

QATAR UNIVERSITY
COLLEGE OF ENGINEERING

INVESTIGATING ADAPTABILITY OF STADIUM PRECINCTS POST QATAR
2022 WORLD CUP: TOWARD AN ADAPTIVE STRATEGY THROUGH
PUBLIC-PRIVATE PARTNERSHIP (PPP)

BY

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ABSTRACT

Mega Sporting Events have become a way of transforming cities around the world. However, the sustainability of these large-scale transformations is questioned. This thesis aims to investigate the adaptability of stadium precincts post-Qatar 2022 World Cup based on selected case studies from Al Rayyan municipality. The challenges of using large facilities such as iconic stadiums are worth investigating.

The thesis aims to find answers to the following questions: To what extent is Qatar 2022 World Cup stadiums is adaptive to its precincts? What impacts the adaptability of Qatar 2022 World Cup stadiums? And How an adaptive strategy through public-private partnership can take place for Post 2022 World Cup?

A selection of case studies from Qatar includes Khalifa International Stadium, Qatar Foundation and Al Rayyan Stadiums are examined to answer the research questions. The thesis is based on qualitative case study research with three data collection and analysis tools. The tools used are site assessment (observations), expert interviews, and secondary data that include feedback from Al Rayyan residents toward Al Rayyan stadiums and precincts. The data is analyzed in the light of New Urbanism and the thesis conceptual framework to examine impact factors, opportunities and challenges for adaptability after a mega sporting event.

The research findings show that Qatar 2022 stadiums precincts can be very adaptable but can also face many challenges. Challenges include land use regulations, walkability, lack of unified urban design code, lack of housing options, and low

building densities. Most of the challenges are beyond the scope of the stadiums' owners. The extent of Qatar 2022 stadium adaptability to its precincts is promising, especially for stadiums that are within an existing urban development. In addition, factors impacting the stadiums adaptability included the stadium location, the design process and stakeholder's involvement. However, stakeholder's involvement also impacted the selection of the stadium location and the design process which emphasize the significance of a public-private partnership.

Table of Contents

Abbreviations	VIII
List of Tables:	iii
List of Figures:	iv
Acknowledgments.....	vi
Dedication	vii
Chapter One: Introduction.....	1
1.1 Introduction	1
1.2 Historical Background: The evolution of Arena and its integration into the urban fabric	1
1.3 Problem Statement	7
1.4 The Significances of the Study.....	8
1.5 Aim and Objectives.....	9
1.6 Approach and Methodology.....	10
1.7 Conclusion.....	12
Chapter Two: Literature Review and Conceptual Framework.....	13
2.1 Introduction	13
2.2 The Legacies of Mega Sporting Events	13
2.3 Sustainability and Event Led Regeneration	17

2.4 Adaptability of Mega Sporting Events Facilities	20
2.5 Conceptual Framework	25
2.5.1 FIFA Stadiums Technical Requirements.....	25
2.5.2 Features of Sport-Oriented Districts.....	31
2.5.3 Successful Case Studies.....	32
2.6 Principles of New Urbanism	39
2.7 Conclusion.....	42
Chapter Three: Methodology	43
3.1 Introduction	43
3.2 Hypothesis and Research Questions	44
3.3 Research Design.....	45
3.3.1 Method of Data Collection	45
3.3.2 Method of Data Analysis	52
3.4 Limitation and ethical consideration.....	55
3.5 Conclusion.....	56
Chapter Four: Case Studies Evaluation: Data collection and Analysis	59
4.1 Introduction	59
4.2 AL Rayyan Municipality and Qatar National Development Framework 2030	60
4.2.1 Khalifa International Stadium –Aspire Zone – Bayya District:	61

4.2.2 Qatar Foundation Stadium – Education City – AlShaqab District.....	61
4.2.3 Al Rayyan Stadium – Al Rayyan Gate – Al Seeij District.....	61
4.3 Site Assessment.....	63
4.4 Expert Interviews	74
4.5 AlRayyan Majlis Visits Report Analysis	79
4.7 Conclusion.....	81
Chapter Five: Research Findings, Interpretations and Discussions.....	82
5.1 Introduction	82
5.2 Applying New Urbanism Principles into Designing Stadium Districts.....	83
5.3 Opportunities for Urban design interventions on Stadium Districts.....	89
5.3.1 Technical Context:.....	90
5.3.2 Logistical Context.....	93
5.3.3 Operational Context.....	96
5.4 Toward a Public-Private Adaptive Strategy.....	99
5.4 .1 Urban Design Interventions for Stadiums Adaptability	103
5.4.2 Towards Creating Stakeholder Engagement Process	107
5.4 Conclusion.....	113
Chapter Six: Conclusion and Recommendations.....	115
6.1 Introduction.....	115

6.2 Qatar 2022 World Cup Stadiums Adaptability:	115
6.3 Factors impacting Qatar 2022 World Cup Stadiums Adaptability:	117
6.4 The Process of Creating Public-Private Partnership (PPP):.....	118
6.5 Recommendations:	119
6.7 Limitation and Further Research Recommendations:.....	121
References.....	123
Appendixes	132
Appendix A: IFIFA temporary facilities infrastructure	133
Appendix B: Adequacy Scale Rubric	134
Appendix C: Expert Interviews Questions	135
Appendix D: Aspire Zone and Education city Existing Cycling Tracks	138
Appendix E: Education City Schools and Universities	139

Abbreviations

Abbreviation	Definition
AZ	Aspire Zone
AZF	Aspire Zone Foundation
EC	Education City
MSE	Mega Sporting Event
PPP	Public-Private Partnership
QF	Qatar Foundation
SC	Supreme Committee for Delivery and Legacy

List of Tables:

Table 1: FIFA Strategic Pre-construction Decision Questions (FIFA, 2011)

Table 2: Case Study Analysis

Table 3: Principles of New Urbanism for Different Planning Levels (CNU, n,d)

Table 4: Al Rayyan City 2022 Stadiums Summary

Table 5: Land Use and Housing of the selected Districts (MMUP, 2012; MMUP, 2013; MMUP, 2014)

Table 6: Building by Activities and Densities (MMUP, 2012; MMUP, 2013; MMUP, 2014)

Table 7: Expert Interviews Discussion Highlights

Table 8: Al Rayyan resident's expectations and concerns from Qatar 2022 World Cup at the local level

Table 9: Adequacy Scale Results

Table 10: Mapping of Stakeholders Groups

Table 11: Operational Context Analysis

Table 12: Contextual Assessment Index of Opportunities and Challenges

List of Figures:

Figure 1: A Blueprint for Successful Stadium Development Timeline (Sartori & Nienhoff, 2013)

Figure 2: The Colosseum: Rome (Geraint, Sheard, & Vickery, 2007)

Figure 3: Photos of Barcelona Sea Front before and after 1992 (Busquets, J. 2005)

Figure 4: Milton Keynes stadium phases (Geraint, Sheard, & Vickery, 2007)

Figure 5: Research Design

Figure 6: Stadium location FIFA example (FIFA, 2011)

Figure 7 Public access and egress FIFA example (FIFA, 2011)

Figure 8: World Cup Planning and Phases Timeline

Figure 9: Case Studies Geographical Location

Figure 10: Right London 2012 Olympic Park Master Plan for the Olympic Games

Left: The park transformation after the Games (Olympic Park Legacy Company Limited, 2012)

Figure 11: Sapporo Dome (Google Earth, 2014)

Figure 12 Yarra Park Master Plan (MCG, 2010)

Figure 13 Principles of New Urbanism (CNU, n,d)

Figure 14: Al Rayyan host city transport network 2022 bid proposal (FIFA, 2010)

Figure 15: Al Rayyan Municipality boundaries and distant between the three selected sites.

Figure 16: Site Analysis opportunities and constraint assessment (LaGro, 2008)

Figure 17: Data Collection and Analysis Process: Input and Output

Figure 18: Existing and Proposed Parks and Open Spaces (MMUP, 2012; MMUP, 2013; MMUP, 2014)

Figure19: Al Rayyan Gate Master Plan (Makower Architects, 2014)

Figure20: Al Rayyan Gate Clusters (Makower Architects, 2014)

Figure 21: Existing Roads, Bus Stations and Proposed Metro Station

Figure 22: Expert Interviews Main Discussion Themes

Figure 23: Al Rayyan resident's expectations from Qatar 2022 World Cup

Figure 24 Urban design opportunities from technical, logistical and operational context

Figure 25: Types of Legacies

Figure 26: Khalifa International stadium flexibility options

Figure 27 Stadium Recycling Options

Figure 28: AlRayyan stadium modular seating match and legacy modes (Images courtesy of the Supreme Committee for Delivery and Legacy)

Figure 29: Public-Private Partnership Adaptive Strategy Process

Figure 30: Communication Channels Model

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Dedication

To my parents whom without their support this work would have not
been achieved.

Chapter One: Introduction

1.1 Introduction

Chapter one will introduce a brief historical background on the evolution of arenas and their integration into the urban fabric. The background will be the basis of this thesis's problem statement. It will then introduce the aims and objectives of this thesis. In addition, it will present the study approach and methodology used in tackling the issue in the study. The rest of the thesis chapters will then elaborate on the background introduction presented in this chapter. Chapter two will further the background study by including a comprehensive literature review and a conceptual framework. Chapter three will then lay out the methodological approach of data collection and analysis. Moreover, Chapter four and five will present data collection, analysis, and discussion. Finally, Chapter Six will conclude the thesis by answering the research questions, give recommendation, discuss the significant of the study and its limitation, and further research.

1.2 Historical Background: The evolution of Arena and its integration into the urban fabric

Since ancient times, entertainment and performances were not only produced for leisurely purposes but for political support as well. People used to perform in many arenas that had more natural structures. The first stadium can be traced back to

776BC in Ancient Greece (Sartori & Nienhoff, 2013). Figure 1 shows the timeline of stadium developments that is divided throughout history into three eras.

The first era is Antiquity, specifically in Ancient Greece and Rome. The second era is the Renaissance, with the rise of sport as a profession and the construction of specific use stadiums (Sartori & Nienhoff, 2013). The last era is Modernity, with the increased capacity and the introduction of the five generations stadiums theory invented by Sheard (2005). The first section of this chapter focuses on studying the evolution of arena as a building type and its integration into the urban fabric.

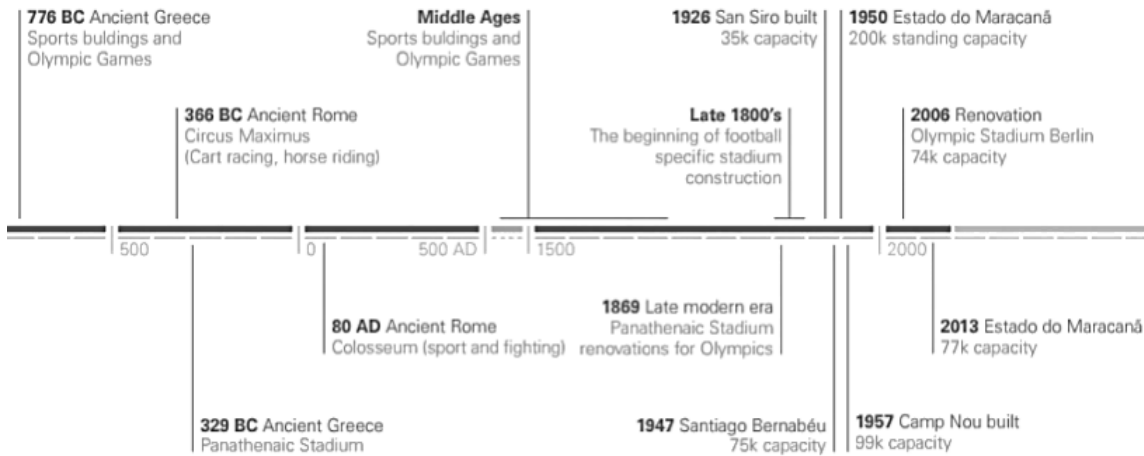


Figure 1: A Blueprint for Successful Stadium Development Timeline (Sartori & Nienhoff, 2013)

The five generations of the stadium development theory was based on the rise of a specific need at a given time. According to Sheard (2005), the development of the first generation was out of the need for larger spaces because no televised broadcast was available. The development of the second generation was for the opposite reasons; people chose the comfort of their homes to watch the games, and this facilitated the need for more comfortable stadiums. The development of the third generation was based on the need for safety, especially after a series of catastrophic events in the UK (Karatzmuller, 2010). The development of the fourth generation was based on the need of revenues to maintain such large structures through public-private partnership (PPP). Finally, the last generation was developed as an urban regeneration catalyst.

Many factors impacted the development of arenas; politics, technology, and finance were major trends in the development of current and future arenas. Since ancient Greece and Roman time's politicians used arenas to make their citizens busy enjoying sports and other events, and distracting them from thinking of overthrowing their governments (Fried, 2010). Figure 2 shows The Colosseum in ancient Rome as one example¹.

On the one hand, advances in technology played a major role in stadium development. For example, the introduction of the roof helped in keeping the arena used at all times during the year, regardless of the weather. On the other hand, the

¹ Initially, the colosseum of Rome was built for gladiator's combat; it then developed into a theater form with tiers for seating.

The Olympic Games were the first to tackle the issue of arena integration. The need for facilities for different sports and accommodation introduced the development of the Olympic Villages. The first Olympic Village to be introduced was in Los Angeles for the 1932 games. (Muñoz, 1997). The Olympic Village has evolved throughout history until the Barcelona 1992 Olympiad that became the model for urban regeneration in modern Olympics history (Olympic, 2012). The Barcelona model is based on three aspects: 1) infrastructure development by opening the city to the sea, 2) Continuity of existing urban patterns, and 3) creating a mixed used district (Nel·lo, 1997). Figure 3 shows photographs of the Barcelona Sea Front before and after 1992.



Figure 3: Photographs of Barcelona Sea Front before and after 1992 (Busquets, J. 2005)

Although the Olympic Villages have tackled the issue of urban integration to one extent, the development of a single-use sports complex for cities not hosting the

Olympics is yet to be addressed. Unlike Olympic Villages, the process of building a sports complex can take years beyond the event to be developed and integrated into its surrounding. However, this brings more opportunities for an integrated master plan that takes into consideration all of the stadium's surroundings.

The Milton Keynes stadium in the United Kingdom is one example of phase stadium development. Figure 4 shows the six phases of the Milton Keynes stadium development. The development of the stadium complex through phase planning can help in taking into consideration urban surrounding changes, local needs, and finance (Geraint, Sheard, & Vickery, 2007). The second part of this chapter will discuss the thesis problem statement, aim, objectives, and methodological approach.

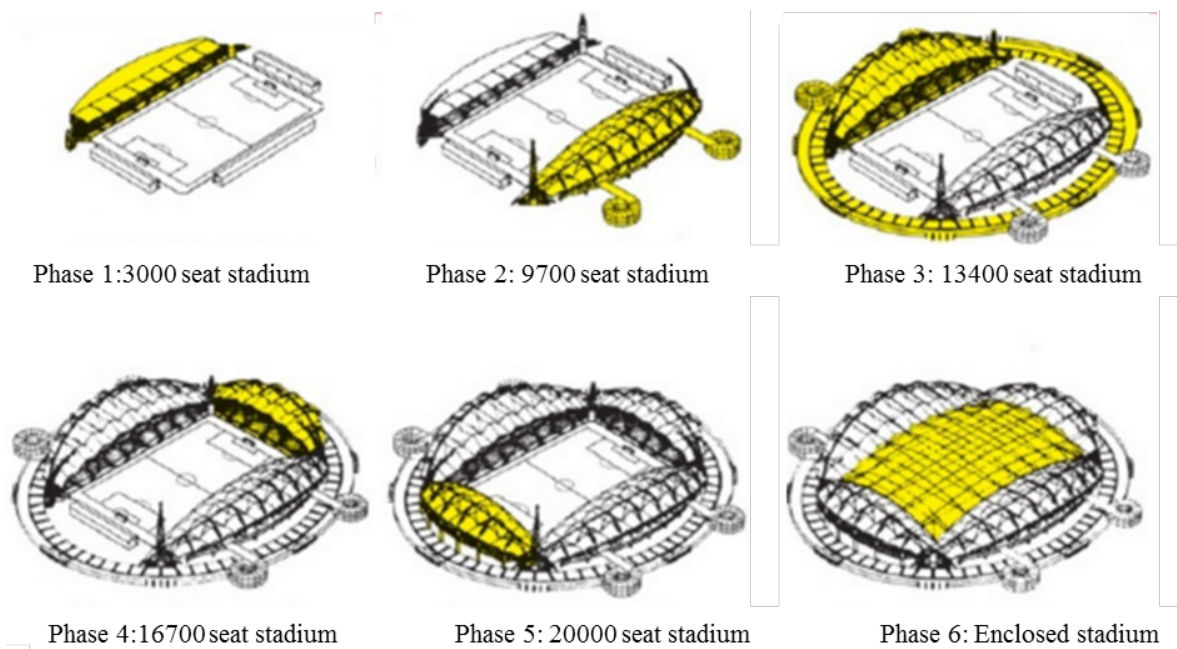


Figure 4: Milton Keynes stadium phases (Geraint, Sheard, & Vickery, 2007)

1.3 Problem Statement

Cities hosting MSEs aspire to make use of the infrastructural developments beyond the duration of the event. However, MSEs requires specific sport related infrastructure, such as stadiums and training sites, which can surpass local needs and might result on unused facilities. The requirements of developing World Cup stadiums promote singularity of use that can lead to the development of single-use districts threatened by urban sprawl.

According to a survey done by Qatar Ministry of Development Planning and Statistics in 2014 on audience reluctance to attend football matches at stadiums, around 65% of Qataris and 58% of Non-Qataris have not attended any football matches during the 2013 season. The survey results show that audience reluctance was based on several reasons. Personal reasons included cultural barriers for women, as well the lack of time and desire. Other reasons included organizational issues, clubs technical level, service, hot climate, paid audience², and TV broadcast.

Investigating the adaptability of Stadium Precincts post Qatar 2022 World Cup can help in assessing the opportunities and challenges presented from hosting an MSE. It also can tackle the issue of a single-use district through the application of New Urbanism principles. In addition, an Adaptive Strategy through Public-Private partnership can help in optimizing the post-2022 stadiums uses. Cities hosting MSE will be able to maximize the benefits of the required sporting infrastructure and create a legacy that is based on the local needs.

² Paid audience: fans that are paid to attend the matches by the clubs.

1.4 The Significances of the Study

The Adaptability of Sport-Oriented and Tourist Attractions Areas

Cities aspire to host MSE for many reasons. Each city has its own legacy which makes it harder to specify a common legacy for all MSEs. Although “legacy” can be the positive/negative, planned/non-planned outcome of a MSE, the development of large scale athletic infrastructure remains challenging. The question is why cities would invest in sport infrastructure over other developments? This question was raised after South Africa hosted the 2010 world cup, taking into consideration that a large proportion of its population lacked access to electricity and clean water (Alm J. , 2012). Although the development of sport infrastructure requires other supporting developments, time and budget constraints can hinder the quality of these developments.

The contribution of this research is not limited to MSEs. It contributes to the field of urban planning and design of sport-oriented districts specifically, and tourism oriented district in general. Both MSEs and tourism activities share similar characteristics. Both sport and tourism oriented districts attract more than only the local visitors; this presents a challenge of integrating the district to its surroundings. For example, sport or tourism monuments such as stadiums and other attractions have a significant impact on the area’s operation and future integrations. This research provides tools that can help in identifying the significance of these districts.

Although this research focuses on Qatar 2022 world cup, the research methodology can be used on other case studies. The use of the adequacy scale can provide significance to, or highlight, the opportunities and challenges facing a sport oriented district or a single use district. In addition, stakeholder input is gathered through a series of expert stakeholder interviews and other official reports. This can bring useful insight on communication expectations and patterns. However, further research can also tackle the limitations faced in this study.

1.5 Aim and Objectives

a. Aim:

The aim of this thesis is to investigate the adaptability of Qatar 2022 Stadiums Precincts after the World Cup, and explore the potential of a PPP adaptation strategy.

b. Objectives:

- Measure the extent of Qatar 2022 Stadiums Precincts adaptability through a site assessment study that is based on New Urbanism Principles.
- Identify factors that impact the adaptability of Qatar 2022 Stadiums through a site assessment study that is based on the study's conceptual framework.
- Develop a Public-Private Adaptive strategy for Qatar 2022 Stadiums Precincts through stakeholder's input.

1.6 Approach and Methodology

The purpose of this thesis is to tackle the issue of single use stadium oriented districts that are an outcome of hosting an MSE such as the World Cup. This thesis examines impact factors, challenges, and opportunities for adaptability after the MSE. Three data collection and analysis methods are selected to answer the research questions and meet the objectives of the study.

Figure 5 in the following page shows the research design. A comprehensive literature review includes themes on MSE legacies; sustainability and event led regeneration, and adaptability of MSE facilities are examined. A conceptual framework based on FIFA stadium's technical recommendations, elements of sport oriented districts, principles of New Urbanism and a selection of successful case studies will be the basis for this thesis.

