different sports need to be facilitated. But even more immense is the task of the host city after the Games have left town. The different sport facilities need to be operated and maintained, a task that is not easily done.

In Barcelona the management of the Olympic venues is handled quite well. In the pre-Olympic period Barcelona thought through the organisation of the Olympic venues. Truño (1995), a member of the COOB’92, states “The gathering of all the new Olympic installations under the umbrella of Council management would have meant increasing the municipal staff to the tune of 500 people. This was logistically impossible to cope with”. In order to find another way to manage the buildings a new by-law was passed in 1991 affecting the use of municipal sports installations. According to Truño (1995) the by-law introduced new management systems, including ‘concerned management’. “This ‘concerned management’ meant that a private organisation could obtain management of a municipal installation by entering a public competition, although the Council would maintain control of and monitor this management by means of a monitoring commission, and would also have the power to make vital decisions concerning issues such as service rates, programmes of action, budgeting, and maintenance plans” (Truño 1995). In addition, Truño (1995) states “An initiative, which was taken in the field of municipal sports management, was the creation of a municipal joint-stock company, with 100% municipal capital, called Barcelona Promoció”. The purpose of this company was to manage the main venues of the Olympic Games: the Palau Sant Jordi, the Olympic Stadium, the Palau Municipal d’Esports, and the Velòdrom. The Olympic Stadium and the Palau Sant Jordi are situated in the main Olympic park on top of the Montjuïc while the Velòdrom is part of the Olympic area Vall d’Hebron and the Palau Municipal d’Esports is a stand-alone building on the foot of the Montjuïc. Barcelona determined the management of the Olympic venues in the pre-Olympic period and made adjustments in order for it to be feasible.
However, in 2004 Barcelona hosted the Universal Forum of Cultures, which is an international event used by the city of Barcelona to extend the legacy of the Olympic Games and to achieve more urban goals. Forum 2004 produced another event site with facilities to be managed by Barcelona Promoció. The identity of the management organization was therefore changed in 2003 to Barcelona de Serveis Municipals (BSM) and became part of a much larger municipality organization. In figure 3.15 the timeline of the Olympic stadium provides an overview.

In figure 3.16 the organizational chart of the BSM is shown. BSM is hired by the municipality of Barcelona to manage several aspects of the city and it is divided in four main departments; Mobility, Parc Montjuïc and Forum, Olympic Ring and Barcelona Zoo. These departments are supported by the general departments in the left row of the organizational chart (figure 3.16).

The Olympic Ring department exists of 38 staff members, divided into (BSM 2012):

- General Services: 2
- Ticketing and administration: 7
- Sales Dept.: 5
- Technical services: 4
- Operations Dept.: 20
- Other staff working daily: external companies awarded contracts via public tender
The mission of the company is to “contribute to Barcelona’s development by providing its knowledge, specialisation and added value to manage city council activities and services, as well as to represent the interests of the city council in the BSM Group of companies” (Barcelona de Serveis Municipals S. A. 2012). The activities BSM develops include a wide range of projects throughout the city such as those related to mobility and managing important facilities in the city dedicated to leisure. In addition, this municipal organisation is responsible for operating the Olympic main venues. BSM states that its good financial results and performance in activities support the municipal public company model (Barcelona de Serveis Municipals S. A. 2012). However, it must be said that these good financial results are due to the mobility department. During the interview with Teresa Sala and Gemma Mariages (BSM 2012) it became clear that the Olympic Ring department is not financial feasible in itself, however, all departments of BSM are, at the end of the year, put together and the losses of the Olympic Ring department are balanced by the profits of the mobility department. In addition, it is the municipality that makes the decisions about what happens to the stadium, however, there is no financial support from the municipality. Teresa Sala (BSM 2012) states that sometimes the municipality decides to pay the fee of entering a competition bid for an event, but only if they really want the event to take place in Barcelona. All other aspects, like maintenance costs, have to be paid by BSM.

![Figure 3.17 Income division (based on BSM 2012)](image)

Next to all the expenses, the Olympic Ring department also has an income. This income is divided into several categories (figure 3.17). The most important income for the department is the income out of rights of use. If promoters want to use one of the three venues of the Olympic Ring, rights of use need to be paid. This usually is a minimum amount plus a percentage of ticket sales. In other words, if the concert sells 10 tickets, the minimum amount is paid. If the concert sells out, the minimum amount plus a percentage of the ticket sales goes to the Olympic Ring department. Another income source is sponsorship. A view companies sponsor BSM in its totality. The sponsor money is divided over the different departments of BSM. In addition, the income of catering is important as well. The Olympic ring department hires external companies to facilitate the restaurants and to clean and secure the venues. In this way, the necessary amount of security, catering and cleaners can be adjusted to the event. The caterers pay rent to use the bars and restaurants in the venues and pay a fee for each consumption they sell to the Olympic Ring department.

It can be concluded that Barcelona gave the management of the Olympic venues good thought in the pre-Olympic period. They used a new management form called ‘concerned management’. After the management by Barcelona Promoció another municipal company took over the management of the Olympic venues, Barcelona de Serveis Municipals. The municipality remains the owner of the venues and decides what happens to it. However, the municipality does not financially support the venues and its management. The Olympic Ring department of the BSM is responsible for the management of the Olympic stadium, the Palau Sant Jordi arena and Sant Jordi Club. Together the venues are covering the different demands of clients and complete each
Financially seen, the venues are not feasible, however, due to the mobility department of BSM this loss can be balanced. It can be stated that bringing the different departments of BSM together is the solution for the financial challenge of managing the buildings.

Adjustability of the Stadium
The way in which a venue can adjust itself to the needs of its user determines the degree of use. The Olympic stadium, for instance, has been downsized after the Games from 72,000 to almost 61,000 seats today. The amount of 72,000 seats was too much for the stadium but necessary for the Olympic Games. After the Games, the temporary seats were removed. Today, the Olympic Ring department is responsible for the management of the Palau Sant Jordi, the Sant Jordi Club and the Olympic stadium. In order to represent Barcelona and the venues the best way possible, the promoters of international and national events are offered the venue that suits best to the event. In this way, the venues complete each other and provide the perfect setting for the event. Teresa Sala and Gemma Mariages (BSM 2012) explain that promoters come to the Olympic Ring department with the request to host an event. Together with the promoter BSM will consider the different options available and which venue can accommodate the event the best way. It sometimes happens that an event is hosted best in the Olympic stadium while only 20,000 people will visit the event. In these cases half the Olympic stadium is used and every time it turns out to be a beautiful and the event is used as a role model for next events (BSM 2012). It sometimes also happens that BSM says no to a promoter because their venues cannot facilitate the event in a way that it is good advertisement for Barcelona and the event itself. Teresa Sala states it gladly does not happen very often but that BSM rather refuses to host the event than to have negative advertisement (BSM 2012). In most cases however, BSM succeeds in finding the best option. It is possible to create almost everything Sala states (BSM 2012). In figure 3.18 this is shown. Unless there is no VIP area available in the stadium, it is easily created. However, Sala and Mariages (BSM 2012) stress that they would like to have five skyboxes available but that it is technically, and financially, not possible to create them. In addition they state that the athlete’s floor and the grass of the stadium are the greatest bottlenecks when it comes to organising events other than football or athletics competitions. It is very expensive to protect (and sometimes replace) the track and grass for event promoters. Solving this bottleneck is difficult since it not possible for the stadium to, for instance, create a moveable grass floor, like at the Gelredome in Arnhem, the Netherlands. Mariages (BSM 2012) states this would be the perfect solution, however, the production of such a floor is not possible at the Olympic stadium without major construction work.

Figure 3.18 Possible events at Olympic stadium

It can be concluded that the stadium construction is not very adjustable but that the spaces give enough flexibility to adjust the stadium to almost every event. The combination of the three venues together makes the adjustability of the venues complete. A bottleneck is found in the form of protecting the athlete’s track and the grass of the stadium. It can however be stated that the stadium is indeed quite adjustable to the needs of its user.

Architectural Value
Localizing the design of a facility will greatly enhance the architectural identity of the place and will put the venue on the map. Localizing a facility design can be achieved by the use of unique design elements reflecting the character of the city or country. In case of the Olympic stadium of Barcelona, the design is certainly localized. It was designed by the Barcelonan architect Pere Domènech i Roura and opened in 1929 for the Barcelona World Expo. In 1992 it was
remodelled for the Barcelona Olympic Games, however, the outside façades were maintained (figure 3.19). Next to the Olympic stadium, other buildings were developed for the World Expo of 1929, like the Palau National, which now houses the National Museum of Catalonian Art. The stadium façades give the impression of a castle more than of a stadium. It is recognisable due to this unique image. But does it have architectural value? According to Sala and Mariages (BSM 2012) it sure does. They state the stadium is part of the city. Many residents of Barcelona used to come to the Montjuïc area in the weekends. Until the mid ‘80 the area accommodated an amusement park. People spend their free time in the parks and the stadium has always been part of that, even though it was unused. For tourists, the architectural value will not be very high, like the Sagrada Familia, however, to the resident of Barcelona, it is. Changing the outer façade will definitely offend a lot of Barcelonan residents (BSM 2012).

It can hence be concluded that the stadium has architectural value to the residents of Barcelona. The stadium is part of the city and seen as a monument. The Barcelonan people are proud of the building and according to Sala and Mariages (BSM 2012) would be offended if the design were changed.

Function
The post-use of sport facilities is dependent upon many aspects. One of those aspects is the amount of functions the venue can accommodate. A multi-functional building will have a better chance to be used than a mono-functional building. In case of the Olympic main stadium of Barcelona, it can be stated that the stadium is multi-functional. The events that take place at the stadium are sport events, concerts and business events. In figure 3.20 the division in events is shown for the three buildings in the Olympic Ring department. According to Sala and Mariages (BSM 2012) the division represents the events hosted in the Olympic stadium and Palau Sant Jordi since they have more or less the same division in events.
In addition, the Olympic stadium has shown that it can also accommodate a football club. From 1997 until 2009 RCD Espanyol was using the Olympic stadium as its home. It was assumed that having this tenant was a positive aspect of the post-use period of the Olympic stadium. However Sala and Mariages (BSM 2012) state that they were very relieved that RCD Espanyol moved to their new stadium in 2009. RCD Espanyol had to demolish its stadium back in 1997 and the municipality of Barcelona offered the football club to use the Olympic stadium until their new stadium, Estadi Cornellà-El Prat, was ready (in 2009). Sala and Mariages (BSM 2012) continue that the municipality let RCD Espanyol use the stadium without charging them for it and in addition, BSM could not host events in the stadium due to the football matches and trainings. Before RCD Espanyol used the stadium, there were many concerts and shows. During their stay, there were almost none. Sala and Mariages (BSM 2012) state that they are now working on reinstalling the image of the stadium as an event accommodation but that it is difficult, also because of the economic crisis. Another function the stadium currently has is a tourist attraction. The tourist busses are dropping off tourists every day, who can visit the stadium for free. According to Sala and Mariages (BSM 2012) BSM wanted to ask some entrance fee for visiting the stadium, however, the municipality states that the Olympic stadium is a public good and should be accessible for free. BSM used to provide guided tours for the stadium, however, this only produced €6,000/- per year, which was less than the costs for the tour guide and hence guided tours are not possible anymore (BSM 2012). In addition, the stadium has been the décor of the Hollywood movie Red Lights with Robert de Niro, which will be in Dutch theatres in September 2012. It is clear that the stadium is used for different functions. In total the Olympic stadium has been used by 780,813 people, over a period of 173 days in 2011, for 23 events (BSM 2012). This is because in general, the hosting of sporting events means the venue is occupied for many days due to the adaptation, production and training requirements. The main customers of the Olympic stadium are (BSM 2012):

- Music promoters
- Family show promoters
- Sporting events promoters
- Corporate events Organisers
- Political parties, trade unions
- Religious organisations
- Catering companies
- Advertising agencies
- Private individuals
- Barcelona City Council, other public institutions

As stated before, BSM is trying hard to attract events to the stadium again. In the nearby future, the Olympic Ring venues will at least host the (BSM 2012):

- Basketball Cup (2012)
- The European X-Games (2012)
- World Junior Athletics Championships (2012)
- World Swimming Championships (2013)
- Handball World Cup (2013)
- Basketball World Cup (2014)

However, there are also a few difficulties BSM experiences with the Olympic main stadium. These are mainly the high production costs of hosting an event in the stadium, the seasonal limitations and maintenance costs of the venue. The costs of event production are high in the Olympic stadium because it is very expensive to cover the grass and the athlete’s track (BSM 2012). In addition, promoters have to replace the grass when it is damaged too much. These are expensive costs for the organisers of the event and sometimes this leads to events being held in the Palau Sant Jordi (if the amount of spectators allows it). In addition, the stadium has no roof and is mainly used during half a year, from June to October (BSM 2012).

It can be concluded that the Olympic stadium can be used for multiple functions. This greatly enhances its chances on post-use. Even though there has been little (paid) use from 1997 until 2009, BSM is working hard to attract as many events as possible to restore the image of the stadium. The most surprising fact is that a tenant, like RCD Espanyol, only decreases the use of the venue and that BSM is happy that there is no tenant involved at the moment. The difficulties BSM is experiencing can be solved quite easily for new build stadiums by adding a roof that can be open or closed and by installing a (re)moveable floor to protect the grass. However, these
adjustments are not possible for the Olympic stadium of Barcelona due to the major construction works that comes with them.

3.4 CONCLUSION BARCELONA

In this paragraph the conclusions of the Barcelona case will be provided and specified. Each aspect of post-use creation will be examined, on city, area and building level.

City level

Barcelona managed to use the Olympic Games as a catalyst to execute the existing urban master plan and to realise objectives that were determined before the Olympic Games. They connected the long-term perspectives of the city to the Olympic development and created a positive impact on the city. The time was right for Barcelona to say goodbye to the industrial city and hello to the international city it would soon become. The urban planning aspect of post-use creation can be labelled as very well integrated for the Barcelona case.

When stakeholders and organisation are concerned, Barcelona Games has made its remarks on Olympic host cities. The Barcelona Model is famous in the world of urban regeneration since it is a whole new approach to urban design. The Barcelona city council worked together with private parties but kept the control over the developments and due to the strong involvement of the civil society, there was little to no protest against the plans. The fact that other cities are trying to work according to the Barcelona Model says it all; Barcelona mastered the organisation of the Games.

In addition, the residents of Barcelona benefit from the Games until this day on. The Olympic developments and successful city marketing have made the city better accessible, greener and attractive to tourists and businesses from all over the world. The social costs of the Games are, compared to the gains, quite low. Barcelona gained a better sport participation, growth in employment rates, an international reputation and a boost in tourism. In addition, there is a whole new infrastructural and communicational network realized and the city has more public open spaces. The costs of hosting the Games are limited to the increase in house prices, the decrease in housing accessibility and a decrease in purchasing power.

Area level

The Olympic Ring is not easy accessible by public transportation. By car it is no problem to get to the area and there are enough parking spaces. However, by public transport the area is directly accessible by bus only. With the other forms of public transport, a 15-minute walk is required.

When looking at the travel time, it can be concluded that the Montjuïc area is accessible within 30 minutes by public transport and within 15 minutes by car. Compared to the travel time by public transport in the rest of the city, it takes long to arrive at the Olympic Ring. It can be assumed that due to this long travel time, people will only go to the area by public transport if they have to be there, which means that the liveability and mixed use of the area is not enhanced by the mobility factor of Montjuïc. Therefore the mobility of the area is rated low.

Being located on a hill, the Olympic Ring is not on a certain route for the residents of Barcelona. They will only visit the area if an event is hosted or in the weekend to enjoy the park. For tourists the Olympic Ring is on the route since the tourist busses are trespassing the area. This brings some liveliness to the area. Taking this into consideration, the factor routing will be marked medium.

Nevertheless, there is enough to do to spend a complete day at Montjuïc. However, all functions provided in the area are sport or culture related. Due to this, there is no mixed group of users and the liveability of the area is low. Mainly tourists are visiting the museums and they leave the area as soon as they are done. In the weekends, some residents of Barcelona spend the day at the park though. It can be stated that the program of Montjuïc offers enough to do on a day however, activity is limited to visiting a museum or the swimming pool. The Olympic stadium and Palau Sant Jordi organise events but these only attract people to the area with tickets and as soon as the event is over, they will head home. It can hence be stated that the program of Montjuïc is only sport and culture related, which does not lead to a mixed group of users and hence liveability of the area. The program of the area is therefore labelled mono-functional.
The Olympic stadium does not have a standard catchment area as formulated in chapter 2. The catchment area of the stadium depends a lot on the kind of event that takes places. In addition, the Olympic stadium experiences little to no competition from the other stadiums of Barcelona due to the fact that the Olympic stadium is focussing on hosting big events and not the principal spectator sport; football.

**Building level**

Barcelona gave the management of the Olympic venues good thought in the pre-Olympic period. They used a new management form called ‘concerned management’. After the management by Barcelona Promoció another municipal company took over the management of the Olympic venues, Barcelona de Serveis Municipals. The municipality remains the owner of the venues and decides what happens to it. However, the municipality does not financially support the venues and its management. The Olympic Ring department of the BSM is responsible for the management of the Olympic stadium, the Palau Sant Jordi arena and Sant Jordi Club. Together the venues are covering the different demands of clients and complete each other for optimal use. Financially seen, the venues are not feasible, however, due to the mobility department of BSM this loss can be balanced. It can be stated that bringing the different departments of BSM together is the solution for the financial challenge of managing the buildings.

When the adjustbility is concerned it can be stated that the stadium construction is not very adjustable but that the spaces give enough flexibility to adjust the stadium to almost every event. The combination of the three venues on the Olympic Ring together makes the adjustability of the venues complete. A bottleneck is found in the form of protecting the athlete’s track and the grass of the stadium. It can however be stated that the stadium is indeed quite adjustable to the needs of its user.

In addition, the stadium has architectural value to the residents of Barcelona. The stadium is part of the city and seen as a monument. The Barcelonan people are proud of the building and would be offended if the design were changed. Furthermore, the Olympic stadium can be used for multiple functions. This greatly enhances its chances on post-use. Even though there has been little (paid) use from 1997 until 2009, BSM is working hard to attract as many events as possible to restore the image of the stadium. The most surprising fact is that a tenant, like RCD Espanyol, only decreases the use of the venue and that BSM is happy that there is no tenant involved at the moment. The difficulties BSM is experiencing can be solved quite easily for new build stadiums by adding a roof that can be open or closed and by installing a (re)moveable floor to protect the grass. However, these adjustments are not possible for the Olympic stadium of Barcelona due to the major construction works that comes with them.

**Framework**

The findings are specified in the framework on the next page (figure 3.21) which will make it possible to make a good comparison between cases during the cross case analysis. The framework also provides the different aspects of post-use creation with a score. The maximum score exists out of three plusses (+++), which stand for outstanding. The minimum score is shown by three minuses (---), which stand for weak. Overall it can be stated that the Barcelona case has not been praised by the world for nothing. Even two decades after the Olympic Games, the Olympic stadium functions quite well. Even though it is financial not feasible to manage the stadium in its current way, Barcelona found a solution to make it feasible. Their objective to put Barcelona on the map by hosting international events worked out well and makes the residents of Barcelona proud. Overall Barcelona is rated with a double plus (++).
### Figure 3.21 Barcelona framework

<table>
<thead>
<tr>
<th>City Level</th>
<th>Barcelona 1992</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Integration</strong></td>
<td>• Very well integrated</td>
<td>+++</td>
</tr>
<tr>
<td><strong>Master Plan/Strategy</strong></td>
<td>• Barcelona Model</td>
<td></td>
</tr>
<tr>
<td><strong>Stakeholders</strong></td>
<td>Local municipality, private parties and involved civic society</td>
<td>+++</td>
</tr>
<tr>
<td><strong>Organisational Structure</strong></td>
<td>[Diagram]</td>
<td></td>
</tr>
<tr>
<td><strong>Social Costs &amp; Benefits</strong></td>
<td>+ New sport facilities and new public open space</td>
<td>++</td>
</tr>
<tr>
<td></td>
<td>+ Growth in economy and employment rates</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ Boost in tourism and business</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Increase of real estate prices</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Decrease in housing accessibility and purchasing power.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Area Level</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mobility</strong></td>
<td>Not easy accessible by public transport</td>
<td>- -</td>
</tr>
<tr>
<td><strong>Routing</strong></td>
<td>Semi connected</td>
<td>-</td>
</tr>
<tr>
<td><strong>Program</strong></td>
<td>Mono-functional, only sport and culture orientated</td>
<td>-</td>
</tr>
<tr>
<td><strong>Catchment Area</strong></td>
<td>• Depends on event</td>
<td>++</td>
</tr>
<tr>
<td></td>
<td>• Little to no competition</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Building Level</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adjustability</strong></td>
<td>Adjustable</td>
<td>+</td>
</tr>
<tr>
<td><strong>Architectural Value</strong></td>
<td>High, local design</td>
<td>+++</td>
</tr>
<tr>
<td><strong>Function</strong></td>
<td>Multiple functions possible: sports, concerts, shows, corporative</td>
<td>+++</td>
</tr>
<tr>
<td><strong>Organisation</strong></td>
<td>Municipal organisation Barcelona de Serveis Municipals</td>
<td>+++</td>
</tr>
<tr>
<td><strong>Finance</strong></td>
<td>In the black (total organisation)</td>
<td>+++</td>
</tr>
</tbody>
</table>

**OVERALL** | | ++
4 ATHENS 2004
The first Olympic Games ever were held in Greece, in Olympia. Also the first modern Games took place in Greece, in Athens in 1896. After years, the Games came finally home in 2004. Athens won the bid to host the Games in that year and thought of the Games as an opportunity to work on the environmental pollution in the city. Athens wanted to increase public spaces and had major infrastructure projects in the planning. The aim was a 35 % CO2 reduction. The enhanced infrastructure of Athens is well known however the other parts of the legacy are famous for being not the best ever. The development plans, which made Athens win the bid, were significantly changed after a new government was installed. Focus shifted from urban regeneration of deprived neighbourhoods to high-profile architecture of the sport venues to show the world Greece's capabilities (Gold and Gold 2007). In the first paragraph, Athens on city level will be discussed. The second paragraph will provide an analysis on area level, concentrating on the Olympic Park and the OAKA area. The third paragraph will elaborate on building level, namely the Olympic main stadium. Finally, the fourth paragraph will conclude the lesson learned from this case.

4.1 ATHENS
Athens is the biggest and capital city of Greece. The city is located (figure 4.1) in the region Attica and is named after the Greek Goddess Athena, the goddess of heaven, of pure, clean air. The population of the city (table 4.1) is 655,780 people. The Gross Domestic Product (GDP) of Greece is $29,600 per capita. The GDP is the value of all final goods and services produced within a nation in a given year (Indexmundi 2011) and it is an indicator for the economic welfare of a country. However, there is a lot of debate over the use of the GDP since it makes no distinction between economic activities that really improve the living standard of people and the economic activities that do not. According to the International Monetary Fund Greece has a GDP above the world GDP per capita, currently $10,700, and hence it can be stated that Greece has an economic welfare above the world’s average.

Table 4.1 Population Athens

<table>
<thead>
<tr>
<th>Population in 2011</th>
<th>Surface in km²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attica (region)</td>
<td>3,812,330</td>
</tr>
<tr>
<td>Athens (city)</td>
<td>3880</td>
</tr>
<tr>
<td></td>
<td>655,780</td>
</tr>
<tr>
<td></td>
<td>38,964</td>
</tr>
</tbody>
</table>

Before the Olympic developments of Athens will be elaborated, it is important to know the context of these developments. By knowing the context, a better comprehension of decisions and events is created. In the 20th century Athens was growing significantly. Refugees from Asia came to the city in the early ‘twenties. However, during the Second World War Athens was taken by the Germans and thousands of people found death in this period. In addition, the Greek civil war started in the same period. This civil war was an armed conflict from 1942 to 1949 between the Greek communist guerrillas and Greek government. The war cost another 160,000 lives. After the war, more and more people are moving to the big city. Athens is bursting at the seams and due to minimal government control its citizens developed the city (Gold and Gold 2007). By hosting the Games of 1996, one hundred years after the first modern Games, Athens was hoping to regenerate the city. Athens lost the bid. However, the EU membership had brought political and economical stability and created a better chance of winning the bid of the Games in 2004, as they did. The development plans of the bid were significantly changed after a new government was installed. Focus shifted from urban regeneration of deprived neighbourhoods to high-profile developments.
architecture of the sport venues to show the world Greece’s capabilities (Gold and Gold 2007). In addition, the planning of the Games suffered some delays and these caused Athens an official warning by the IOC in 2000, telling them they were to lose the games if no changes were made. Eventually, Athens did host the Games of 2004.