The research methodology is based on case studies qualitative research. This is arrived to after the examination of the method used in the selected literature review discussed in chapter two. The research design included includes the use of both primary and secondary data. Primary data includes site assessment observations, and stakeholders input through expert interviews. Secondary data includes an in-depth analysis of the Supreme Committee for Delivery and Legacy (SC) report on Al Rayyan Majlis visits. The research methodology is further discussed in chapter three.

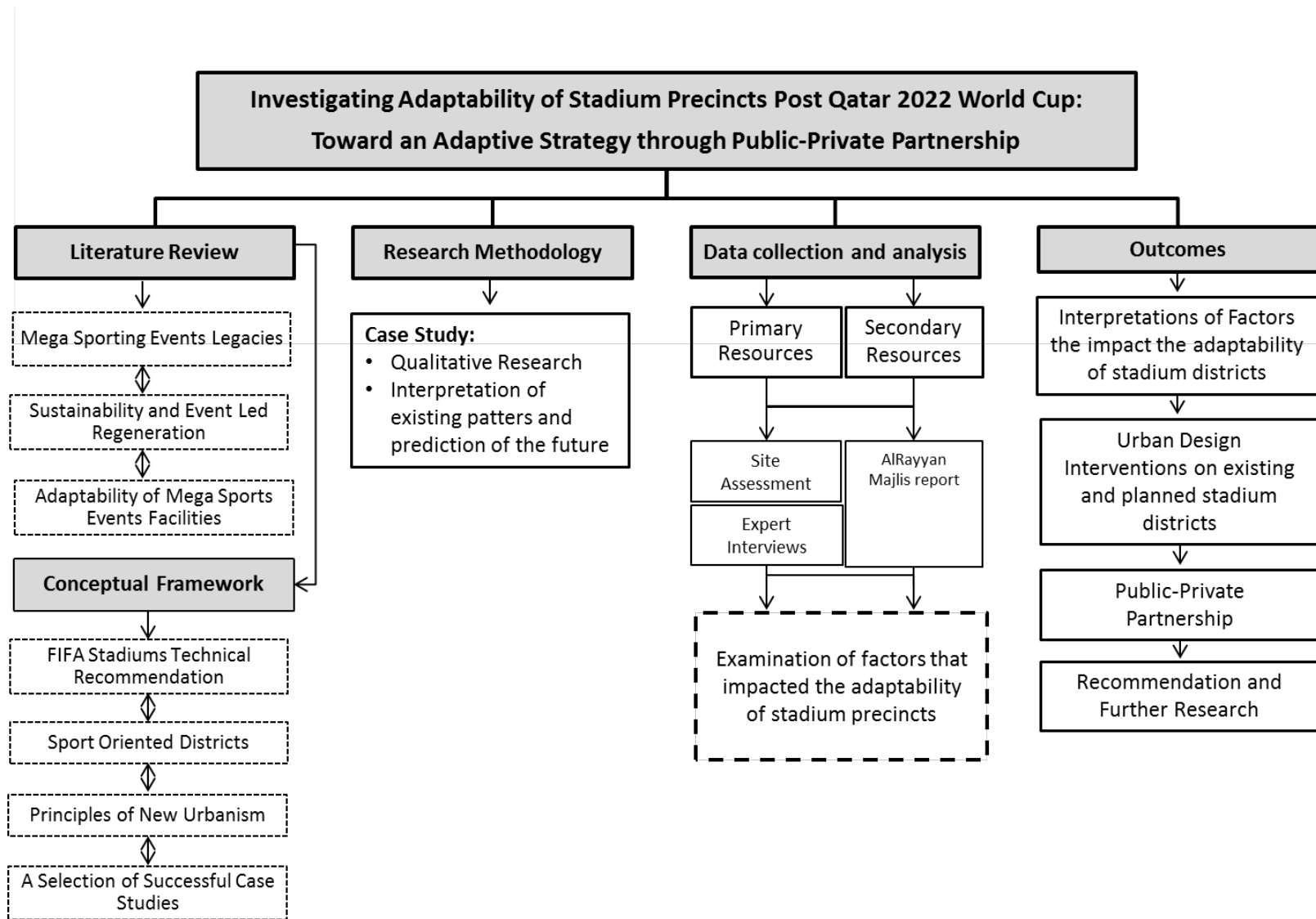


Figure 5: Research Design

1.7 Conclusion

Chapter one examined the history of arena development and its integration into the urban fabric. The developments of arenas was impacted by factors that include lack of safety, space, and televised broadcast. However, the development of the modern arena intended to use the arenas as an urban regeneration catalyst. From the historical background major issues emerged in regard to arena development.

This thesis aims to tackle the problem of the adaptability of Qatar 2022 Stadiums Precincts after the World Cup. Chapter two will present a literature review that is accompanied with a conceptual framework and will lay the foundation for the study methodology presented in chapter three and the results interpretation discussed in chapter four and five. Finally, chapter six will answer the research questions presented chapter three, give recommendation and discuss the thesis limitation and further research opportunities.

Chapter Two: Literature Review and Conceptual Framework

2.1 Introduction

The first part of this chapter discusses a list of literature related to three primary themes: MSE legacies, sustainability, and adaptive reuse. The second part of this chapter discusses the thesis conceptual framework, including theories and concepts discussed in the literature review and practices of successful case studies. The concepts discussed include: FIFA stadiums technical recommendation requirements, Sport-oriented districts, and New Urbanism principles.

2.2 The Legacies of Mega Sporting Events

The literature review explores current themes in mega-events planning, and its accompanied legacies. It mainly focuses on creating a conceptual framework through exploring the three most important topics of this thesis: MSEs, Sustainability, and Adaptive Reuse. The literature discusses definitions, methodologies of research design, and concepts. Mega Events literature is significantly increasing in numbers.

Even though the subject of Mega Events in academic literature is discussed in different disciplines, the definition of the term “Mega Event” itself is not debatable. Many resources briefly talk about the definition of the term “Mega Events,” but rather focus on discussing the legacies or outcomes of such events.

According to Burbank, Andranovich and Heying (2002) mega-events are large-scale events, such as the World Fair or the Olympic Games, that intend to drive

the local economy and urban development through tourist's attraction by media coverage of the host city (p.180). Although it is arguable that mega events drive the local economy, Deng & Poon.2011; Cornelissen, & Bob & Swart, 2011 agree that mega events are large events that attract an international audience.

However, Deng and Poon (2011) further the concept of mega-events, which are led by a strategic mega-project where flagships of sports, cultural and recreational facilities take central stage in urban development. On the one hand, the definition of such event legacies, especially those of mega sporting events, was highly arguable. On the other hand, Preuss³ proposed an abstract definition that has been cited in many of the literature (2007, p. 211):

“Irrespective of the time of production and space, legacy is all planned and unplanned, positive and negative, tangible and intangible structures created for and by a sports event that remains longer than the event itself.”

Although Preuss defines the legacy of such events, a new term emerged that focus on the negative legacy of MSE that is called the White Elephants.

The White Elephants Phenomena was discussed in Alma, Solbergc, Stormb & Jacobsen's (2014) article, “Hosting major sports events: the challenge of taming white elephants.” This notion was found in ancient times in Asia, and specifically Thailand. At that time taking care of white elephants was expensive, and in general,

³ Holger Preuss is Professor of Sport Economics and Sport Sociology. His work focuses on sports and mega events with 16 books and more than 120 articles in international journals and books. He worked as a consultant for Qatar 2022 World Cup and Dubai 2020 bids and many others.

the costs of keeping and taking care of a white elephant were more expensive than the daily income of the keepers. Therefore, it becomes known as a punishment in ancient time where kings would give their villains a white elephant that will most likely lead them to financial loss. This term is now used to describe the stadiums that are built for certain events, and later end up unused or not fully utilized after the event.

Research in investigating mega events legacy lays in multidisciplinary literature. There have been different research methods and approaches that are in use. Research in economy uses more quantitative data over the research done in social or political fields that focuses more on qualitative studies. The most used research tool is the case study; Burbank, Andranovich, and Heying (2002) focused on the Olympics, and used the American cities, Atlanta and Salt Lake, as case studies. However, case studies that focus on the Middle East or Asia have a different setting than those affected by the U.S federal system.

On the one hand, qualitative studies focused mostly on the case study analysis method. For example, with the significant interest in FIFA in making the Football game for all, awarding Africa the rights to host the 2010 world cup attracted many researchers to use it as case a study in the most recent literature. All of Cornelissen, Bob & Swart 2011; Preuss, Solberg, & Alm, 2014 have used the South Africa 2010 world cup as a case study.

While legacy has been the most arguable term in the literature, Preuss (2015) argues that legacy impacts five areas of the hosting city: the infrastructure, the knowledge, the policy, the networks, and the emotions. Most importantly, the

stakeholders of one event might differ from one another, and they have a high impact on the production of the legacies and the timeframe.

Cities that have successful bids will have the bidding knowledge. However, this means that the legacy needs an opportunity to surface. Hosting cities can create this opportunity to ensure the sustainability of the legacies. A post-event strategy should make sure stakeholders are involved in the planning phase (Preuss, 2015).

Finally, Preuss, Solberg, & Alm, (2014) suggest that FIFA should reconsider its requirements of having scattered stadiums. One example is South Africa, where the host country could have renovated some of the stadiums to meet the FIFA requirements instead of building new ones. FIFA technical requirements and its impacts will be discussed further in the conceptual framework section.

Investigating MSE legacies has been a rising issue in the academic literature. Preuss (2007) proposed furthering the research that tries to develop methodologies or approaches for understanding MSE legacies and how to measure or identify its positive and negative dimensions.

Moreover, Deng & Poon (2011) concluded that historically, the post-event performance of Mega Event Flagships has a close tie with the fate of area-based renewal strategy. For example, Barcelona 1992 Olympics have led successful urban transformation by constructing new Flagships accompanied with a long-term utilization strategy, a strategy that focuses on allocation and multistage.

2.3 Sustainability and Event Led Regeneration

Sustainability has been an expanding term over the years. Measuring sustainability criteria differs from one field to another. However, sustainability was first defined as a general term in the 1987 Brundtland Report:

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

(World Commission on Environment and Development, 1987, p. 49)

The report focuses on different aspects, and acknowledges the connection between the population, energy, food security, industries, and loss of species, genetic resources, and human settlements in achieving the goals of sustainable development. However, with more than two decades since the “Our Common Future” report, a need of a Post-Brundtland report era conceptualization is necessary.

Hall (2012) discusses the concept of sustainability in the light of MSEs. He seeks to investigate how we can interpret sustainability, and its implication for the concept of sustainable Mega-events. He argues that Mega-events focused on economic, or balanced sustainability, are not sustainable. Sustainability through a steady-state approach is preferable to maintain or enhance the natural capital. He also highlights some practices that are more prominent in utilizing the concept of sustainable development in Mega-events.

Hall discusses sustainability as a dependent variable of Mega-events. Sustainability can be found in three different approaches: economical, balanced, and

steady-state approaches. He used the deductive approach in defining the variables, in addition to a collection of contextual data that was used to identify and compare the variables of interest. He used official reports to collect qualitative data from recognized international bodies, such as the International Olympic Committee (IOC) and World Travel & Tourism Council (WTTC).

He argues that sustainable events are more likely to be found in the smaller localized community-based events. Mega-events have been a way for place making, political legitimacy, and corporate interests, rather than a way to promote sustainable development. Steady-state approaches reflect the maintenance or enhancement of natural resources, and cities that intend to host Mega-events should seek innovative ways to assure a long-term sustainable development.

Moreover, sustainable Mega-events have two key dimensions related to green events. These dimensions are argued by Borchers & Maboda (2011) as fundamentals in the conceptualization of Mega-events sustainability. The two dimensions are 1) direct environmental impact, where the footprint or waste and energy and carbon dioxide emission impact is measured, and 2) A broader impact of social or political behavioral changes toward a more sustainable lifestyle.

Both dimensions have different aspects regarding measurement and programming that can result in a positive legacy. The first is directly measured through quantitative data such as footprint emission while the second is measured through qualitative data; for example, people's perceptions and local initiatives. Also, another important concept that is discussed in the literature related to mega-

event sustainability is urban regeneration and its role in the development of an event led sustainability approach.

Urban regeneration tackles the issue of post-event sustainability in a more comprehensive and a direct way to the wider sustainability approach. Although event-led regenerations are promoted by the hosting cities, the lack of direct measurement tools has made it difficult to assess the physical outcome. Roberts and Sykes (2000) define urban regeneration as:

“ 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.”

The above definition further explains and emphasizes all aspects related to urban regeneration. Although not all are measurable, the authors have traced the origin of urban regeneration features and characteristics that can lead to developing approaches' and solutions of urban regeneration related issues.

Among the most significant MSE development sport infrastructures are the stadiums and training sites. Sports facilities and venues have been the major point of argument over hosting MSEs. Many efforts were made to study the impact of MSEs and its related developments in creating a long lasting legacy.

Smith (2012) argues that even when venues have developed near a disadvantaged area, they are often not properly integrated with the community. The

Stade de France in Paris for the 1998 world cup, which developed as a key venue, was a successful example of physical integration by creating a bridge that eased accessibility. In addition, the creation of the public space commission helped in having a coherent transition of the stadium prescient to its surrounding communities.

However, the project has failed to improve community lives, which emphasizes the need for social and economic integration that can finally lead to event-led regenerations that create a positive legacy for the local community.

The role of sports facilities on regeneration or redevelopment of urban areas is a three-dimensional issue. For sports facilities to work as urban redevelopment catalysts the venue utilization, connectivity with its surrounding, and venue finance, are important issues to be taken into consideration.

2.4 Adaptability of Mega Sporting Events Facilities

While little resources tangled the problem of urban adaptive reuses, most of the existing literature on adaptive reuse focuses on the argument of reusing versus demolishing old, unused buildings. However, Langston, Wong, Hui & Shen (2008) took up the issue of adaptive reuse in Hong Kong through creating an Adaptive reuse potential model that aims to estimate the expected life of buildings, through assessing the physical, economical, functional, technological, social and legal obsolescence. It also aims to investigate the possible reuses of a building.

In their study, the authors suggested that the Adaptive reuse potential model can measure the building physical obsolescence through examining its performance and maintenance policy. In addition, the location of the building in a central business district or a city center can also measure the economic obsolescence of a building. The building extent of flexibility embedded in its design can also measure its functional obsolescence; while building usage and operational energy can measure its technological obsolescence. Away from the building technicalities, the social and legal obsolescence can be measured through the building function relation to the marketplace and the quality of the original design. Finally, the authors use the data in an algorithm to measure the future usefulness of a building.

The Adaptive reuse potential model suggests that adaptability can be measured through the time left for a building to remain in use, adaptability is then the extent of building future usefulness. Furthermore, the form of a city, its buildings, streets, and flow of activities are the main component of a vital city. However, the role of the old or unused building can be an important part of revitalizing a city or its communities.

Christiaanse (2012) argues that tracing back the city as a loft goes to 1960 to industrial cities to escape the separation of living and working spaces to become a space that is defined by clusters. The city as a loaf tackled the issue of adaptability before it emerges. Adaptability can be seen here as the extent of where the space itself is multiuse and can accommodate different activities at the same time. Similar to the loaf city are today Olympic villages discussed in chapter one.

On the contrary, others have viewed adaptability from its uselessness perspective. Chapin (2004) argues that reusing vacant or existing buildings through the investment of sports facilities can lead to urban redevelopment. He argues that reusing existing buildings, spaces or constructing new developments within the surrounding district of sports oriented districts, can be indicators that investing in sports can lead to urban redevelopment or regeneration of existing land. However, this does not necessary result in direct revenues.

In general, the available literature which focuses on adaptive reuse, has been concentrating on historical buildings and historical sites. However, Mega-events facilities are modern facilities that are not on the edge of demolishing but rather the need for it to be utilized to avoid being a financial burden. Some of the literature has suggested assessments tools that can be used to assess building utilization; however, the lack of literature on sport facilities reuse is significant. Most of the literature agrees that adaptive reuse is the process of adapting new uses for existing buildings.

Although there is a significant lack of literature that focused directly on the reuse of MSEs facilities, Sertac and Ozfiliz (2006) looked at sustainable stadiums from a planning perspective. They emphasized that global event stadiums should be questioned regarding sustainable urban development and architecture. Furthermore, they suggested measuring stadium sustainability through urban connectivity, energy-efficiency, and flexibility of capacity and uses.

An important question that arises in hosting MSEs, or stadium constructions, is the need of such venues and its justification of the resources allocated for its

development. Although MSE stakeholders such as the Olympic committee or the FIFA have minimum requirements of venues used in its events, the question lays on the future sustainability of such large spectacular venues.

The economic argument of financing and revenues is discussed mostly in economic literature. Feddersen and Maennig (2009) argue that spectators prefer mono-functional stadiums over multipurpose facilities that can create a better atmosphere. They also argue using an empirical tool to measure spectator behavior toward a mono soccer arena can ultimately contribute to the stadium financing through tickets sales. However, MSEs such as the World Cup or the Olympics are bound by the event organizer's requirements and compliance.

Additionally, quantitative studies such as the one done by Alm (2014) by using a Stadium Utilization Index method that divided the attendance figures with the stadium capacities by the number of spectators per season/year. The Stadium Utilization Index helps in comparing stadium utilization with different world cup stadiums; it also raises questions on why some stadiums are more attractive than others, and why stadiums face difficulties in utilizing its capacity to its full potential?

In addition, Alm, Solberg, Storm and Jakobsn (2014) used a Stadium Utilization Method that showed privately owned venues are more utilized over the public owned ones. They argue that the private sector has more interest in assessing the needs that can ultimately generate revenue through maximum utilizations.

The literature discussed above focused on MSE legacies, sustainability, and adaptability of MSE Facilities. However, the needs for large Mega-Projects or

Flagships such as stadiums are necessary to host such events. There are many arguments in the literature for having these large projects and the impact on the hosting cities. The broad definition of Mega-events legacies made it a multidisciplinary phenomenon that can be studied in different fields.

The literature above used a variety of research methods. On one hand, the most used method was based on qualitative case studies analysis. Case studies in the literature examined and investigated the legacy impact of different MSEs. On the other hand, quantitative data was also used in many types of research, such as the Stadium Utilization Index that measures stadium utilization through stadium size, attendees, and events per year. However, the data collection and analysis method used is affected by the time frame of the study. A suitable method is needed to measure the impact before, during, and after the event; taking into consideration that the research scope has a great impact on selecting between the qualitative vs quantitative method.

Finally, although many have discussed different criteria for adaptability either from urban planning perspective focused on urban connectivity, energy- efficiency, and flexibility of capacity and uses; or through stadium utilizations and the use of other algorithms such as the one used in the Adaptive Reuse Model. The criteria of adaptability have been greatly impacted by the stakeholder involved in deciding why the need to adapt a certain facility and to what extent do they intent to utilize it.

The second part of this chapter is the thesis conceptual framework. The concepts used are selected based on gaps found in the literature review discussions. The conceptual framework discusses FIFA 2011 stadiums technical requirements,

features of Sport-oriented districts, and New Urbanism principles. The aim of the conceptual framework is to put forward the detailed methodological framework of this thesis that is further discussed in chapter three.

2.5 Conceptual Framework

2.5.1 FIFA Stadiums Technical Requirements

Hosting mega-events that are awarded through a bidding process usually requires the hosting city to meet specific event related requirements. In the case of the World Cup, FIFA minimum stadium design requirements are detailed in the FIFA fifth edition 2011 football stadium technical recommendations and requirements book. The book consists of 12 chapters that vary from pre-construction decisions to hospitality and media requirements. The most relevant chapter to this thesis is the first chapter: strategic pre-construction decisions, location selection criteria, and setting social, environmental, and economic goals. In addition, public access and parking and temporary facilities are also two relevant chapters of this thesis.

A. Strategic pre-construction decisions

The Strategic pre-construction decisions section recommends raising the following questions in the pre-construction decisions phase (See Table 1):

Table 1: FIFA Strategic Pre-construction Decision Questions (FIFA, 2011)

Topic	Key Questions
Funding	Is sufficient funding available to achieve what is necessary?
Adapting a Basic Stadium	<p>Can standing terraces be converted to seating areas?</p> <p>Can new premium suites be added with good sight line and accessibility?</p> <p>Can a roof and large video screens be added?</p> <p>Does it have room to adapt to future technologies</p>
Capacity	<p>What should the stadium capacity be? How is it going to sustain itself in the legacy mode? (30.000 people are the minimum capacity for international matches).</p> <p>Will modular stadiums be introduced?</p>
Market Knowledge	Will the stadium attract VIPs and customers who are interested in premium seating areas?
Maintenance	How the stadium is maintained, operationalized, and managed?
Pace of Change	How can the stadium life span be adapted to new technological advances to increase its life span for more than 30 years?

Following the strategic pre-construction decisions is the stadium location criteria. According to the FIFA (2011):

“A stadium should be situated in a location which is sufficiently large to provide spacious and safe external public circulation/activity areas and marshaling space for service vehicles and functions.”

Stadiums can be located in urban, semi-urban or rural areas (See Figure 6). Each location comes with its opportunities and challenges. The Urban Center provides transport infrastructure; however future development might be very limited due to the site’s compact nature. The semi-urban location has larger space for future development, but needs an adequate transport infrastructure. In addition, rural areas will require larger sites to accommodate major roads and large car parking infrastructure.

The ideal stadium location will be a large city center site with good public transport, parking, and major roads. The final decision is highly impacted by the availability of public transport and transportation infrastructure. The sustainability of the stadium should be assured through the attainment of LEED certification and environmental compatibility assessment, and the need for the stadium development to meet the local needs. Moreover, stakeholders involvement during this phase can create a positive event experience. Finally, designing multi-purpose stadiums should not have a negative impact on the main purpose of the stadium to host football events.

B. Public access and Parking

For the tournament, the public access, and parking section emphasize the need of an outer fence for the first security check (See Figure 7). Parking should also be a minimum of 10.000 parking spaces for a 60.0000 seating stadiums in addition to 500 bus parking area. This does not include hospitality, teams, officials, or staff parking. Media should have an adjunct car park and accessible pathways to the stadium.

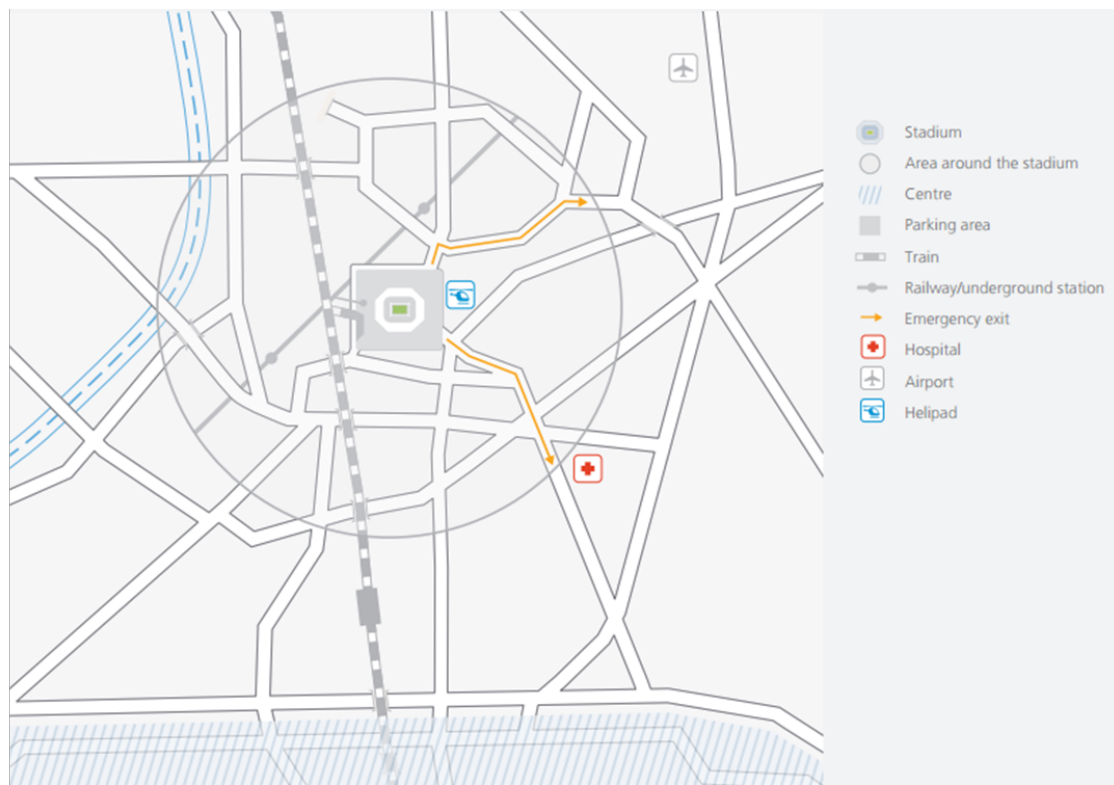


Figure 6: Stadium location FIFA example (FIFA, 2011)

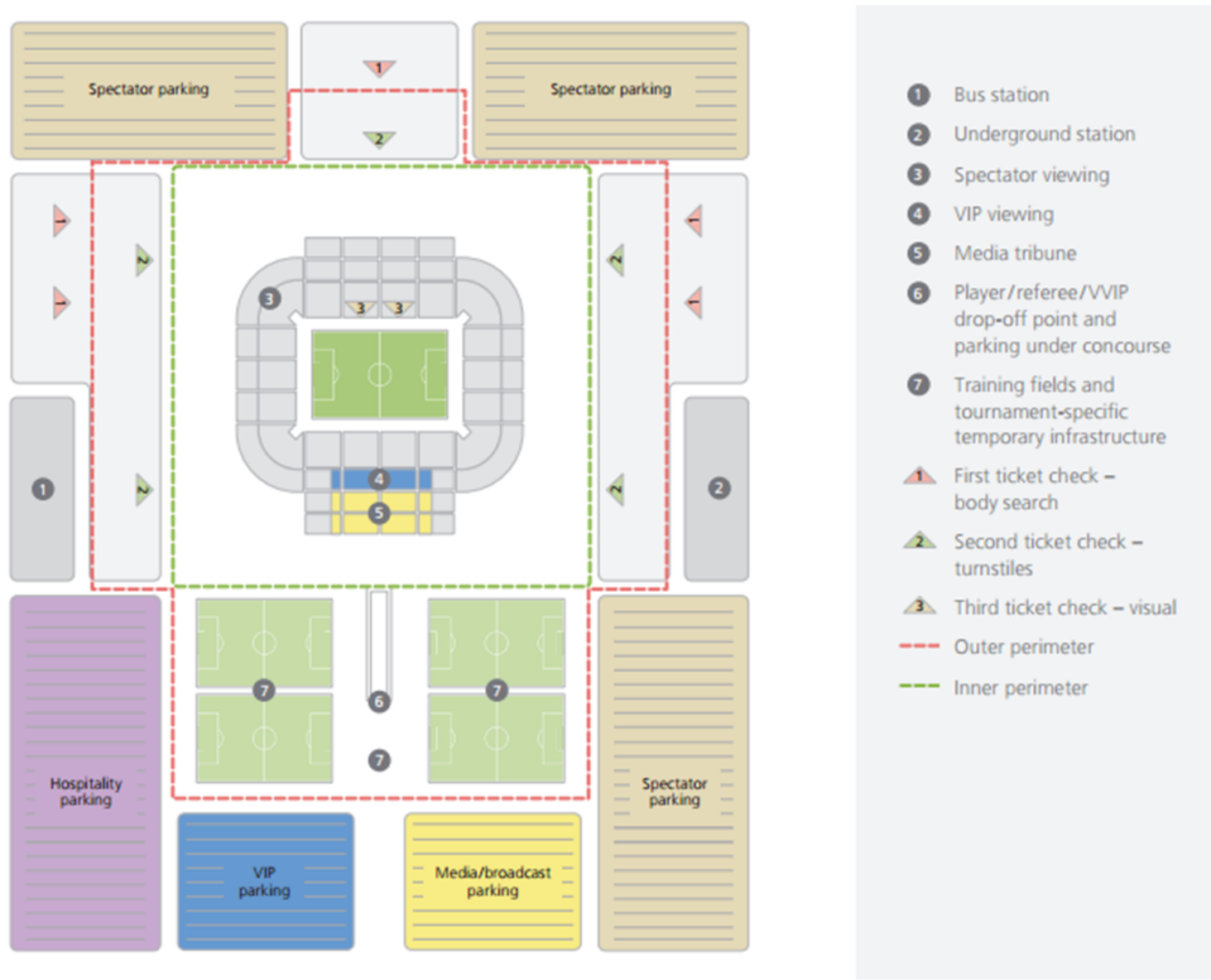


Figure 7 Public access and egress FIFA example (FIFA, 2011)

C. Temporary facilities

The World Cup infrastructure can be a permanent or temporary structure that is divided into three areas (See Appendix A):

1. **Front of the House (FOH):** Spectator entrance and movement domain
2. **Back of the House (BOH):** Officials and operational support domain
3. **Seating Bowl:** seating capacity includes permanent and temporary seating

The temporary structure can vary from temporary seating capacity that can increase the stadium capacity up to 50%, to the precinct temporary structure which includes tents, bridges, street furniture, way finding and others. The stadium and precinct design will be divided into three phases before, during, and after the tournament. Phases and overlays timeline are summarized in figure 8:

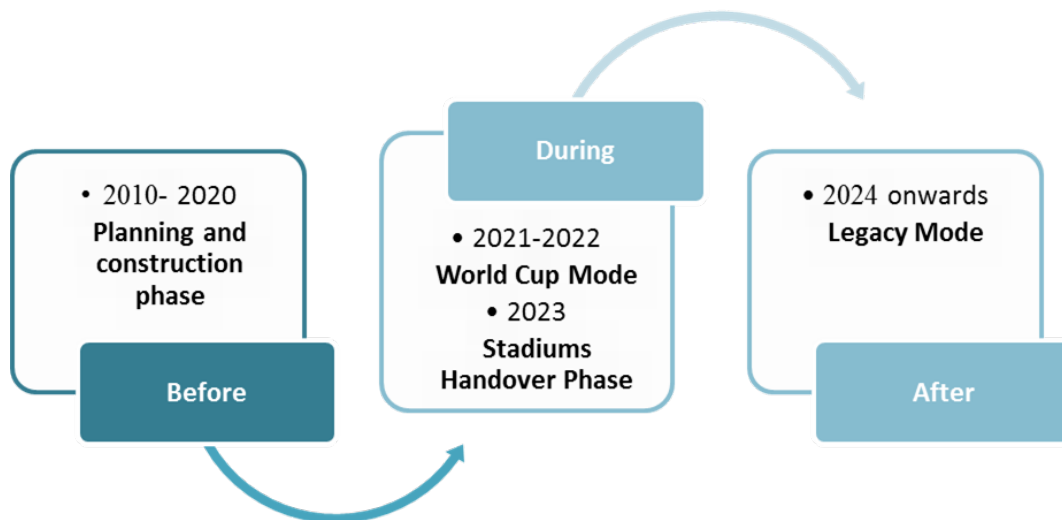


Figure 8: World Cup Planning and Phases Timeline

2.5.2 Features of Sport-Oriented Districts

Features of Sport-oriented districts are determined by its type of sports activities. It is important to distinguish the differences between one case study to another to examine the challenges and opportunities they present. Examples of game based parks include the London 2012 Olympic Park or recreational parks such as Central Park in New York, and tourist and Attraction Parks such as Yara Park in Sydney known for its famous Melbourne Cricket Ground.

Designing for sport and recreation can be a challenge when designing to host MSEs. On the one hand Multisports events such as the Olympics require multiple venues to be at the same place within one hosting city. On the contrary, mono-sports events such as the World Cup require multiple single use venues for that can be mostly scattered across the country. Having similar multiple venues after an event such as the World Cup raise significant questions regarding its future utilization and adaptability to its surrounding. Although multiple multiuse venues required for the Olympics games present more opportunities for reuse and adaptability, both face different post-event challenges. However, both the FIFA and the Olympics organization committees are advocates for post-game legacy planning.

Designing for Sport-oriented districts is different from one case to another. Factors, which include financing, the scale of development, scope, uses, local needs and others, all bring different opportunities and challenge to designing a sport oriented district; ultimately the design is impacted by the stakeholders involved in the decision-making and planning process (Gatto, 2015).

For this thesis, the focus is on the 2022 World Cup. With the major challenge of having a multiple single use football stadiums, Qatar will be the first to host compact games where stadiums and matches will be within a small distance. The uniqueness of the hosting concepts requires careful consideration into the design of the stadiums and its precincts to ensure its sustainability. Lessons can be learned from successful case studies of cities that have hosted the Olympics, the World Cup, and have other historic stadiums.

2.5.3 Successful Case Studies

Case Studies Geographical Location:

Figure 9 shows the selected Case Studies Geographical Location

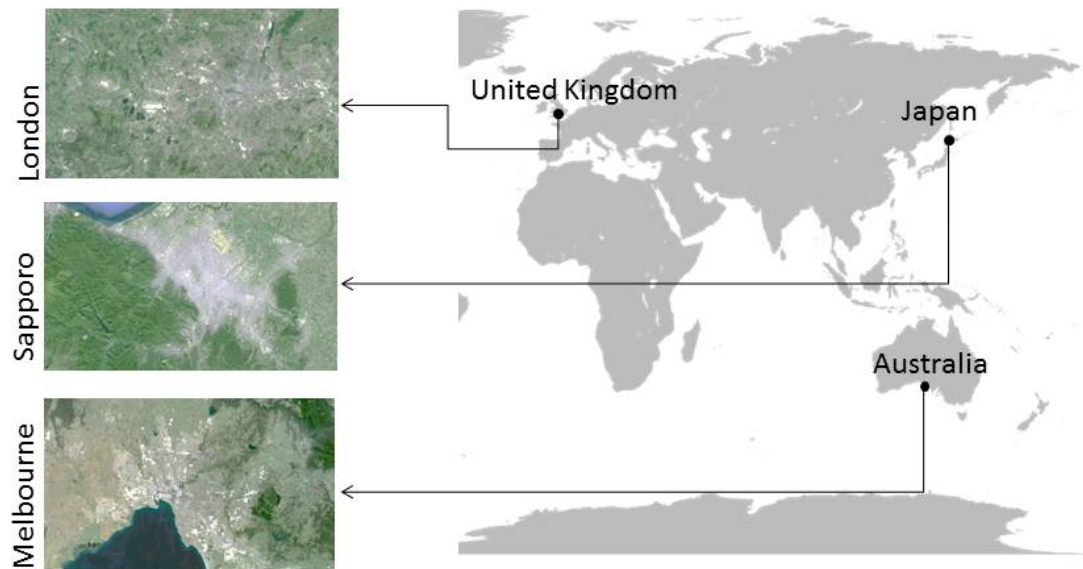


Figure 9: Case Studies Geographical Location

2.5.3.1 London 2012 Olympic Games: Queen Elizabeth Olympic Park

The London Olympic Games organizing committee highly embedded the concept of sustainability from its bidding process to post-game mode. Although the legacies of the 2012 games were many, the most significant one was the creation of the Queen Elizabeth Olympic Park in East London on a polluted old industrial land. Figure 10 shows London 2012 Olympic park master plan in the games and the legacy mode.

- **Features, Significance, and Utilization:**

The development of multiple arenas to meet the Olympic needs presented opportunities for East London to transform it to mixed-use development after the games. The park is considered the largest parkland in Europe (Olympic, 2013). London Olympic Park opened in 2013, and was later named Queen Elizabeth Olympic Park. The park has successfully attracted more than 4 million visitors (Queen Elizabeth Olympic Park, 2016). The park has five neighborhoods with its first neighborhood Chobham Manor already sold out (Chobham Manor, n.d.). The iconic stadium will be officially open after its transformation to host multiple events in 2016. In its transformation process, the stadium hosted four national games and 2 international games including two matches of Rugby World Cup in 2015 (Queen Elizabeth Olympic Park, n.d.). The stadium will be the home for British Athletics West Ham United starting 2016 (Queen Elizabeth Olympic Park, n.d.).



Figure 10: Right London 2012 Olympic Park Master Plan for the Olympic Games Left: The park transformation after the Games (Olympic Park Legacy Company Limited, 2012)

2.5.3.2 Korea and Japan World Cup 2002: Sapporo Dome (Japan)

The Sapporo Dome was one of South Korea and Japan’s 2002 world cup stadiums. The stadium is located in Sapporo city in Hokkaido, a Japanese Island. The dome opened in 2001, since then it attracted more than 30 million visitors by 2013 (Sapporo Dome, n.d.). Figure 11 shows aerial image of the Sapporo Dome.

- **Features, Significance, and Utilization:**

The Sapporo Dome is uniquely designed to host two sports, Football, and Baseball. It is designed like the number 8 with two hovering fields that ease the transformation of one sport to another, in addition to its ability to host games all year round despite the weather; its maximum seating capacity is 53,738 people (Sapporo Dome, n.d.). From 2001 till 2015 the dome hosted 128 events including the FIFA World Cup in 2002 and the annual Soft and fluffy adventure, a Japanese kids entertainment event. In total the dome hosted 11 Soccer events, 16 Baseball events, 17 Other sports events, 60 concerts, and 78 entertainment events (Sapporo Dome, n.d.).



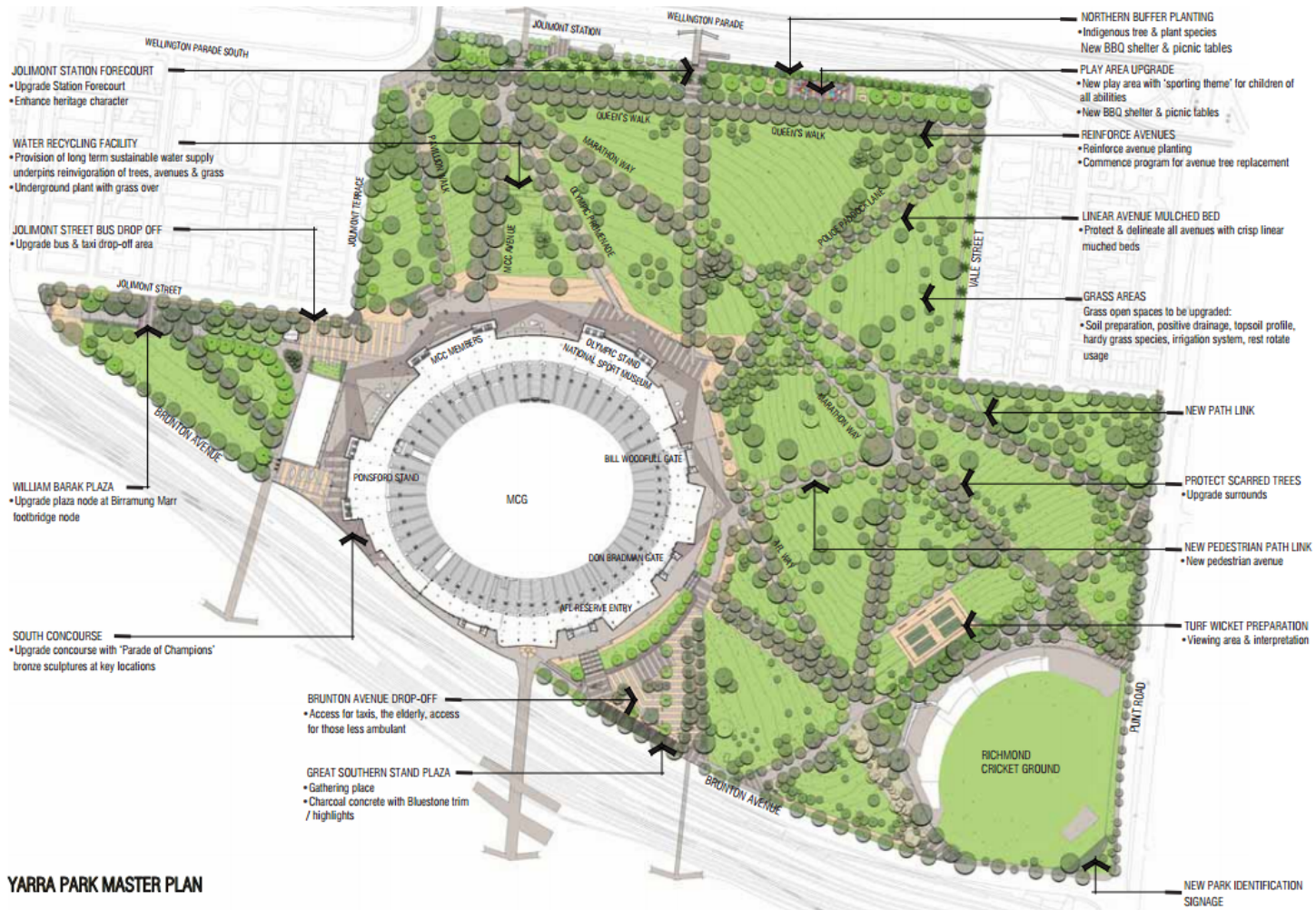
Figure 11: Sapporo Dome (Google Earth, 2014)

2.5.3.3 Melbourne Cricket Ground

The Melbourne Cricket Ground is one of the world largest stadiums, during the past 159 years, the ground held many events attended more than 100,000 people per event. The Melbourne Cricket Ground faced a series of demolition and expansion phases. The current ground was the fourth ground location that was selected in 1853 to make room for the route of the first Australian steam train that was going to pass under the previous ground (MCG, n.d.). The ground grandstand's recent upgrade was in 2002 in preparation for the 2006 Commonwealth games (MCG, n.d.).

- **Features, Significance, and Utilization:**

Melbourne Cricket Ground is part of Yarra Park (See Figure 12) it has a significant indigenous pre-history and is also noted for both its landscape and sporting heritage. The Melbourne Cricket Stadium is used for Cricket, Australian football, rugby, soccer, concerts, and other major functions on its natural turf arena, in addition to other function venues. A Portable cricket pitch technology helps in having a greater flexibility to host events throughout the year (MCG, n.d.). The Ground is designed for football and cricket both at the international and national level. Although it has been successful as a sports venue, the highest crowd recorded was in 1959 when it hosted the American evangelist Billy Graham with more than 130,000 attendees. However, the Melbourne Cricket Ground's most distinguished record is 1.153 million fans for the 15 days of the 1956 Olympics (MCG, n.d.)