**The Olympic Developments**

The aim of Games was to create the northern highway, to extend the network of the metro, to relocate the airport and to enhance the city centre. To house the events, the city realized numerous new facilities or renovated existing venues, for example the Olympic main stadium. Athens had chosen to build three Olympic Parks (figure 4.2). The renovated Olympic Athletic Centre of Athens (OAKA), the newly build Faliro Olympic Bay Complex and the Helliniko Olympic Complex, realized on the location of the old city Airport. The Olympic Village was developed on a different location. The blue star on the map is the city centre of Athens (figure 4.2). In addition, Athens has several Olympic venues through town and even across Greece (football stadiums).

1. Helliniko Olympic Complex
2. Faliro Olympic Bay Complex
3. OAKA
4. Olympic Village

**Helliniko Olympic Complex**

The Helliniko Complex was built on the site of the former Ellinikon International Airport and housed several sports during the Olympics, an indoor area and fencing hall, a baseball centre, a kayak centre, a softball complex and a hockey complex. The indoor arena is now the home of the basketball clubs Panionios BC and Panellinios BC. The kayak centre is turned over to a private consortium with the plans to turn it in to a water park. The baseball centre is adjusted to house the football club Ethnikos Piraeus F.C. and also the softball centre has a post-use, it is used for concerts.

**Faliro Olympic Bay Complex**

The second Olympic Park on the map is the Faliro Olympic Bay Complex. This park consists out of the sports pavilion (taekwondo and handball), the beach volleyball centre, the peace and friendship stadium (volleyball) and the Karaiskaki stadium (football). Currently the peace and friendship stadium is in use by the Olympiacos Basketball Club (just before the Olympics). Also the other venues are in use. The beach volleyball centre is used for concerts and as a theatre and the sports pavilion is converted to the Athens International Convention Centre.

**OAKA**

The Olympic Athletic Centre of Athens is the third Olympic Park on the map. The complex consists of five major venues as well as other additional sport facilities, namely the aquatic centre.
swimming, diving, synchronized swimming, water polo), the indoor hall (gymnastics, basketball), the tennis complex, the velodrome and the Olympic main stadium (opening and closing ceremonies, track and field, football). There has been no significant use after the Games in the venues of this complex, except for a few events. The main stadium is the home of the football club Panathinaikos and AEK Athens football club. Also some Champions League competitions have taken place in the stadium, as well as concerts. The velodrome is used as a training facility and sometimes hosts an event. The aquatics centre is open for public use and the indoor hall is being used for various events but is mainly used by the basketball club Panathinaikos. The tennis complex is nowadays a public tennis centre and open for public use.

The Olympic Village
The fourth Olympic Park on the map is actually the Olympic Village. Next to housing it included a variety of entertainment options for the athletes. The village is a new suburb composed of four- to five-story apartments and became a residential area with social housing after the Games.

Investments
As described above, Athens has been able to renew its infrastructure thanks to hosting Olympic Games. In addition, Athens renovated and created sport venues and parks. However, makeovers like these need to be paid for and as a result Athens organized the one of the most expensive Games in history. With the makeovers came along high investments which can be divided into different categories; operational costs for organising the event, costs for venues and accommodations and costs for infrastructure and others (figure 4.3). The security costs of the Athens’ Olympic Games were the highest in history, due to higher safety standards after the terrorist attack in New York in 2001. Athens has spent a total of over US$ 13 billion on directly and indirectly Olympic related investments (Prooye 2010). The investment for the event itself was only US$ 2.5 billion, which is nothing compared to the total investment. In order for the investments to be feasible, the public parties financed 80% of the investments. The private parties invested 20%, by means of revenues of the marketing sales.

Urban Planning
In 1990 Athens bid to host the Olympic Games of 1996, which would be exact 100 years after the first modern Games, hosted by Athens as well. With great disappointment of Athens the Games were awarded to Atlanta. It did not take long for Athens to look beyond the loss and in 1996 Athens placed a bid for the Games of 2004. A great part of the bid book from 1990 was used for the bid in 1996 (Gold and Gold 2007). The strategic plan in 1990 wanted to concentrate the sports facilities in two centres, the OAKA and Faliro Bay. In addition, the centre would house IOC members, the Olympic Family and official guests, with the Olympic Village scheduled for construction on the northern fringes of the Athens Metropolitan Area on the slopes of Mount Parnitha (Gold and Gold 2007). The master plan of the second bid also sought to concentrate the Games in a small number of locations while making use of existing sport infrastructure. The backbone of the strategy remained to use the locations identified in the earlier bid (Gold and Gold 2007). The bid book stated that of the competition venues 75% and of the training venues 92% were already in place. Athens wanted to increase public spaces and had major infrastructure projects in the planning. The aim was a 35 % CO₂ reduction and at the time
Athens was awarded the Games many infrastructure projects were under construction. However, the greater area of the city of Athens was still experiencing problems with heavy traffic, high congestion in the road network, insufficient and low quality public transport services with severe impact on air pollution. Therefore, the bid proposal was based on the completion of transport infrastructure projects already underway or planned and to be complemented by additional works aimed to support the Games (ATHOC\right) 2005).

In 1997 the Games were awarded to Athens. During the preparations of the Games, Athens was confronted with some time challenges and political changes, which caused significant damage to the planning of the post-use period of the legacy. Instead of the immediate implementation of the master plan, the government started a review in early 1998 'to eliminate potential problems that might arise during the implementation phase due to the existing zoning and town planning legislation' (ATHOC\right) 2005; Gold and Gold 2007). These considerations led to considerable and time-consuming changes to the original strategy. The OAKA complex remained the heart of the Games, but the government decided to concentrate less activity in the Faliro area while preserving it as an important urban regeneration site. It was decided to use a site at the Athens International Airport at Helleniki. Faliro now only staged four rather than 11 sports (Gold and Gold 2007). These changes to the original strategy set back the timetable. Transport strategies required revision to take into consideration the new sites and relocated sports. The process of rethinking, with associated debates, contributed to the delays in the completion of venues and infrastructure. Although it was claimed that 75% of the venues already existed, the renovation work planned for some was ambitious. Additional problems arose from the presence of multiple and often conflicting agencies, the difficulties of gaining cooperation from officials from different political parties, the bureaucratic planning system, and from archaeological discoveries made during construction that required excavation and recording before work could continue (Beriatos and Gospodini 2004; Gold and Gold 2007). Eventually the delays resulted in an official warning from the IOC that Athens could lose the Games if nothing changed. Beriatos and Gospodini (2004) are describing the final plan of Athens as a 'scattered model' suggestive of a strategy for promoting 'multi-nucleus urban regeneration and development'. This is in contrast to cities like Barcelona, which focused investment on a few key locations. The plan reduced the logic of concentrating development in major nodes by a policy that suggested post-Games use, in which facilities were more widely spread in the community. In reality, however, there was no proper strategic planning for the period after 2004, with the plan containing apparent contradictions. Despite promoting the desire to protect and create open space, development focused primarily on green field sites and overlooked possible brownfield locations. Emphasis was placed on gaining spectacular buildings and monuments to create a sense of place and to signify the 2004 Games, yet these structures are outside the main tourist areas (Gold and Gold 2007).

It can be concluded that the objective of Athens shifted during the pre-Games period from urban regeneration to hosting the Games, mainly due to the lack of focus and clear goals. Athens had a big challenge in getting the city to the Olympic level. Lag in infrastructure and in (quantity and quality of) hotels, venues and supporting accommodations made hosting the Games an enormous assignment for Athens with limited time available. The urban planning factor is hence labelled as badly integrated.

**Stakeholders & Organisation**

The stakeholders involved in the Olympic development are of great influence to the outcome of this Olympic development. In case of the Athens Olympic development, the government of Greece saw the opportunity to put Athens back on the map by improving its infrastructure and traffic pollution and by restoring the traditional values of the Olympiad. Due to this, the government controlled the developments, willing to work with private parties in a public private partnership. Athens did not have a lot of experience with planning mayor events and public private partnerships and hence few partnerships were established due to lack of interest from private parties (Beriatos and Gospodini 2004). After Athens had changed the master plan for the Games, just after the Games were awarded, a new development model was established as well. This model can be seen as one giant organisation, as clear distinction between tasks was not obvious, of which the government had full responsibility and carried the full risk (Prooye 2010).
In addition to the vagueness of the model, it was changed multiple times in the period before the Games (ATHOC¹ 2005).

The model is provided in figure 4.4 and can be described as “ambitious, extensive, governmental control, unwilling private parties, incapable societal involvement and over-integration. The government’s attitude can be described as active” (Prooye 2010). In the end, the Games were financed for 80% with public funds and for 20% with private funds by means of revenues of the marketing sales.

It can be concluded that the organisation of Athens was changed multiple times during the preparations of the Games. This in combination with little experiences led to delays in the Olympic developments. The government was in control of the developments and bared the risks as well. It can be stated that a better-organised organisation of the Games could have saved a lot of time delays.

**Social Costs & Benefits**

Organising an event like the Olympic Games has a major impact on the host city. These impacts are not only the physical ones. The social costs and benefits are the impacts that influence the lives of the inhabitants of the host city, and in the end, determine if they look back on hosting the Games in a positive or a negative way. The Olympic Games of 2004 brought Athens a new and renovated urban rail and underground system that can carry more than 1.000.000 passengers a day, which is 20% of Athens’ population. In addition, Athens built 90 kilometres of new road, widened an extra 120 kilometres, and installed a computerized traffic management system to help minimize traffic (ATHOC² 2005). Thousands of buildings were renovated and repainted, billboards have disappeared and the new lighting on the Acropolis enhanced the streets of Athens. The number of tourist visiting Athens has slightly grown since the preparations for the Olympic Games (figure 4.5).

---

¹ ATHOC: Athens Olympic Organising Committee<br>
² ATHOC: Athens Olympic Organising Committee

---

**Figure 4.4 Organisational model of Athens 2004 (based on Prooye)**

**Figure 4.5 Tourism Athens (ATEDC 2008)**
Next to these benefits, 100,000 Greeks received technical, managerial or other Games-related training. ATHOC\(^2\) (2005) states that, “perhaps most important to the Greeks is the 17-day advertisement for Athens. Potential investors discovered that Greece has the talent, attitude and infrastructure - and the EU membership -to compete internationally”. However, it remains the question if Greece made this impression to the world after the official warning of the IOC. It is clear that the ATHOC has no objective opinion about the costs of the Games. While they are only positive about hosting the Olympics, there are most definitely negatives sides as well. The Independent (2008) even states, “Athens has become a manual on how not to stage the Olympics”. Where the ATHOC states that urban wasteland along the coast was transformed to parks and sports facilities, and connected to the city centre by public transport and the rowing facility is now surrounded by recovered wetland that has been designated a wildlife preserve (ATHOC\(^2\) 2005), a more negative impression is given by others. In the Faliron complex, for instance, gipsy camps have appeared (figure 4.6). Tents have been erected on grounds that, before the Olympics, were playing fields for children (Malone 2008). The venues of the complex are in decay and used as graffiti walls (figure 4.7).

In addition, the once stunning bridge at the Helliniko complex, which brought spectators from the yachting complex to the baseball stadium, has been abandoned and a waste dump (figure 4.8).

Athens spent a lot of money on venues for sports that find little following in Greece (Malone 2008). “And yet the madness does not end there: annual 'maintenance' of the empty sites has cost almost £500million since the event and the Greek authorities unconvincingly insist they are still involved in 'active negotiations' to find buyers for the venues” (Malone 2008). As stated in the Barcelona case, Cushman and Wakefield (2012) did a survey among 500 corporations in Europe in 1990 and since that time the survey has provided an overview of the perceptions that corporates have about cities across Europe and their relative attractiveness, and how perceptions have changed over that time. Athens was awarded the 22\(^{nd}\) place in 1990. In 2003, just before the Games, Athens was listed 30\(^{th}\), eight places below its starting point. After
the Games, in 2010, the attractiveness of Athens decreased even more, leaving Athens the 36th and last place on the list (Cushman and Wakefield 2012). Furthermore, Athens is left with an amount of abandoned venues. The Athens Olympics have left Greece with a massive debt. “In the months after the Games, the shortfall amounted to €50,000 for each Greek household. The Greek authorities have plans to sell some of the underused venues” but for now it stays with plans (The Independent 2008).

When real estate prices are concerned, it is noted that the so-called “Olympic effect” (that is the sharp increase in house process before and after the Olympic Games) was somewhat limited in the case of Greece (COHRE 2007). COHRE (2007) states, “according to research carried out by the British Halifax Bank, there was a 63% increase of house prices in Athens in the five years period leading to the Olympic Games, which was not significantly higher that the 55% increase of house prices in the rest of Greece”. Additionally, they state, “the resilience of the Greek housing market ensured that house price were already increasing and would presumably continue to do so, even if the Olympics were not held” (COHRE 2007). Furthermore, forced evictions in relations to the Olympic Games, took place with, in almost all cases, Roma communities. It is estimated that more than 2,700 individuals of Romani ethnic origin were negatively affected by the Olympic Games (COHRE 2007).

Table 4.2 Social Costs and Benefits Athens

<table>
<thead>
<tr>
<th>Social Benefits</th>
<th>Social Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge improvement</td>
<td>Useless and expensive venues</td>
</tr>
<tr>
<td>Improved environment</td>
<td>Forced evictions</td>
</tr>
<tr>
<td>Increase in tourism</td>
<td>Massive debt</td>
</tr>
<tr>
<td>Improved public open space</td>
<td>Decrease in business image</td>
</tr>
<tr>
<td>Improved transportation network</td>
<td>Abandoned and decayed locations</td>
</tr>
</tbody>
</table>

It can be concluded that Athens benefits from the infrastructure and decrease in traffic pollution caused by the Olympic developments. A new airport, a peripheral road, tramways in the city, and a light rail are serving the residents of Athens. However, the post-use of the venues was not kept in mind and the legacy (except infrastructure) is useless to the residents of Athens. In the end it can be stated that the social benefits for Athens’ residents are more or less equal to the costs they suffer from the Olympic Games of 2004. In table 4.2 the social benefits and costs are summarized.

4.2 THE OLYMPIC ATHLETIC CENTRE OF ATHENS

The Olympic Athletic Centre of Athens (OAKA) is built in the early ‘80s and hosted the Mediterranean Games of 1991. In 2004, OAKA (figure 4.9) was the main location of the Olympic Games and it accommodated cycling, tennis, swimming, indoor sports like basketball, athletics and of course the opening and closing ceremony. Before the Games arrived, the area was renovated and enhanced by designs of Santiago Calatrava. Also the roof of the stadium is designed by Calatrava. In this paragraph the factors of post-use creation on area level will be discussed; mobility, routing, program, and the catchment area.
**Mobility**

As stated before, mobility is the factor that determines the accessibility of and travel time to the Olympic Park. Accessibility and travel time have effect on the performance of a certain area (Trip 2007). When the distance between the city centre and the Olympic Park is too long or the travel time between them too high, there is a lower chance of users or mixed users of the Olympic Park and hence of the venues it contains.

The OAKA area is accessible in several ways, from public transports to private transportation. The park is located north from the city centre (9 km) near two main roads, which is contributory to the mobility factor of the area since 55% of the residents of Athens travels by car (TTR 2004). In addition, a metro station, Irini, brings people directly to the park. OAKA is accessible by car, bus and metro. However, the roads surrounding OAKA isolates it from the rest of the city. A bridge for pedestrians enhances this a bit. In figure 4.10 the travel times from the stadium to some important places of Athens are shown. It can be concluded that the area of OAKA is well accessible by public and private transport. The important places of Athens can be reached within 40 minutes, which is similar to the average travel time in Athens. The mobility factor is hence be rated as good.

**Routing**

A location should be part of a route through a city, and not be the end of this route, if it wants to create a circulation of users. When the location is at the end of the route, people will only go there for a specific reason. The OAKA area is surrounded by high-density neighbourhoods and located between the city centre and the highway to the airport of Athens. In this respect one would say the routing is quite well. However, OAKA has no significant function or destination surrounding it and hence there is no important flow of visitors trespassing the area. Even the tourist busses of Athens do not have stops at OAKA and hence there is also no flow of tourists creating some form of liveability in the area. It can hence be concluded that the OAKA area is a semi- to non-connected area.

**Program**

With the factor program is meant the kind of functions, which are present on area level. In order to attract a mixed group of visitors, an area should offer multiple functions, which will in the end create liveability at different times of the day. The OAKA area is especially designed to host sport and music events and this is clearly seen in the functions the area accommodates. There are five major venues, namely the aquatic centre, the indoor hall, the tennis complex, the velodrome and the Olympic main stadium, as well as other additional sport facilities. The indoor sport centre and the Olympic main stadium are, next to sports, also used for music events. The tennis and aquatics centre are open to the public. However, the sport facilities have few supporting...
amenities to offer the public concerning restaurants, bars and leisure functions in general. Malone (2008) states after a visit, “while concerts and football matches are held here since 2004, the magnificent new stadium is in a sorry state. Apart from a group of security guards, just a few athletes were training inside the pool. Nothing else moved, except rubbish in the wind. A 20,000-seat tennis stadium lies empty. So does the cycling stadium. And the Olympic diving area. And the hockey facilities. The list goes on”. In addition, almost half the surface of the OAKA area consists out of a public park so that huge flows of visitors can be handled. In the park no commercial leisure functions can be found and hence the area is mono-functional. It can therefore be concluded that the liveability of the area is low due to the fact that the venues in it are only used when an event takes place, and only by people going to the event, leaving the area as soon as the event ends. The program of the OAKA area is hence labelled as mono-functional.

**Catchment area**

The catchment area is the area and population from which the facility attracts visitors or customers. The catchment area of the Olympic Stadium during the Games is worldwide, however, more importantly is the catchment area of the stadium after the Games are over. For the post-use of the stadium, users are necessary. In the previous chapter, the catchment area for stadiums was set on a radius of 35 km as the crow flies. For the Athens Olympic stadium this means a catchment area as displayed in figure 4.11. The catchment area of 35 km is based on stadiums that have soccer as their main use. In the case of Athens, the main function of the Olympic stadium is organising the matches of two different football clubs, namely AEK Athens and Panathinaikos and hence it is assumed that the catchment area of the Olympic stadium is similar to the catchment area of other stadiums in Europe.

Next to the football matches, the stadium hosts events of national and international scale. For these events, it is difficult to determine the catchment area due to the differences in scale. It can be stated that the football matches mainly attract residents from Athens and its direct surroundings. For the national events, people from all over Greece may be attracted to the stadium, especially when it is the only concert or sport event of that kind in Greece. The same applies for the international events.

**Demand & Competition**

Next to the catchment area, the demand of the users is very important. In Athens, the main spectator sport is soccer. The Olympic stadium can facilitate this sport, since it is the home stadium of two major football clubs of Athens. Though, the Olympic main stadium does have an athlete’s track and players and spectators mostly dislike the atmosphere that is created by this barrier. However, the Olympic stadium (with 75,000 seats) is the only stadium in Athens that is big enough to accommodate football clubs like AEK Athens and Panathinaikos. The other stadiums in Athens, suitable to accommodate football, all have less than 17,000 seats and hence are too small to house the supporters of big clubs. It is assumed however, that the Olympic stadium does have some competition of the Indoor Sports Centre located next to the Olympic stadium. Though the indoor centre has only 18,000 seats, it hosts sports and cultural events, like basketball tournaments and concerts of Beyoncé and Roger Waters. Due to the roof, the indoor stadium can be used during the entire years whereas the Olympic stadium is only used for events from April until October. However, it must be said that the Olympic stadium and the Indoor Sports Centre are both part of the OAKA and hence it could be very well possible that the venues are completing each other, since the same company manages them. A situation comparable to Barcelona then occurs, only without the mobility department to balance the financial aspects of managing the venues.
It can be concluded that the Olympic stadium does not have a standard catchment area when events are concerned but that it does have a catchment area of 35 km when the football matches it hosts are concerned. In addition, the Olympic stadium experiences little to no competition from the other stadia of Athens due to the fact that the Olympic stadium is the only stadium of its size in Athens. When events are concerned, the Indoor Sport Centre might be of competition to the Olympic stadium though.

4.3 THE OLYMPIC STADIUM SPIROS LOUIS
The Olympic stadium Spiros Louis, named after the winner of the first modern Olympic marathon in 1896, was opened in 1982 to host the 1982 European Athletes Championships. After this event it also hosted the 1991 Mediterranean Games and the 1997 World Athletes Championships. Clearly, the stadium was perfectly capable of hosting major sport events. In 2004 it was renovated for the 2004 Summer Olympics and provided with a roof designed by Santiago Calatrava. In this paragraph a more in-depth analysis of the Olympic stadium (figure 4.12) will be provided.

![Figure 4.12 Olympic Stadium Athens (Google Pictures 2012)](image)

Organization & Finance
The amount of sport facilities necessary for the Olympic Games is immense. After the Games, these facilities need to be managed, which is not easily done. In Athens, OAKA S.A manages the Olympic Athletic Centre of Athens (OAKA), which is owned by the Greek government. The other Olympic venues were managed by the Hellenic Olympic Properties S.A. until 2011, when the venues were transferred to the Public Properties Company S.A..

The OAKA S.A. manages the Olympic stadium, the Velodrome, the aquatics centre, the tennis centre and the indoor sports centre. Next to these divisions, the company has many departments of which some are shown in table 4.3. It can even be stated that the amount of departments seems to be over the top. In addition, the same person manages several departments.

Table 4.3 Several departments of OAKA (OAKA 2005)

<table>
<thead>
<tr>
<th>Departments</th>
<th>Departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Personnel</td>
<td>Department of Economics</td>
</tr>
<tr>
<td>Department of Legal Service</td>
<td>Department of Accounting</td>
</tr>
<tr>
<td>Department of Industrial Relations</td>
<td>Department of Purchasing</td>
</tr>
<tr>
<td>Department of Education</td>
<td>Department of ICT</td>
</tr>
<tr>
<td>Department of Public and International Affairs</td>
<td>Department of Research</td>
</tr>
<tr>
<td>Department of Communications and Press</td>
<td>Department of Engineering</td>
</tr>
<tr>
<td>Department of Ministry and Green Spaces</td>
<td>Department of Health Care</td>
</tr>
<tr>
<td>Department of Doping Control</td>
<td>Department of Cultural Events</td>
</tr>
<tr>
<td>Department of Social Services</td>
<td>Department of Sports Promotion</td>
</tr>
<tr>
<td>Department of Administrative Services</td>
<td>Department of Sport Sites</td>
</tr>
</tbody>
</table>
About the methods of operating the stadium, not much is known. The same applies for the income generations and objectives of the company. It can be concluded that not much information is available about the organisation, its objectives and its methods of managing the venues. The information that is available provides the image that the organisation of the OAKA is quite confusing and obscure due to the amount of departments and closed due to the lack of information available.

**Adjustability of the Stadium**

The way in which a venue can adjust itself to the needs of its user determines the degree of use. The Olympic stadium, for instance, has been downsized for the Olympic Games from 81,000 original seats to 72,000 seats during the Games. However, the 75,000 seats the stadium has available during football matches are filled when top clubs like AEK Athens and Panathinaikos are playing their games. As stated before, the athlete’s track is not favourite with football supporters; however, the clubs have no choice than to play at the Olympic stadium since it is the only one in its size and hence big enough to accommodate the supporters. It appears that the stadium is adjustable enough to accommodate sports and cultural events. In cases the stadium cannot be filled by an artist, it is possible to use half the stadium (figure 4.13). The figure also provides some impressions of the events hosted at the Olympic stadium (figure 4.13).