YARRA PARK MASTER PLAN

Figure 12 Yarra Park Master Plan (MCG, 2010)

2.5.3.4 Case Study Summary

Table 2: Case Study Analysis

Name	Queen Elizabeth Olympic Park	Sapporo Dome	Melbourne Cricket Ground
City/Country	UK/London	Sapporo/Japan	Melbourne /Australia
Location	East London	Sapporo, Hokkaido	Victoria, East Melbourne
Population	7,825,200 (Office of National Statistics)	1,937,70 (Sapporo Toursim)	854,000 (City of Melbourne)
Year	2012	2001	1853
Capacity	54,000 seats	53,738 seats	100.000 seats
Significance	Olympic Legacy	World Cup Legacy	Historical/Tourism
Functions	Mixed Use District	Multi-Purpose Sport and Entertainment Venue	Multi-Purpose Sport and Entertainment Venue/ Public Park
Uses Frequency	All Year Round London Legacy Development	All Year Round	All Year Round
Stakeholder	Corporation's Board/ Government	Government/Private companies	Melbourne Cricket Ground Trust/ Government

According to the case studies presented above. All of the selected stadiums have public (governmental) and private (non-governmental) stakeholders. While the private stakeholders created and executed the stadiums business and operational plans, the public stakeholders ensured its alignments with the city vision and the public interest. It is important to note that the significance of both Queen Elizabeth Olympic Park and the Sapporo Dome lays upon being an MSE legacy. While the development of Melbourne Cricket Ground was not initially to host a MSE, the ground breaking attendance record was while hosting the 1956 Olympics.

Another significance that appears from the selected case studies that are all a multi-functional development, whether it was initially developed for a single use such as in the case of Melbourne Cricket Ground and further developed to be multi-functional; or developed as a result of hosting mono-sport oriented game such as in the case of Sapporo Dome hosting the 2002 World Cup, or a multi-sport MSE such as the Olympics as in the case of Queen Elizabeth Olympic Park. All of the case studies have successfully become multifunctional facilities whether by design flexibility and its operational and business plans developed by its stakeholders.

The case studies show successful practices that help in tackling the issues of stadium adaptability that result in mixed used development. Many theories discussed the need of mix-used districts; however New Urbanism principles have taken an in-depth investigation of attributes that can lead to creating a mixed used development.

2.6 Principles of New Urbanism

To tackle the issue of urban sprawl as a result of a single use development, the Congress of New Urbanism advocates a human scale urban design approach. The New Urbanism Charter articulates 27 design principles for the region, the neighborhood, and the block (CNU, n.d). Figure 13 shows New Urbanism general principles. In the context of this study, these principles are used as the basis to create a mixed used, human scale and accessible stadium districts.

We advocate the restructuring of public policy and development practices to support the following principles:

- Neighborhoods should be diverse in use and population.
- Communities should be designed for the pedestrian and transit as well as the car.
- Cities and towns should be shaped by physically defined and universally accessible public spaces and community institutions.
- Urban places should be framed by architecture and landscape design that celebrate local history, climate, ecology, and building practices.

Figure 13: Principles of New Urbanism (CNU,n,d)

The Congress provided tools such as the use of public charrette and form-based codes to ensure the integration of the New Urbanism principles into the planning process. All of the three planning levels are integrated. However, since the focus of this study is on stadium districts, a greater emphasis is on the nine principles related to the neighborhood, the district, and the urban corridor.

According to new urbanism, the neighborhood, the district, and the urban corridor are essential elements of development. They also need to promote mixed uses, walkability, housing options, transit corridors, building densities, diversity of activities, quality urban design codes and parks and open spaces. Since the stadium districts are essentially considered open spaces; these principles are converted into an adequacy scale rubric to measure the opportunities and challenges facing the optimization of each element. The adequacy scale method is discussed in chapter

three and the scale results are discussed in chapter five. Table 3 shows a summary of new urbanism principles on the three planning level:

Table 3: Principles of New Urbanism for Different Planning Levels

	The Region: Metropolis, city, and town	The Neighborhood, The District, and The Corridor	The block, the street, and the building
1	Geographic boundaries with identifiable centers	Essential elements of development	Public Space
2	Fundamental economic unit	Mixed Use	Transcends architectural style
3	Farmland and natural landscape	Walkability	Safety and security
4	Infill development	Mixed-Income Housing	Pedestrian and auto mobility
5	Integration of new development into existing urban fabric	Transit Corridors	Streets that are configured for safety and comfort
6	Respect of Historical patterns	Building densities and land uses	Identifiable civic and public spaces
7	Regional economy to support all incomes	Diversity of Activities	Local inspired Architecture and landscape design
8	Transportation Alternatives	Quality Urban design Codes	Sense of natural environment
9	Shared resources and reviews	Parks and Open Spaces	Preservation and renewal of historic places and buildings

2.7 Conclusion

The literature review in this chapter discusses and identifies MSE legacies. Although there are similarities that accompany MSEs legacies such as its type and its requirements, each MSE and its legacy has different opportunities and challenges that are impacted by the hosting concept and stakeholder involved. For that reason, most of MSE legacies literature used the case studies method.

For the legacy to be active, sustainability should always be the target for its longevity. On the one hand, some argue that sustainability is the result of hosting an MSE, while on the other hand others have argued that event-led regeneration does not always necessarily lead to sustainability. Stadium's adaptability is impacted by factors that do not only present in the post-event phase, but the design phase as well.

The conceptual framework section is based on concepts taken from the discussed literature, in addition to other principles that related to the preparation and delivery of Qatar 2022 World Cup stadium infrastructure. The conceptual framework is based on FIFA 2011 stadiums technical requirements that are used in the design of Qatar 2022 stadiums. Moreover, it is worth noting that Sport-oriented districts that are the results of MSE differ from one another. While the Olympics require multifunctional venues, the World Cup venues are mostly singular.

Finally, New Urbanism principles were examined as the basis for the assessment and recommendation of this study. New Urbanism promotes mixed-use human scale development that can have a positive intervention impact on the single use World Cup stadium districts.

Chapter Three: Methodology

3.1 Introduction

This chapter introduces research methods adopted in the thesis. The chapter will discuss the methods used in qualitative research. The selected data collection tools are case studies, interviews, and secondary data. The first part of the chapter will discuss research questions, and the hypothesis. The second part of this chapter will cover data collection and analysis tools. Finally, a discussion on issues related to research limitation and ethical considerations will conclude this chapter. Overall the research methodology chapter will explain in details the method and stages followed and used in conducting this thesis. The study is conducted through a qualitative research methodology. The research is being carried out through case study analysis.

According to Yin (2003);

“Case studies help in investigating contemporary phenomenon’s within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident.”

Yin (2003) distinguishes two case study dimensions. The first is the single vs. multiple case study approach, and the second is the holistic vs. the embedded approach. In this thesis, multiple embedded case study approach is selected to examine the occurrence of the phenomena for generalization, while focusing on the physical infrastructure of the World Cup. The use of the qualitative method in the

scope of this thesis focusing on precincts and the limitation it has in being a future event can be better handled due to the availability on the qualitative data.

3.2 Hypothesis and Research Questions

a. Hypothesis:

It is notable that Mega Sporting Events (MSEs) impact many aspects of the hosting city. One important aspect is the infrastructural development required to host the event. This thesis argues that if a city invests in a stadium to host a Mega Sporting Event, then an adaptive strategy is needed to ensure its integration to its urban surroundings after the event. This hypothesis is tested after answering the following research questions:

b. Research Questions:

The research questions are driven by the thesis hypotheses variables: Stadiums, MSE legacies, and adaptive strategies. It aims at answering the following questions to create a PPP Adaptive Strategy for cities hosting MSEs:

1. To what extent are Qatar 2022 World Cup stadiums adaptive to the precincts?
2. What impacts the adaptability of Qatar 2022 World Cup Stadiums?
3. How can an Adaptive strategy through Public-Private Partnership take place for Post 2022 World Cup?

The research questions are answered through different data collections and analysis tools. The first question is examined through three case studies from Qatar. The adaptability of stadium precincts will be measured through an adequacy scale that is based on New Urbanism principles. The adequacy scale method is explained in the data analysis section of this chapter.

The second question is investigated through semi-structured interviews of professionals on mega events legacies, stadiums design; and facilities planning. The interview questions are based on four main discussion themes: strategic objectives, stadium construction and design, stakeholders' involvements and legacies. In addition to the expert interviews, an in-depth analysis of AlRayyan residents feedback collected by the SC is used. Finally, the last question will be answered through exploring the potential for a PPP adaptation of the stadium after the event. The research method tools mentioned above are further discussed in this chapter.

3.3 Research Design

3.3.1 Method of Data Collection

MSE Legacies are broad concepts that include physical, social, environmental, and economic aspects. This study focuses on MSE's physical legacy. Although this study will concentrate on investigating the physical legacy only, it is anticipated that the results will have an impact on the social, environmental and economic aspects, therefore creating a holistic legacy for Qatar 2022.

The method used in investigating stadium and precincts adaptability post an MSE are done through a series of local case study site assessment and expert interviews. The study is designed as a qualitative research that includes case studies, interviews, and secondary data as data collection tools:

3.3.1.1 Site Assessment

a. Case Study Sample

A total of three case studies were selected as part of the investigation of stadium adaptability following the Qatar 2022 world cup. Figure 14 shows Al Rayyan city transport network 2022 bid proposal (FIFA, 2010). Although many opportunities arise from the fact that 2022 world cup stadiums are yet to be constructed, many challenges will still be present that will hold back the post-World Cup uses of these venues. Taking Al Rayyan City Stadiums as a case study, Al Rayyan City will have a minimum of three stadiums: Khalifa International Stadium, Al Rayyan Stadium, and Qatar Foundation Stadium.

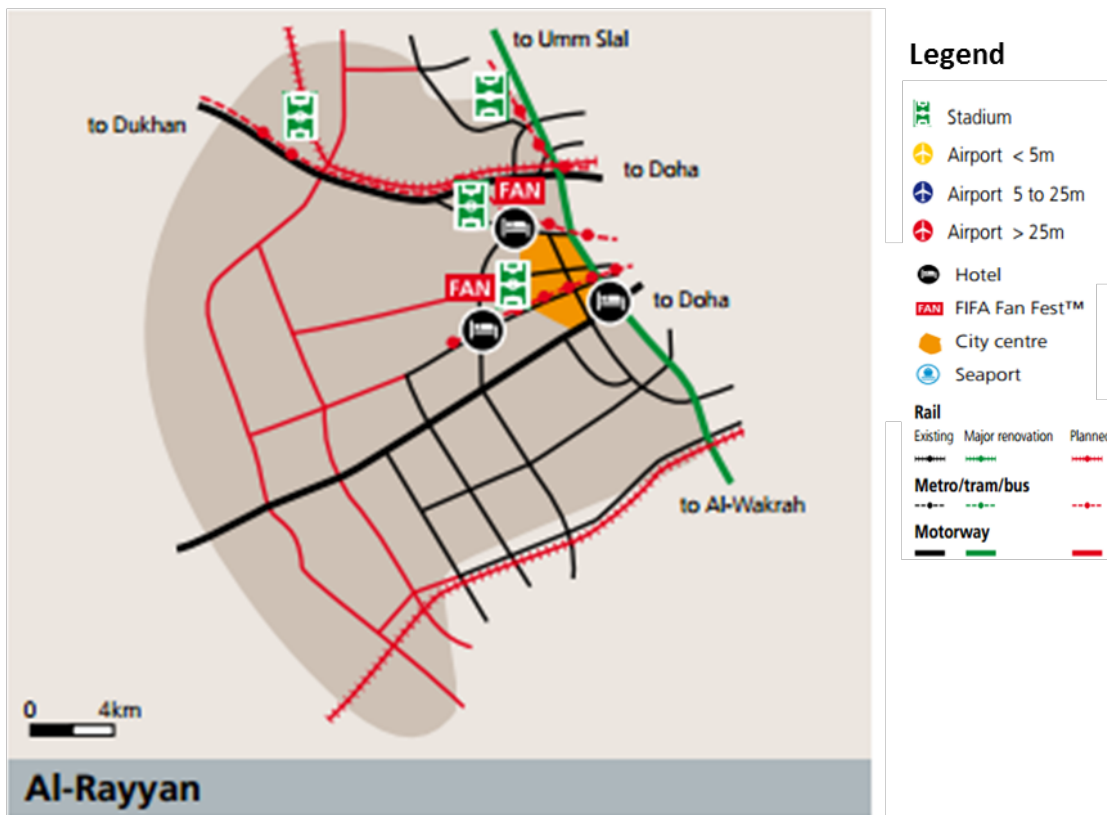


Figure 14: Al Rayyan host city transport network 2022 bid proposal

b. Case Study Selection Criteria

Al Rayyan City is part of Al Rayyan Municipality, Qatar's largest geographical municipality that covers 50% of Qatar land. 85% of the development of Al Rayyan Municipality is in Al Rayyan City and includes many Mega projects such as Aspire Zone (AZ) and Education City (EC) (QNDV, 2014).

Al Rayyan City is also part of Metropolitan Doha, which is characterized with Qatari neighborhoods where 47% of the Qatari population lives in Al Rayyan (QNDV, 2014). The Qatari National Housing Program in Al Rayyan Municipality

faced many challenges that resulted in isolated neighborhoods, fragmented urban form, and low-quality townscapes (QNDV, 2014).

Al Rayyan City includes 7 zones out of the total Al Rayyan Municipality 11 zones, and 3 of the 7 zones are planned to have a World Cup Stadium: 1) Khalifa International Stadium, 2) Qatar Foundation Stadium and 3) Al Rayyan Stadium (See Figures 15). Al Rayyan Municipality stadiums represent 3 out of the 7 announced stadiums (SC, n.d.).

Figure 15 shows the distant between the three selected stadiums. The stadiums are 15 to 40 minutes apart from each other and are within connected zones. Although Qatar is the first world cup hosting country with a compact hosting concept; a compact event can challenge the event management, but also bring up opportunities for post-event adaptation. However, Al Rayyan municipality stadiums can face double these challenges or have better opportunities for their close proximity. This is impacted by the involvement of the stadium stakeholders with each other.

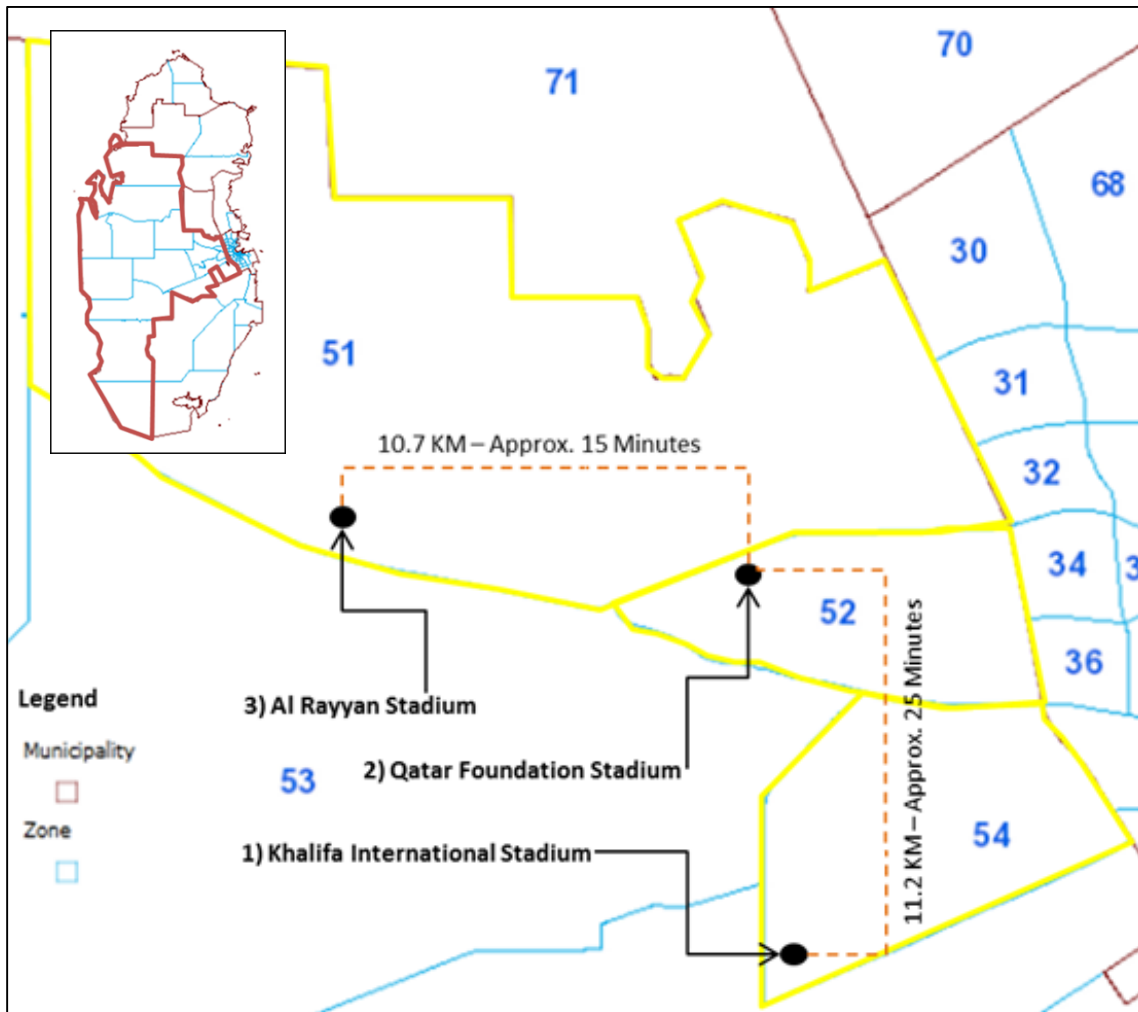


Figure 15: Al Rayyan Municipality boundaries and distant between the three selected sites.

3.3.1.2 Expert Interviews

a. Expert Sample

The experts represent the position and the strategy of their respective organizations or entity. According to the FIFA Brazil 2014 sustainability strategy report, the stakeholders are divided into two categories:

- **Key Stakeholders:** FIFA, Host Cities, Local organizing committee, and others who have direct involvement in the planning and production of the FIFA 2022 world cup
- **Other Stakeholders:** Attendees, the local community, NGOs and others who are affected by the planning and production of the FIFA 2022 world cup

The focus of this thesis is to key stakeholders involved in the planning of Qatar 2022 world. However, some key stakeholders are already working with other stakeholders in developing their plans and strategic objectives.

b. Expert Interviews Selection Criteria

Due to the specificity of the research questions, the sample of interviewees was selected from professional organizations involved in sport and mega-event preparations and operations. After a primary scanning of stakeholders in Qatar, three key stakeholders were identified for the case studies selected:

- Supreme Committee for Delivery and Legacy (SC)
- Aspire Zone Foundation (AZF)
- ASTAD Project Management

In addition, other professionals were interviewed that are experts in urban planning, stadium construction and MSE legacies. The interview questions are based on the stakeholder's strategic objectives, stadium construction and design, stakeholder's involvements and Qatar 22 planned legacies (see Appendix C).

3.3.1.3 Supreme Committee for Delivery and Legacy Reports

The SC was founded in 2011, but changed its name by an Emiri Decree from Qatar 2022 supreme committee to Supreme Committee for Delivery & Legacy in 2014 (SC, n.d.). The main rule of the supreme committee (SC) is to ensure the delivery of Qatar 2022 infrastructure aligns with Qatar 2030 national vision and Qatar 2011-2016 National development strategy (SC, n.d.). The committee has initiated a local community engagement program.

The Community engagement program provides a series of communication channels through creating forums for people to share their thoughts about the SC projects. Additionally, it involves the local neighbors into the idea creation process that aims to build the legacy for Qatar 2022 and meets its local needs. Al Rayyan community engagement report helps in presenting the end user needs.

The community engagement program conducted eight Majlis visits at local residents' homes in Al Rayyan. A total of five male sessions and two female sessions were conducted. The report is prepared by Nielsen, a media research company⁴. However, the visits and attendees were arranged and recruited through the SC team. While there is a need for the resident expectation, the report aims to get resident feedback, expectation, and concerns with regard to Al Rayyan stadiums and precinct plans and progress.

⁴ Nielsen is a media research company that provided series includes studies on consumer's behaviors (Nielsen, n.d.)

3.3.2 Method of Data Analysis

The data analysis tools are based on the conceptual framework discussed in the literature review and conceptual framework chapter. The main data analysis tool will be matching patterns of the selected case studies and theories found in the conceptual framework. The pattern matching is intended to investigate the adaptability of Qatar 2022 stadium precincts based on the practices of previous successful case studies, and New Urbanism principles as a driven theory to avoid the urban sprawl for single use development faced by stadium oriented districts.

a. Site Assessment

The site assessment is based on principles of New Urbanism as a tool for neighborhoods, districts, and urban corridor design. The tool of analyzing the selected case studies based on New Urbanism principles is done through the readings of existing maps and official documents into pattern matching through explanatory diagrams and tables. According to LagGro (2008), site analysis can help in assessing the site opportunities and constraints by assessing the site program and existing conditions. In addition, the site program includes the goals, objectives, land use and activities phasing, while the existing conditions include physical, biological and cultural attributes (See Figure 16). In this thesis, the existing condition attributes are assessed through its compatibility with New Urbanism principles. By combining site analysis and New Urbanism principles and adequacy scale is created to specifically assess the opportunities and challenges facing stadium precinct adaptation.