![Figure 4.13 Events at Olympic stadium Athens](GooglePictures2012)

In addition the Olympic stadium has VIP boxes available and hence business and sponsorships can be attracted to visit and support the stadium as well. However, it is assumed that the athlete’s floor and the grass of the stadium are bottlenecks when it comes to organising events other than football or athletics competitions. It is very expensive to protect (and sometimes replace) the track and grass for event promoters. Solving this bottleneck is difficult since it not possible for the stadium to, for instance, create a moveable grass floor, like at the Gelredome in Arnhem, the Netherlands, without major construction work.

It can be concluded that the stadium’s construction is not very adjustable but that the spaces inside give enough flexibility to adjust the stadium to accommodate cultural and sport events. It is assumed a bottleneck is found in the form of protecting the athlete's track and the grass of the stadium. It can be stated that the stadium is slightly adjustable to the needs of its user.

**Architectural value**

Localizing the design of a new facility will greatly enhance the architectural identity of the place and will put the venue on the map. Localizing a facility design can be achieved by the use of unique design elements reflecting the character of the city or country. In the case of the Olympic stadium of Athens, the roof of the stadium in particular represents architectural value. It can be stated that the roof is a landmark for Athens and one of international recognition (figure 4.14).
The same applies to the Velodrome and the landscaping of the OAKA, which are, just like the roof of the Olympic stadium, designed by Santiago Calatrava.

Calatrava writes, “People understand Greek culture in terms of the classical tradition, with its columns, architraves and pediments. But there is also a later Greek tradition, the Byzantine, which is all arcs and vaults. I had to choose how to articulate the project within these traditions. For the very long spaces that had to be overcome in roofing the Olympic Stadium and the Velodrome, I thought the more recent Byzantine tradition was appropriate. However, the sequence of space in plan is very classical. There is also a third, more general tradition at work, the Mediterranean. You see it in the landscaping, the light and colour (with the reliance on white, blue and ocher), the use of materials such as ceramic tile. So I would say of the design for the Athens Olympic Sports Complex that the plan is classical, the elevations are Byzantine, and the spirit is Mediterranean” (OAKA 2005). It must be said however, that even though a landmark is created, this landmark is situated far from the city centre and the other tourist places. It can be concluded that the design of the stadium is localized and a landmark for Athens but that it is located far from the daily activity of Athens and the tourists. It can therefore be stated that the architectural value of the stadium is of reasonable importance to Athens.

Function
The post-use of sport facilities is dependent upon many aspects. One of those aspects is the amount of functions the venue can accommodate. A multi-functional building will have a better chance to be used than a mono-functional building. In the case of Athens, it can be stated that the stadium can facilitate different kind of events, namely sport events and concerts. However, concerts are only organised during the summer months due to the open roof of the stadium. The football matches of the two football clubs using the stadium, on the other hand, are taking place throughout the entire football season. This means that the division in events is won by the sport events. However, if the football matches of AEK Athens and Panathinaikos are excluded, the division of events will be more equal. Athens has hosted the FIFA Champions League final in 2007 and the World Games Special Olympics in 2011. In 2008 Madonna performed at the Olympic stadium and in 2010 U2 gave a concert there. Despite of the other concerts and sport events held, the stadium does not execute any other functions. It is, for instance, not possible to visit the stadium for tourists or to organise a corporate event. In addition, it is assumed that the stadium must experience a few difficulties, especially with hosting cultural events. These are mainly the high production costs of hosting an event in the stadium, the seasonal limitations and maintenance costs of the venue. The costs of event production are high in the Olympic stadium because it is very expensive to cover the grass and the athlete’s track. In addition, promoters have to replace the grass when it is damaged too much. These are expensive costs for the organisers of the event and this must sometimes lead to promoters choosing to host the events at the Indoor Sport Centre (if the amount of spectators allows it). In addition, the stadium has no roof and can only be used during half a year.

It can be concluded that the stadium is mainly used for sport events. However, besides the weekly matches of the football teams, mayor sport events are hosted only a few times in the past 8 years. The concerts seem to be a nice bonus to hosting sport events, which is the main purpose
of the stadium. In addition, no business events are hosted at the stadium and therefore the stadium can be labelled as mono-functional.

4.4 CONCLUSION ATHENS
In this paragraph the conclusions of the Athens case will be provided and specified. Each aspect of post-use creation will be examined, on city, area and building level.

City level
Athens did not manage to use the Olympic Games as a full catalyst for the urban regeneration of the city. The organisation did not have a proper strategic planning for the period after 2004, since the plan contained apparent contradictions. In addition, the objective of Athens shifted during the pre-Games period from urban regeneration to hosting the Games, mainly due to the lack of focus and clear goals. Despite promoting the desire to protect and create open space, development focused primarily on green field sites and overlooked possible brownfield locations. Emphasis was placed on gaining spectacular buildings and monuments to create a sense of place and to signify the 2004 Games. Athens was confronted with some time challenges and political changes during the preparation of the Games, which caused significant damage to the planning of the post-use period of the legacy. Instead of the immediate implementation of the master plan, the government started a review in early 1998 'to eliminate potential problems that might arise during the implementation phase due to the existing zoning and town planning legislation' (ATHOC! 2005; Gold and Gold 2007). These considerations led to considerable and time-consuming changes to the original strategy. The urban planning factor is hence labelled as badly integrated.

When stakeholders and organisation are concerned, a new development model was established after Athens had changed the master plan for the Games, just after the Games were awarded. This model can be seen as one giant organisation, as clear distinction between tasks was not obvious, of which the government had full responsibility and carried the full risk (Prooye 2010). The organisation of Athens was changed multiple times during the preparations of the Games. This in combination with little experiences led to delays in the Olympic developments. The government was in control of the developments and bore the risks as well. It can be stated that a better-organised organisation of the Games could have saved a lot of time delays.

In addition, the residents of Athens did not benefit from hosting the Games as they could have. There are benefits from the infrastructure and decrease in traffic pollution caused by the Olympic developments. And a new airport, a peripheral road, tramways in the city, and a light rail are serving the residents of Athens. However, the post-use of the venues was not kept in mind and the legacy (except infrastructure) is useless to the residents of Athens and abandoned to decay. In the end it can be stated that the social benefits for Athens’ residents are more or less equal to the costs they suffer from the Olympic Games of 2004.

Area level
The area of OAKA is well accessible by public and private transport. When looking at the travel times, the important places of Athens can be reached within 40 minutes, which is similar to the average travel time in Athens. Therefore the mobility factor is rated good. However, OAKA has no significant function or destination surrounding it and hence there is no important flow of visitors trespassing the area. Even the tourist busses of Athens do not have stops at OAKA and hence there is also no flow of tourists creating some form of liveability in the area. It can hence be concluded that the OAKA area is a semi- to non-connected area. In addition, the liveability of the area is low due to the fact that the venues in it are only used when an event takes place, and only by people going to the event, leaving the area as soon as the event ends. The program of the OAKA area is mono-functional and hence no liveability is created in the area.

The Olympic stadium does not have a standard catchment area when events are concerned but that it does have a catchment area of 35 km when the football matches it hosts are concerned. In addition, the Olympic stadium experiences little to no competition from the other stadiums of Athens due to the fact that the Olympic stadium is the only stadium of its size in Athens. When events are concerned, the Indoor Sport Centre might be of competition to the Olympic stadium though.
Building Level
It seems that Athens gave the management of the Olympic venues good thought in the pre-Olympic period by outsourcing the management to the OAKA S.A.. However, not much information is available about the organisation, its objectives and its methods of managing the venues. The information that is available provides the image that the organisation of the OAKA is quite confusing and obscure due to the amount of departments and closed due to the lack of information available.
Furthermore, the stadium’s construction is not very adjustable but the spaces inside give enough flexibility to adjust the stadium to accommodate cultural and sport events. It is assumed a bottleneck is found in the form of protecting the athlete’s track and the grass of the stadium. It can however be stated that the stadium is slightly adjustable to the needs of its user.
The design of the stadium is localized and a landmark for Athens however, it is located far from the daily activity of Athens’ residents and its tourists. It can therefore be stated that the architectural value of the stadium is of reasonable value to Athens.
The stadium is mainly used for sport events. However, besides the weekly matches of the football teams, major sport events are hosted only a few times in the past 8 years. The concerts seem to be a nice bonus to hosting sport events, which is the main purpose of the stadium. In addition, no business events are hosted at the stadium and therefore the stadium can be labelled as mono-functional.

Framework
The findings are specified in the framework on the next page (figure 4.15) which will make it possible to make a good comparison between cases during the cross case analysis. The framework also provides the different aspects of post-use creation with a score. The maximum score exists out of three plusses (++++), which stand for outstanding. The minimum score is shown by three minuses (--), which stand for weak. Overall it can be stated that the Athens case has not been praised by the world and that there is a good reason for this. Even eight years after the Olympic Games, the Olympic legacy is useless and abandoned, except for the infrastructure and the Olympic stadium. The objective to put Athens on the map by hosting the Games events has been achieved, however, the question remain if the image created is a positive one. Overall Athens is rated with a double minus (--).
### Figure 4.15 Framework Athens

<table>
<thead>
<tr>
<th>City Level</th>
<th>Athens 2004</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Integration</strong></td>
<td></td>
<td>--</td>
</tr>
<tr>
<td>Master Plan/Strategy</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stakeholders</strong></td>
<td>Greek government, Athens municipality</td>
<td>--</td>
</tr>
<tr>
<td><strong>Organisational Structure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Organisational Structure Diagram" /></td>
<td></td>
</tr>
<tr>
<td><strong>Social Costs &amp; Benefits</strong></td>
<td>+Slight increase in tourism</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>+Infrastructure network improvements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+Increase in knowledge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+Improvements of environment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Forced evictions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Expensive and useless venues</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Massive debts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Decrease in business image</td>
<td></td>
</tr>
<tr>
<td><strong>Area Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mobility</strong></td>
<td>Well accessible by public transport and by car</td>
<td>++</td>
</tr>
<tr>
<td><strong>Routing</strong></td>
<td>Semi/non connected</td>
<td>+</td>
</tr>
<tr>
<td><strong>Program</strong></td>
<td>Mono-functional</td>
<td>---</td>
</tr>
<tr>
<td><strong>Catchment Area</strong></td>
<td>•35 km</td>
<td>+</td>
</tr>
<tr>
<td><strong>Building Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Adjustability</strong></td>
<td>Slightly adjustable</td>
<td>+</td>
</tr>
<tr>
<td><strong>Architectural Value</strong></td>
<td>Reasonable value for Athens</td>
<td>+</td>
</tr>
<tr>
<td><strong>Function</strong></td>
<td>Multiple functions possible: sports and concerts</td>
<td>+</td>
</tr>
<tr>
<td><strong>Organisation</strong></td>
<td>OAKA, S.A.</td>
<td>+</td>
</tr>
<tr>
<td><strong>Finance</strong></td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td><strong>OVERALL</strong></td>
<td></td>
<td>--</td>
</tr>
</tbody>
</table>

---

**Notes:**
- The table and diagram provide an overview of the Athens 2004 Olympics planning and execution, focusing on integration, stakeholders, organisational structure, social costs and benefits, mobility, and building level aspects. The outcomes include positive and negative impacts on various aspects of the Olympic planning, such as infrastructure, environment, and public perception.

---

Master Thesis – The Olympic Adventure - Kiki Klee – June 2012
5 BEIJING 2008

In 2008 Beijing hosted the Olympic Games. The city won the bid over four other cities that also wanted to organize the Games. The Chinese government promoted the Games and invested in new facilities and transportation systems. A total of 37 venues were used to host the event including 12 venues constructed especially for the Games. Some criticized the choice of China as Olympic host because of the China's human rights record but the IOC suggested that the selection might lead to improvements in human rights in China. The goals of Beijing for hosting the Games were to fully display China's 5,000-year history and its glorious culture, to express the common aspiration of the Chinese people to jointly seek peace, and to leave a unique legacy for China and world sports (Beijing Organizing Committee for the Games of the XXIX Olympiad 2008). In the first paragraph, Beijing on city level will be discussed. The second paragraph will provide an analysis on area level, concentrating on the Olympic Park and the third paragraph will elaborate on building level, namely the Olympic main stadium. Finally, the fourth paragraph will conclude the lesson learned from this case.

5.1 BEIJING

Beijing is the capital of the People's Republic of China but is also known as Peking. As the name says in Chinese, the city is located in the north east of China (figure 5.1). Beijing is China's second largest city by urban population (after Shanghai) and is the country's political, cultural, and educational centre. The population of the city is 19,612,368 people in 2010 and the Gross Domestic Product (GDP) of China was $7,600 per capita in 2011. However, Beijing’s was $ 12.447, which is much higher than the nation’s average. The GDP is the value of all final goods and services produced within a nation in a given year (Indexmundi 2011) and it is an indicator for the economic welfare of a country. However, there is a lot of debate over the use of the GDP since it makes no distinction between economic activities that really improve the living standard of people and the economic activities that do not. According to the International Monetary Fund China has a GDP beneath the world GDP per capita, currently $10,700, and hence it can be stated that China has an economic welfare that is lower than the world’s average. However, Beijing has a GDP of $ 12.447 and hence has an economic welfare above the world’s average.

In 1949, during the Chinese civil war, communists seized control over Beijing. On October 1 of the same year, the Communist Party of China, the party of Mao Zedong, announced the beginning of the People’s Republic of China. Beijing would be the capital of the new government. In the 1950’s, the city began to expand beyond the old walled city and its surrounding neighbourhoods, with heavy industries in the west and residential neighbourhoods in the north. A large part of the old city wall was torn down in the 1960’s to make way for the construction of the subway and a second ring road. During the Cultural Revolution (1966-1976), the Red Guard movement began in Beijing and the city's government fell victim to one of Mao's first purges. In 1976, the Cultural Revolution came to an end and since the early 1980s, the urban area of Beijing has expanded greatly with the completion of the 2nd Ring Road in 1981 and the subsequent addition of the third, fourth, fifth and sixth ring road. However, in recent years, the expansion of Beijing has also brought to the forefront some problems of urbanization, such as heavy traffic, poor air quality, the loss of historic neighbourhoods, and a significant migration of farmers to the city. China has rapidly become one of the most powerful nations in the world and sports have always played an important role in the Chinese culture. Politics and sports were closely interwoven, and sports were used as an instrument for the promotion of pride and identity (Gold and Gold 2007). By hosting the Games, Beijing had to change from a producer city to a city of consumption, of knowledge-based activities and with an enhanced international...
profile. Due to the fact that the government was in strong control of the developments, they made sure the developments fit as optimally as possible in the urban master plan of the city. Therefore the Olympics were used as a catalyst for indirectly related developments throughout the city (Gold and Gold 2007). These Olympic developments are elaborated in the next subparagraph.

The Olympic Development

The main goal of the Games of 2008 was to provide China with global recognition. In addition, the legacy of the Games should provide Beijing the chance to become a city of consumption, of knowledge-based activities and with an enhanced international profile. Beijing was suffering from heavy traffic and poor air quality. By using the Games as a catalyst for indirectly related developments throughout the city the theme of ‘Green Games’ was related to Beijing. In contradiction with Barcelona and Athens, Beijing only has one Olympic Park, the Olympic Green (figure 5.2). Venues outside the park are not clustered but are spread across town (figure 5.3).

Figure 5.2 Location Olympic Park

Figure 5.3 Olympic venues (en.beijing2008.cn)

“The Olympic plan included the construction of the fifth and sixth ring roads, the expansion of several expressways and railways connecting Beijing to surrounding cities, the construction and reconstruction of 318 kilometres of roads and 154.5 kilometres of urban light railway, the construction of eight new urban subway lines and the renovation of the two existing lines, the expansion of Beijing’s bus system and the extension of the Third Terminal of Beijing Capital International Airport” (Chen 2012a).

The Olympic Green

As stated above, a total of 37 venues were used to host the Games of 2008. Of these 37 venues, 12 venues were constructed especially for the Games and ten of them are located in the Olympic Park. The newly build venues are the Olympic stadium, the aquatics centre, the indoor stadium and the Beijing Olympic green tennis court. The buildings that already existed were the Olympic sports centre stadium, the Olympic sports centre gymnasium and Yingdong natatorium of national Olympic sports centre. Beijing also made use of temporary venues. Temporary venues in Beijing centre were the fencing hall of national convention, the green hockey stadium, the green archery field and Wuksong sports centre baseball field. Also located in the Olympic Green is the Olympic Village, which exists out of twenty-two 6-story buildings and twenty 9-story buildings. When post-use is concerned, the venues and facilities, which were built near and for the universities, are in use.

Investment

As describe above, Beijing has made use of the venues of the Asian Games to host the Olympic Games. In addition, new venues were developed as well as the Olympic Village. Developments like these need to be paid for and as a result Beijing invested $20 billion, directly and indirectly, in the Olympic Games. These investments can be divided into different categories; operational costs for organising the event, costs for venues and accommodations, costs for infrastructure and environmental costs (figure 5.4).
Of the $20 billion spent, only $2 billion was needed to host the event itself, however, $13.6 billion was used for investments in infrastructure (Preuss 2004; Fida et al., 2008; Brunet and Xinwen 2009; Prooye 2010). Of the total finance 90% derived from public funds, the other 10% was provided by revenues from marketing sales and used for the event itself (Fida et al., 2008; Prooye 2010). The approaches used to finance the Olympic developments range from Public-Private Partnerships, like the BOT model (Build-Operate-Transfer) to public and private investments and lottery money (Houlihan and Green 2011; Brunet 2009).

Urban Planning
In this subparagraph, the urban planning of the Olympic Games will be investigated. Are the developments planned and hence are they connected to the long-term perspectives of the host’s urban regeneration plan? It is believed that whenever Olympic developments are connected with the existing plans and policies, they will have a more positive impact on the host city.

Beijing was a severely polluted city in the 1990’s, with relatively poor infrastructure. By hosting the Games, Beijing wanted to change from a producer city to a city of consumption, of knowledge-based activities and with an enhanced international profile (Gold and Gold 2007). The establishment of a new image was an important ambition inserted in the mega-event strategy of Beijing (Chen 2012). In 2001 the bid of the Olympic Games was awarded to Beijing and already much had changed by that time. When China had decided to bid, mainly to modernize and internationalize Beijing, short- and longer-term measures were taken with the 2008 Games in mind, including, for example, investment in infrastructure, development of new hotels; establishment of parks, green and silver bins to increase awareness of environment, removal of older cars from the city to reduce air pollution, banning people burning coal in the city, and the closure of the Shougang factory, which was a steel plant (Gold and Gold 2007). Due to the fact that the government was in strong control of the developments, they made sure the developments fit as optimally as possible in the urban master plan of the city. The Olympic preparations provided an opportunity to combine Beijing’s urban restructuring and environmental upgrading with its economic restructuring (Chen 2012). “The Olympic Action Plan of Beijing set out clear guidance for the objectives and implementation of strategies for strengthening the positive effects and mitigating the negative effects, while constantly taking post-use into consideration” (Chen 2012). In addition, Chen (2012) states there was a clear integration of the Olympic Action Plan and Beijing’s other long-term planning goals, which clarifies the position and goals, such a mega–event strategy would contribute to the overall city vision.

The site of the Asian Games of 1990 was renovated and expanded by the Olympic Park and Village. Infrastructures were enhanced as well as the environmental conditions of Beijing. Therefore the Olympics were used as a catalyst for developments throughout the city. However, according to Chen (2012) what was not undertaken in Beijing was to focus on underutilised areas of the city. “Beijing focused mainly on locations, which already had good facilities for staging sports events and on trying to create a new urban sub-centre with sports and leisure functions. The direct consequence of this choice was to increase the gap in urban quality between
the north and the south of Beijing, as most of the investment was poured into the northern area of the city” (Chen 2012).

It can be concluded that Beijing used the Olympic Games as a catalyst to execute the existing urban master plan and to realise objectives that were determined before the Olympic Games. They connected the long-term perspectives of the city to the Olympic development quite well, however, there is also an increased gap in urban quality between the north and the south of Beijing. The urban planning aspect of post-use creation can nevertheless be labelled as well integrated for the Beijing case.

**Stakeholders & Organisation**

The stakeholders involved in the Olympic development are of great influence to the outcome of this Olympic development. In case of the Beijing developments, the central government of China played an important role. The founding of the People’s Republic of China as a communist state led to three models of development; first the Soviet model in which centralization and heavy industry were key features; then the Maoist model in which the decentralized commune was a major element; and finally the Dengist model of market socialism, or ‘socialism with Chinese characteristics’ (Gold and Gold 2007). The Dengist model took China down the capitalist road. It was based on an open door for foreign direct investment with the objective of modernizing China’s agriculture, industry, defence, science and technology (Gold and Gold 2007). The Chinese state had set the preconditions for investment to enter, the local state provides the infrastructure, and foreign companies provide the necessary investment through which China’s resources of land and labour could be fully exploited (Gold and Gold 2007).

It was the central government who initiated the bid for the Olympic Games with the wish to show the world that China was a new and open, leading nation and to modernize the economic sectors. It can hence be said that the developments for the Games were under strong control of the active Chinese government. This is clearly shown in the organisational model of the Olympic developments (figure 5.5). Prooye (2010) describes the model as ambitious, clearly structured, strongly controlled by the active government, docile private involvement and a powerless societal involvement. Some high officials were removed from their function due to corruption (Gold and Gold 2007).

In order to create social support, Beijing had an on-line platform for public participation in the Olympic plan and approximately 3 million volunteers to organise the event.

![Organisational model of Beijing (based on Prooye 2010)](image)

The enormous investments for the developments were necessary for Beijing to access the Olympic level. Integrating these investments with the infrastructure ensured that the infrastructure could support the growth of the city, as the population was quickly growing and the economic sectors were modernized (Gold and Gold 2007; Prooye 2010). To ensure the post-use of the venues, the development locations were mainly in the neighbourhood of the university or based on the choices made for the Asian Games of 1990 (Gold and Gold 2007).
Social Costs and Benefits
Organising an event like the Olympic Games has a major impact on the host city. These impacts are not only the physical ones. The social costs and benefits are the impacts that influence the lives of the inhabitants of the host city, and in the end, determine if they look back on hosting the Games in a positive or a negative way (see chapter 2.3.1).

In China, sport is an important factor in life and seen as an instrument for the promotion of national pride and identity (Gold and Gold 2007). However, China does have growing obesity problems and hence the awareness the Olympic Games bring about a better lifestyle and the renovated and new sporting facilities are a benefit for Beijing’s residents. Another important benefit of hosting the Olympics were the more than 5000 sets of sports equipment and facilities in residential communities, along major roads and villages by the end of 2005 (figure 5.6), with financial input (over $83 million) from the profits from the local sports lottery (Chen 2012).

In addition, the Olympic Games have benefit Beijing on environmental terms. Over 60 square kilometres of green zones have been created since 2004 and green public space has reached an average of 15 square meters per person. Meanwhile, air and water quality has improved as well (Gold and Gold 2007). Also, Beijing relocated the Capital Iron and Steel Works to a coastal location and Beijing has more blue-sky days (one of the set targets), an increased use of LPG in buses, and greater restrictions on pollution via industry or vehicles (Gold and Gold 2007).

Beijing needed an improvement in its infrastructure due to the expanding city and growing economy. The Olympic Games brought this improvement by expanding the airport, creating 7 new subway lines with 80 new stations and the new roads and ring roads which are now supporting the city. Due to all the investments made and the transformation in to a service-based city, Beijing is interesting city to invest in and a more attractive city for businesses. In 1990 Cushman and Wakefield (2012) did a survey among 500 corporations in Europe and since that time the survey has provided an overview of the perceptions that corporates have about cities across Europe and their relative attractiveness, and how perceptions have changed over that time. Later they added cities outside Europe to the questionnaire in order to measure the willingness of European companies to establish a company department in a city outside Europe. Beijing was awarded the 30th place in 2003. In 2010 Beijing was listed 20th (Cushman and Wakefield 2012), which is a very good result for such a short period in time. In addition, the employment rate of Beijing increased significantly due to the Olympic Games. Approximately 620,000 jobs were created yearly (Prooye 2010).

When tourism is concerned, Beijing certainly benefits from hosting the Games and the international promotion of the city it brings along. In the first six months of 2009, some 85.4 million tourists visited Beijing, an increase of 20.8 % year on year (Xinzhen 2009). According to the statistics of the Beijing Tourism Administration (BTA 2012), tourism markets have increased during the first half of 2010 with 8.2% year-on-year. In 2011 the tourism markets are increased with 6.1% year-on-year (Na 2010) and in the first quarter of 2012 the tourism markets increased with 9.3% year-on-year (BTA 2012). The Bird's Nest has become a major tourist spot, attracting 20,000 to 30,000 visitors per day, according to the Beijing Tourism Administration (BTA 2012). However, during the preparation period and during the Games self, controversy of human right issues and the removal of human right groups led to tighter measures in issuing visa to foreign
visitors and similar measures for domestic visitors, resulting in a major dip in tourist numbers in 2008 but a big increase after the Games.

Another benefit is of course “Beijing being able to exchange and learn advanced management and technological skills from Western countries” (Wei and Yu 2006). Hosting a mega-event like the Olympic Games provides lots of knowledge and experience for the organisers.

In Beijing the real estate prices have increased over the years leading to the Olympic Games. While this is a benefit for the people who bought their houses before the Olympics, it also means that the housing accessibility for some groups of the population is decreasing. There are two periods to describe the price changes of real estate in Beijing. The first stage is 1998-2001, which can be seen as non-Olympic time with a price index rate of 0.45% yearly. The second stage is 2002-2006, which can be seen as pre-Olympic time with a price index rate of 4% yearly (Xuebing and Yongling 2012). In their research, Xuebing and Yongling (2012) stress that hosting the Olympic Games has been increasing the rising trend of real estate prices before 2008. However, the general trend of real estate prices is expected to be consistent with the economic cycle of Beijing eventually. Next to the increasing house prices, 1.5 million people were relocated and 300,000 people were evicted to make place for developments. Even though most of these relocations and evictions were indirectly related to the Olympic Games, it led to protests from human right groups (Gold and Gold 2007; Fida et al., 2008). Finally, according to Chen (2012) Beijing did not focus on underutilised areas of the city, creating a gap between the northern and southern part of the city.

Table 5.1 Social costs and benefits

<table>
<thead>
<tr>
<th>Social Benefits</th>
<th>Social Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>New sport facilities (also outdoor)</td>
<td>Increase in real estate prices</td>
</tr>
<tr>
<td>Increase in employment</td>
<td>Decrease in housing accessibility</td>
</tr>
<tr>
<td>Increase in tourism</td>
<td>Eviction and relocation of people</td>
</tr>
<tr>
<td>Improved green public open space</td>
<td>Human right violations</td>
</tr>
<tr>
<td>Improved transportation network</td>
<td>Gap between north and south Beijing</td>
</tr>
<tr>
<td>Improved business image</td>
<td></td>
</tr>
<tr>
<td>Relocation of steel industry</td>
<td></td>
</tr>
<tr>
<td>Enhanced environmental quality</td>
<td></td>
</tr>
<tr>
<td>Increase in knowledge</td>
<td></td>
</tr>
</tbody>
</table>

It can be concluded that the residents of Beijing benefit enormously from the Games until this day on. The developments and successful city marketing have made the city better accessible, greener and attractive to tourists and businesses. The social costs of the Games are, however, quite serious due to the human right violations. In table 5.1 the costs and benefits are summarized.

This paragraph provides an idea about Beijing before and at the time of the Olympic preparations, about the Olympic development of Beijing and about the aspects of post-use creation on city level. In the next paragraph, the aspects of post-use creation on area level will be elaborated. In the Beijing case, the area, which will be investigated, is the Olympic Green. As stated above, the Olympic Green houses the Olympic main stadium, which will be investigated on the aspects of post-use creation on building level in paragraph 5.3.
5.2 THE OLYMPIC GREEN

The Olympic Green is the Olympic Park of Beijing and besides the Olympic stadium it also houses the Olympic Village (figure 5.7). In 1990 the site was used for the Asian Games and in 2001, when Beijing was elected host city, it was expanded for the Olympic Games. The existing venues were renovated, while the other districts of the park would become the home of the Olympic stadium, the national indoor stadium, the aquatics centre, the main press centre, the international broadcast centre and the Olympic village (BOCOG 2012). In this paragraph the factors of post-use creation on area level will be discussed; mobility, routing, program, and the catchment area.

Figure 5.7 Olympic Green (Google Pictures 2012) North >

Mobility

As stated before, mobility is the factor that determines the accessibility of and travel time to the Olympic Park. Accessibility and travel time have effect on the performance of a certain area (Trip 2007). When the distance between the city centre and the Olympic Park is too long or the travel time between them too high, there is a lower chance of mixed users visiting the Olympic Park and hence the venues it contains.

In case of the Beijing Olympic Green, the national stadium is chosen as the starting point for the mobility assessment due to the fact that the Olympic park is quite large and it takes about half an hour to get from the Olympic stadium to the Olympic village by foot or by public transport (±3 km). The Bird’s Nest, only 27km from the Beijing Capital International Airport and 18km from the Tiananmen Square, is accessible by taking any of the nearly 50 bus lines or the Metro Line 8. However, the stations of these bus and metro lines are located at a 10-minute walk from the stadium. Since Beijing is a very big city, this is considered not to be that long. In addition, public transport is the main mean of transportation in Beijing. Furthermore, the 4th ring road of Beijing is trespassing the Olympic stadium and the Olympic Green has 8 parking places available and hence the accessibility by car is adequate as well. However, the organisation that operates the Olympic stadium warns that in order to avoid traffic congestion, it is highly recommended to take advantage of public transport, particularly when traveling to and from major events (NS 2011).

More important than how to access the area is the time it takes to do so. In figure 5.8 the travel times from the Olympic Stadium to the most important places in Beijing are shown (based on Beijing Subway 2012). From the city centre to the Olympic Green it will take about 30 minutes using the public transportation possibilities and since Beijing is a big city this is not that long. The average travel time is about an hour while it can take up to three hours to get in to the suburbs of Beijing (Chen 2012). The airport is too far away to affect the liveability of the Olympic Green, since it takes approximately 50 to get to the airport by public transport and 70 minutes by car.
It can be concluded that the accessibility of the Olympic Green is quite well organised. The area is well accessible by car and by public transportation. In addition, it takes less than an hour to get to the city centre of Beijing, which is not that long for a city of Beijing’s size. It does take quite some time to get to the airport; however, mainly people are not travelling directly from the airport to the Olympic Green and the other way around. Hence the mobility aspect of the Beijing Olympic Park is labelled as good.

Routing
A location should be part of a route through a city, and not be the end of this route, if it wants to create a circulation of users. When the location is at the end of the route, people will only go there for a specific reason.

In case of the Olympic Green area, the routing is medium. The Olympic park is situated in the north of the city and is not part of a daily route. The Olympic Village is located 3km from the Olympic stadium and hence this influences the routing minimally. However, the good accessibility of the area will bring people to the area, not only when they want to watch a sport event or concert. The Olympic Green is a tourist destination and the Olympic stadium attracts thousands of visitors each day (BTA 2012). In addition, the route of the Hop-on Hop-off tourist busses crosses the area and brings the tourists to the Olympic park from the early morning until the end of the day. Also the Olympic stadium is open for visits, and it offers different recreational activities. Also the park itself has recreational activities and the residents of Beijing also visit the area.

It can be concluded that the Olympic Green is not on a certain route for the residents of Beijing. However, they will come if an event is hosted or to enjoy a day in the park. For tourists the Olympic Green is on the route since the tourist busses are trespassing the area. Taking this into consideration, the factor routing will be marked medium/good.

Program
With the factor program is meant the kind of functions, which are present on area level. In order to attract a mixed group of visitors, an area should offer multiple functions, which will in the end create liveability at different times of the day. As stated before, the Olympic Green houses, among others, the Olympic main stadium, the aquatic centre, the indoor stadium and the Olympic village. The functions of these venues are all different. International events, both sport and cultural related, are hosted at the Olympic main stadium while the Olympic village is a residential area. In addition, the main stadium is a tourist attraction and it offers all kinds of
recreational activities. Besides these venues the Olympic Green houses the Chinese National Convention Centre, where many people work during the day, and are trespassing the area as well. The venues are used extensively for sports events, cultural activities, exhibitions, business, tourism and recreations (BOCOG 2008) and hence it can be stated that there are quite some different functions represented at the area. On an empty site behind the Olympic stadium an amusement park is build (figure 5.9) with, among others, a roller coaster, a merry-go-round and a Ferris wheel. However, the quality of these kinds of amusement parks is often so bad that they do not attract that many visitors (Chen 2012).

On an empty site behind the Olympic stadium an amusement park is build (figure 5.9) with, among others, a roller coaster, a merry-go-round and a Ferris wheel. However, the quality of these kinds of amusement parks is often so bad that they do not attract that many visitors (Chen 2012).

Figure 5.9 Amusement park behind the Olympic stadium (NS 2011)

Next to the tourists and working people, the residents of Beijing also visit the area. While they will not visit the venues, they do use the park for recreational purposes. It is for instance possible to rent roller-skates and explore the Olympic Green on wheels. In addition, Chinese parents meet near the Olympic stadium trying to find a good match for their offspring. There is enough to do to spend a complete day at Olympic Green. Next to the amusement park, the Olympic stadium provides tours, restaurants, a museum and of course sport and cultural events every now and then. The aquatic centre is since 2010 used as a subtropical swimming pool and the indoor stadium is used for sport competitions, cultural and entertaining purposes and as a multi-functional exercise centre for local residents. It can hence be stated that the program of the Olympic Green is more than only sport and culture related, which leads to a mixed group of users and hence liveability of the area. The program of the area is therefore labelled multi-functional.

Catchment area
The catchment area is the area and population from which the facility attracts visitors or customers. The catchment area of the Olympic Stadium during the Games is worldwide, however, more importantly is the catchment area of the stadium after the Games are over. For the post-use of the stadium, users are necessary. In chapter 2, the catchment area for stadiums was set on a radius of 35 km as the crow flies. However, the catchment area of 35 km is based on stadiums that have soccer as their main use. In the case of Beijing, the main purpose of the Olympic stadium is tourism and organising events. These events differ in scale and while some are regional, others are national or international orientated. This means that there is no standard catchment area for the stadium due to the difference in events that are hosted by the stadium.

Competition & Demand
However, there is a difference between the users of the Olympic stadium and the other stadiums in Beijing. While the catchment area of the stadium depends on the events that are taking place, the users, or rather the promoters of the events, can be defined more easily. Due to the differences between the Olympic stadium and its competition, different promoters are attracted. The Olympic stadium is a large (80,000 seats), high quality venue, which is expensive to rent. Other stadiums in Beijing, for instance the National Indoor Stadium (18,000 seats), are smaller and less expensive to rent (Chen 2012). This distinction leads to a division in demand. According to Chen (2012) it is comparable with the location of offices. Some companies can afford to have their office at an A location while others are at a B or C location. In other words, the Olympic
stadium does have quite some competition however, due to the differences in quality and scale, this competition is not equivalent. Nevertheless, the National Indoor Stadium can be used the entire year while the Olympic stadium is dependent on the weather and hence is mostly used from April until October. Furthermore, the size of the Olympic stadium is one of its plus and downsides. In China, the principal spectator sport is football. However, where European football clubs attract 100,000 spectators (Barcelona FC), the Chinese football clubs exceed themselves when 30,000 spectators are coming to watch their matches. This is one of the reasons why the Bird’s Nest does not have a football club as its tenant. Initially, the football club Beijing Guo’an intended to play at the Olympic stadium but due to their superstition of changing stadiums, the size of the stadium and the high maintenance costs they decided to stay at their current stadium. In addition, the Olympic stadium has an athlete’s track, which is not appreciated by the spectators of other sport matches. If this is a disadvantage for the Olympic stadium is to be considered, since the Barcelona case showed that having a tenant affected the opportunities to host events.

It can be concluded that the Olympic stadium does not have a standard catchment area but that the catchment area depends a lot on the kind of event that takes places. In addition, the Olympic stadium experiences little to no competition from the other stadiums of Beijing due to the fact that the quality and size of the stadiums are completely different.

5.3 THE OLYMPIC STADIUM OF BEIJING

One of the objectives of Beijing for hosting the Olympic Games of 2008 was the opportunity to create a new urban image as a service orientated and global city. One way of reaching this goal was the development of the Olympic stadium. The design of the Bird’s Nest (figure 5.10) created a landmark for Beijing and a number one tourist attraction. In this paragraph a more in-depth analysis of the Olympic stadium will be provided.

![Figure 5.10 Olympic Stadium - Bird’s Nest Beijing (Google Pictures 2012)](image)

Organisation & Finance

The amount of sport facilities necessary for the Olympic Games is immense since more than 25 different sports need to be facilitated. But even more immense is the task of the host city after the Games have left town. The different sport facilities need to be operated and maintained, a task that is not easily performed.

In case of the Beijing Olympic stadium, a consortium was composed back in 2003, with the approval of the Beijing Municipal Government. This consortium became the owner/manager of the National Stadium and it existed out of the China International Trust and Investment Company (CITIC), the Beijing Urban Construction Group, Guan Elstrong from Hong Kong and the Golden State Holding Group from the United States (NS 2011). Later, the "Joint Operation Contract" with the Beijing State-Owned Assets Management Co., Ltd. (BSAM) was signed. This meant the National Stadium Co., Ltd. (NS) was born. In figure 5.11 the organisational chart of the NS in its beginning years is shown.
The NS was made up of the Beijing State-Owned Assets Management Co., Ltd. (BSAM), who had a 58% investment interest in the stadium, and the CITIC Group consortium, who had invested 42% in the venue (NS 2007). The CITIC Group was granted a 30-year chartered management right to the venue, after which management privileges would go to the government representative, BSAM (NS 2007). However, the challenge of operating the stadium as a feasible initiative proved too much for CITIC, which quietly handed over its management rights back to the government just 12 months into the 30-year contract (Jiang 2009). Hence the NS is now a completely public company.

An important objective of the now public National Stadium is to enhance the progress of sports culture among young people and the greater mass, encourage environmental protection and show greater concern for disadvantaged groups including the poor, homeless and disabled (NS 2011). In order to achieve this social goal, the Olympic stadium promotes public welfare by undertaking social obligations, appealing for goodwill efforts and holding non-profit activities so as to build up its brand image and create a favourable social environment (NS 2011).

In addition, tourism is a very essential aspect of the Olympic stadium. Each day tens of thousands of people are visiting the stadium and enjoying the activities created for them. Especially when the income of the stadium is concerned, it can be seen how important the tourism sector is for the existence of the stadium. In figure 5.12 the income division of the Bird’s Nest is shown.

In its first year after the Olympics of 2008, the stadium generated an operational income of $38.2 million (Xinzhen 2009). Nevertheless, the 70% of the income the tourism sector is bringing the
stadium is already enough to cover the maintenance costs. While this source of income is sufficient on the short term, the question remains whether or not it is enough for the long-term period. In 20 years from now the stadium may very well not be the number one tourism attraction of Beijing anymore and other sources of income need to be found by that time. It can be concluded that Beijing gave the management of the Olympic venues good thought in the pre-Olympic period. They used a public tender for the procurement of the ideal management company for the National Stadium. The BSAM remained the owner of the venue with 52% of the shares and hence had the final say when it came to important decisions. However, after only one year the private company CITIC bailed out on the management of the stadium and ever since, the NS is directed by the public company BSAM. They financially support the stadium by means of subsidies. However, due to the tourism sector, the stadium is able to generate enough income to cover the maintenance costs, at least for now.

Adjustability of the Stadium

The way in which a venue can adjust itself to the needs of its user determines the degree of use. The Olympic stadium, for instance, has been downsized after the Games from 91,000 to 80,000 seats today. The amount of 91,000 seats was too much for the stadium but necessary for the Olympic Games. However, it can be stated that the amount of 80,000 seats is still quite high since sporting events attract fewer people in China as they would in Europe for instance. As stated before, the Beijing Guo’an football club does not want the stadium as its home since they normally attract only 10,000 spectators and will be embarrassed if the other 70,000 seats are empty. On the other side, the stadium is able to attract a full house for events like concerts and snow world.

The National Stadium Co., Ltd., (NS) is responsible for the management of the Bird’s Nest and in order to represent Beijing and the stadium in their best way possible, the promoters of events need to follow a process before the event can take place. In short this means that when a client contacts the NS, they will describe the client the relevant equipment and facilities as well as the rental prices of the stadium and invite them to a site visit. The client has to provide plans for the event, for security and for the construction of stages etc. Then, a coordination conference will be arranged with the Construction Department, the Facilities Department and the Security Department of NS to evaluate the plans. Eventually, the event preparation will be initiated, and the scheme for coordination will be set up between the client and the relevant departments of the NS (NS 2011). In this way, NS hopes to organize diverse, representative events of high quality. This strategy seems to work quite well as the events hosted at the stadium are rather divers. It appears that the stadium is adjustable enough to accommodate all kinds of sports and cultural events, as well as corporative events. In the figure below, some impressions of the events hosted at the Bird’s Nest are provided (figure 5.13).
In addition, the Bird’s Nest has VIP boxes available and hence business and sponsorships can be attracted to visit and support the stadium as well. However, it is assumed that the athlete’s floor and the grass of the stadium are bottlenecks when it comes to organizing events other than football or athletics competitions. It is very expensive to protect (and sometimes replace) the track and grass for event promoters. Solving this bottleneck is difficult since it is not possible for the stadium to, for instance, create a moveable grass floor, like at the Gelredome in Arnhem, the Netherlands without major construction work. It can be concluded that the stadium’s construction is not very adjustable but that the spaces inside give enough flexibility to adjust the stadium to almost every event. It is assumed a bottleneck is found in the form of protecting the athlete’s track and the grass of the stadium. It can however be stated that the stadium is in most cases, indeed quite adjustable to the needs of its user.

**Architectural Value**

Localizing the design of a facility will greatly enhance the architectural identity of the place and will put the venue on the map. Localizing a facility design can be achieved by the use of unique design elements reflecting the character of the city or country. In case of the Olympic stadium of Beijing, the design is certainly localized. It was designed by the Swiss architects Jacques Herzog and Pierre de Meuron and the concept of the Nest was thought of after the team studied Chinese ceramics. The stadium consists of two independent structures, a red concrete seating bowl and the outer steel frame around it (figure 5.14).

The NS states, “the Bird’s Nest embodies traditional Chinese elements sprinkled with modernity. With a red glow, the venue symbolizes luck and optimism, and its structure mirrors the energetic and ardent spirit innately present in athletes’” (NS 2007).

Next to the high-tech design of the stadium, the environmental objective of hosting the Games is reflected in the stadium. In other words, “the stadium, in winters, is heated by absorbing thermal energy from the soil through embedded heat exchange pipes; and cooled, in summers, by absorbing cold energy from the soil, saving considerable amount of electric power. The roof of Bird’s Nest is equipped with a special rainwater recycling system, through which rainwater is collected for watering plants and grass, flushing toilets, fire fighting and even washing the tracks” (NS 2011).

Next to the high-tech and green image of the stadium, the architectural value of the stadium is very high. The design was elected by the expertise team and was the number one favourite choice in the public vote. The stadium attracts tens of thousands of people every day, just to see the stadium in real life. It is the number one tourist attraction of Beijing and this means that it attracts more visitors than the Great Wall or the Forbidden City (Chen 2012). The image of the stadium is known all over the world and it can be stated that it put Beijing on the global map for sure.

It can hence be concluded that the stadium is of huge architectural value for Beijing. In addition, the residents of Beijing are proud of the building and its high-tech design and construction.
methods. Furthermore, the stadium has become the number one tourist attraction of Beijing and it has its design to thank for it.

Function
The post-use of sport facilities is dependent upon many aspects. One of those aspects is the amount of functions the venue can accommodate. A multi-functional building will have a better chance to be used than a mono-functional building. In case of the Olympic main stadium of Beijing, it can be stated that the stadium is multi-functional. The events that take place at the stadium are sport events, concerts, family shows and business events. In figure 5.15 the division in events over the last 4 years is shown.

The use of the stadium was already determined in the bid phase where the BOCOG explained “after the Games, the Stadium would become a landmark and Olympic legacy, and would be used for sports events of national and international scales, as well as cultural and recreational events” (BOCOG 2008). The stadium is built on a plinth (figure 5.16) so audiences can access the stadium by walking along this plinth through the Olympic Green. In this plinth, divers functions are accommodated. “In the north of the plinth is a sunken warm-up field, which is connected to the competition arena inside the main building by an athletes-only tunnel. The post-Olympics commercial facilities are arranged under the elevated ground to enable entries for different groups of people, as well as to maintain the clarity, consistency and integrity of the exterior of the main structure. Above the plinth are seven floors altogether, including service facilities for audiences, work areas for media and VIP reception areas; under the plinth are three floors in total, including a parking lot’ (NS 2011).

As stated before, it is possible to organize corporate events at the Olympic stadium. The venue is suitable for small and medium-sized high-end conferences, exhibitions, events and banquets (figure 5.17). But there is more. Tourists are of great importance to the stadium and hence different recreational activities are presented at the stadium. It is, for instance, possible to visit the Waxwork Museum inside the Bird’s Nest, which exhibits the wax images of the eight IOC presidents and eight Diaohua Longyi Chairs (ancient thrones) (NS 2011). In addition, there is the Segway Fantasy. Tourist can ride around the stadium on their own Segway and experience the stadium in a new way (figure 5.18).
After these activities, visitors are able to have a drink or a bite in the Bird’s Nest Tour-Theme Creative Café, the Huanchao Sports Lounge or the Yuandingyuan Restaurant (figure 5.19). However, there are also a few difficulties the stadium may experience. These are mainly the high production costs of hosting an event in the stadium, the seasonal limitations and maintenance costs of the venue. These three factors are assumed to influence the stadium’s attractiveness for clients.

It can be concluded that the Olympic stadium can be used for multiple functions quite well. This greatly enhances its chances on post-use. However, most activities are based on the tourism sector and it remains the question if the stadium is still as popular in 20 years as it is today. Nevertheless, the stadium accommodates different kind of events and hence it is labelled as multi-functional.
5.4 CONCLUSION BEIJING

In this paragraph the conclusions of the Beijing case will be provided and specified. Each aspect of post-use creation will be examined, on city, area and building level.

City level
Beijing succeeded in using the Olympic Games as a catalyst to execute the existing urban master plan and to realise objectives that were determined before the bid for the Olympic Games. They connected the long-term perspectives of the city to the Olympic development quite well and created a positive impact on the city. However, due to the concentration of the Olympic developments in the north part of the city, there is an increased gap in urban quality between the north and the south of Beijing. The urban planning aspect of post-use creation can nevertheless be labelled as well integrated for the Beijing case.

When stakeholders and organisation are concerned, the Dengist model took China down the capitalist road. It was based on an open door for foreign direct investment with the objective of modernizing China. The Chinese state had set the preconditions for investment to enter, the local state provided the infrastructure, and foreign companies provided the necessary investment through which China's resources of land and labour could be fully exploited. It was the central government who initiated the bid for the Olympic Games with the wish to show the world that China was a new and open, leading nation and to modernize the economic sectors. It can hence be said that the developments for the Games were under strong control of the active Chinese government. As Chen (2012) stresses, the Olympic Action Plan of Beijing set out clear guidance for the objectives and implementation of strategies for strengthening the positive effects and mitigating the negative effects, while constantly taking post-use into consideration. It can hence be concluded that Beijing did a very good job in organising the Olympics.

Furthermore, the residents of Beijing benefit enormously from the Games until this day on. The developments and successful city marketing have made the city better accessible, greener and attractable to tourists and businesses. However, the social costs of the Games are quite serious due to the human right violations. Beijing gained better sport facilities, growth in employment rates, an international reputation and a boost in tourism. In addition, there is a whole new infrastructural network realized and the city has more green public open spaces. The costs of hosting the Games are the increase in house prices, which lead to the decrease in housing accessibility and the relocation and evictions of some households. However, the benefits for all do exceed the social costs of some for Beijing.