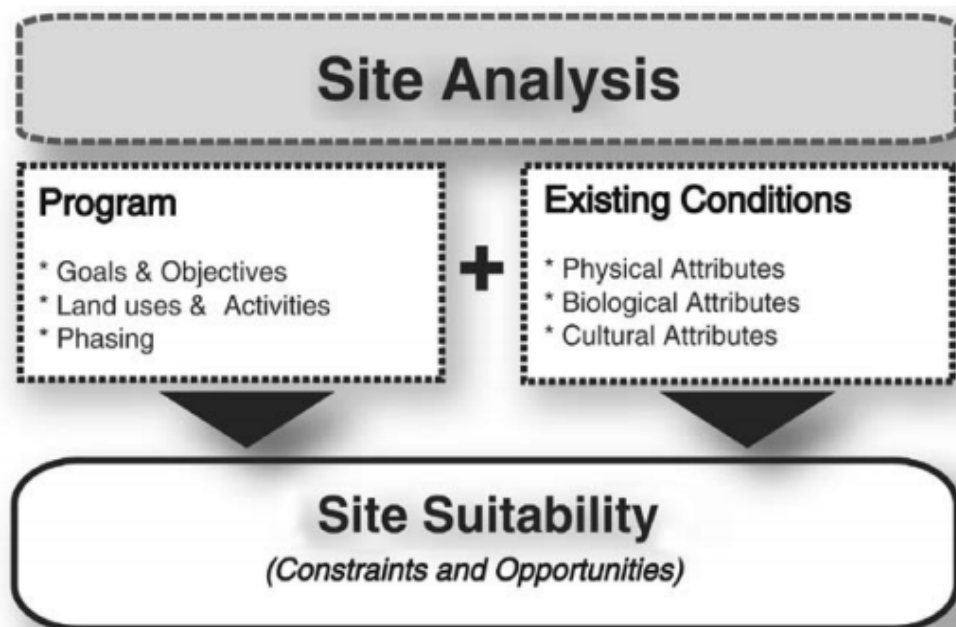


Figure 16: Site Analysis opportunities and constraint assessment (LaGro, 2008)

An adequacy scale aims to measure the site adaptability based on New Urbanism attributes. Each attribute will score between very adequate, adequate, inadequate or very inadequate. The scores are based on a rubric created based on New Urbanism principles (see Appendix B for full rubric). The attributes as discussed in chapter two are parks and open spaces, housing and land used, special developments, commercial and non-commercial buildings, densities, transit alternatives, walkability and urban guidelines.

The scale results will aim at identifying the opportunities and challenges facing stadium districts. The expert interviews and Al Rayyan Majlis report analysis will help in identifying the opportunities and challenges as well.

b. Expert Interviews Analysis

Analyzing the expert interviews is based on the six steps of analyzing expert interviews according to Meuser & Nagel (2009):

1- Transcription: Transcribing the expert interviews is the first step; however, because some of the information is confidential, they were blocked from the transcription and paraphrased.

2- Paraphrasing: paraphrasing is an essential step for synthesizing the data for easier management.

3- Headlining: the data is grouped into thematic headlines.

4- Thematic comparisons: the outcome of the third step is used for comparison purposes, leading to new themes or confirming existing ones.

5- Scientific Conceptualization: terminologies and expertise to be categorized for further analysis, comparison, and generalizations.

6- Theoretical Generalization: in the final step the categories are organized according to theoretical relationships for result generalization.

The above steps will result in a thematic discussion highlights. The themes will help on identifying solutions for challenges facing stadium districts. In addition, it will help in optimizing the opportunities presented by the districts.

c. Al Rayyan Majlis Report Analysis:

Although the Al Rayyan community engagement report is secondary data, an in-depth analysis of resident feedback on their expectations and concerns will help in comparing existing planning practice and the expert input to create a PPP adaptive strategy. The analysis will show the resident's expectations and concerns with regard to Al Rayyan plans and progress. An in-depth analysis of Al Rayyan resident's expectations and concerns with regard to the following 2022 World Cup outcomes: Promoting Local Culture, growing the economy, infrastructure development, women inclusion, and a self-sufficient city are examined. The analysis results will help in creating the steps towards a public-private adaptive strategy.

3.4 Limitation and ethical consideration

a. Limitation of the study:

The study has some data limitation because the topic possesses a unique timeline that can create some restraints on data collection. Mega events timeline differs than any other project where the bidding process can start over five years before hosting the event, in addition to the timeline needed to investigate the legacy of the event after it occurs. This limitation is overcome through the selection of specific variables that is not highly affected by time constraints, and at the same time,

is relevant to the case study selected. However, the use of secondary data will help in confirming patterns and further explain the issue in the study.

b. Ethical Consideration

Even though the selected data collection tools are limited to professionals and don't involve any other human subjects, all actions are taken to take the consent of the interviewees involved, and insure their confidentiality. Additionally, no other human subjects are to be involved unless with written consent. To conduct this research, approval from Qatar University Institutional Review Board (QU-IRB) was granted. The thesis QU-IRB research ethics approval number is QU-IRB 545-E/16.

3.5 Conclusion

The methodology chapter presented the tools needed in collecting and analyzing the data needed to answer the research questions and test the hypothesis. The scope of the study is within the three districts of the selected case studies from AlRayyan municipality. Three data collection were identified: site assessment (observations), expert interviews, and secondary data obtained from the SC that includes feedback from Al Rayyan residents toward Al Rayyan stadiums. The data is analyzed in the light of New Urbanism and the conceptual framework created in chapter two. Figure 17 shows the data collection and analysis input and output process followed in this thesis:

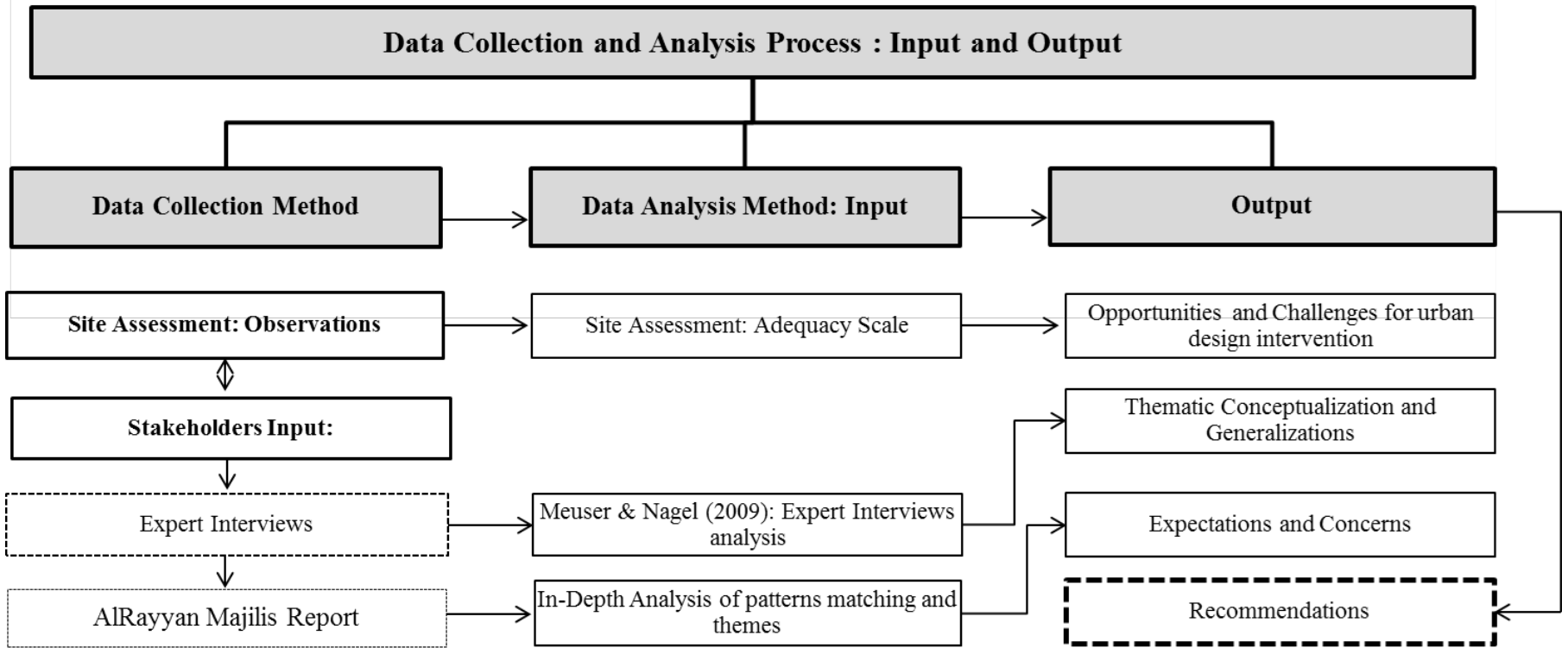


Figure 17: Data Collection and Analysis Process: Input and Output

The data collection and analysis methods showing in figure 17 is done through a concurrent process of site assessment that is done through the observation of existing maps, satellite images and urban design documents. In addition to collecting stakeholders input through expert's interviews and the examinations of AlRayyan Majlis report results. After the data is collected it is then analysis in three steps. The data analysis input is done through measuring the compatibility of the site assessment attributes of parks and open spaces, housing and land used, special developments, commercial and non-commercial buildings, densities, transit alternatives, walkability and urban guidelines to New Urbanism principles adequacy scale (Seep Appendix B). Aiming at showing opportunities and challenges for urban design intervention in stadium districts.

In addition, the expert's interviews data is analyzed through the Littig 2011 interview process mentioned earlier in this chapter, aiming at showing thematic conceptualization and generalization of the issue in hand. Finally, the examinations of AlRayyan Majlis report results is analyzed through an in-depth analysis of patterns and themes matching aiming at showing AlRayyan residents expectations and concerns on AlRayyan municipality stadiums as end-users stakeholders. The final output of the data collection and analysis process aims at giving final recommendation and further research suggestion.

Chapter Four: Case Studies Evaluation: Data collection and Analysis

4.1 Introduction

Chapter four aims at presenting the data collection as well as the analysis results based on the data gathering and analysis tools mentioned in chapter three.

This chapter begins with an overview of Al Rayyan Municipality and Qatar National Development Framework 2030. In addition, a brief is included on the three selected stadiums areas. It is important to note that the data collected are related to three planning levels: the regional level, the district and the stadium precinct level.

The site assessment will represent related to the district and the stadium precinct level with parks and open spaces, land use and housing, special developments, buildings by activities and densities, pedestrian and cycling pathways. And the regional level that includes urban design codes and accessibility and transit corridors.

The site assessment data aims at presenting information that will later be used in chapter five when measuring the district adaptability based on the adequacy scale mentioned in the methodology chapter (see Appendix B). The adequacy scale results will help in assessing the opportunities and challenges for urban design interventions on the selected districts. In addition, the data from expert interviews will be analyzed through thematic conceptualization and generalization to help in creating the public-private adaptive strategy framework. Additionally, SC Al Rayan Majilis report will

also be examined and analyzed through residents' expectation and concerns that will result in providing the thesis recommendation in chapter six.

4.2 AL Rayyan Municipality and Qatar National Development Framework 2030

As mentioned in chapter three, Al Rayyan Municipality is the largest geographical municipality in Qatar. This presents opportunities for future urban expansion of the capital city of Doha. Although Al Rayyan city is considered part of metropolitan Doha, plans aim at developing new centers that are mixed use mixed density in Al Rayyan North and South centers (QNDV, 2014).

According to Qatar National Development Framework 2032 (2014), Al Rayyan will have two new metropolitan centers. It is important to note that the three selected stadiums districts are commonly known for each district's existing projects. Khalifa Stadium is located within Bayya district that is known as Aspire Zone; Qatar Foundation Stadium is located within AlShaqab district that is known as Education City south campus. Finally, AlRayyan stadium, located in Al Seeij district, is soon to be Al Rayyan Gate project. The new metropolitan centers Al Rayyan North, and Al Rayyan South will be within Education City, and AZ projects respectively. Also, Al Seeij district is near a proposed green belt area (QNDV, 2014).

4.2.1 Khalifa International Stadium –Aspire Zone – Bayya District

Khalifa International Stadium was built in 1976. The Stadium is the national stadium and it holds historical significance for the game of football in Qatar (SC, n.d.). The stadium is now undertaking major renovations that are expected to be done by 2016 in preparation for the 2022 World Cup. The original stadium capacity is 20,000 seats, and the renovation is intended to increase the capacity to 40,000 for the 2022 World Cup (SC, n.d.). Now, after 40 years, the iconic stadium has become an important landmark in Qatar and Aspire Zone.

4.2.2 Qatar Foundation Stadium – Education City – AlShaqab District

Qatar Foundation Stadium is located within the EC south campus. The stadium capacity will be 40,000 seats during the tournament, and will be reduced to 25,000 seats for the legacy mode (SC, n.d.). The modular upper tier will be disseminated and sent to developing countries in need for sporting infrastructure (SC, n.d.). The stadium precincts will include outdoor playing fields such as football and tennis courts as well as indoor sports, swimming centers and retail outlets (SC, n.d.). The stadium and its precinct will become a sport, social and leisure hub for Qatar foundation (QF) and the local community.

4.2.3 Al Rayyan Stadium – Al Rayyan Gate – Al Seeij District

Al Rayyan Stadium is the first recycled stadium for Qatar 2022 world cup; the stadium will be reconstructed on Ahmed Bin Ali Stadium site, with at least 90% of existing stadium materials recycled and reused (SC, 2015). The stadium capacity is

40,000 for Qatar 2022 however; it will be reduced to 21,000 (SC, 2015). The stadium precinct will also include many other sports facilities such as an athletics track, tennis courts, cricket pitch, hockey pitch, football training area, aquatics center, cycling and pedestrian track, as well as a skating park (SC, 2015). Table 4 shows a summary of Al Rayyan city 2022 stadiums:

Table 4: Al Rayyan City 2022 Stadiums Summary

Name	Khalifa International Stadium	Al Rayyan Stadium	Qatar Foundation
Location/District	Baaya	Al Seej	Al Shaqab
Year	1976	2003(Demolished)	To Be Constructed
Capacity	40,000	40,000	40,000
Significance	Sport Legacy	Cultural	Education
Functions	Multi-Purpose Sport Venue	Football Stadium	Multi-Purpose Sport Venue
Legacy	Larger and cooler Stadium	Reduce capacity 21,000/ Home to Al Rayyan Sport Club	Reduce capacity 25,000 / Health & Wellness Precinct
Owner	AZF	Qatar Olympic Committee	Qatar Foundation

4.3 Site Assessment

The site assessment data presented will include existing and proposed parks, types of housing and land uses, special developments within the selected districts, commercial and non-commercial buildings and densities, transit alternatives, walkability and urban guidelines. The data is divided into stadium, precinct and regional level; In addition, it present expert interviews discussion point and themes. And Al Rayyan Residents expectations and concerns from Qatar 2022 World Cup at the local level.

a. The Stadium and Precinct Level:

1. Parks and Open Spaces

All of the three selected districts have significant existing or proposed parks and open spaces. Figure 18 shows the existing or proposed parks in the selected districts. The stadiums played a major role in increasing open spaces as an open space itself, and for its precinct and training site's needs. Also, all three districts have parks that are not related directly to football or sports (see table 6 for full list)

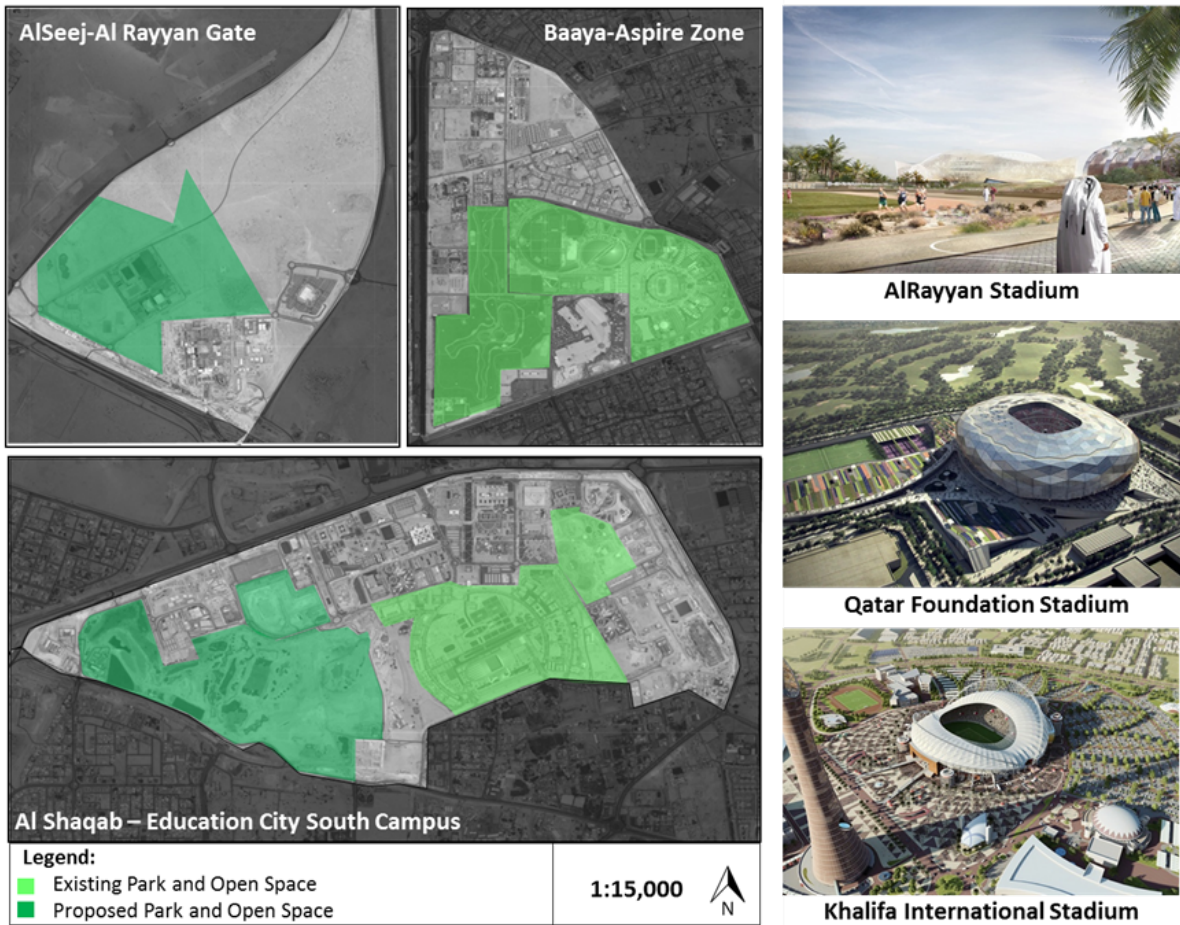


Figure 18: Existing and Proposed Parks and Open Spaces (MMUP, 2012; MMUP, 2013; MMUP, 2014)

2. Land Use and Housing

Land uses help in setting the general regulation of a certain development, ensuring sustainability and future growth for the area. However, since the EC and AZ are in the heart of Baaya and Al Shaqab District, QF and AZF played an important

role as main stakeholders. Table 6 shows a summary of land uses, followed by a further explanation of each special district development.

Table 6: Land Use and Housing of the selected Districts (MMUP, 2012; MMUP, 2013; MMUP, 2014)

Land Use and Housing/District	Aspire Zone Baaya	Education City Al Shaqab	Al Rayyan Gate Al Seej
Single Families (Attached/Detached)	✓	✗	✓
Multi Families	✗	✗	✗
Others Housing	✗	✓	✗
Commercial Offices	✗	✗	✗
Commercial Souk/Centers	✓	✗	✓
Commercial Frontage	✗	✗	✗
Public institutes: Schools	✓	✗	✗
Public institutes: Governmental	✓	✗	✓
Parks/Recreation and Open Space	✓	✓	✓
Parking	✓	✓	✓
Mosque	✓	✓	✓
Special Uses	✓	✓	✓

3. Special Developments:

All of the three selected districts include a significantly large-scale urban development. These developments are ultimately impacted by the land use regulation.

- **Aspire Zone –Bayya District:**

Aspire Zone inception was in 2003 as Qatar’s first Sports City. In 2006, the Sports City was rebranded as Aspire Zone and finally became Aspire Zone Foundation in 2008, including Aspetar, Aspire Academy, and Aspire Logistics. The re-branding shows the changes in AZF strategic objectives, from Qatar’s first Sports City to an international Sports Destination (Aspire Zone, n.d.). As a sport and recreation destination, AZ greenery covers 50% of Baaya area leaving only 50% of the land for mixed used developments (Aspire Zone, n.d.). However, AZ is located in AlWaab, which is part of AlRayyan South future metropolitan center (QNDV, 2014).

- **Qatar Foundation (Education City) - AlShaqab District:**

Qatar Foundation was established in 1995 with the theme “Unlocking human potential” (Qatar Foundation , n.d.). QF has since grown rapidly, including the EC that consists of elite world class and local universities (See Appendix E). QF also embraces health and wellness with the development of Al Sahqab Equestrian Academy, and Oxygen Park, in addition to Qatar Foundation stadium. The EC will be at the edge of AlRayyan second metropotalin center, AlRayyan North (QNDV, 2014).

- **Al Rayyan Gate-Al Seej District:**

Al Rayyan Gate is a new proposed development in Al Seej district. Al Rayyan Stadium, and the newly built Mall of Qatar (expected to be open by late 2016), are going to be part of Al Rayyan Gate project (Mall of Qatar, n.d.). The development is intended to be a low-density mixed use development where people can live, work, and shop all at the same place. Figure 19 and 20 shows AlRayyan gate master plan and clusters



Figure19: Al Rayyan Gate Master Plan (Makower Architects, 2014)



Figure20: AlRayyan Gate Clusters (Makower Architects, 2014)

4. Buildings by Activities and Densities

To understand Baaya, AlShqab and AlSeej districts land uses, it is important to look at building activities and densities. Table 7 shows a summary of building activities and densities for each specific districts. Although the selected areas have low building densities, the Torch hotel, for example, is the tallest building in Qatar and is located in Baaya-Aspire Zone.

Table 7: Building by Activities and Densities (MMUP, 2012; MMUP, 2013; MMUP, 2014)

Type/Area	Aspire Zone Baaya	Education City Al Shaqab	Al Rayyan Gate Al Seej
Building Densities	Low Density 1-25	Low Density 1-25	Low Density 1-25
Residential Density	G+1+P	G+1+P	G+1+P
Commercial Buildings	<ul style="list-style-type: none"> Commercial Offices Commercial Frontage Shopping Malls Aspire Park Khalifa International Stadium and Precinct 	None	<ul style="list-style-type: none"> Commercial Offices Shopping Malls
Parks and Recreation		<ul style="list-style-type: none"> Al Shaqab Academy Oxygen Park Qatar Foundation Stadium and Precinct Golf Course 	<ul style="list-style-type: none"> Al Rayyan Stadium and Precinct
Landmarks (excluding parks and recreation)	<ul style="list-style-type: none"> Torch Hotel Aspire Dome (world's largest indoor multi-purpose dome) ASPETAR Hospital Villagio Mall Hayat Plaza 	<ul style="list-style-type: none"> Education City (Including top-ranked American university see Appendix E) Qatar National Library Mathaf: Arab Museum of Modern Art 	<ul style="list-style-type: none"> Mall of Qatar Al Refaa Wedding Hall

5. Pedestrian and Cycling Pathways

According to New Urbanism principles, walkability is promoted within areas of mixed use and mix density that provides transportation alternatives and appropriate landscaping. Walkability cannot be separated from a distinct urban design element; it is rather integrated as a tool and as a desired outcome for urban planning. This is done through the study of buildings by activities and density and transportation alternatives that are discussed in this chapter as well.

There are existing cycling and pedestrian tracks in both EC and AZ, as well as plans to have cycling and pedestrian tracks in Al Rayyan Gate. Currently, AZ and EC tracks are within district use. However, the cycling and pedestrian tracks are fragmented and cluster in certain areas mostly for leisure uses. The Ministry of Communication and Transportation are currently working on a cycling master plan that will also encourage walkability. Appendix D shows the cycling tracks in EC south campus and AZ. Walkability can be encouraged through quality urban design codes that promotes human scale development

b. The Regional Level:

6. Urban Design Codes

The lack of an active master plan and the development of many large-scale projects hindered the existing quality of urban design codes in Qatar. According to the United Kingdom Commission for Architecture and the Built Environment, urban

design codes consist of a three-dimensional master plan that is supported by a detailed narrative of issues related to urban design requirements. While the QNDF 2032 aims to create unified urban design codes, projects such as EC and AZ have their own design codes that are applied within individual project boundaries. However, while some guidelines such as building densities are applied, other issues such as landscaping are different from one project to another.

Many challenges can emerge from the lack of a unified urban design codes. Urban codes and design guidelines play an important role in creating walkable areas. The lack of guidelines can create fragmented and random neighborhoods, while codes can regulate the opportunities presented in the area. Also, codes can help in creating a sense of connection between the different districts in the city. The lack of united codes presents a challenge on connecting each district to another, such as the case of education city's north and south campuses that are intersected by Khalifa Avenue. Moreover, the urban design code will help in increasing accessibility and management of transit corridors.

2. Transit Corridors and Accessibility

The quality of the transit corridors and accessibility are vital for district existing. In this section three main transport are discusses, the roads, the railway and public transport. Figure 21 showed the existing roads, bus stations and proposed Metro stations for Alseej, AlShqab, and Bayya.

1. Roads: All of the three districts in the study are connected to major road development:

- **Baaya:** two major roads are connected to Baaya district. The first is Al Waab Street, the commercial heart of Al Waab. The second is Al Furuosia Street, connecting Al Rayyan North to Al Rayyan South.
- **AlShaqab:** work is currently in progress for the development of Khalifa Avenue connecting the heart of Doha to Dukhan. Alshaqab is connected by the development of Khalifa Avenue (currently Luqta Street) and Al Rayyan Street, which is also currently be expanded to become Al Rayyan Highway
- **AlSeej:** Al Seej is also connected by two major roads. First, Al Dukhan highway, which is expected to be completed by 2018. And, the other is the existing national day celebration Road (Al Riffaa Road) connecting Al Gharafa and Um Salal areas to Dukhan Road.

2. Railway: Qatar rail's first phase is expected to be in operation by 2019. In the first phase, three stops are designated for QF (Green Line: Education City, Al Shaqab, and Qatar National Library Station). There is

one station for Al Rayyan Gate (Green Line: Al Riffa Station) as well as one station for AZ (Gold Line: Sports City Station) (Qatar Rail, n.d.).

- 3. Public Transports:** Qatar bus services are handled by Mowasalat, which offers bus services for metropolitan Doha, including AZ and AlShaqab. Currently there are five bus stations for Baaya, six bus stations in Al Shaqab and one bus station for Al Seej (Mowasalat, 2016).



Figure 21: Existing Roads, Bus Stations and Proposed Metro Station

4.4 Expert Interviews

The expert interviews were semi-structured interviews intended to investigate the level of stakeholder involvement and legacy planning for Qatar 2022 world cup. Five interviews were conducted, a minimum of one interview for each of the selected case studies. The interviews were arranged by email that had the thesis abstract, To Whom It May Concern letter from the architecture and urban planning department, the consent form and Qatar University Institutional Review Board information, and finally, the interview questions (see Appendix C). Four Additional interviews were gathered from the thesis proposal stage are added. Figure 22 the main discussion themes discussed: strategic objectives, stadium construction and design, stakeholders and legacy.

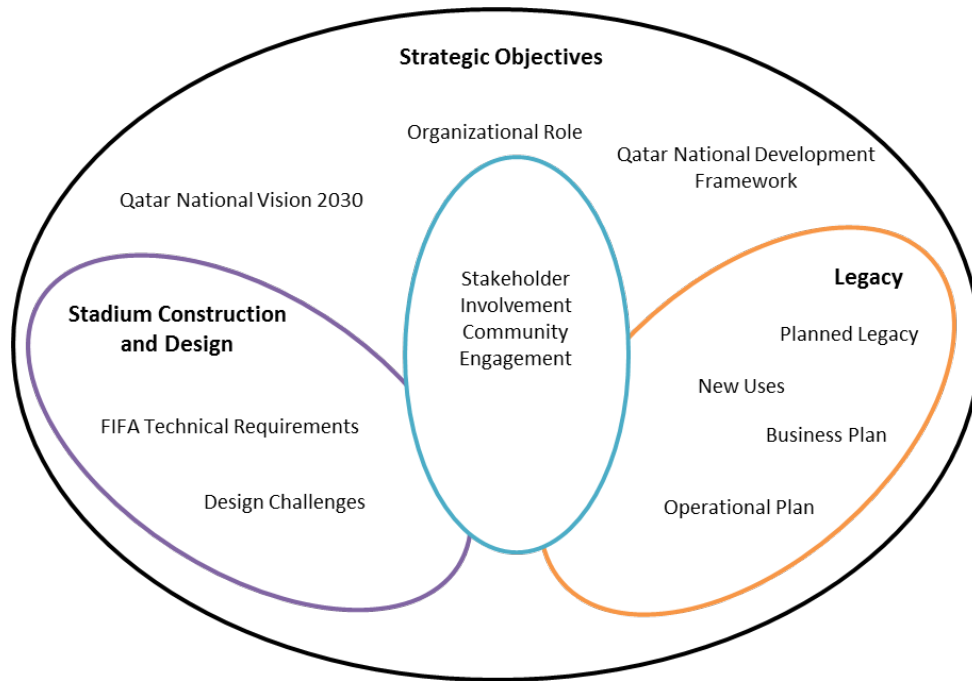


Figure 22: Expert Interviews Main Discussion Themes

1. Strategic Objectives:

The strategic objectives for hosting Qatar 2022 world cup came from Qatar national vision 2030, that was first introduced in 2008. The organization involved in the preparation and the delivery of Qatar 2022 World Cup infrastructure is in alignment with the Qatar national development framework.

2. Stadium Construction and Design:

Many factors impact designing and constructing facilities for the mega event. For the world cup, this includes the compliance to FIFA stadiums technical requirements, and managing to solve design challenges.

3. Stakeholders:

Stakeholder involvement and community engagement play an important part in the delivery of the Qatar 2022 World Cup. Primary stakeholders include entities that are directly responsible for the delivery of the 2022 tournament infrastructure, while secondary stakeholders were the stadium's users and the local community.

4. Legacy:

The planned legacy of Qatar 2022 plays a major role in creating an operational and a business plan for the post-tournament legacy mode. However, new uses can also be taking into consideration as part of the operational and business plan.

Table 7 shows experts' interviews discussion highlights in regards to the four main themes mentioned above and other sub-themes mentioned in figure 22:

Table 7: Expert Interviews Discussion Highlights

Theme	Discussion Highlights
Organizational Role	<ul style="list-style-type: none"> - SC is the umbrella for all the 2022 world cup projects - SC is responsible for designing, constructing and disseminating 2022 world cup stadiums and training sites - SC community engagement program strategy is to inform, consult and empower the local community. - AZF plays an important role as an experienced facility management entity in Qatar - AZF turf management program helps in maintaining a high resilient grass - Aspire Zone started as professional development facility but developed to become a health and wellness development with directions from higher management.
Strategic Objectives	<ul style="list-style-type: none"> - QF landscaping vision aims in creating a car-free campus - Transport strategy is needed to enhance area accessibility - Selection of stadium location was based on the local needs - A stadium can give opportunities for an area - Stadium design and construction takes around a minimum of 4 years
Design Challenge	<ul style="list-style-type: none"> - 2022 stadiums are in different timeline, and they are in different designing and construction phases - The deadline of mega-events sometimes comprises a good plan - Park and Ride concept is a good substitute for large parking spaces. However, the culture of park and ride is not very active - SC coordinate and reach out to both the primary and secondary stakeholders of the 2022 world cup
Stakeholders	<ul style="list-style-type: none"> - AZF and QF are the primary stakeholders of Khalifa and Al Qatar Foundation stadiums respectively. - Other stadiums with no private stakeholders will be owned by the Ministry of Culture and Sports. - Public entities are a supportive stakeholder. Private stakeholders are needed for investments opportunities.

	<ul style="list-style-type: none"> - Channel of communication between stakeholders is coordinated under the SC umbrella - SC community engagement strategy consists of four approaches, inform (now-2022), consult (now-2018), empower and involve (2018 onwards). - SC community engagement provided training workshop, roadshows, and Majilis visits to inform, consult, and empower - Local traditional needs are acknowledged in the design process - Representations of Qatar diver’s population into the design process alongside the Qatari population will provide more opportunities to attract people to Qatar. - Qatar Stars League clubs will be one of the main beneficiaries of the new world class stadiums - Khalifa stadium legacy is a bigger air conditioner stadium
<p>Community Engagement</p>	
<p>Legacy</p>	<ul style="list-style-type: none"> - Qatar Foundation stadium legacy will provide sporting facilities for QF community. - The legacy mode is impacted by the ability to scale down the stadium, its flexibility to convert from one use to another, and its connectivity with other developments - A stadium can be considered a public open space that can be used for other non-sport uses
<p>New Uses</p>	<ul style="list-style-type: none"> - Non-sport uses can include entertainment shows and events - Business incubators and commercial offices - Other uses that is operational and doesn’t need restructuring - The business plan is impacted by the maintenance budget and the flexibility of the facility to have different uses - The business plan should be considered from the designing phase
<p>Business and Operational Plan</p>	<ul style="list-style-type: none"> - Tournament Legacy mode will need its own budget to operate - Tournament stadium operator will be the most suitable operator of the stadiums in its legacy mode - AZA and QF both included the business plan in the design phase for Khalifa and Qatar Foundation stadium. <hr/>

4.5 AlRayyan Majlis Visits Report Analysis

The supreme committee community engagement program held a series of Majilis visits in Al Rayyan. The purpose of the Majilis visits is to have feedback from Al Rayyan local community. The outcome of the visits was based on expectation, concerns, and future engagement opportunities (see figure 23)

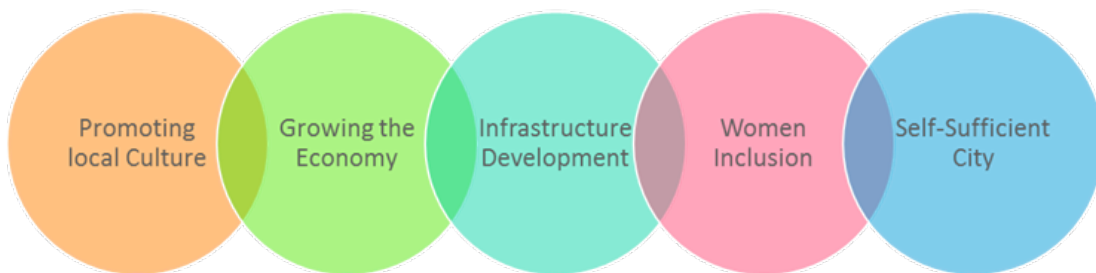


Figure 23: Al Rayyan residents expectations from Qatar 2022 World Cup

Al Rayyan residents expect that the 2022 world cup will help in promoting local culture through the recognitions of the values and history of the area. They also expect an impact on the growing the economy through bringing more businesses and facilities to the stadium, thus making it a self-sufficient city. The pressure to finish on time before 2022 will help in finishing the needed road infrastructure that is currently causing traffic issues. In addition to traffic, the resident expects localization of facilities with more Freejs, and opportunities for hosting traditional events such as camel racing.

An emphasis on the importance of women’s inclusion to these facilities that complies with Qatari traditions was also one of the expectations brought up by men and women. According to the residents, a major positive outcome of hosting the world cup in Al Rayyan is reducing the reliance on Doha and become a self-sufficient city. Table 8 shows Al Rayyan Residents expectations and concerns from Qatar 2022 World Cup at the local level:

Table 8: Al Rayyan Residents expectations and concerns from Qatar 2022 World Cup at the local level

Outcome	Expectations	Concerns
Promoting Local Culture	Support of local traditions through architecture and facilities that support hosting traditional events such as camel racing.	Losing local identity of Al Rayyan and Qatari national identity as a result of the international exposé accompanied by hosting the world cup
Growing the Economy	Facilities that creates economic opportunities such as hotels, restaurants, and shops.	Qatar Mall is seen inconvenient in opposite to Freej shops that are more appropriate for day to day needs.
Infrastructure Development	Infrastructure development is in place that is benefit for the long term	Traffic as a daily frustration and concern on traffic management during the tournament.
Women Inclusion	Women and Family oriented facilities	Stadiums experience does not fit with local tradition
Self-Sufficient City	Facilities that meet the local needs	Losing local identity and maintaining the Freej (neighborhood)

4.7 Conclusion

Chapter four presented the research findings that were based on the data collection, and analysis method mentioned in chapter three. In the site assessment, the data shows that the three selected areas have significant park and open space structures. This confirms that the selected district has a high potential for sport and recreation. However, all of the three districts have a special development project that almost covers the whole district plot, these special developments impact land use, and have zoning regulations that are different from one project to another.

In addition, a lack of mixed housing options and commercial uses are also affected by the special district developments. It is also noted that AlRayyan districts are planned to be low density, however, a need for diverse density will emerge with the emergence of the new metropolitan centers. Moreover, transit alternatives such as public transport and metro are taking place; however, the districts are still on their way to becoming more pedestrian friendly. Although there is a lack of a unified urban design code, communication between the public and private sector are driven by the unified strategic objectives of the country.

The expert interviews represent the stakeholder's highlighted challenges faced through the stadium design and planning process, in addition to ways forward to meet the legacy for Qatar 2022. Finally, the in-depth analysis from the Majilis visits shows that traffic and losing identity top the list of residents' concerns. While the expectations focus on family oriented facilities, economy growth, infrastructure development, and a self-sufficient city as a result of hosting the tournament.

Chapter Five: Research Findings, Interpretations and Discussions

5.1 Introduction

Chapter five will discuss the research findings presented in chapter four. The first part of this chapter will talk about applying new urbanism principles into the design of stadium districts. It will then discuss opportunities for urban design interventions in stadium districts, and give a final recommendation.

Firstly, the results of the adequacy scale mentioned in chapter three are discussed. The three districts are examined based on the adequacy scale rubric (see Appendix B). The adequacy scale measures the district character, uses, walkability, housing options, transit corridors, building densities, land uses, diversity of activities, parks, and open spaces and the quality urban design codes. Based on the adequacy results, key challenges of inadequate elements are highlighted, and discussed as the basis for the second part of this chapter.

Secondly, the chapter discusses opportunities presented for urban design interventions on Stadium districts. First, through a contextual examination of the technical context on opportunities presented at the regional, district and stadiums level. Second, mapping of stakeholders and stakeholder's roles and communication channels opportunities from a logistical context. Third, discussions on the stadium location, design flexibility, design process and stakeholder involvement from an operational context.

The last part of this chapter gives an overview of the existing planning process in Qatar, and defines the legacy of Qatar 2022. Finally, it presents some recommendations for creating an adaptive strategy through PPP.

5.2 Applying New Urbanism Principles into Designing Stadium Districts

It can be seen from the literature review that the challenges facing the design of stadium districts lay upon the fact that these are mostly single use districts. New urbanism has tackled the issue of urban sprawl caused by single usage, by providing design guiding principles. New urbanism promotes mixed used walkable areas that are the opposite to the single use stadium oriented districts. To investigate the extent of adaptability present in the selected three districts in Al Rayyan, a comparison of the nine guiding principles to the existing or the proposed district design is necessary.

From the research findings chapter 4, the site assessment played a major role identifying the level of compatibility with New Urbanism principles. To measure the degree of compatibility, an adequacy scale of measurement is used. The adequacy scale measures the level of existing or proposed urban design of the selected districts into four levels Table 9 shows the adequacy scale results (See Appendix 2 for full rubric):

1. **Very Adequate (4):** the level of urban design exceeds the requirements mentioned in New Urbanism principle

2. **Adequate (3):** New Urbanism principles is present or proposed to a full extent
 3. **Inadequate (2):** New Urbanism principles are present or proposed to a certain extent
- Very Inadequate (1):** there are no signs of existing or proposed principles

Table 9: Adequacy Scale Results

	←	→			
	Very Adequate (4)	Adequate (3)	Inadequate (2)	Very Inadequate (1)	
District		Bayya	AlShaqab	AlSeeij	
Character		4	4	3	
Mixed Use		4	3	4	
Walkability		3	3	2	
Mixed Income Housing		2	2	2	
Transit Corridors		4	4	4	
Building densities and land uses		3	2	3	
Diversity of Activities		4	3	4	
Parks and Open Spaces		4	4	4	
Quality Urban design Codes		3	3	1	
Percentage		86%	77%	75%	

Bayya scored the highest score of adequacy regarding existing or proposed urban design elements related to new urbanism principles. The district scored four in character, mixed use, transit corridors, diversity of activities and parks and open spaces. Bayya is mostly known as Aspire Zone. There is a significant lack of mixed-income housing, and most housing is for middle to the high-income population. Also, AZ holds its urban design code that was established by the AZF.

AlShaqab district is very similar to Bayya. It holds a distinguished character of being part of Qatar Foundation South campuses. It scored 4 in character, transit corridor, and parks and open spaces. It lacks commercial activities, although QF is considered a nonprofit organization. It is, however, known for its education facilities, including high ranked American universities, as well as for parks and open spaces including AlShaqb academy, Oxygen Park, and the soon to be open golf course and Qatar Foundation Stadium. Al Shaqab being part of QF has its individual urban design code.

Al Seeij, however, is an area under development. Two main projects are in progress, Al Rayyan Stadium and precincts, and Qatar Mall. It is intended to be a mixed-use development with a diversity of activities where people can live, shop, work at the same place. Currently, there are no clear urban design codes for the area, although the area is intended to be AlRayyan Gate, with a distinguished character as a Gate to a western expansion of the capital city Doha.