Area level
The accessibility of the Olympic Green is quite well organised. The area is well accessible by car and by public transportation. In addition, it takes less than an hour to get to the city centre of Beijing, which is not that long for a city of Beijing's size. It does take quite some time to get to the airport; however, mainly people are not travelling directly from the airport to the Olympic Green and the other way around. Hence the mobility aspect of the Beijing Olympic Park is labelled as well accessible.

The Olympic Green is not really on a certain route for the residents of Beijing. However, people are trespassing the area to go to work or to enjoy a day at the park. For tourists the Olympic Green is on the route since the tourist busses are trespassing the area. In addition, the liveability of the area is quite good since there are always a lot of people in the area. Taking this into consideration, the factor routing will be marked medium/good.

There is enough to do to spend a complete day at Olympic Green. Next to the amusement park, the Olympic stadium provides tours, restaurants, a museum and of course sport and cultural events every now and then. The aquatic centre is since 2010 used as a subtropical swimming pool and the indoor stadium is used for sport competitions, cultural and entertaining purposes and as a multi-functional exercise centre for local residents. It can hence be stated that the program of the Olympic Green is more than only sport and culture related, which may lead to a mixed group of users and hence liveability of the area. The program of the area is therefore labelled multi-functional.

The Olympic stadium does not have a standard catchment area but that the catchment area depends a lot on the kind of events that take places. In addition, the Olympic stadium
experiences little to no competition from the other stadiums of Beijing due to the fact that the quality and size of the stadiums are too different.

**Building level**

Beijing gave the management of the Olympic venues good thought in the pre-Olympic period. They used a public tender for the procurement of the ideal management company for the National Stadium. The BSAM remained the owner of the venue with 52% of the shares and hence had the final say when it came to important decisions. However, after only one year the private company CITIC, with 48% of the shares, bailed out on the management of the stadium and ever since, the NS is directed by the public company BSAM. They financially support the stadium by means of subsidies. However, due to the tourism sector, the stadium is able to generate enough income to cover the maintenance costs, at least for now. A more reliable source of income is needed for the longer-term period.

When the adjustability is concerned it can be stated that the stadium’s construction is not very adjustable but that the spaces inside give enough flexibility to adjust the stadium to almost every event. It is assumed a bottleneck is found in the form of protecting the athlete’s track and the grass of the stadium. It can however be stated that the stadium is in most cases, indeed quite adjustable to the needs of its user.

Furthermore, the stadium is of huge architectural value for Beijing. In addition, the residents of Beijing are proud of the building and its high-tech design and construction methods. Additionally, the stadium has become the number one tourist attraction of Beijing and it has its design to thank for it. The Olympic stadium has provided Beijing with a global landmark, which can be used for multiple functions quite easily. This greatly enhances its chances on post-use. However, most current activities are based on the tourism sector and it remains the question if the stadium is still as popular in 20 years as it is today. Nevertheless, the stadium accommodates different kind of events and hence it is labelled as multi-functional.

**Framework**

The findings are specified in the framework on the next page (figure 5.20) which will make it possible to make a good comparison between cases during the cross case analysis. The framework also provides the different aspects of post-use creation with a score. The maximum score exists out of three plusses (+++), which stand for outstanding. The minimum score is shown by three minuses (---), which stand for weak. Overall it can be stated that the Beijing case did a very good job in organising the Olympic Games and its legacy. It has been only four years ago since the Games took place, however, the stadium has become the number one tourist attraction of Beijing. Even though it is financial feasible to manage the stadium in its current way, Beijing needs to consider its future income. The objective to put Beijing on the map by hosting the Games worked out well and the improvements the city has undergone are still benefitting the residents of Beijing. Overall Beijing is rated with a triple plus (+++).
<table>
<thead>
<tr>
<th>City Level</th>
<th>Integration Master Plan/ Strategy</th>
<th>Stakeholders</th>
<th>Organisational Structure</th>
<th>Social Costs &amp; Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Very well integrated</td>
<td>Chinese government, municipality and private companies</td>
<td>UNEP, SEPA, BOCOG, BAOG, Green Projects, Sport Projects, Civic Projects</td>
<td>+ New sport facilities and new public open space</td>
</tr>
<tr>
<td></td>
<td>• Olympic Action Plans</td>
<td></td>
<td></td>
<td>+ Growth in economy and employment rates</td>
</tr>
<tr>
<td></td>
<td>• Concentrated on the northern part of Beijing</td>
<td></td>
<td></td>
<td>+ Boost in tourism and business after the Games</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+ Infrastructure network improvements</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+ International image boost</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Increase of real estate prices</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Decrease in housing accessibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Evictions and relocations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Gap between the north and south of the city</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Area Level</th>
<th>Mobility</th>
<th>Routing</th>
<th>Program</th>
<th>Catchment Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Well accessible by public transport and by car</td>
<td>Medium/good</td>
<td>Multi-functional</td>
<td>• Depends on event</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Building Level</th>
<th>Adjustability</th>
<th>Architectural Value</th>
<th>Function</th>
<th>Organisation</th>
<th>Finance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Adjustable</td>
<td>High: international known landmark for Beijing</td>
<td>Multiple functions possible: sports, concerts, shows, corporative</td>
<td>National Stadium Co., Ltd.,</td>
<td>In the black due to the tourism sector</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OVERALL</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>++</td>
<td></td>
</tr>
</tbody>
</table>

Figure 5.20 Framework Beijing
6 CROSS-CASE ANALYSIS

In this chapter, the conclusions and findings of the cases studied in the previous chapters will be analysed by means of a cross-case analysis. The objective of the cross-case analysis is to compare the findings of the case studies and find resemblances or differences between them. From these resemblances or differences, lessons can be drawn, which will be foundation of the strategy for post-use creation on building level. In paragraph 6.1 the contexts of the cities and the aspects of post-use creation on city level will be discussed, in paragraph 6.2 the aspects of post-use creation on area level will be elaborated and in paragraph 6.3 the aspects of post-use creation on building level are compared. Finally, paragraph 6.4 will present the conclusions of the cross-case analysis.

6.1 ASPECTS OF POST-USE CREATION ON CITY LEVEL

Before the aspects of post-use creation on city level will be analysed, the contexts of the cities will be compared. The resemblances or differences in culture, size and political situation could affect the outcome of the Olympic Games and hence the context is an important factor when comparing cases.

The cities are all located at the northern hemisphere of the earth and even almost at the same latitude (table 6.1). This means that the climate of the cities is more or less comparable. Especially Barcelona and Athens are similar, yet Athens is slightly warmer during the summer months. Beijing has colder winters than Barcelona and Athens but the summer in Beijing is rainier. This could have some affect on the use of the Olympic stadium, since there is no roof to protect the field from the rain. The spectators however, are sheltered and the stadium is heated by absorbing thermal energy from the soil through embedded heat exchange pipes.

<table>
<thead>
<tr>
<th>City</th>
<th>Latitude</th>
<th>Temperature in °C</th>
<th>Most rain during</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barcelona</td>
<td>41° 23’ N</td>
<td>5 - 27</td>
<td>Winter months</td>
</tr>
<tr>
<td>Athens</td>
<td>37° 58’ N</td>
<td>4 - 34</td>
<td>Winter months</td>
</tr>
<tr>
<td>Beijing</td>
<td>39° 54’ N</td>
<td>-10 – 30</td>
<td>Summer months</td>
</tr>
</tbody>
</table>

Next to the location and climate of the cities, the size and political situation at the time of preparing the Games is of importance (table 6.2). It can be stated that the cities differ in surface and population. Where Beijing is a big metropolitan, Athens is just a small town. Barcelona is in the middle but does not even come close to Beijing’s size. The amount of Olympic venues that have to be developed will have a greater impact on a smaller city like Athens than on giants like Beijing. However, this does not say anything about the impact that can be created by using the Olympics as a catalyst. When the political situation is concerned, it can be stated that Athens and Beijing were stable at the time of bidding for the Games. Their objectives for bidding were to create a new urban image and international recognition. However, Barcelona, after years of suppression, was free of its dictator for about 10 years and needed to change its city from an industrial to a service related city in order for the city to fit the daily lives of its residents.

<table>
<thead>
<tr>
<th>City</th>
<th>Population</th>
<th>Surface in km²</th>
<th>Political situation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barcelona</td>
<td>1.6 million</td>
<td>101.9</td>
<td>Free of dictator/stable</td>
</tr>
<tr>
<td>Athens</td>
<td>655,780</td>
<td>39</td>
<td>Stable</td>
</tr>
<tr>
<td>Beijing</td>
<td>19.6 million</td>
<td>16,808</td>
<td>Stable</td>
</tr>
</tbody>
</table>

Now that the context of the cities is compared, it is possible to also compare the aspects of post-use creation. In this paragraph, the aspects on city level will be compared, which are urban planning, the stakeholders and organisation and the social costs and benefits of the Olympic developments.
Urban Planning

Each city has its own objectives for entering the bid phase of the Olympic Games and its own methods of reaching those objectives. In this subparagraph a comparison of the goals behind hosting the Games and the methods and strategies used to achieve these goals will be made (table 6.3).

The first case is Barcelona. As stated above, Barcelona had become a democratic city again after being part of a dictatorship for decades. Ten years after Barcelona was liberated of Franco, it decided to bid for hosting the 1992 Olympic Games. Barcelona had been working very hard to modernize the city so it would fit the daily lives of its residents again. The Barcelonan residents had shifted from an industrial city to a service related city but the city itself remained industrial and the infrastructure was not sufficient anymore to serve the residents of the city. Barcelona could hence use some kind of catalyst that would help to execute the new master plan in a quicker way and found it in the 1992 Olympic Games. In order to meet the Olympic conditions, Barcelona focused on four locations that also enabled them to execute their existing plans. It can be stated that Barcelona made perfect use of the Olympic catalyst and the city connected its long-term perspectives to the mega-event strategy in such way that the impact of the Olympic developments has created the city the Barcelonan residents were waiting for.

Athens had different reasons to host the Olympic Games. The intention of Athens was to host the Olympic Games of 1996, since it was then 100 years ago the first modern Games were organised, in Athens as well. But this was not the only reason Athens aimed to win the bid. In the 1980s it was obvious that smog from factories and the increasing amount of cars, as well as the lack of sufficient open space due to overcrowding, had become problematic for Athens. And hence Athens wanted to use the Olympics to regenerate the city. However, it was Atlanta that won the bid. Yet, Athens did not give up and won the bid for the 2004 Olympic Games. After winning the bid, the development plans changed and where Barcelona chased its goals conveniently, Athens lost sight of its goals along the way. Hosting the Games became the priority for Athens and the post-use of the legacy was not given much attention. However, when the improvement of infrastructure is concerned, Athens did quite a good job. The international airport was expanded, as well as the metro network and some highways. In addition, anti-pollution measures were taken and the environment enhanced significantly. It can hence be stated that Athens began with chasing its goals but got lost on the way and the goal shifted from urban regeneration to hosting the Games, leaving the city with expensive and useless venues.

Table 6.3 Urban planning aspect

<table>
<thead>
<tr>
<th>City</th>
<th>Used original master plan</th>
<th>Adjusted it to fit Olympic conditions</th>
<th>Changed master plan</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barcelona</td>
<td>X</td>
<td>X</td>
<td></td>
<td>+++</td>
</tr>
<tr>
<td>Athens</td>
<td>X</td>
<td>X</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Beijing</td>
<td>X</td>
<td>X</td>
<td></td>
<td>++</td>
</tr>
</tbody>
</table>

Beijing has similarities to both Athens as Barcelona when the objectives for hosting the Games are concerned. Beijing was growing rapidly and had to expand its infrastructure in order to facilitate the growth. In addition, the legacy of the Games should provide Beijing the chance to become a city of consumption, of knowledge-based activities and with an enhanced international image. Due to the fact that the government was in strong control of the developments, it was made sure the developments fit as optimally as possible in the urban master plan of the city. The Olympic preparations provided an opportunity to combine Beijing’s urban restructuring and environmental upgrading with its economic restructuring (Chen 2012a). Beijing used the Olympic Action Plans to give direction to the implementation of strategies, keeping the post-use in mind and connecting Beijing’s other long-term planning goals, to the mega-event strategy so it would contribute to the overall city vision. Beijing chose to use the locations of the Asian Games of 1990 for the Olympic venues and due to this, the Olympic development focussed on the northern part of the city, increasing the gap between north and south Beijing.
Stakeholders and Organisation

Just like the objective for hosting the Games, the method of organising it differs per city. Each city is different and hence each city has different stakeholders and organisational models. In table 6.4 the organisational models are compared to each other. In all cases, the role of the government was active. This means that the government was in control of the developments. However, while the government of China was completely in control of the Beijing Olympic developments, the governments of the other two cases worked together with private parties to establish the Olympic developments. As shown in table 6.4, the private parties invested 30% of the Olympic development while in Beijing only 10% was funded by private parties, which were the costs of hosting the event itself and not of the developments belonging to it.

Table 6.4 Organisation

<table>
<thead>
<tr>
<th>City</th>
<th>Role of the government</th>
<th>Role of the private parties</th>
<th>Role of the civic society</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barcelona</td>
<td>Active</td>
<td>30%</td>
<td>Involved</td>
<td>+++</td>
</tr>
<tr>
<td>Athens</td>
<td>Active</td>
<td>20%</td>
<td>Not involved</td>
<td>--</td>
</tr>
<tr>
<td>Beijing</td>
<td>Strong</td>
<td>10%</td>
<td>Involved</td>
<td>++</td>
</tr>
</tbody>
</table>

When the involvement of the civic society is concerned, Barcelona stands out. Due to the dictatorship of Franco, democracy was quite important for the Barcelonan residents and the opinion of the public counted heavily. In Athens, the role of the civic society was far less. Of course the organisation tried to win the support of the public but real involvement was lacking. In Beijing, the society was involved in the Olympic plan through an on-line platform and the 3 million volunteers.

Social costs and benefits

Hosting the Olympic Games brings along major impacts on the host city. These impact can be positive but negative as well. In all three cases both positive as negative impacts are detected, however some impacts are bigger than others. In table 6.5 the comparison is made between the cases and the most important impacts are shown. While Barcelona and Beijing managed to create a positive legacy, Athens did not. Besides the improved infrastructure and decrease of pollution in the city, the impacts are not so positive. The venues created or renovated for the games are useless to the residents of Athens but are expensive to maintain. In addition, Athens failed to use the locations for urban regeneration and instead is burdened with abandoned sites in a far state of deterioration.

Table 6.5 Social costs and benefits

<table>
<thead>
<tr>
<th>City</th>
<th>Social benefit</th>
<th>Social cost</th>
<th>Overall impact</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barcelona</td>
<td>Infrastructure, regeneration, image</td>
<td>Decrease housing accessibility</td>
<td>Positive</td>
<td>++</td>
</tr>
<tr>
<td>Athens</td>
<td>Infrastructure and less pollution</td>
<td>Useless legacy, massive debts</td>
<td>Average</td>
<td>-/+</td>
</tr>
<tr>
<td>Beijing</td>
<td>Infrastructure, less pollution, image</td>
<td>Human right violations</td>
<td>Positive</td>
<td>++</td>
</tr>
</tbody>
</table>

Barcelona and Beijing on the other hand, create the opposite and hence a very positive impact for its residents. Besides the enhanced infrastructural networks both cities got rid of industrial sites and managed to put themselves on the global map, attracting more tourists and businesses than before the Games. The amazing urban regeneration of the city still benefits the residents of Barcelona today and in Beijing serious steps are taken in order to enhance the city’s environment. However, as stated above, there were also found some negative impact. In Barcelona, these impacts are nothing when compared with the positive impacts. The real estate prices increased and hence some groups of society could not effort to stay in their home (rental) or could not by a
house in Barcelona and hence the city had decreasing housing accessibility. In Beijing the same impact occurred. Next to this, forced evictions took place to make room for the Olympic developments, and protests against the Games were punished by imprisonment without trial or re-education through labour. However, Beijing, just like Barcelona, benefits from hosting the Olympic games more than it suffers of it.

6.2 ASPECTS OF POST-USE CREATION ON AREA LEVEL
In this paragraph the outcomes of the analysis on the aspects of post-use creation on area level of the different cases will be compared. These aspects are the mobility, the routing, the program and the catchment area and competition of the stadium.

**Mobility**
An important aspect that will determine the liveability of an area is the mobility factor. If the area is well and easy accessible, the chance that a mix group of users will come to the area, and hence create liveability, is high. In table 6.6 the comparison between the cases is shown. The Olympic park of Barcelona is located on a hill, which decreases its accessibility in such way, that it is not accessible by metro. Since this is the main transportation system in Barcelona, it is needed to transfer between the metro and the Funicular or a bus. While the bus will bring visitors directly to the Olympic Park, the Funicular stop is at a 10-minute walk away. Due to this, the need to transfer or the time it takes to go with the bus, the travel time between the city centre and the Olympic park is above average. By car however, the Olympic park is well accessible and enough parking space is available. The main mean of transport in Barcelona is by public transportation though.

<table>
<thead>
<tr>
<th>City</th>
<th>Access by car</th>
<th>Access by public transport</th>
<th>Travel time city centre - stadium</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barcelona</td>
<td>Well accessible</td>
<td>Poor, only by bus</td>
<td>Above average</td>
<td>--</td>
</tr>
<tr>
<td>Athens</td>
<td>Well accessible</td>
<td>Good, per metro</td>
<td>Average</td>
<td>++</td>
</tr>
<tr>
<td>Beijing</td>
<td>Well accessible</td>
<td>Good, per metro &amp; bus</td>
<td>Slightly beneath average</td>
<td>++++</td>
</tr>
</tbody>
</table>

The same is applies to the Olympic park of Athens, which is also well accessible by car. In addition, the park is also well accessible by public transport since it has its own metro station. Due to the size of the park, it is necessary to take a 10-minute walk to the stadium however. The time it takes to travel from the city centre to the Olympic park is about 30 minutes, which is an average travel time for Athens. In Athens, the main mean of transportation is by car though.

Also the Olympic park of Beijing is well accessible by car. The park has several parking lots and the Olympic stadium has its own parking garage. It must however be said that the traffic in Beijing is different than in Athens or Barcelona. It could take hours to get to the Olympic park with the car due to traffic jams. Therefore, most people use the subway as the main mean of transport and hence also to get to the Olympic park, which has multiple stops (of which some closed after the Games however). The stop closest to the Olympic Stadium is located at a 10-minute walk from it, which is not that long considering the scale of Beijing. The travel time to the city centre is about 45 minutes, which again, is not long for a city the size of Beijing. The average travel time within Beijing is about an hour and hence the travel time to the Olympic park is slightly less.

**Routing**
Another important aspect that will determine the liveability of an area is the routing factor. When people are trespassing the area because it is on a route, the chance that a mix group of users will use the area, and hence create liveability, is high. In table 6.7 the comparison between the cases is shown. The Olympic park of both Athens and Barcelona is not on a certain route. When there is no event hosted, few people will cross the area. A difference between the two cases is that the Olympic Park of Barcelona is part of a tourist tour and hence visited by tourists daily. This brings some liveability to the area. Also the museums next to the Olympic park attract visitors who...
cross the area and might spend some time at the Olympic park. In Athens, no tourist tour is going to the Olympic park and no interesting destinations are surrounding the park that will lead to people trespassing the area.

Table 6.7 Routing

<table>
<thead>
<tr>
<th>City</th>
<th>Connected area</th>
<th>Semi-connected area</th>
<th>Non-connected area</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barcelona</td>
<td>X</td>
<td>X</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Athens</td>
<td>X</td>
<td>X</td>
<td></td>
<td>-/+</td>
</tr>
<tr>
<td>Beijing</td>
<td>X</td>
<td></td>
<td></td>
<td>++</td>
</tr>
</tbody>
</table>

Beijing however, does have an Olympic park that is on a certain route. First of all, the Olympic park is the number one tourist destination of Beijing and hence daily tens of thousands of tourists are at the park. Additionally, the Olympic village is located in the area and its residents might find the park on their daily route to work or use the park to spend their free time. Next to this, the Chinese national convention centre is located at the park and a lot of people are working in the building, and trespassing the area when they are going to work. It can hence be stated that the Olympic Park of Beijing is a connected area.

Program
Yet, an even more important aspect that will determine the liveability of an area is the program factor. When there are enough different functions in the area, the chance that a mix group of users will visit the area, and hence create liveability, is high. In table 6.8 the comparison between the cases is shown. Remarkable is that none of the Olympic parks has some kind of retail available to attract visitors to the park. While all the parks, naturally, facilitate sports, only Beijing also has added the functions housing and work to the Olympic park. The Olympic village, in the northern part of the Olympic park is a residential area and halfway the park, the Chinese national convention centre is proving the work function.

Table 6.8 Program

<table>
<thead>
<tr>
<th>City</th>
<th>Sport</th>
<th>Leisure/Culture</th>
<th>Retail</th>
<th>Offices</th>
<th>Housing</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barcelona</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Athens</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Beijing</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>+++</td>
</tr>
</tbody>
</table>

A similarity is found between the Olympic parks of Beijing and Barcelona in the form of the leisure/culture function. The Olympic park of Beijing serves different kind of leisure functions, like visiting the Olympic stadium, roller-skating through the park and enjoying the amusement park while the Olympic park of Barcelona is surrounded by museums. Nevertheless, the program of the Barcelonian Olympic park is quite mono-functional, like the one of Athens. Beijing however, has a multi-functional Olympic park and liveability can certainly be found in the park.

Catchment area
The catchment area of the Olympic park is the area and population from which the park attracts visitors or customers. The catchment area of the Olympic Stadium during the Games is worldwide, however, more importantly is the catchment area of the stadium after the Games are over. In table 6.9 the comparison between the different cases is presented.

Table 6.9 Catchment area

<table>
<thead>
<tr>
<th>City</th>
<th>Catchment area</th>
<th>Spectator sport</th>
<th>Competition</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barcelona</td>
<td>Depends on event</td>
<td>Football</td>
<td>Indoor Sports Hall</td>
<td>++</td>
</tr>
<tr>
<td>Athens</td>
<td>35 km</td>
<td>Football</td>
<td>Indoor Sports Centre</td>
<td>++</td>
</tr>
</tbody>
</table>
Both Barcelona and Beijing do not have a permanent tenant and hence their catchment areas are different per event. Events all attract different crowds and sometimes an event has a national catchment, while other times the catchment area is regional or international. Athens, on the other hand, has two football clubs as its permanent tenant and hence the catchment area can be determined at a ratio of 35km around the stadium. Naturally, when the stadium hosts another event, the catchment area also changes.

Also important is the demand of the catchment area. While it is difficult to determine this catchment area, it can be stated that a stadium should be able to accommodate the main spectator sport. In all cases, this sport is football and the stadiums are able to facilitate this sport. However, the catchment area also contains competition like other stadiums or event halls. Barcelona is an exception since it does not experience any competition of the other venues, due to the fact that the other venues do not host events or are managed by the same company. The same applies to Athens. The Olympic stadium of Athens is the only stadium big enough to facilitate the major football clubs it has as its permanent tenant and events are mostly hosted by the Olympic stadium or the Indoor Sports Hall, which is managed by the same company as the Olympic stadium. However, it must be said that it is an assumption that the Indoor Sports Hall is not of real competition since this is not confirmed by the management company. In Beijing, the National Sports Centre is managed by a different company and is hence competition for the Olympic stadium. Especially during the winter, the Olympic stadium will be less used. However, there is a difference in quality and size between the Olympic stadium and the Indoor Sports Centre due to which a natural selection already takes occurs.

### 6.3 ASPECTS OF POST-USE CREATION ON BUILDING LEVEL

In this paragraph the outcomes of the analysis on the aspects of post-use creation on building level of the different cases will be compared. These aspects are the organisation, the adjustability, the architectural value and the function of the stadium.

#### Organisation of the stadium

The way in which a facility is managed can have great influence on the post-use of the venue. In table 6.10 the comparison between the different cases is presented. The Olympic stadiums of all cases are managed by a public company. However, while the governments are the owners of the stadiums, the companies managing them are not governmental. In case of Barcelona, the municipality does not pay for the management or the maintenance of the Olympic stadium while in Beijing the management companies receive subsidies.