To understand the challenges facing the selected areas, a study of the master planning process is a must. This is especially true, since the three selected areas are

part of a special development that is not directly managed by the government. Each district had its timeline and phase planning process that impacted the integration of the new urbanism principles into its master plans:

- A. **Aspire Zone:** the main aim for the establishment of the sports city in 2003 is to create an international athlete-oriented sports hub. The area then developed to become more of a health and recreation hub, intended to engage the community in health, sports, and wellness. The district, however, was long before known for Khalifa International Stadium built in 1967 as Qatar National Stadium.
- B. **Qatar Foundation – Education City:** the development of QF in 1994 was focused on education with the establishment of Qatar Academy in 1994 (Qatar Foundation , n.d.). It then grew with the same purpose of education and research until 2001, with its first master plan focused on a single axis connecting the north and south campuses. The master plan grew significantly with AlShqab in 2005, till the announcement of the FIFA 2022 and Ashqal Expressway project in 2010.
- C. **Al Rayyan Gate:** the first development in Al Seeij Area is the development of Al Reffa Wedding Hall, a public, governmental wedding hall in 2014. The second development is Qatar Mall that is intended to be open in 2016. Like Aspire Zone, the district was known for Al Rayyan Stadium built in 2003. Al Rayyan Club has the biggest fan base in Qatar.

D. Key Challenge 1: Mixed-Income Housing:

One of the major challenges facing the areas in the study is the lack of mixed income housing options. This is mainly because the selected areas are special developments with their own specific vision. For one, AZ as an International sports excellence hub, and QF as an education, research and social hub. However, Al Rayyan Gate is the only district that is promoting a live, work, shop district theme, although they also are targeting a mid-income population.

Although there is a lack of adjacent housing options, the selected districts are surrounded by the district with much more housing options. In general, the majority of the housing market in Qatar is targeting mid-income population. According to Qatar National development framework there is a lack of affordable housing that can be tackled through increasing density and building typologies.

Key Challenge 2: Building densities and land uses:

All the three selected districts are low density, which was a factor in the lack of mixed income housing option mentioned above. However, most of the area has a minimum of two to three land uses including commercial use, parks and recreation, residential land use and others. AlShaqab currently has no existing commercial land use. However, since Al Shaqab and Bayya are both located within Al Rayyan new metropolitan centers (AlRayyan North and AlRayyan South) that will present the need for mixed density and mixed-use approaches.

Key Challenge 3: Walkability

Walkability in an arid zone like Qatar faces many challenges. Not only does it face high temperatures in the summer, but additionally, most of the year is considered summer time. Currently, walkability in Qatar is either a leisure activity, or can be seen in small neighborhoods. Walking to the mosques for prayer is the most walkable activity in the day. In addition to the hot climate, districts such as AlShaqab plan to be car-free zones, however walkability is still a challenge. Consideration such as shading, building orientation, and landscaping are important factors in promoting walkability.

Key Challenge 4: Quality Urban Design Codes

The last key challenge is the existence of a quality urban design code. Although AZ and QF have a distinguished character, the lack of a unified urban design code in Qatar is one of the major challenges in creating harmony between neighborhoods and districts. However, Qatar is undertaking large-scale projects, and some have individual urban design codes. These projects include Qatar Foundation, Aspire Zone, Meshrib, and Katara. Qatar's new master plan intended to solve this problem through an urban design compendium that includes guidelines on the urban form, connectivity, place-making, implementations, and building typologies (Qatar National Development Framework).

5.3 Opportunities for Urban design interventions on Stadium Districts

The three selected areas scored adequate or very adequate on character, mixed use, diversity of activities, transit corridors and parks and open spaces. This is influenced by factors such as location, master planning process, and management.

The location of the selected district is very significant and important to the expansion of Qatar's urban development. Both Bayya and AlShaqab will be the new metropolitan centers of Al Rayyan city. However, their location had a significant important feature before it was designated as a new metropolitan center. First, Bayya had Qatar's most historic stadium, Khalifah international stadium. Second, AlShaqab is also the heart QF project. Finally, Al Seeij district with Al Rayyan Club stadium, which has the biggest fan base in Qatar.

The master planning process also plays a significant role in providing opportunities for urban design interventions on stadium districts. The phase-by-phase planning approach in the selected districts can be categorized into three phases. Phase one is the inception of the project and its significant aim. Phase two includes the expansion of the project and its aims to a broader population. Phase three is the integration of the project to its surroundings. The phase planning process helps in taking into consideration local community needs and finance.

District management raises important questions on who are the key stakeholders? How are they involved in the planning and the production process? Moreover, how do these stakeholders interact to reach a common vision? To study the stakeholder involvement, the study of the technical, logistical, and operational context is a must.

5.3.1 Technical Context:

The technical approach to stadium district urban design interventions is divided into three levels. The first level is the regional level, how the district is connected and related to other districts and the city in general. The second level is the district level, how the district is connected, characterized, and managed. The third level is the stadium and its precincts. This includes stadium adaptability and flexibility.

a. Regional level:

According to new urbanism principles, regions and metropolitan centers should be supported by a strong transportation network and alternatives. Also, districts and neighborhoods should integrate the existing urban patterns of the region (CNU.). The district should prioritize connectivity with another district in the same regional level. However, connectivity should not only be through large transit corridors, but also a network of transportation alternatives including public transportation.

The three selected districts are all connected with major road projects. Bayya is connected through Al Furuosia and Al Waab Street. Al Shaqab is connected with Khalifa Avenue. Al Seeij is connected with Dukhan highway and Al Riffaa Road. The connectivity opportunities brought by these major projects are significant. Not only is each district connected through a major road development, but railway plans propose three metro stations in Al Shaqab, two metro stations in Bayya, and one

metro station in Al Seeij (see figure 19). The railway project is currently in progress and expected to be finished by 2019 (Doha metro).

Lastly, although a network of public transportation currently exists in the selected area, it is still lacking a significant connection due to major roads construction taking place. All of the six Al Shaqab bus stations are located in the south access to the area, while there is only one bus station in Al Seeij due to Dukhan highway constructions. Bayya is the only district that has north-south access through bus stations (see figure 18). Connectivity in a regional level appears to be a strong in the selected three districts. However, these opportunities need to be taken under high consideration to not be hindered due to budget or time constraints, since two of the major roads are still in the construction phase (Khalifa Avenue and Dkhan Road). In addition to the railway project that is significantly important as an alternative transportation mode.

b. District Level:

Like at the regional level, connectivity from one point to another is even more significant at the district level. Even though there is work in progress on district accessibility, inner-district connectivity through pedestrian and cycling networks is important. Although due to the Qatar hot climate, pedestrian and cycling network might not always be efficient. Each district needs to divide its inner pedestrian and cycling networks into zones in order it ensures connection within each zone. For extreme axis, alternatives such as the light rail that is proposed in QF can solve this issue.

It is also important for a district to have an identifiable character to promote its sense of place and connection. Landscaping is one of the tools that can show the connection and the character of the area. Urban design code plays an important role in defining the place character. A unified urban design code will help in creating a character for Al Rayyan city as a whole.

Finally, although AlRayyan municipality manages most of the districts, AZF and QF are key stakeholders of Bayya and AlShaqab since both districts are part of AZ and the EC project. A private business stakeholder increases the opportunities for a district utilization and usage through their needs in creating more opportunities for revenues.

c. Stadium and Precincts Level:

The opportunities for the stadium and precincts levels differ highly from the regional and district level. The first mostly focus on mixed uses and connectivity, the later focuses on adding and managing new or existing structures. On one hand, Qatar Foundation and AlRayyan stadiums capacity will be reduced after the World Cup; this leaves the upper tier space to be adapted for new uses. On the other hand, the space needed for stadium precincts during the tournament mode will need to be larger, and is needed for spectator flow and safety, more than the legacy mode. These present an opportunity of using an existing structure such as Aspire Park in AZ for other uses. The same case applies to Qatar Foundation stadium since it is in an urban

location. However, in the case of Al Rayyan stadium, new infrastructure is needed since the whole area is still under development.

5.3.2 Logistical Context

a. Identifying the Role of Stakeholder

The role of the stakeholders involved in the planning and delivery of the world cup does not simply stop after hosting the games. Stakeholder's role is important in ensuring the sustainability of the world cup legacy. Since 2014, the FIFA initiated a sustainability strategic plan for Brazil 2014, and Russia 2018. The strategy aims at engaging the local and international stakeholders to approach the challenges and opportunities that might arise in the event of hosting the world cup.

The first phase of the FIFA strategy takes place two years before the event, which includes the design and the construction of the needed facilities. The SC in Qatar plays an important role as the umbrella of all stakeholders' communication with regard to Qatar 2022 infrastructure and legacy. There are two categories of stakeholders - primary and secondary stakeholders. The SC has a dedicated department to coordinate and reach out to each category to have a common vision and mission. However, not all of the primary and secondary stakeholders are involved at the same time; some have different timelines than the other.

b. Mapping of Stakeholders Groups

According to the FIFA:

“Stakeholders are those individuals, groups of individuals or organizations that affect and/or could be affected by an organization ‘s activities, products or services.”

While there are two categories of stakeholders that can be considered as Qatar 2022 stakeholders, Table 10 shows the stakeholders of Al Rayyan Stadiums:

Table 10: Mapping of Stakeholders Groups

Primary Stakeholders	
Group	Examples
Event Organizers	FIFA, SC, Local Organization Committee
Host City	Al Rayyan Municipality
Governmental entities	Ministries e.g. Ministry of Economy and Commerce, Ministry of Labor, Qatar Olympic Committee
Venue Owner	Ministry of Culture and Sport, AZF, QF
Investors	Venue Operators and business owners
Commercial Affiliates	FIFA world cup sponsors and local supporters
Secondary Stakeholders	
Group	Examples
Community	Local and international community groups that are affected by the hosting of Qatar 2022 world cup
Other Football entities	Qatar Star League clubs
Attendees	Spectators, ticket holders, and Fans

Stakeholder groups can be further identified for each stadium. For example, venue owners, investors, commercial affiliates and other football entities may differ

from one stadium to another. While event organizers, governmental entities, the host city, community and attendees are almost the same for AlRayyan city stadiums.

c. Creating Channels of Communication

After identifying stakeholder's roles, and mapping of stakeholders group, it is important to see how these stakeholders communicate with each other. The existing channels of communication are under the SC. The SC has three designated department to facilitate with the identified primary and secondary stakeholders. The first is the non-competition venue and infrastructure department, dealing with the primary stakeholders' groups. The second is the community engagement department, dealing with the secondary stakeholder's groups. The third is the legacy department, dealing with both secondary and primary stakeholders groups

The strength of the current communication strategy is in having a unified platform run by the SC. This does not only ensure the alignment of the work of different stakeholders into one vision but also, helps to ensure that each stakeholder's needs are met and aligned with the hosting concept. Also, having a unified platform helps in meeting the deadlines, and assures challenges are sufficiently addressed in a timely matter. The unified platform creates more opportunities for communication.

Although there is a significant strength of the current stakeholders communication practices. Most of the communication is done with the stakeholders in matters related to the tournament itself. While there are strategies toward the legacy

of the tournament, the current strategies focus more on identifying the legacies, rather than the actual operational plans of the legacy. However, AZF and QF are the exceptions, being the venue owners, and taking into consideration that stadiums are now in different design and construction phases.

5.3.3 Operational Context

Since each stadium has a different design and construction timeline, approaching the issue from an operational perspective at once is challenging. In the case of Khalifa International Stadium, AZF has been managing the facility since 2006; this puts Khalifa stadium ahead of other stadiums since its own business and operational plan existed before its latest renovation in 2006. In Qatar Foundation's case, the stadium is yet to be built, whereas Al Rayyan stadium is being rebuilt in the same location. Both stadiums are yet to be tested in terms of their new operational plans.

Factors that influence the operational approach include opportunities presented by the stadium location and design, the process of the stadium design and stakeholders involvements. Table 11 shows an analysis of each factor for the selected stadiums:

Table 11: Operational context Analysis

Factor/Stadium	Khalifa International Stadium	Qatar Foundation Stadium	Al Rayyan Stadium
Location	Within existing development	Within existing development	Remote location near planned development
Design Flexibility	Iconic Stadium	Modular Stadium	Modular Stadium
Design Process	- Renovation of an existing structure - Business plan in place	- Stakeholders Involvements - Business plan in place	- Design and Build strategy
Stakeholders Involvements	Internal Stakeholders with SC supervision	Corporate to Corporate	Community Engagement program

Stadiums that are within an existing development have more opportunity to adapt to the surroundings, whereas a location that is remote needs more utilities to ensure its use and connection after the event. However, semi-remote locations, such as in the case of Al Rayyan stadium, with near planned development also has an opportunity for adaptability; however, it can take a longer time to be fully utilized.

The flexibility of the design also has a high impact on the operation and business plan of the stadium. As an iconic historical stadium, Khalifa stadium might not face the same challenges of utilization as is the case of QF and Al Rayyan Stadiums. However, both stadiums are modular stadiums, which give opportunities to have new sport and non-sport uses following the event.

The design process itself also plays an important role in the future use of the stadium. Taking into consideration the business plan in the design process increases its adaptability and utilization chances after the event. In the selected case studies, there are different approaches. However, each process was impacted by the location, design requirements, and stakeholder's involvement

Stakeholder's involvement was also different from one stadium to another. Khalifa Stadium has its own set of internal stakeholders and as an existing facility, the SC role was primarily supervising the stadium upgrading status to meet the FIFA requirements. QF involvement strategy was based on corporate to corporate practice to ensure the need of both SC and QF as venue owners are met. However, Al Rayyan Stadium as part of SC public stadiums supervision followed the SC community engagement program, and SC communications protocols. Figure 24 summarizes the opportunities for urban design interventions on the selected areas:

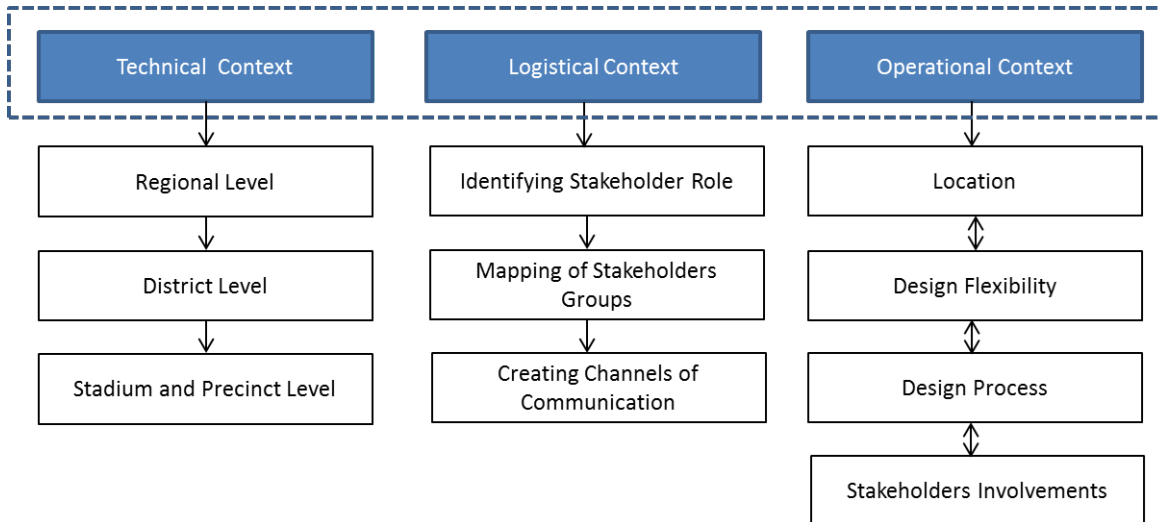


Figure 24 Urban design opportunities from technical, logistical and operational context

5.4 Toward a Public-Private Adaptive Strategy

a. Overview of Existing Planning Process in Qatar

The process of creating an adaptive strategy for cities hosting MSEs is largely impacted by the hosting city planning practices. While the Ministry of Municipality and Environment is responsible for overseeing Qatar’s urban development, there are other governmental entities with an impact on urban planning decision. Emiri decrees, advisory council, and the municipal council all have a significant role in the making the urban planning decisions in Qatar. It is also important to note that Qatar’s first master plan was introduced in 1975, however, many large scale developments took place separately such as Katara, the Pearl, Mesherib and Souq Waqif.

The SC in the selected case study context is the higher planning authority for Qatar 2022 infrastructure. Their role is also to coordinate with governmental entities such as the Ministry of Municipality and Environment. The Emir is also the president of the SC board of directors, which includes the Minister of Municipality and Environment, Minister of Finance, Minister of Culture and Sports, Minister of Transport and Communications, Minister of Development Planning and Statistics, and the president of the Qatar Football Association (QFA).

b. Defining the legacy of Qatar 2022

The Qatar 2022 evaluation bid book identifies three legacies for the 2022 world cup. The first legacy is a carbon-neutral world cup through the use of the new cooling technologies. The second legacy is the use of modular stadiums that can be partly dismantled and sent to developing countries. Lastly, is hosting the World Cup for the first time in the Middle East. However, these are not the only 2022 world cup legacies. The process of defining the legacy starts from the bidding process, but it does not stop when winning the bid or by the end of the tournament.

While the bidding process can be considered the cornerstone of defining the positive, planned, and tangible legacy, the preparation time will present opportunities or challenges that can create negative, not planned, tangible or intangible legacies. It is the role of the hosting city to address these challenges and opportunities in a timely matter (see figure 25).

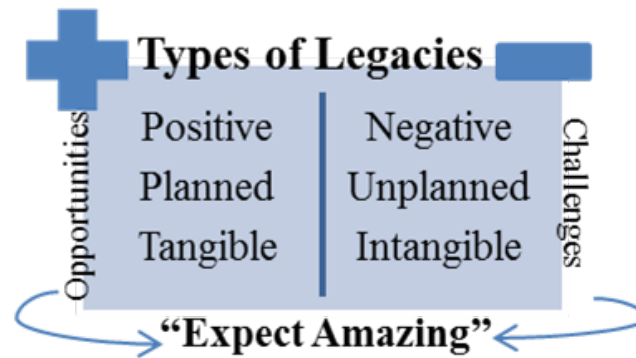


Figure 25: Types of Legacies

Although Qatar’s bidding concept had defined the three legacies mentioned earlier, factors such as time, budget, social pressure and stakeholder involvement impact the definition of Qatar 2022 legacies. While the first highlighted legacy for Qatar 2022 was the usage of new environmental friendly cooling technologies, in 2015 the FIFA agreed on moving the world cup tournament from summer to winter for the first time (FIFA, 2015). However, the SC confirmed its commitment to having the new cooling technologies as a legacy for the whole region.

While time will always be a factor in defining the legacy of hosting mega-events, the economics alongside time constraints present a challenge in defining and redefining the legacies. In December of 2015, Qatar announced its first budget deficit in 15 years (AlRayya,2015). However, cutbacks were not made on infrastructure development projects such as the ones related to the World Cup. It is also worth noting, that any future budget constraints still will be a tangible issue.

On the one hand, while time and budget will be a constant factor in defining and redefining the legacy of the 2022 world cup, social pressures have a great impact on defining the world cup legacy. The media outbreak on worker welfare in Qatar was one of the challenges in having a negative legacy for Qatar 2022 world cup. However, the SC created the worker welfare standards (SC) to ensure a positive legacy for the Qatar world cup. According to AlThawadi the SC secretary general:

“This Workers’ Charter is our pledge to ensuring a lasting positive legacy on the wellbeing of workers in Qatar.”

On the other hand, based on the SC community engagement program’s Majlis and Road Show surveys, the respondent perception of the legacy was mostly focused on factors that are related to the hosting of the world cup tournaments, rather than the opportunities that stadiums and its precinct can offer. While the majority of the roadshow participants responded that sports and football matches will attract them to a visit a stadium and its precincts, only 28% said they will visit a stadium for restaurants and cafes. It seems that the concept of a stadium and its precincts in Qatar is highly impacted by the resident perception of it as a sports venue only.

Lastly, stakeholder involvement, especially in the case of AZ and QF, plays a major role in defining the legacy of the Qatar 2022 world cup. As primary stakeholders, both AZF and QF are working on their own business and operational plans. While the legacy of other stadiums is defined by how the stadium can benefit its surrounding community, AZF and QF stadiums legacies are defined by how the stadiums can benefit AZ and QF developments.

It can be concluded that work on the cooling technologies and modular stadiums are in progress for creating the tournament legacy. However, after the world cup, modular stadiums and cooling technologies will only be the legacy of the stadium itself, the precinct and other legacies are different from one stadium to another. While there are many factors that impact the legacy of each stadium, working toward a public-private adaptive strategy will help in defining and planning a long lasting legacy for each stadium.

5.4 .1 Urban Design Interventions for Stadiums Adaptability

When studying stadium adaptability from urban design perspective it is important to assess the stadium utilization plans. Stadium utilization can be impacted by technical, logistical, or operational factors. For example, a stadium can be designed with the newest technologies at the stadium technical level; however, it may lack accessibility and a transportation network. Looking into stadium adaptability cannot be done unless taking into consideration the stadium flexibility, its operational plan, and recycling opportunities, all at once to determine the most suitable stadium adaptability plan for each stadium.

a. Operational plan:

Each stadium old or new can benefit from a well-studied operational plan. Each stadium operational plan is impacted by many factors. Factors include finance, local

culture and the stadium stakeholders. For example, female only sports day can be more appealing to the local culture in Qatar over other events. Additionally, the stadium finance and stakeholders, both public and private, will be more interested in creating an extensive operational plan that will depend on the plan return on investments for the stakeholders. Whether its revenue or prestige the operational plan is impacted by the stakeholder's budget and desired outcome.