<table>
<thead>
<tr>
<th>City</th>
<th>Company</th>
<th>Main income</th>
<th>Owner</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barcelona</td>
<td>Public</td>
<td>Concerts</td>
<td>Municipality</td>
<td>++</td>
</tr>
<tr>
<td>Athens</td>
<td>Public</td>
<td>Permanent tenants</td>
<td>Greek government</td>
<td>+</td>
</tr>
<tr>
<td>Beijing</td>
<td>Public</td>
<td>Tourism</td>
<td>Municipality</td>
<td>++</td>
</tr>
</tbody>
</table>

The sources of income are quite different for each of the cases. While Barcelona’s main source of income is hosting concerts, Athens has two permanent tenants. Of the Barcelona stadium is known that it is financially seen not feasible but that another department of the management company balances the losses of the stadium with the profits of other operations. If the Olympic stadium of Greece is financially feasible is not known, however, Beijing’s Olympic stadium is capable of supporting itself financially seen. The maintenance costs can be paid by the income generated by tourism. The stadium is the number one tourist attraction of Beijing and 70% of the stadium’s income finds its source here. However, the Games have left Beijing only 4 years ago and the question remains if the popularity of the stadium remains equal over a longer period of time. It may very well be that the stadium is not able to support itself in a few years from now when the initial attractiveness of the stadium slowly dissolves and the main income source of the stadium disappears.
Adjustability of the stadium

The way in which a venue can adjust itself to the needs of its user determines the degree of use. In table 6.11 the comparison shows what is possible at the different stadiums. The constructions of all the stadiums are not easily adjustable to the demands of the users. However, in the stadiums of Beijing and Barcelona, a lot can be created. While the Barcelonan stadium does not have VIP boxes available, a VIP area can be created simply. Athens’ stadium does not have, in contrast with those of Beijing and Barcelona, rooms available for corporate events like product promotions.

Table 6.11 Adjustability

<table>
<thead>
<tr>
<th>City</th>
<th>Sports</th>
<th>Concerts</th>
<th>Shows</th>
<th>Corporate</th>
<th>VIP box</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barcelona</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Athens</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Beijing</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>++</td>
<td></td>
</tr>
</tbody>
</table>

The main difficulty the stadiums experience is the protection of the athlete’s track and the grass during concerts, shows and corporate events. Protecting the floor is quite expensive and replacing parts of it certainly is. However, the stadiums cannot implement solutions like a moveable floor without major construction work.

Architectural value of the stadium

Localizing the design of a facility will greatly enhance the architectural identity of the place and will put the venue on the map. Localizing a facility design can be achieved by the use of unique design elements reflecting the character of the city or country. In table 6.12 the comparison shows the architectural values of the different stadiums.

Table 6.12 Architectural value

<table>
<thead>
<tr>
<th>City</th>
<th>Residents</th>
<th>International</th>
<th>Local design</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barcelona</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>+++</td>
</tr>
<tr>
<td>Athens</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>+</td>
</tr>
<tr>
<td>Beijing</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>+++</td>
</tr>
</tbody>
</table>

The architectural designs of the stadiums of Beijing and Athens seem to be global, as if the building could stand anywhere in the world. However, when a more detailed look is given to the designs, local elements are showing through. The design of the Barcelonan stadium however, is very local almost ancient. The residents of Barcelona perceive the stadium as a monument. Yet, the stadium does not have international fame like the designs of Athens and Beijing.

When it comes to the architectural value of the designs for the cities, it can be stated that the stadium of Beijing attracts a lot of visitors to the city and in case of Barcelona the design is part of the city, since it has always been there. For Athens however, the stadium is located far from the tourists and little attention is paid to the stadium nowadays.

Function of the stadium

A multi-functional building will have a better chance to be used than a mono-functional building. In table 6.13 the comparison between the stadiums shows what kind of functions are performed at the stadiums.

Table 6.13 Functions

<table>
<thead>
<tr>
<th>City</th>
<th>Events</th>
<th>Restaurants</th>
<th>Shops</th>
<th>Tourism</th>
<th>Weekly matches</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barcelona</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>+++</td>
</tr>
<tr>
<td>Athens</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Beijing</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>+++</td>
</tr>
</tbody>
</table>
In Athens, the only activity takes place during events or during the football matches of the two football clubs using the stadium. Of course it will be possible to get something to eat or drink during the games, but at any other time, it is not. This in contradiction with Barcelona and Beijing. The Barcelonian stadium has a small self-service restaurant that is open to the public the entire day, during the entire year. The same applies for the stadium itself, which can be visited for free and in addition, the stadium has a shop inside where Olympic souvenirs can be bought. In Beijing, the stadium has a café, a lounge bar and a restaurant, which can be visited the entire day as well. It is a bit more difficult to get in since the stadium is not accessible for free, but with a reservation, it is possible. The stadium itself offers a waxwork museum, other recreational activities and a shop. As stated before, it is also the number one tourist attraction of Beijing.

6.4 CONCLUSIONS

In this paragraph the conclusions of the cross-case analysis will be provided from which lessons can be learned to create post-use on building level. In Table 6.14 the scores of the different cases on the aspects of post-use creation are summarised. What can be concluded is that all the factors have some individual influence on the post-use of the legacy, however, only if all factors are combined in a strong way, certain liveliness can be created. In other words, the factors have to “work together” in order to provide the change to create liveability on area level. In its turn, this liveability could create post-use of the area and of the venues it contains.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban planning</td>
<td>+++</td>
<td>--</td>
<td>++</td>
</tr>
<tr>
<td>Stakeholders and organisation</td>
<td>+++</td>
<td>--</td>
<td>++</td>
</tr>
<tr>
<td>Social cost and benefits</td>
<td>++</td>
<td>-/+</td>
<td>++</td>
</tr>
<tr>
<td>Mobility</td>
<td>--</td>
<td>++</td>
<td>+++</td>
</tr>
<tr>
<td>Routing</td>
<td>-</td>
<td>-/+</td>
<td>++</td>
</tr>
<tr>
<td>Program</td>
<td>-</td>
<td>--</td>
<td>+++</td>
</tr>
<tr>
<td>Catchment area</td>
<td>++</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>Organisation</td>
<td>++</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>Adjustability</td>
<td>+</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>Architectural value</td>
<td>+++</td>
<td>+</td>
<td>+++</td>
</tr>
<tr>
<td>Function</td>
<td>+++</td>
<td>+</td>
<td>+++</td>
</tr>
<tr>
<td>Overall assessment</td>
<td>++</td>
<td>--</td>
<td>+++</td>
</tr>
</tbody>
</table>

When considering the cross-case analysis, it can be concluded that certain factors of post-use creating have more influence than others on the post-use creation. The urban planning, routing, program, and adjustability factor are greatly influencing the possibility of post-use creation, either on city, area and building level. Without a lively area surrounding the stadium it becomes a secluded venue except for the days it hosts an event. It can therefore be concluded that it is important to provide the area the change to attract users and hence to create a certain liveability. The factors most influencing this change to create liveability are the urban planning factor on city level and the routing and program factor, on area level. It is the urban planning factor that has to encourage the routing and program factor by connecting the mega-event strategy to the long-term perspectives of the urban regeneration strategy and select locations for the Olympic developments where it is most useful for the residents after the Games. This leads to the next conclusion, which concerns the planning of the post-use of the legacy. It has proven to be important to consider the post-use of the Olympic legacy from an early stage on. The cases of Barcelona and Beijing prove that considering the post-use from the bid phase on creates a better chance of post-use of the legacy than when the post-Games period is neglected. Especially on city level it is obvious that Barcelona and Beijing found good use for the Olympic legacy. Athens, on the other hand, has abandoned its legacy, leaving it to decay. The main difference between Barcelona, Beijing and Athens on this is that the latter one did not plan the post-use of the legacy.
When comparing the next two import factors, routing and program, it is obvious that Barcelona and Athens score low, especially when compared to Beijing. For the Barcelonan case this can be explained by the fact that the Montjuïc area is added to the mega-event strategy to meet the Olympic conditions. Since hills and the sea surround Barcelona, city expansion is difficult. However, if Barcelona wanted to host the Games, it needed to have an Olympic stadium, which was found in the Montjuïc stadium, built for the 1929 World Expo. This turned out to be a good choice, since the then neglected stadium now is an area used by tourists and the residents of Barcelona. Yet, Montjuïc is a hill and hence the routing is not that good. People do not have to trespass the area to go somewhere and hence the Olympic park of Barcelona is more a final destination where people only go to if the want to be there. The program of the area however, attracts tourists and residents of the city during the weekends to spend time at the park, creating some kind of liveability. Athens used an existing location, without a daily route crossing the area, for the Olympic park as well. However, the main difference between Athens and Barcelona is the program of the area. In Athens, no interesting destinations are in the neighbourhood of the Olympic park and hence the park only attracts users when an event is hosted. Beijing, on the other hand, created a multi-functional program for the Olympic park, which daily attracts thousands of people. Additionally, the different functions also enhance the routing factor since people who live or work in the area, will trespass it.

On building level, the adjustability of the stadium is an important factor for the creation of post-use. Without the possibility of the stadium to adjust itself to the demands of the users, which in this case are mostly the promoters of events, a mono-functional venue arises. Mono-functional buildings in turn provide a lower chance of post-use of the venue. From the cross-case analysis it can be concluded that the three cases all are adjustable enough to at least accommodate two functions. The main function of the stadiums differs per case, however, post-use is post-use and it in fact does not matter what this use precisely comprehends. Yet, the more adjustable the stadium, the more functions it can facilitate and hence the more chance of post-use is created. Beijing’s stadium, for instance, generates its income from tourism. However, in a few years, the stadium might be less popular among tourists and other sources of income have to be found. With an adjustable stadium, it should be possible to find another kind of post-use quite easily. The three cases have one thing in common when the adjustability of the stadiums is concerned. The athlete’s track and the grass in the middle of the stadium have to be protected when other events take place. This is an expensive operation, which is not necessary nowadays. In the Netherlands, the Gelredome stadium has a floor that can be removed from the stadium, leaving a concrete floor behind, which is ideal for events like concerts. However, the construction of the stadiums of the case studies, do not allow this solution without major construction work.

Overall it can be concluded that when hosting the Olympic Games, the aspects of urban planning, routing, program and adjustability need to be considered with care. The same applies for the post-use of the legacy in general. In the cases analysed for this research, these aspects had the most influence on the legacy of the Games, in either a positive or a negative way. The other factors of post-use creation are of influence as well but on a much lower scale. The mobility factor in Barcelona, for instance, was not appreciated that much, however, if there is something interesting to do in the area, people will come, even though some extra effort is needed to get to the location. This of course to a certain extend. The same applies for the architectural value of the stadiums. While Athens’ design is of international level, the value of it for the city is modest due to its location, which is not used on a daily basis, or by tourists.

By all means, these conclusions are established on three case studies and hence, in order to secure the reliability of the conclusions, more case studies should be performed. The case of London, for instance, would be of good complement to the research due to the legacy company founded for the post-use of the Olympic legacy and the private ownership of the Olympic stadium.
7 LESSONS LEARNED AND CONCLUSIONS

In this chapter the lesson learned from the case studies are elaborated. The lessons learned will be transformed into theoretical guidelines for post-use creation on building level, which can be used by future host cities of the Olympic Games. In the second paragraph the conclusions of the research are elaborated. The research question, asked in the beginning of this research, finds an answer in the lessons learned and the theoretical guidelines derived from them. This research question was: How are the aspects of post-use creation implemented to the Olympic competition venue, the main stadium, on building level and to what extent has the mega-event strategy of the Olympic host city influence on this implementation?

7.1 LESSONS LEARNED & GUIDELINES FOR FUTURE HOSTS

In this paragraph, the lessons that can be learned from the case studies and the cross-case analysis will be discussed. Later, these lesson learned will be transformed into a set of theoretical guidelines which will help future host cities to provide a chance of creating post-use on building level for their Olympic developments, and especially the Olympic main stadium. First however, the lessons learned per aspect of post-use creation are elaborated.

Urban planning

Mega-events create an unique need to reach consensus among different actors on development and therefore provide a great opportunity to realise urban ambitions, which are difficult to be realised in the normal situation (Chen 2012). It can hence be stated that the lesson learned from the case studies in the field of urban planning is that the mega-event strategy should connect with the long-term perspectives of the existing urban regeneration strategy of the host city. When hosting the Games becomes the main target during the pre-Olympic process, the legacy will suffer of it in the Post-Olympic period. On building level, the urban planning factor determines if the building finds a use that is consumable for the residents of the host city. If the building, for instance, is located at a location where it has no added value for the city, the chances of it finding a post-use will be limited. Another lesson learned is the planning of the post-use from the bid phase on. When the post-use of the venues is thought over well and a useful post-use is chosen, the chances of the building eventually having a post-use is much higher.

Stakeholders and organisation

When the stakeholders and organisation of the Olympic developments are concerned, the lesson that can be learned from the case studies is that a partnership with private parties is used. In some cases this private share is bigger than in other cases, however, private parties were involved. These private parties bring different perspectives to the development table and hence the chance of post-use creation is enlarged. More perspectives offer a better view on what is useful and what is not. However, it is also seen that the organisational models differ per city. The lesson that can be learned from this is that each city has its own context and hence should use the organisational model that fits the interest of the city best. In addition, a lesson is found in the involvement of the civic society. The more the civic society is involved, the more public support the Olympic developments will have. This involvement can have different forms, like an actual say in decisions or volunteers that are involved in the organisation.

Social costs and benefits

The lesson that can be learned from the cases when focussing on the social costs and benefits aspects is that the social minorities experience the most inconveniences from hosting the Olympics. Especially the increase in housing prices due to the Games causes a decrease in housing accessibility, particularly for the poor people of the society. It is hence important to pay extra attention to the consequences for these groups of society. In addition, the relocation or forced evictions of households also appears during the preparations of the Games. A lesson learned is that adequate measures need to be taken to provide solutions for these households. On building level, a social cost would be an abandoned, useless venue. When the Olympic stadiums are concerned, this social cost does not occur in one of the case studies, however, Athens does have a lot of other venues that are developed for hosting the Games but are useless for the residents of the city. Social benefits are better represented in the case studies since the Olympic
stadium of Barcelona has offered the city a venue that can place the city on the international event map and the stadium of Beijing has provided the city a new, international tourist attraction.

**Mobility**
A lesson learned in the field of travel distances and travel times is that the program aspect affects this mobility aspect. Athens, for instance, has a building that is well and easy accessible. However, since there is no reason to go the area, due to the mono-functional program, no visitors are attracted. Yet, in Barcelona, it is the other way around. Even though the building is not as easy and well accessible as the one in Athens, visitors do visit the area due to the program of the area, the museums. The lesson learned is hence that the mobility factor, on building level, is not of a very big influence on the post-use of the venue, until a certain range of course. For a frequent use among residents however, the travel time to the stadium should not be much higher than the average travel time of the city. The same applies for the effort that needs to be done to access the area. If, for instance, residents like to use the park in their free time, they will not visit the area if they have to spend too much time to get to the area or put too much effort in getting there.

**Routing**
There are also lessons to be learned concerning the routing factor. In Athens and Barcelona, the Olympic parks and stadiums are located at the end of a route, which means that people are not trespassing the area but have to really go to the area if they want to be there. This leads to people only visiting the area if they really want to and not because they are passing it anyway. This decreases the use of the area and hence the liveability. A lesson learned is therefore that the Olympic park and stadium could be best located on a route. This is difficult to achieve since the existing urban structures will mostly not allow it. However, routing can also be created. This is the second lesson learned. By creating a multi-functional program for the Olympic park, routes are created. A great example of this is Beijing’s Olympic park. Due to the residential and professional functions available at the park, people are trespassing the area on a daily basis, enhancing the chance of liveability and post-use.

**Program**
The program aspect of post-use creation has proven to be an important one. The lesson learned is that this aspect is influencing the mobility and the routing factor and that has affect on the liveability of the area and hence enhances or decreases the chance of post-use creation on building level. The case studies have shown that the areas with a multi-functional program are attracting more visitors to the area and are hence increasing the liveability of the area, which in turn might lead to post-use creation of the area and the venues it contains. It can hence be learned that the program of the area should contain multiple functions. However, some of the functions need to be usable for the residents of the city. Barcelona, for instance, attracts mainly tourists to the Olympic park since the area offers, besides sports, only museums. Residents might visit the museums once or twice a year but certainly not on a daily or weekly basis and hence, the liveability will not be enhanced in the way it would when functions like work or living were added to the program/area.

**Catchment area**
The catchment area depends a lot on the use that is found for the stadium. The case studies show that different events attract different visitors from different places. Where the matches of the football clubs of Athens will attract mostly regional spectators, concerts of artistes like Bruce Springsteen might attract spectators from all over the country or even from abroad. It can hence be learned that the catchment area is influenced by the use planned for the stadium in the early phase of the Olympic preparations. Another lesson learned is that the stadium should facilitate at least the main spectator sport of the country, since this sport will attract the most visitors. Lessons learned concerning the competition of the stadium are that the Indoor Sports Centres are mostly the number one competitors of the Olympic stadium. Despite of the size of the Olympic stadiums, they can only be used during the summer months and even then, some artists will avoid the risk of performing in the rain and choose for the Indoor Halls. The other lesson
learned here is that the other stadiums in the host city are mostly not of competition to the Olympic stadium due to the fact that the Olympic stadium is often the only one in its size or because the main use of the stadiums differs too much.

**Organisation of the stadium**

The case studies show that the organisations of Barcelona and Athens have in common that they manage more Olympic venues at the Olympic Park. One of these venues is the Indoor Sports Centre, which means that a part of the competition is taken away. Additionally, the management companies of the three cases are all part of the government and the government owns the venues as well. This means that the governmental influence is big. However, when it comes to the financial part, the stadiums vary. In Barcelona, operating the stadium itself is not feasible, however, due to the profits of other departments, the losses of the stadium are balanced. Barcelona prioritises the objective of the stadium, hosting international events, above generating profit. In Beijing, the stadium is financial feasible due to the income generated from the tourism sector. About the financial situation of Athens no information is found. The lesson learned is that there are as much different methods to manage the Olympic stadium in a positive way, as there are different cities.

**Adjustability of the stadium**

The lesson learned concerning the adjustability of the stadium is that the more adjustable the stadium is, the better it can facilitate the demands of its user. The second lesson that can be learned from the case studies is that the protection of the athlete’s track and the grass are very expensive and that a solution in the form of a moveable floor would mean that hosting cultural events will be less expensive, which might increases the demand for hosting events at the Olympic stadium. The same applies for a retractable roof. If the Olympic stadiums could close its roof for cultural and business events, the adjustability would be increased as well. However, these solutions have to be taken in to consideration beforehand since implementing them later on requires major construction work.

**Architectural value of the stadium**

When the architectural value of the stadium is concerned the case studies show different designs. Barcelona’s stadium is more traditional while the designs of Athens and Beijing are more international. It can be learned that the architectural value for the host city does not depend on this level of modernity. What is important however, is the localization of the design. All three cases have a design, which is based on local aspects and by this they give identity to the city. While all designs can be seen as a landmark, regional or international, what is also important is their added value to the city. In Beijing for instance, the stadium is responsible for attracting tens of thousands tourists a day while the stadium of Athens does not attract tourists at all.

**Function of the stadium**

A lesson that can be learned from the aspect function is that the more functions the stadium can accommodate, the more chances are created for post-use. The stadiums of the three case studies can all at least accommodate two functions, which is not that much. Barcelona and Beijing both can accommodate four of them. This results in a more varied division in events for Barcelona and Beijing compared to Athens. This in turn leads to diverse users, which ultimately leads to a wider range of post-use possibilities. The advertisement the stadium perceives from hosting different kind of events and functions might attract more promoters who would also like to host an event. The lesson learned is hence that multi-functional stadiums have a better chance to be used in the post-Olympic period than mono-functional stadiums.

**Guidelines for future hosts**

The above-described lesson learned can be transformed in to theoretical guidelines which can be used by future host cities to enhance the possibility of post-use creation on building level. Inevitably, some guidelines will focus more on the city or area level than on the building level, however, it is believed that these aspects are of such influence on the post-use creation on building level that ignoring them would be a mistake. The table below displays the theoretical
The guidelines provide guidance in implementing the aspects of post-use creation on different levels in the preparation phase of the Olympic bid.

**Table 7.1 Theoretical guidelines for post-use creation**

<table>
<thead>
<tr>
<th>Level</th>
<th>Aspect</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>City level</td>
<td>Urban planning</td>
<td>• The mega-event strategy must connect to the urban regeneration strategy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The post-use of the legacy must be planned from the bid phase on</td>
</tr>
<tr>
<td></td>
<td>Stakeholders &amp; organisation</td>
<td>• A right combination of public/private involvement needs to be found</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The involvement of the civic society must be considered beforehand</td>
</tr>
<tr>
<td></td>
<td>Social costs &amp; benefits</td>
<td>• Attention needs to be paid to the consequences for social minorities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Measurements need to be taken for relocated/evicted households</td>
</tr>
<tr>
<td>Area level</td>
<td>Mobility</td>
<td>• Travel time needs to be around the average travel time of the city</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The area should be accessible without too much effort</td>
</tr>
<tr>
<td></td>
<td>Routing</td>
<td>• The area should be connected to an existing route through the city or;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• A route should be created by means of a multi-functional program</td>
</tr>
<tr>
<td></td>
<td>Program</td>
<td>• Multifunctionality needs to be created by means of the program</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The functions of the program need to attract a mix group of users</td>
</tr>
<tr>
<td></td>
<td>Catchment area</td>
<td>• The use needs to be known beforehand for catchment area research</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The stadium should differ from the competition (size &amp; function)</td>
</tr>
<tr>
<td>Building level</td>
<td>Organisation</td>
<td>• The management company should match organisation with function</td>
</tr>
<tr>
<td></td>
<td>Adjustability</td>
<td>• The adjustability should be enhanced as much as possible</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New stadiums should be implemented with adjustability solutions</td>
</tr>
<tr>
<td></td>
<td>Architectural value</td>
<td>• The design needs to be localized to create identity of place</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The design should create added value to the host city</td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td>• Multi-functionality needs to be considered from an early stage on</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The sport function does not have to be maintained per se</td>
</tr>
</tbody>
</table>
7.2 RESEARCH CONCLUSIONS

The Olympic host cities have been facing difficulties with the post-use of the legacy of the Olympic Games. When organizing the Games, big plans for the city arise and during the event, the city shows its beautiful venues. However, after the Games the venues sometimes remain unused. The residents of the Olympic host city offer too little demand for the created venues and ‘white elephants’ occur. During the years, the legacy of the Games has become more and more important and host cities are planning their legacy from the initiative phase on. However the Olympic main stadiums are still known for their difficult post-use period. Just planning the legacy does not seem to be enough. It can be concluded that is of great importance that the mega-event strategy is connected with the long-term perspectives of the host city’s urban regeneration plan in order to create a usable legacy. In addition, the legacy needs to find a balance on the three pillars of legacy creation; social-cultural, financial-economic and physical-environmental.

This research concentrated on how the aspects of post-use creation are implemented on building level and to what extent the mega-event strategy of the Olympic host city influences this implementation. These aspects of post-use creation are factors that determine the effective use of an area or sport facility. By considering these aspects from the bid phase on, the post-use of the Olympic venues can be implemented and managed. In order to learn lessons from previous host cities, three case studies are examined; Barcelona, Athens and Beijing. These cases showed diverse outcomes in the post-use of their Olympic park and Olympic main stadium. The aspects of post-use creation, used to examine the cases, found their origin in the Urban Area Development field. The aspects of urban planning, the organisation of the Olympic development, and the social costs and benefits of these developments are viewed on city level. On area level, the cases have been assessed on the aspects of mobility, routing, program and the catchment area of the Olympic stadiums in the post-Olympic period. In addition, the cases have been assessed on building level on the aspects of the organisation of operating the stadium, its adjustability, architectural value and its function.

It can be concluded that the areas and venues with a multi-functional program, on area and building level, attract a mix group of users, which will enhance the liveability and increase the chance of post-use of the area and stadium. In addition, it became evident that connecting the mega-event strategy to the master plan of the city influences the implementation of the aspects of post-use creation in a positive way. However, creating a multi-functional program at area level seems to be difficult since the area needs to be orderly and easily controlled during the Games for safety reasons. However, solutions for this challenge can be found in creating temporary use during the Games. In Beijing for instance, the fencing hall was transformed in to a convention centre after the Games, creating a multi-functional program in the post-Olympic period without compromising the safety of the Olympic spectators. On city level, implementing the aspects of post-use creation is furthermore depending on the organisation and stakeholders of the Olympic developments. The cooperation between public and private parties provides different perspectives and objectives, enhancing the implementation of the post-use aspects and the additionally enhancing the chances of creating a usable legacy. On building level, the implementation of the adjustability aspect will enhance the chances of use in the post-Olympic period simply by enlarging the stadiums potential for users.

The research has resulted in theoretical guidelines for post-use creation on building level, which can be used by future host cities to enhance their chance of post-use creation. The guidelines provide guidance in implementing the aspects of post-use creation on different levels in the preparation phase of the Olympic bid.

Olympic host cities can increase the chance of creating liveability and post-use at their Olympic park and stadium by creating a mega-event strategy, founded on the three pillars of the legacy model, that connects to the urban regeneration plan of the host city. The aspects of post-use creation on the different levels need to be implemented in this mega-event strategy from the bid phase on in order to gain the maximal effect. This means that the aspects of post-use creation, on city, area and especially building level, need to be considered with care. The implementation of these aspects is what determines the degree of use in the post-Olympic period. Some aspects depend upon others however. The program factor, for instance, is a very important one since it influences the mobility and routing factor. If an area offers a multi-functional, and attractive program, users will come to the area, whether it is on their route and easy accessible or not. On
the other hand, when an area is well accessible and on the daily route of a lot of people, but the program of the area is mono-functional, they will not use the area. The same applies to the adjustability factor of the stadium, which is an important aspect as well. The amount of functions a stadium can accommodate depends on the adjustability of the stadium. The more adjustable the stadium is, the more functions it can accommodate and hence the more the potential of use increases.

It can be concluded that post-use of the Olympic main stadium depends upon the implementation of the aspects of post-use creation on different levels. Three aspects have proven to be of great influence on the chances of post-use creation, which are the urban planning factor, the program factor and the adjustability factor. Integrating these aspects with the mega-event strategy in an early stage of the Olympic preparation will enhance the chances of use in the post-Olympic period on building level.
8 REFLECTION

In this chapter the research and the research process are reflected upon. Performing a research is an iterative process. Initially, it seems to be linear since a research proposal is written, research is done and conclusions are made. However, in reality, writing a master thesis is much more complex. It is a cyclical movement of going back and forth between the literature, the empirical analysis, and the research findings, trying to connect all aspects with each other. The same applies to this research process.

Literature has been studied and cases have been analyzed and compared to each other. The choice of these methods has been helpful for this research project. The literature provided a sound base for the appraisal of the cases and functioned as a framework to assess the cases in the cross-case analysis. In addition, the cases of Barcelona, Athens and Beijing have provided an insight view in the Olympic legacy on building level. However, getting in contact with the organizations managing the different stadiums has been difficult. Where Barcelona’s BSM responded quickly and very enthusiastic, Beijing’s NS did not reply at all. Gladly, Beijing is well organized and keeps track of its decisions in (Chinese) literature so information could be conducted with the help of Yawei Chen. Athens’ OAKA on the other hand, pretended to be willing to answer the interview questions but they never did, which was very frustrating. In addition, information about the organization or its decisions is very difficult to find since very little is documented by the Greek. Eventually, it was possible to subtract lessons learned from the cross-case analysis and transform them into theoretical guidelines for post-use creation though.

Reflecting the work done is a method to learn from the process used. It can be concluded that the case study method is a good way of examining the urban area development aspects and to subtract lessons from precious cases. A lot has been learned of writing this master thesis, concerning the subject of the thesis but also executing a research in general. Much information has been conducted from the cases and especially from Barcelona. The organization of the Olympic stadium has been mapped and surprising and unexpected facts are discovered. Within the time available, this research has tried to find an answer to the post-use challenges on building level and succeeded in a certain way. With this is meant that the conclusions of this report are established on three case studies and hence, in order to secure the reliability of the conclusions, more case studies should be performed. The case of London, for instance, would be of good complement to the research due to the legacy company founded for the post-use of the Olympic legacy and the private ownership of the Olympic stadium. In addition, it initially was the idea to connect the research findings to the Dutch case but due to the limited time available, this has not been done, however it would be of good complement to the research as well.

The scientific relevance of the research can be found within the provided insights in the different ways of operating an Olympic main stadium. Little was know about how to deal with this particular legacy of the Olympic Games in the post-Olympic period and this research provided a small contribution in the process of finding an answer to this question. Though the results should be tested with more case-studies to be reliable enough to make statements with certainty, it can be assumed that this research found the aspects of post-use creation which are of great influence on enlarging the chances of post-use creation. Future host cities can use the theoretical guidelines provided in this research to increase the chance of their stadium to be used in the post-Olympic period.

The social relevance of the research can be found in the theoretical guidelines of post-use creation as well. The guidelines enlarge the chance of a useful stadium for the residents of the host city. Often the Olympic main stadiums are seen as expensive burdens for the host city and its residents. Creating a multifunctional stadium that is useful for the residents of the host city is an important aspect of the creating a successful Olympic legacy.
9 RECOMMENDATIONS

This research focussed on the aspects of post-use creation on building level. While the research question is answered, some additional question appeared during the research. In this paragraph, these questions are transformed in to recommendations for further research concerning the Olympic legacy on building level.

The first question that occurred is related to the organisation of the Olympic stadiums. In all the cases examined in the case studies, the Olympic stadiums are operated by public companies. While the financial feasibility was solved by different measures, none of the stadiums was generating enough income to support itself by hosting events. Barcelona does not play even and Beijing finds its main income source in tourism, which is sufficient for the short-term period but uncertain for the long-term period. The question occurred is what would be the effect of a private company operating the Olympic stadium. Would this enhance the financial situation, for a long-term period or will there be no difference noticeable? In the nearby future, London will be the perfect case to answer this question.

The second question that occurred is a more technical question concerning the adjustability of the stadiums. The research showed that implementing a moveable floor and retractable roof will enhance the adjustability of the stadiums and enlarge the possibilities of post-use. However, implementing these solutions are very expensive and not possible without major construction work, or so it seems. What are the technical possibilities of implementing such solutions and what will be the affects on the use of the stadium in reality?

The last question concerns the effects of the legacy company used by London on the post-use of the Olympic legacy on building level. London is the first Olympic city that uses a specially founded legacy company to ensure the post-use of the Olympic legacy. Will London indeed produce a “perfect” legacy?
SUMMARY

Introduction
The Olympic Games is nowadays the most famous and spectacular sporting event in the world. Every four years an edition of one of the Games is held. However, the Games have grown enormously during the centuries and for most cities, if not all cities, this means that great urban development is necessary to host the Olympic Games. Since Barcelona 1992, a new motivation to host the Olympics has arisen. Next to enhancing tourism, promoting entrepreneurial goals and gaining recognition as a global city or nation, more cities want to use the Games as a tool for urban regeneration. Barcelona was the first one to successfully use the Games to transform their city. They enhanced their infrastructure, imago and tourist attractiveness and became world famous for their ‘Barcelona model’. Even though cities tried to establish a similar effect, none of them really succeeded on all aspects. Still, hosts are hoping to do use the Olympic Games as a catalyst for a successful urban regeneration one-day. While the bid and the preparation of the Games and the Games themselves are very well organized, this is not always the case for the period after the Games and post-use of the venues produced for the Games is sometimes poor. Mainly the clustered venues in the Olympic Parks, like the main stadium, stand the chance to be ‘white elephants’. According to the Oxford University Press (2011) a ‘white elephant’ is defined as “a thing that is useless and no longer needed, although it may have cost a lot of money”. But why do these ‘white elephants’ occur? It used to be due to the lack of planning of and interest for the legacy (Cashman 1998) but nowadays the Olympic legacy is an important aspect of the bid and without a plan for the legacy a bid will certainly not win. Hence the planning of the legacy alone seems to be not enough to prevent ‘white elephants’ to occur. Cities have started to see the Olympic Games as a starting point to fast-track urban development but not always as a part of the urban regeneration plan of the city. Urban developments can only be successful if the measures taken support the long-term perspectives of the urban regeneration strategy of the city. If the Olympic mega-event strategy connects with the urban development strategy in a proper way, will these ‘white elephants’ still occur? The problem statement that can be derived from this problem analysis is:

Due to inadequate attempts to connect the Olympic mega-event strategy to the long-term perspectives of the urban regeneration strategy of the host city, ‘white elephants’ arise in the host cities in the post-Olympic period.

More research could be done concerning the mega-event strategy and the post-use on building/area level, by which is meant the competition venues (building level) of the Olympic Games, mostly clustered in the Olympic Park (area level). The research objective of this research can be formulated as follows:

Investigate different cases on the post-use aspects of the Olympic legacy on building level and use the lessons learned to create theoretical guidelines for post-use creation, which can be used by future host cities.

The problem analysis has made it clear that ‘white elephants’ are still a challenge for Olympic host cities, especially the Olympic main stadium. The main research question will hence have to provide more insight on how post-use of the legacy can be created. In addition, the focus of this research will be on the building level of the Olympic Games, the competition venues. Huijsmans (in Bakker 2009) categorized these facilities in the following way:

• Specific stadiums (Olympic Stadium, Football, Velodrome, etc.)
• Complexes (Hockey complex, Tennis complex, Aquatics centre, etc.)
• Indoor halls (Volleyball, Handball, Judo, etc.)
• Landscapes (Rowing, Marathon, Sailing, etc.)

The below mentioned venues are generally seen as main venues and are mostly being centralized in the Olympic Parks (VROM et al, 2008):

• Olympic Stadium (Athletics, opening and closing ceremony)
• Aquatics centre (Swimming, Diving, Water Polo and Synchronized Swimming)
• Velodrome (Track cycling)
• Indoor halls (Basketball, Handball, Volleyball, etc.)
• Olympic Village (Athletes housing)

Obviously, this means that the Olympic Park, as the direct surrounding and hence location of the main competition venues, will also be researched. This is why the research question is formulated as follows:

*How are the aspects of post-use creation implemented to the Olympic competition venue, the main stadium, on building level and to what extent has the mega-event strategy of the Olympic host city influence on this implementation?*

By answering the above research questions, the final result of this research can be achieved.

*Connect the aspects of post-use creation on building level to the mega-event strategy of the Olympic host city and create theoretical guidelines for enhanced post-use creation on building level, which can be used by future host cities.*

**Research design**

This research project is an empirical research. Empirical research is to determine what occurs in reality by means of observation (Baarda & De Goede 2006). This can be done in different ways. The research method of the research depends on the research question and the research objectives (Baarda & De Goede 2006). In descriptive research the objective is to accurately map a situation or a series of events to describe what occurs precisely (Leiden University 2011). However, in this descriptive research project the focus is on generating conjectures and hence the research can be defined as an exploratory one. The purpose of exploratory research is to form ideas about possible connections (Leiden University 2011). In this case, possible connections between the mega-event strategy and the post-use of the Olympic legacy on building level are researched. There are different ways to investigate the possible connections and for this research project a literature study, interviews and case studies are conducted. The literature study exists of reading and processing different literature sources about relevant topics. These literature sources can be scientific articles, books, websites, newspapers, scientific magazines, master theses and so on. The different sources are used to create a more or less complete overview of the literature on a particular topic. Later on in the research, interviews were held with experts who are/were involved in the cases that were studied. The interviews were prepared in advance and exist of open questions. After the interviews, the collected data is transcribed and analysed. The last research method that is used during this research is the case study method. The cases were studied explorative to make sure no important information is left out of the research project. The cases that will be studied intensively however are:

- Barcelona 1992
- Athens 2004
- Beijing 2008

Barcelona is, as stated above, the first edition of the Games in which urban regeneration was so important and successful. It is a classic example for urban regeneration by means of hosting the Olympic Games and hence is an important case to learn from. In addition, Barcelona’s main stadium has known a successful post-use in the post-Olympic period. The reason Athens is selected is because Athens has improved its infrastructure tremendously but has issues with the post-use of the legacy, especially with the main stadium. Beijing is a case in which the post-use of the Olympic legacy was very important from the early start on and which included the post-use in the master plan. However, some parts of the legacy have not been used since the Games have left town (other parts gladly are in use though) and hence this case also forms a good learning example. For this research project these are believed to be important cases. The cases are all former cases, this means that the approaches that will be used are ex post evaluations. The three other cases will in turn be examined in an explorative way. The reason why they have not been chosen is different for each case. For the Atlanta case, the economic thrive for organising the Games is this reason. The Atlanta Games were organised by mainly private parties and had as
main goal, economic growth. This is very different from the Dutch motivation to host the Games and hence this case is not elected. When the case of Sydney is concerned, the reason for not being selected is the location of the Olympic development. Sydney has chosen for one location and, as stated before, this is not comparable with the Dutch situation. Since it will not be feasible for the Dutch to create a single location development, this case is not a perfect match. For the London case the main reason is the fact that the Games, at this moment in time, still have to take place and hence it is difficult to predict and investigate the post-use of the legacy.

**Literature results**

The literature shows that there are two sides to every coin. Malfas *et al* (2004) has demonstrated that nearly all the positive applications of the mega-events have also a negative side. They state “along with organizing a mega-events comes increased city awareness, economic development, job creation and urban regeneration but those have been witnessed along with high inflation, expensive housing, threats to civil liberties of certain groups, terrorist acts and even city defamation after revelations of bribery scandals.” Cashman (2002) states there is a growing contemporary awareness that a mega-event can have many positive and negative impacts on a host city and its environment. In order to minimize the negative impacts and optimize the positive impacts, it is important to integrate the mega-event in the urban regeneration plan or master plan from the early start on so the mega-event can be used as a tool for urban regeneration. In addition, Hiller (1998) concludes impact assessment must to be part of every mega-event plan and mitigation plan to control adverse affects.

The Olympic Games have over the years grown into such a mega-event. The motives of the hosting cities have changed over time and are nowadays, as Baim and Misch (2008) concluded, enhancing tourism; promoting more rapid infrastructure investment than would occur without the Olympics; promoting entrepreneurial goals; and gaining recognition as a global city or nation. In addition, funding became more and more important and governments are now often in a partnership with private companies in order to make the Games as (financially) feasible as possible. The facilities necessary for the Olympic Games can be divided in to seven categories. One of these categories is the category ‘competition venues’. Mostly these venues are, together with the Olympic Village, concentrated in the Olympic Park and exist out of the Olympic stadium, aquatics centre, velodrome and the indoor halls. The life cycle of the Olympic Games starts far before the event is held with the planning and organization of the event and ends decades after the Games have left town (or perhaps never) with the legacy of the Games. This Olympic legacy can be anything created by or for the Games, in either a positive or negative way. In all cases, the legacies are tangible or intangible, planned or unplanned and operate within several categories, namely economical impact, cultural considerations, social debate, sporting legacy, political legacy, spatial and environmental legacy and the value of Olympic education. In the general context and adjusted to the relevancies of this research report legacy can be defined as:

*Legacy, in the tangible, physical-environmental pillar, is the positive and negative implication and effect of planned and unplanned development realised to host the Olympic Games on the host city.*

It is expected that whenever Olympic developments are connected with the existing plans and policies, the legacy will have a more positive impact on the host city. In order to assess the cases on the post-use of their legacy, the aspects of post-use creation on city, area and building level need to be examined.

**Case study results**

What can be concluded after examining the aspects of post-use creation is that all the factors have some individual influence on the post-use of the legacy, however, only if all factors are combined in a strong way, certain liveliness can be created. In other words, the factors have to “work together” in order to provide the change to create liveability on area level. In its turn, this liveability could create post-use of the area and of the venues it contains.
When considering the cross-case analysis, it can be concluded that certain factors of post-use creating have more influence than others on the post-use creation. The urban planning, routing, program, and adjustability factor are greatly influencing the possibility of post-use creation, either on city, area and building level. Without a lively area surrounding the stadium it becomes a secluded venue except for the days it hosts an event. It can therefore be concluded that it is important to provide the area the change to attract users and hence to create a certain liveability.

The factors most influencing this change to create liveability are the urban planning factor on city level and the routing and program factor, on area level. It is the urban planning factor that has to encourage the routing and program factor by connecting the mega-event strategy to the long-term perspectives of the urban regeneration strategy and select locations for the Olympic developments where it is most useful for the residents after the Games. This leads to the next conclusion, which concerns the planning of the post-use of the legacy. It has proven to be important to consider the post-use from the bid phase on. The cases of Barcelona and Beijing prove that considering the post-use from the bid phase on creates a better chance of post-use of the legacy than when the post-Games period is neglected. Especially on city level it is obvious that Barcelona and Beijing found good use for the Olympic legacy. Athens, on the other hand, has abandoned its legacy, leaving it to decay. The main difference between Barcelona, Beijing and Athens on this is that the latter one did not plan the post-use of the legacy.

When comparing the next two import factors, routing and program, it is obvious that Barcelona and Athens score low, especially when compared to Beijing. For the Barcelonan case this can be explained by the fact that the Montjuïc area is added to the mega-event strategy to meet the Olympic conditions. Since hills and the sea surround Barcelona, city expansion is difficult. However, if Barcelona wanted to host the Games, it needed to have an Olympic stadium, which was found in the Montjuïc stadium, built for the 1929 World Expo. This turned out to be a good choice, since the then neglected area now is an area used by tourists and the residents of Barcelona. Yet, Montjuïc is a hill and hence the routing is not that good. People do not have to trespass the area to go somewhere and hence the Olympic park of Barcelona is more a final destination where people only go to if the want to be there. The program of the area however, attracts tourists and residents of the city during the weekends to spend time at the park, creating some kind of liveability. Athens used an existing location, without a daily route crossing the area, for the Olympic park as well. However, the main difference between Athens and Barcelona is the program of the area. In Athens, no interesting destinations are in the neighbourhood of the Olympic park and hence the park only attracts users when an event is hosted. Beijing, on the other hand, created a multi-functional program for the Olympic park, which daily attracts thousands of people. Additionally, the different functions also enhance the routing factor since people who live or work in the area, will trespass it.

On building level, the adjustability of the stadium is an important factor for the creation of post-use. Without the possibility of the stadium to adjust itself to the demands of the users, which in
this case are mostly the promoters of events, a mono-functional venue arises. Mono-functional buildings in turn provide a lower chance of post-use of the venue. From the cross-case analysis it can be concluded that the three cases all are adjustable enough to at least accommodate two functions. The main function of the stadiums differs per case, however, post-use is post-use and it in fact does not matter what this use precisely comprehends. Yet, the more adjustable the stadium, the more functions it can facilitate and hence the more chance of post-use is created. Beijing’s stadium, for instance, generates its income from tourism. However, in a few years, the stadium might be less popular among tourists and other sources of income have to be found. With an adjustable stadium, it should be possible to find another kind of post-use quite easily. The three cases have one thing in common when the adjustability of the stadiums is concerned. The athlete’s track and the grass in the middle of the stadium have to be protected when other events take place. This is an expensive operation, which is not necessary nowadays. In the Netherlands, the Gelredome stadium has a floor that can be removed from the stadium, leaving a concrete floor behind, which is ideal for events like concerts. However, the construction of the stadiums of the case studies, do not allow this solution without major construction work. Overall it can be concluded that when hosting the Olympic Games, the aspects of urban planning, routing, program and adjustability need to be considered with care. The same applies for the post-use of the legacy in general. In the cases analysed for this research, these aspects had the most influence on the legacy of the Games, in either a positive or a negative way. The other factors of post-use creation are of influence as well on a much lower scale. The mobility factor in Barcelona, for instance, was not appreciated that much, however, if there is something interesting to do in the area, people will come, even though some extra effort is needed to get to the location. This of course to a certain extend. The same applies for the architectural value of the stadiums. While Athens’ design is of international level, the value of it for the city is modest due to its location, which is not used on a daily basis, or by tourists. By all means, these conclusions are established on three case studies and hence, in order to secure the reliability of the conclusions, more case studies should be performed. The case of London, for instance, would be of good complement to the research due to the legacy company founded for the post-use of the Olympic legacy and the private ownership of the Olympic stadium.

The lessons learned of the cross-case analysis can be transformed in to theoretical guidelines, which can be used by future host cities to enhance the possibility of post-use creation on building level. Inevitably, some guidelines will focus more on the city or area level than on the building level, however, it is believed that these aspects are of such influence on the post-use creation on building level that ignoring them would be a mistake. The table below displays the theoretical guidelines (table 7.1). The guidelines provide guidance in implementing the aspects of post-use creation on different levels in the preparation phase of the Olympic bid.
### Table 7.1 Theoretical guidelines for post-use creation

<table>
<thead>
<tr>
<th>Level</th>
<th>Aspect</th>
<th>Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>City level</td>
<td>Urban planning</td>
<td>• The mega-event strategy must connect to the urban regeneration strategy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The post-use of the legacy must be planned from the bid phase on</td>
</tr>
<tr>
<td></td>
<td>Stakeholders &amp; organisation</td>
<td>• A right combination of public/private involvement needs to be found</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The involvement of the civic society must be considered beforehand</td>
</tr>
<tr>
<td></td>
<td>Social costs &amp; benefits</td>
<td>• Attention needs to be paid to the consequences for social minorities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Measurements need to be taken for relocated/evicted households</td>
</tr>
<tr>
<td>Area level</td>
<td>Mobility</td>
<td>• Travel time needs to be around the average travel time of the city</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The area should be accessible without too much effort</td>
</tr>
<tr>
<td></td>
<td>Routing</td>
<td>• The area should be connected to an existing route through the city or;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• A route should be created by means of a multi-functional program</td>
</tr>
<tr>
<td></td>
<td>Program</td>
<td>• Multifunctionality needs to be created by means of the program</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The functions of the program need to attract a mix group of users</td>
</tr>
<tr>
<td></td>
<td>Catchment area</td>
<td>• The use needs to be known beforehand for catchment area research</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The stadium should differ from the competition (size &amp; function)</td>
</tr>
<tr>
<td>Building level</td>
<td>Organisation</td>
<td>• The management company should match organisation with function</td>
</tr>
<tr>
<td></td>
<td>Adjustability</td>
<td>• The adjustability should be enhanced as much as possible</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New stadiums should be implemented with adjustability solutions</td>
</tr>
<tr>
<td></td>
<td>Architectural value</td>
<td>• The design needs to be localized to create identity of place</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The design should create added value to the host city</td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td>• Multifunctionality needs to be considered from an early stage on</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The sport function does not have to be maintained per se</td>
</tr>
</tbody>
</table>

### Conclusion

The Olympic host cities have been facing difficulties with the post-use of the legacy of the Olympic Games. When organizing the Games, big plans for the city arise and during the event, the city shows its beautiful venues. However, after the Games the venues sometimes remain unused. The residents of the Olympic host city offer too little demand for the created venues and ‘white elephants’ occur. During the years, the legacy of the Games has become more and more important and host cities are planning their legacy from the initiative phase on. However the Olympic main stadiums are still known for their difficult post-use period. Just planning the legacy does not seem to be enough. It can be concluded that is of great importance that the mega-event strategy is connected with the long-term perspectives of the host city’s urban regeneration plan in order to create a usable legacy. In addition, the legacy needs to find a balance on the three pillars of legacy creation; social-cultural, financial-economic and physical-environmental.

This research concentrated on how the aspects of post-use creation are implemented on building level and to what extent the mega-event strategy of the Olympic host city influences this implementation. These aspects of post-use creation are factors that determine the effective use of an area or sport facility. By considering these aspects from the bid phase on, the post-use of the Olympic venues can be implemented and managed. In order to learn lessons from previous host cities, three case studies are examined; Barcelona, Athens and Beijing. These cases showed diverse outcomes in the post-use of their Olympic park and Olympic main stadium. The aspects of post-use creation, used to examine the cases, found their origin in the Urban Area Development field. The aspects of urban planning, the organisation of the Olympic development, and the social costs and benefits of these developments are viewed on city level. On area level, the cases have been assessed on the aspects of mobility, routing, program and the catchment area of the Olympic stadiums in the post-Olympic period. In addition, the cases have
been assessed on building level on the aspects of the organisation of operating the stadium, its adjustability, architectural value and its function. It can be concluded that the areas and venues with a multi-functional program, on area and building level, attract a mix group of users, which will enhance the livability and increase the chance of post-use of the area and stadium. In addition, it became evident that connecting the mega-event strategy to the master plan of the city influences the implementation of the aspects of post-use creation in a positive way. However, creating a multi-functional program at area level seems to be difficult since the area needs to be orderly and easily controlled during the Games for safety reasons. However, solutions for this challenge can be found in creating temporary use during the Games. In Beijing for instance, the fencing hall was transformed into a convention centre after the Games, creating a multi-functional program in the post-Olympic period without compromising the safety of the Olympic spectators. On city level, implementing the aspects of post-use creation is furthermore depending on the organisation and stakeholders of the Olympic developments. The cooperation between public and private parties provides different perspectives and objectives, enhancing the implementation of the post-use aspects and the additionally enhancing the chances of creating a usable legacy. On building level, the implementation of the adjustability aspect will enhance the chances of use in the post-Olympic period simply by enlarging the stadiums potential for users. The research has resulted in theoretical guidelines for post-use creation on building level, which can be used by future host cities to enhance their chance of post-use creation. The guidelines provide guidance in implementing the aspects of post-use creation on different levels in the preparation phase of the Olympic bid. Olympic host cities can increase the chance of creating livability and post-use at their Olympic park and stadium by creating a mega-event strategy, founded on the three pillars of the legacy model, that connects to the urban regeneration plan of the host city. The aspects of post-use creation on the different levels need to be implemented in this mega-event strategy from the bid phase on in order to gain the maximal effect. This means that the aspects of post-use creation, on city, area and especially building level, need to be considered with care. The implementation of these aspects is what determines the degree of use in the post-Olympic period. Some aspects depend upon others however. The program factor, for instance, is a very important one since it influences the mobility and routing factor. If an area offers a multi-functional, and attractive program, users will come to the area, whether it is on their route and easy accessible or not. On the other hand, when an area is well accessible and on the daily route of a lot of people, but the program of the area is mono-functional, they will not use the area. The same applies to the adjustability factor of the stadium, which is an important aspect as well. The amount of functions a stadium can accommodate depends on the adjustability of the stadium. The more adjustable the stadium is, the more functions it can accommodate and hence the more the potential of use increases. It can be concluded that post-use of the Olympic main stadium depends upon the implementation of the aspects of post-use creation on different levels. Three aspects have proven to be of great influence on the chances of post-use creation, which are the urban planning factor, the program factor and the adjustability factor. Integrating these aspects with the mega-event strategy in an early stage of the Olympic preparation will enhance the chances of use in the post-Olympic period on building level.

Recommendations
This research focussed on the aspects of post-use creation on building level. While the research question is answered, some additional question appeared during the research. In this paragraph, these questions are transformed in to recommendations for further research concerning the Olympic legacy on building level. The first question that occurred is related to the organisation of the Olympic stadiums. In all the cases examined in the case studies, the Olympic stadiums are operated by public companies. While the financial feasibility was solved by different measures, none of the stadiums was generating enough income to support itself by hosting events. Barcelona does not play even and Beijing finds its main income source in tourism, which is sufficient for the short-term period but
uncertain for the long-term period. The question occurred is what would be the effect of a private company operating the Olympic stadium. Would this enhance the financial situation, for a long-term period or will there be no difference noticeable? In the nearby future, London will be the perfect case to answer this question.

The second question that occurred is a more technical question concerning the adjustability of the stadiums. The research showed that implementing a moveable floor and retractable roof will enhance the adjustability of the stadiums and enlarge the possibilities of post-use. However, implementing these solutions are very expensive and not possible without major construction work, or so it seems. What are the technical possibilities of implementing such solutions and what will be the affects on the use of the stadium in reality?

The last question concerns the effects of the legacy company used by London on the post-use of the Olympic legacy on building level. London is the first Olympic city that uses a specially founded legacy company to ensure the post-use of the Olympic legacy. Will London indeed produce a “perfect” legacy?
REFERENCES

Books & Articles


Hoorn, A. van, Hornis, W., Wagt, M. van der, (2006). Dutch Delta Games-Pleidooi voor de Olympische Spelen in de Randstad. RPB


Soy, S. K., (1997). *The case study as a research method*. Unpublished paper, University of Texas at Austin


Swaddle, P., (2010). *Post-Olympic legacy: learning from former host cities*. NBS Technical Author

Swanborn, P.G., (2000). *Case-study’s: Wat, wanneer en hoe?*. Amsterdam/Meppel: Boom


Websites


Interview

BSM, (2012). Interview with Teresa Sala and Gemma Mariages of Barcelona de Serveis Municipals. Department Olympic Ring, marketing and sales division. Interviewed on the 12th of April 2012 in Barcelona: Spain

Chen, (2012). Informal interview with Yawei Chen, Assistant professor at Technical University Delft, specialized in mega-event strategy and urban development processes. Interviewed on the 16th of May in Rotterdam: the Netherlands

Goedhart, (2012). Interview with Sigrid Goedhart, senior management assistant Stadion Feijenoord N.V.. Interviewed on the 24th of May 2012

Markvoort (2012). Interview with Christine Markvoort, sales manager of Philips Stadion. Interviewed on the 7th of June.
APPENDIX A


Planned Strategies - Deliberate
Intentional, relatively stable, and predictable strategies that are planned and implemented in advance.

Entrepreneurial Strategies - Deliberate but can emerge
In this entrepreneurial strategy, an individual is able to impose his or her vision of direction on others. Entrepreneurial strategies are most common in new, big organizations which are able to find relatively safe niches in their environment.

Ideological Strategies - Highly deliberate
In the ideological strategy, a vision is determined and shared by different actors. This results in an shared ideology as an operational form. The purpose of ideology is to change the environment or else to protect the organization from it.

Umbrella Strategies - Deliberately emergent
The umbrella strategy entails when leaders set general guidelines for behavior and then let actors maneuver within them. Strategies are allowed to emerge within set boundaries. Almost all real-world strategies have umbrella characteristics.

Process Strategies - Deliberately emergent
The process strategy is somewhat similar to the umbrella strategy. But instead of attempting to control the content through boundaries, the leadership exercises influence indirectly. The central leadership designs the system that allows others the flexibility to evolve patterns within it.

Unconnected Strategies - Relatively emergent
In the unconnected strategy actors are loosely joined to rest of organization. They create their own patterns in absence of the central or common intention. They come neither from a central leadership nor from intentions in the organization at large.

Consensus Strategies - Emergent
Consensus strategies originate in consensus. Unlike the ideological strategy, in which a consensus forms around a system of beliefs, the consensus strategy grows out of the mutual understanding of different actors.

Imposed Strategies - Emergent and deliberate
Strategies can be imposed from outside as well. The environment can directly force the organization into a pattern. This occurs when an external party, with a great deal of influence over the organization imposes a strategy on it. (Mintzberg & Waters, 1985)

(Enk 2010)
### APPENDIX B
Calculations of the catchment area of football stadiums. See chapter 2.3.2

<table>
<thead>
<tr>
<th></th>
<th>Ajax</th>
<th>Amsterdam</th>
<th>Utrecht</th>
<th>The Hague</th>
<th>Rotterdam</th>
<th>Den Bosch</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel</td>
<td>Distance by</td>
<td>car</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10.4 km</td>
<td>34.2 km</td>
<td>60.3 km</td>
<td>76.6 km</td>
<td>87 km</td>
<td>53.7 km</td>
<td></td>
</tr>
<tr>
<td>Travel</td>
<td>time by</td>
<td>car</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>23 min</td>
<td>35 min</td>
<td>44 min</td>
<td>54 min</td>
<td>65 min</td>
<td>44 min</td>
<td></td>
</tr>
<tr>
<td>Travel</td>
<td>time by</td>
<td>public</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>transport</td>
<td>transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>27 min</td>
<td>40 min</td>
<td>69 min</td>
<td>74 min</td>
<td>74 min</td>
<td>57 min</td>
<td></td>
</tr>
<tr>
<td>Travel</td>
<td>distance as</td>
<td>the crow</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>flies</td>
<td>flies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 km</td>
<td>29 km</td>
<td>52 km</td>
<td>55 km</td>
<td>75 km</td>
<td>43 km</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Feyenoord</th>
<th>Rotterdam</th>
<th>Dordrecht</th>
<th>The Hague</th>
<th>Utrecht</th>
<th>Breda</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel</td>
<td>distance by</td>
<td>car</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.4 km</td>
<td>17.2 km</td>
<td>36.5 km</td>
<td>57 km</td>
<td>44.3 km</td>
<td>32.3 km</td>
<td></td>
</tr>
<tr>
<td>Travel</td>
<td>time by</td>
<td>car</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13 min</td>
<td>17 min</td>
<td>34 min</td>
<td>47 min</td>
<td>38 min</td>
<td>30 min</td>
<td></td>
</tr>
<tr>
<td>Travel</td>
<td>time by</td>
<td>public</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>transport</td>
<td>transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>34 min</td>
<td>44 min</td>
<td>70 min</td>
<td>94 min</td>
<td>70 min</td>
<td>60 min</td>
<td></td>
</tr>
<tr>
<td>Travel</td>
<td>distance as</td>
<td>the crow</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>flies</td>
<td>flies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.5 km</td>
<td>15 km</td>
<td>25 km</td>
<td>46 km</td>
<td>39 km</td>
<td>26 km</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>PSV</th>
<th>Eindhoven</th>
<th>Tilburg</th>
<th>Den Bosch</th>
<th>Nijmegen</th>
<th>Venlo</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel</td>
<td>distance by</td>
<td>car</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 km</td>
<td>33.5 km</td>
<td>35 km</td>
<td>72 km</td>
<td>58 km</td>
<td>40.1 km</td>
<td></td>
</tr>
<tr>
<td>Travel</td>
<td>time by</td>
<td>car</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7 min</td>
<td>29 min</td>
<td>32 min</td>
<td>56 min</td>
<td>45 min</td>
<td>34 min</td>
<td></td>
</tr>
<tr>
<td>Travel</td>
<td>time by</td>
<td>public</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>transport</td>
<td>transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>21 min</td>
<td>50 min</td>
<td>55 min</td>
<td>97 min</td>
<td>67 min</td>
<td>58 min</td>
<td></td>
</tr>
<tr>
<td>Travel</td>
<td>distance as</td>
<td>the crow</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>flies</td>
<td>flies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 km</td>
<td>32 km</td>
<td>30 km</td>
<td>52 km</td>
<td>50 km</td>
<td>33 km</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX C

Interview summary: Barcelona de Serveis Municipals, S.A., Olympic Ring Department
Interviewees: Teresa Sala & Gemma Mariages, Marketing and Sales managers
Date of the interview: Barcelona, 12th of April 2012

0.00:00 – 0.02:27 & 0.06:10 – 0.08:02
The company BSM manages venues throughout the city, hence not only the Olympic Stadium but also the zoo and the amusement park for instance. BSM was accomplished in 2003 and before this year, Barcelona Promocio managed the venues. BSM is organised in different divisions. We are the Olympic Ring division and we have some main divisions in the head quarter, like the legal department and the financial department, who are supporting the other divisions with their management. However, the divisions are managing themselves in daily lives, so they have a director, directors of the venues, sales department, financial department and so on. At the end of the month the Olympic Ring divisions gives the management information to the head quarters. The divisions are managing the activities and give information once a month to the head quarter to inform them what is happening, but they are independent.
When maintenance needs to be done to the venues, the technical department of the head quarters manages that. The sales department of the Olympic Ring exists out five employees but we have also in the head quarters a big commercial department to help us to manage the division, with for instance sponsoring or other subjects that we are not able to do from here, because they know the opportunities for the other departments as for instance Coca Cola wants to sponsor our venues but also the Zoo. This is the way that we can make more profit of the sponsoring.

0.02:28 – 0.06:09 & 0.36:56 – 0.40:19
BSM is a private company but also a municipal company. We are not public staff but we depend on the city council. The city council is the owner of the venues and they gave the management of the buildings to BSM. The city council is a part of our company because the president is municipal, the mayor, but they do not manage the daily lives of the venues. They are taking that everything is done under their rules but they are not managing the venues. They are not paying anything. BSM manages the venues and sometimes we have a big event that is good for the city but not good for our accounts. The municipality never pays for the management of the buildings. However, as next year with the athlete world championships, the municipality wants the event for the city and they do all the procedures for the candidature but it is our company in the end who pays everything. The city council usually pays the fee to have the competition (bid for candidacy). When we had the Final Four last year (big event) we had to pay 1 million euros to have this competition and the city council decided to pay because all the other expenses related to the celebration of the event, like buildings, transportation and everything, was paid by BSM. So we had the incomes of the tickets but not all because half of the ticket’s income is for the Euro League as the owner of the competition. It was not enough to cover all the expenses for BSM. The city council assumes that we are having these expenses and we are losing money. It depends on the year if we have many candidatures or not. In the end it is more or less (but mostly less) balanced. For the Olympic stadium it is more difficult because there are not many events. We have one maybe two big concerts a year and some corporative events and the stadium is a very big building and the maintenance expenses are very high so when we have big events at the stadium we know that we going to loose money. Paula Sant Jordi and the Olympic stadium share the account because it is the same division. So we have many events in Palau Sant Jordi, which balance the expenses of the Olympic stadium.

BSM has four different businesses. The mobility business earns a lot of money. In the end everything goes to one place and there it is balanced. And if it is balanced, it is good enough for us and the municipality as well. The city council is happy because they do not have to maintain these venues. And BSM is able to cover the expenses of this department thanks to the mobility department.
The reason behind redeveloping the old stadium for the Olympics is that the stadium is an ancient building, with a history. The city council wanted this building to be the Olympic stadium since Barcelona cannot grow due to the sea and the mountains surrounding it. Montjuïc was an area that was abandoned. It was a good idea to reconsider all the space in Montjuïc to build the Olympic venues. There are other venues in the city that had Olympic competitions and they are now abandoned and not working as Palau Sant Jordi and the Olympic stadium because this is a leisure area. It is easy for the citizens to come here because they are in the middle of the city but in a different place, in a park. Refurbishing the old stadium was respecting the memory of the city because all the history of the building and it was the perfect infrastructure. In fact, it has a big history in events since the Olympic Games because of the good infrastructure for big events. But only the façade was remaining the same, the rest was redeveloped.

There is architectural value for the residents of Barcelona. When I (Sala) used to come here with my parents as a young girl the Olympic stadium was there and it was closed and my parents told me it was a pity that this building is closed and they told me the big history of the stadium. Montjuïc had a park and an amusement park but that closed in 1986 because there was not a culture for people to come to Montjuïc because it was a very dangerous neighbourhood and the area below is not a good one and there were many poor houses so it was not so good. There was a desire of the citizens to have this area more developed because it was like well nothing happens in Montjuïc, it is there but nothing happens there. So when the architects decided to use this area to develop the Olympic venues I think it was a very good decision. And Palau Sant Jordi is the star of the Olympic Games but it is the Olympic Ring that gives value to the city. However, the Palau Sant Jordi is more important to the residents than the Olympic stadium because of the activity not because of the building. All the artists of the big events come here to be celebrated and we citizens are very proud of the building and it is still modern enough after 20 years. Many things happen here than before the Games and these events place Barcelona in the world. And before the Olympic Games there was not really a reference building to the city, like the Agbar tower, only the Sagrada Familia. Only historic buildings so Palau Sant Jordi was the building that was a reference for the world. We are proud that still many things are happening at the venues, 20 years after the Games, even though they are bad for our account. We are happy to feel that many big competitions and artists are coming to Barcelona. We had a big work at the beginning because the venues were new and how are we going to manage them. We went to the USA and asked events to come to Europe, to Barcelona, and because it was the first time, people were like wow, and very proud. And this is still happening.

For the Olympics the area of Montjuïc was redeveloped. They did not execute everything that has been planned but we have new infrastructure and many new business but in fact if you go to one part of the mountain you are like wow, there is the city, but the other part is next to the port and very industrial area. We have the tube that should come here since we have many transportation troubles but the city council have stopped all the works for the tube. It was our hope to see the tube could arrive here maybe in 2 or 3 years but we do not know if it is going to happen because there is no money to do this. People are used to come to our venues by car, or by public transport with the escalators from Placa Espanya, which takes minutes to get here. The neighbourhood has improved but there is still a lot of work to do and it will be difficult since it is a desert place. There is nothing to do for the residents. It is difficult to start business here (retail). On the weekends however, many families are coming to the area to enjoy the park. But the daily motion is not enough. It is not good for the citizens but it is good for the promoters that come here because they see all this space available and all the parking area and it is the perfect place for the big trucks of the promoters since the venues are not in the city and that is a big advantage because many venues in Spain are located in the city.

The management at the time of the Games, Barcelona Promoció, thought multiple-use was important and hence it has been an objective during the redevelopment of the stadium. They thought about which activities to bring to the venues. BSM has divested certain Olympic venues,
like the Velodrome, because they were too old or because the municipality found other functions for them.

The Olympic stadium has had the RCD Espanyol football club as its tenant until 2009 but it was not good for our company because we had the matches every 15 days so we could not plan other activities because the team was using the stadium for their trainings as well. So other events could not take place at the stadium due to the occupancy by RCD Espanyol. In the period before the football club (1992-1997) there were many events hosted at the Olympic stadium, but during their stay (1997-2009) the amount of events dropped and now we are working very hard to reinstall the image of the Olympic stadium concerning hosting events. This is difficult because once again we have to put a venue that has not been in the market for 12 years back on the market again. What makes it difficult is that it is an open venue, very big and the expenses to make are very high but the feeling of our manager from the beginning was, manage the Olympic stadium as the Palau Sant Jordi, with as many events as possible. There are not many corporative events taking place right now because nothing happens at the stadium. No big events take place. But it is the same in the Palau Sant Jordi. In 2008 40,000 people having their gala dinner at the Palau Sant Jordi and this year it were only 1000 people. With the Olympic stadium that is more difficult due to the open stadium and hence it is usable form June until September. Madonna chose to use the Palau Sant Jordi this year because she thought 70,000 tickets were too much. So a few concerts take place at the Olympic stadium, from artists like the Rolling Stones or Bruce Springsteen, and family shows like the Monster Jam happen every two years. But it is very expensive to host these kinds of shows because the grass and the athlete’s track need to be protected. By Monster Jam, the promoter has to pay for the grass and the athletes track reparations, which is expensive and scares them.

0.22:30 – 0.24:50

RCD Espanyol had to leave their old stadium and the municipality of Barcelona led them play at the Olympic stadium for free until they had a new stadium. The football club has 45,000 supporters and thought the stadium was too big for them and they were too far from the supporters. And now they have a really nice stadium in Cornellà de Llobregat Barcelona. They only use it for football matches and sometimes during the summer, one concert so they can pay for changing the grass. The same applies for the Camp Nou of FC Barcelona. And the new stadium of FC Barcelona will also be used for football only and not for other events. The Camp Nou will be used for trainings or sports that belong to FC Barcelona. These stadiums are not considered as competition for the Olympic stadium.

It is better that RCD Espanyol has left because the Spanish football calendar is until June/July and we could not plan an event because we did not know when RCD had to play. It was hard for us because we were used to organise a lot of things and respond to all the customers and during RCD Espanyol the customers thought the Olympic stadium was not there anymore because we could not give the liability of the date. So they forgot the stadium and now it is difficult to put the stadium back in the place where it was many years ago.

0.24:51 – 0.29:00

It is very very expensive to make the stadium more adjustable but for instance creating a retractable roof. With a new building it might be helpful to create more adjustability but with the architecture of this stadium it is not possible. But for BSM the stadium is flexible enough as it is and otherwise we have the Palau Sant Jordi with the roof and all. We think about different products we offer the promoters and if one of the venues is used we have options to offer them another venue and create the event there. Sometimes, in summer, promoters of events with only 5,000 spectators will use the stadium because they do not want an indoor event and than they use half the stadium. The residents of Barcelona will be offended if a roof would be added to the stadium’s architecture. They think, well we already have Palau Sant Jordi so, why change the stadium. And often, in Barcelona, other forms of coverage are used, like tents. But not for 70,000 people of course. But the roof of the Arena is very beautiful.
We have to big promoters in Barcelona, one is live nation, which manages international events, and the other is the Project, which manages local events. These are the main promoters of our events but the activity can be international, national, regional or local. And about corporate events, we have requests from local agencies and national agencies. It is more or less balanced. Maybe out of the 20 events, 11 are international and 9 are Spanish, so there is not a big difference.

Sporting competitions represent a big expense for us because the promoters book the venues for many days to implement the floor, or any special setting, so we have to close the venues for 15 days maybe. And that is not good for the other events that want to use the venue. Due to the Junior World Athletics Championship this year the stadium will be closed for a month to prepare everything, have the championship for a week and dismantle everything again. So in July, which is the high season of the stadium, nothing else will happen there. But it is a good opportunity for Barcelona and also for the stadium because it was modelled to host sporting events mainly.

The catchment area of the stadium depends on the event that takes place. And of the artist is only coming to Barcelona or also to other cities in Spain. I believe (Sala) that maybe 10% of the visitors of the events are foreign but most of the people are from Barcelona’s metropolitan area or from Spain. Tourists are coming from all over the world. The stadium is open for visitors all year, for free, and last year there were approximately 500,000 visitors. There is a tourist bus stop here so tour operators are important for attracting tourists to the area. The city council believes that the stadium belongs to the city and everyone should be able to visit it for free. Guided tours were paid but over the years, fewer tours were given and the expenses of hiring the guide were more than its benefits. Income was about €6000,- a year and it was a lot of work so the city council decided to open the gates for citizens and tourists. For us that means more security points, cleaning, etcetera and hence more investments. So for us it is not necessary but the city council wants it. With a private company it would be very different but with a municipal company, it is difficult.

We know that next year our operating account will be down because we have these three big sporting events next to each other and the venues will be closed for 5 months in a row. So for over 5 months we cannot have other events than these three. But it is good for Barcelona, hotels and restaurants, and the city council assumes we loose money next year but that is okay.

We are with 37 employees. The other services like cleaning are external companies, which we hire. So sometimes with an event we need more cleaning or security and than the company we hire sends more people. Each event is different and we adjust to the activities with the external companies.

If an event comes, we charge a fee of the tickets sold but also a starting fee. So if they sell 70,000 tickets we get a percentage of this but if they sell only 10 tickets we will receive the starting fee. Most of the income come from concerts and bar services. We have an external company that does the bar and restaurant services of the stadium and we get a percentage of what they sell if they exceed a certain amount. So they hire the space from us and we receive a percentage of the drinks they sell above 100,000 drinks. They have a contract for 4 years and they have to invest in the venues to make a bar etc.. If there is no event, the restaurant and bar of the Olympic stadium is open for the public.

We would like to have some skyboxes but not in the Olympic stadium because there are not enough events there. For the Palau Sant Jordi we did a study to see if it is possible to create them but it is too expensive and we would not make profit of it. And we do not have a regular activity so it is difficult to sell the skyboxes. Also the architecture does not allow skyboxes right now. In the beginning maybe, but now it is too late.

If we have VIP events we create the VIP area. So the backstage area of Palau Sant Jordi for instance, is not equipped with stands and is a good area to make these VIP events. We have three VIP rooms that can be used for this purpose as well and if it does not exist, we create it. We work together with the promoter and go around the venue and decide what is a good place and
customize it. It has been done many times. We can make a tailor made project which is very good for the adjustability of the stadium. Sometimes it is a challenge but we do anything to help the promoters to organise the event they want. One of our values that promoters say is our flexibility. That we can manage every event as the needs of the client. We even create a film set of the stadium, for the film of Robert de Niro, Red. Nothing is standard and we can create everything what the client wants. The venues can be transformed into different settings. But is the customers comes and says I want that venues, we sometimes also say no, because the client does not always have the truth. We say let us know your project and than we can place the event where it fits best. Otherwise we suggest they go to the competition because we do not want an event where we do not believe in. That is not good for the customer, not good for us and not good for the city. So if it is not suitable for our venues we tell the customer to go to another building and they respect us being honest to them. If it is not this time, than maybe next time. It is difficult because it is bye bye money but the customers will come back later, it has happened many times before.