The stadium operational plan is also impacted by the stadium flexibility. While stadium flexibility should be taken in the design phase, recycling stadiums to accommodate different uses is also an option.

b. Flexibility of uses:

A stadium can be designed to accommodate different uses without deconstruction. Figure 26 shows a Khalifa international stadium flexibility of uses depending of the flexibility of the playing field vs the stadium structure. Changing the playing field can be accommodated in the operational plan through changing the field only by season. In addition, a stadium itself has many rooms that can be used as student art studios during off seasons or meeting rooms for the local community committee. The opportunities of using a stadium are many; however, flexibility of uses can only be achieved through an operational and business plan.

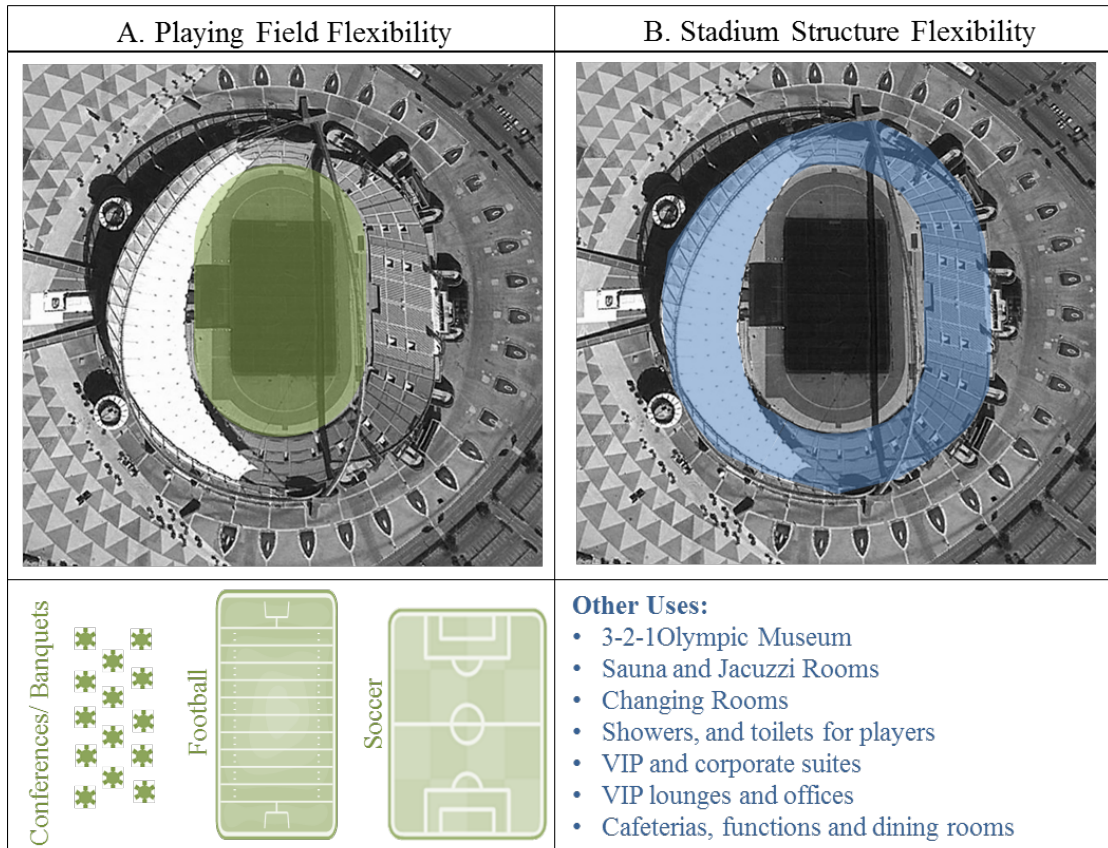


Figure 26: Khalifa International stadium flexibility options

c. Recycling:

Recycling a stadium can be done partially or fully to a stadium, figure 27 shows partial and total stadium transformation examples. The first example shows partial recycling through capacity reduction that is done through the use of modular seating similar to the ones intended to be in QF and Khalifa stadiums; this allows the stadiums operator to increase or decrease the stadium capacity. The second shows

façade transformation to commercial façade. The last example shows total transformation of the stadium to be used as a housing mixed use community. In addition, figure 28 shows AlRayyan stadium modular seating in match and legacy mode.

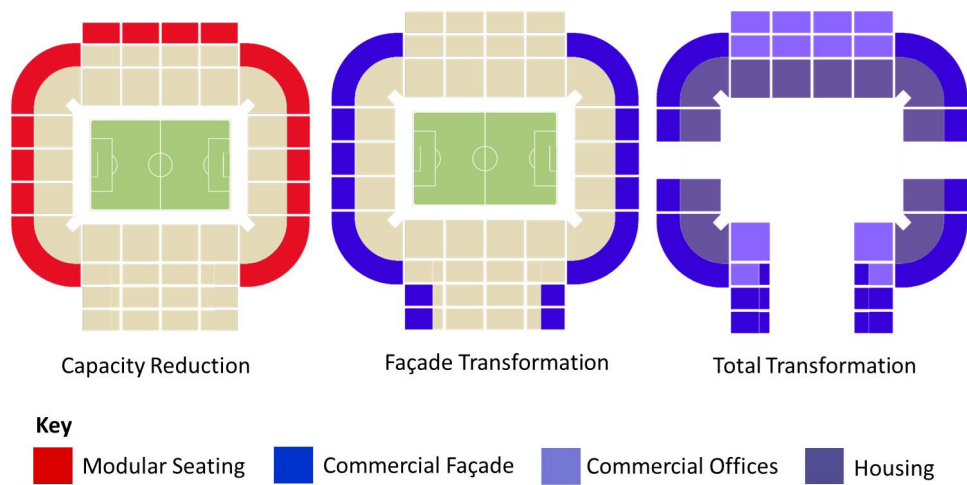


Figure 27 Stadium Recycling Options

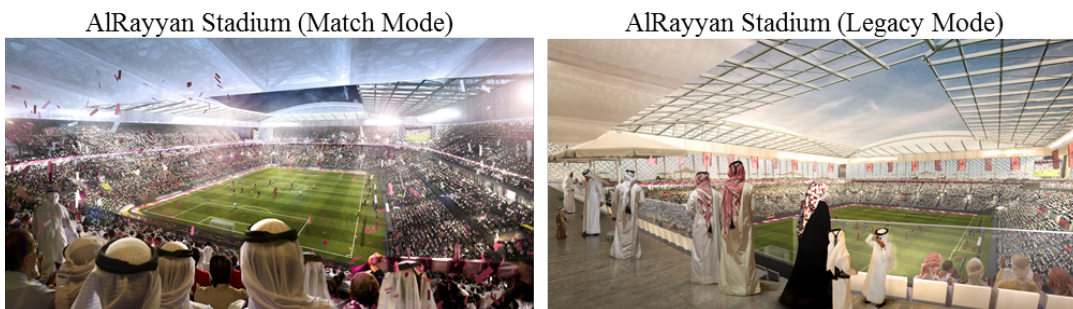


Figure 28: AlRayyan stadium modular seating match and legacy modes (Images courtesy of the Supreme Committee for Delivery and Legacy)

5.4.2 Towards Creating Stakeholder Engagement Process

Based on the discussion above, the following is a five steps process that can help in creating an adaptive public-private strategy for post-Qatar 2022 World Cup. The process is also driven by the three contexts mentioned earlier (see figure 29):



Figure 29: Public-Private Partnership Adaptive Strategy Process

- **Step 1: Creating Channels of Communication**

Currently, the SC is the umbrella for all 2022 projects. However, after 2022, another entity will need to take to their role to continue with the tournament legacy. While many can be potential entities the need to remain neutral is important.

Although the Ministry of Culture and Sport might be by the obvious example, Qatar Tourism Authority can cover a wider range of activities. That being said, the main entity that ensures the longevity of Qatar 2022 legacy can be an existing or new entity as long as it remains neutral and can oversee a wide range of activities. The role of the new entity is in creating channels of communication between the stadiums stakeholders. The role of the communication channels is to align the vision of all stakeholders and ensure there are no overlaps between them. It will also work as a platform for knowledge transfer, and provide sufficient responses to challenges that might arise in the operational phase.

However, communication channels should not be strictly linear, but rather created based on thematic grouping of the legacies. Figure 30 is an example of a communication channels model, where the neutral entity is the strategy management, the committees are the strategy owners and the public- private entities are the stakeholders.



Figure 30: Communication Channels Model Example

- **Step 2: Identifying the Strategy Goals**

The second step is identifying the goals of the strategy. It is important at this point to identify the extent of collaboration expected between the stakeholders. Creating common goals should not impact negatively on the stakeholders. Since the legacy is identified by the SC as part of sports, social, economic and environmental development, this can be the starting point of creating the strategic goal.

Stakeholders can start by identifying the goals of their own entity. A comprehensive list of goals can be shared for discussion and redefined and reduced as much as possible. The new list can be reassessed to meet the needs and the approval

of all the stakeholders. It is also important to note that at this point the goals are meant to be toward the overall legacy of the stadiums and its precincts.

The stakeholders also need to identify the goals for each legacy section. The previous list can also be used to identify the goals for each section. By the end, stakeholders will have a clear image of the needed extent of collaboration. However, it is important to note that stakeholders who are involved in public stadiums might not have as much reservation of stakeholders who are involved in private stadiums.

- **Step 3: Assessing Opportunities and Challenges**

After identifying the goal of the strategy, it will be clear at this point the extent of collaboration expected from each stakeholder. However, before setting the objective of the strategy, it is important to assess the opportunities and challenges that might present as a result of the public-private adaptive strategy partnership.

Assessing the opportunities and challenges will create a common ground for all stakeholders. Since stakeholders will have different opportunities and challenges, this step will help to transfer knowledge and to face the challenges in a more timely matter. Since each stadium will have different opportunities and challenges common standards of assessment will help in having smoother communication.

Table 12 is an assessment index that can be used as the basis of assessing the opportunities and challenges of urban design innovations from the technical and operational context mentioned earlier:

Table 12: Contextual Assessment Index of Opportunities and Challenges

Context	Opportunities and Challenges
Technical Context	
Regional level	Ex, Accessibility
District level	Ex, distinguish character, connectivity,
Stadium and Precinct level	Ex, Modular stadium, historical stadium, limited precinct
Operational Context	
Location	Urban, Semi-Urban or Rural development
Design Flexibility	Ex. Modular stadium
Design Process	Ex, Renovation of an existing structure, business plan in place, design and Build strategy
Stakeholders involvement	Ex, Internal Stakeholders, Corporate to Corporate, Community Engagement program

- **Step 4: Setting the Objectives**

After assessing the opportunities and challenges that face the adaptability of the stadiums following the World Cup, the following step is intended for setting the strategic objectives. Each objective will fall under one of the four legacy sections identified by the SC. The sport, social, economic, and environmental development sections will each have individual sets of objectives. Some objectives will be much more relevant than others depending on the stakeholder’s level of involvement.

In case some objectives are too broad for the strategy, for example, the issue of worker welfare, the goals of the strategy must be revisited. The purpose of setting the objectives is to focus on the issue of stadium adaptability in light of the overall legacy of the 2022 world cup. Whenever the proposed objective is not directly affecting the issue of adaptability, it should be excluded and reported to the appropriate entity.

- **Step 5: Creating the Action Plan**

The last step is creating the action plan. In this stage, the goals and the objectives of the strategy are identified, and the opportunities and challenges of the stadiums are assessed. And finally, the extent of collaboration between stakeholders is set. In the action plan, the previous steps are further elaborated, a proposed timeline is created, and the ownership of each action is delegated for each stakeholder. The action plan will be the final step of the adaptive strategy ensuring commitment of the stakeholders to the legacy.

However, there are many challenges that can emerge in the implementation of the action phase. For one, having a neutral entity provide a discussion platform does not guarantee the commitment of the stakeholders during the implementation phase. The role of the municipality is important to ensure that the expectations of both the public and private stakeholders are met. An ongoing dialogue should help the residents to be aware of plans, and be able to report any misconduct.

In the case of the selected stadiums, Al Rayyan Stadium ought to be the biggest challenge, although technically semi-remote locations have great opportunities for bigger development, the lack of clear operational plan is a challenge due to the fact that the stadium is currently only publicly owned by the government. Opening business opportunities for a stadium operator and private investors can help in increasing the stadium adaptability post the tournament.

Being part Al Rayyan gate project that is still underdevelopment, the stadium and its precinct are an important development, especially given the closeness to Mall of Qatar, which will be Qatar's biggest mall. Failing to successfully integrate the stadiums into the surrounding will result in a fragmented district, and mostly single use area because of the domination of the Mall of Qatar due to its large size.

5.4 Conclusion

This chapter discussed the core issues of this thesis, the adaptability of stadium precincts and PPP toward a future adaptive strategy. Starting with a discussion based on the adequacy scale on stadiums districts, to opportunities for urban design interventions, and the adaptive strategy.

The adequacy scales shows that the main challenges facing stadiums districts in Al Rayyan municipality are the lack of housing options, low density, walkability and the lack of unified urban design code. However, opportunities for urban design interventions have exceeded the challenges. For instance, the development of infrastructure creates more opportunities for connectivity at the regional level, while

special developments, such as AZ and the EC, have given an identifiable character on the districts level.

Moreover, the use of modular stadiums also presents opportunities for future reuse. However, stakeholder involvement in the planning phase and planning to be part of the stadium post-tournament operational plan is vital. The stakeholders are divided into two categories, primary and secondary stakeholders, that included both the public and the private sectors, and currently the SC plays an important role in creating channels of communication between all of the stakeholders. The need of another post tournament entity to oversee the legacy implementation is important.

Finally, the legacy of the world cup will mainly be affect by time and budget, and in order to ensure a long lasting legacy, stakeholder's involvement should be active from the planning phase to create channels of communication, identify and set the strategic goals and objectives, assess the opportunities and challenges, and create the action plan.

Chapter Six: Conclusion and Recommendations

6.1 Introduction

This chapter aims at answering the research question, to what extent are Qatar 2022 World Cup stadiums is adaptive to the precincts? What impacts the adaptability of Qatar 2022 World Cup Stadiums? How can an Adaptive strategy through PPP take place for post 2022 World Cup? These questions will be addressed through the interpretation of the results discussed in chapter four and five.

The chapter will also present recommendations driven from chapter five's discussion on urban design interventions for post MSE stadiums adaptability. In addition, it will highlight the significance of the research by discussing why this research is important to cities planning to host MSEs, and what its contribution to the field of urban planning and design of sport oriented districts in specific, and tourism oriented district in general. Finally, the chapter is concluded with final recommendation and a discussion on the research limitation and of further research.

6.2 Qatar 2022 World Cup Stadiums Adaptability:

Adaptability of stadiums and precincts of cities hosting MSEs is a challenging issue. The challenges facing MSE hosting cities center on the development of sport oriented infrastructure. The adequacy scale discussed in chapter five aims at measuring the adaptability of the stadiums districts as single use developments. Stadiums districts can cause urban sprawl if it has unused sport facilities. The

adaptability of stadium precincts faces many challenges, but opportunities can also be recognized through the results of the adequacy scale.

There are many challenges facing the adaptability of stadiums precincts post Qatar 2022 world cup in Al Rayyan municipality. Al Rayyan city is under Doha metropolitan city, and is characterized by low-density developments. Challenges facing stadiums in Al Rayyan municipality include the lack of housing options due to low-density regulations. However, although the districts are low density, walkability and fragmentation are a result of the lack of unified urban design code. Moreover, many opportunities are found to increase the stadium precincts adaptability.

According to the adequacy scale opportunities for adaptability can be found at the regional, district and the stadium level. Modular stadiums present many opportunities for future uses; however, infrastructure development presents the greatest opportunity that can increase connectivity at the regional level. In addition, special developments such as AZ and the EC have given the districts a distinguishable character and increased the role of private stakeholders.

The opportunities of AlRayyan municipality stadiums adaptability have surpassed its challenges. However, challenges such as walkability, the lack of unified urban design code, housing, and building densities are all beyond the scope of the stadiums' owners. The extent of Qatar 2022 stadium adaptability to its precincts is promising, especially for stadiums that are within an existing urban development. However, the extent of stadium adaptability is impacted by factors that include stadium location, flexibility, the design process and stakeholder's involvements.

6.3 Factors impacting Qatar 2022 World Cup Stadiums Adaptability:

According to the FIFA 2011 technical requirements, there are three locations that need to be taking into consideration when building a stadium; these include urban locations, semi-urban, and rural locations. Each location has its own pros and cons. For example, urban locations are easier to access, but are smaller and more expensive. However, semi-urban locations can be larger such as in the case of Al Rayyan Stadium, but lack infrastructural development. Urban locations, such as in the case of QF and AZFF, which exist in developed precincts, have better opportunities for future use. However, location is not the only factor that impacts stadiums adaptability.

The design process and flexibility are also important factors that impact the adaptability of stadiums post a MSE. While the World Cup stadiums are single use stadiums designated to football only, the flexibility of the design to convert to other uses needs to be considered during the design process. Although the design process is impacted by time and budget constraints, optimization of the stadium flexibility should always be a priority. In Qatar's case, the modular stadiums alone are not enough and should be accompanied for post 2022 operational plans.

Stakeholder's involvement in the design process is also one of the major factors impacting the adaptability of Qatar 2022 stadiums. The involvement of the stakeholders in the case of AZF and QF as private stakeholders in the design process present great opportunities for the development of post 2022 operational plan. Al Rayyan stadium remains the most challenging for its semi-remote location, and the lack of clear post 2022 operational plan. As seen in the case study examples

mentioned in chapter two, the existing of private stakeholders that are interested in producing revenues can increase the stadiums utilizations post a MSE. Stakeholder's involvement can be encouraged through creating a PPP process that aims at creating a post MSE adaptive strategy.

6.4 The Process of Creating Public-Private Partnership (PPP):

The first step of creating an adaptive strategy through PPP is through creating a common communication platform. The platform is created through mapping of stakeholders and identifying their roles in the strategy. In Qatar's case the SC is consider the umbrella for all stakeholder communication for the 2022 World Cup preparation. However, there is a need for another neutral entity that can take the role of the SC following the 2022 World Cup. This entity should have the interest of a variety of stakeholders, such as the Ministry of Sports and Culture or Qatar Tourism Authority, at heart. The stakeholders will then identify the strategic goals and objectives.

The second step of the process is identifying the goals and objectives of the strategy. First the extent of collaboration expected between stakeholders needs to be identified. The goals should not have a negative impact on the stakeholders. According to the SC, Qatar 2022 legacy will be based on sports, as well as social, economic and environmental development. Each stakeholder can propose their desired legacy in order to create a comprehensive list. The strategy objectives will

also be listed under four legacy sections identified by the SC. The sport, social, economic, and environmental development sections, however, are only identified after assessing the opportunities and challenges that faces Qatar 2022 stadiums precinct adaptability.

Assessing the opportunities and challenges helps in creating a common vision for all involved stakeholders. Although stakeholders will have different challenges and opportunities, the discussion will create a platform for knowledge transfer and create opportunities for facing the challenges in a timely matter. The action plan is the final step of creating an adaptive strategy, however, although the strategic goals and the objectives are identified and the opportunities and challenges of the stadiums is assessed, time and budget constraints should be recognized through a proposed timeline, and the designation of action ownership for the strategic objectives.

6.5 Recommendations:

Planning the development of MSE infrastructure should be beyond the temporality of the event. Although many hosting cities plan the event legacy, sometimes even at the bidding stage such as in the case of Qatar; the planning needs to be done through a holistic approach that is done at the national and the local level. For example, the development of Qatar Foundation stadium within the EC boundary and AlRayyan South metropolitan center where the infrastructure and the population are available will ease the stadium integration after the event. Selecting a location that

is not only developed, but is dynamic and ensures that the stadium is considered at the national development level will increase the stadiums post event adaptability. However, the stadium development also needs to be aligned with the national vision through pre-event operational planning in the stadium design phase.

Incorporating operational planning in the stadium design phase encourages a holistic outlook in the stadiums' pre-design and post-event phases. Integrating the business and operational plan while the stadium is in the yet to be constructed or upgraded will optimize the stadiums post event utilization and adaptability. The case of Khalifa International Stadium shows a great example of operational planning. The AZF, being the main stadium stakeholder, has worked for years to integrate the stadium to its surroundings through creating cycling paths or the reuse of the training fields. Having a separate operation entity brings up more opportunities for adaptability and reuse. However, the involvement of all the planning stakeholders is essential for integrating the plans through a holistic approach.

Stakeholder's involvement from the planning phase is important. Although not all stakeholders might be involved at the same time, a timeline needs to be set for each group of stakeholders to accommodate their needs from the planning phase. In Qatar's case, the SC did the initial feasibility study on the stadium location such as in the case of AlRayyan stadium, while the involvement of AlRayyan community as end users stakeholders was done through the community engagement department at the SC. In the other cases, the stakeholder engagement was through corporate to corporate discussions, such as in the case of Qatar Foundation and Khalifa stadiums.

Stakeholder's involvement should adhere to the stadium planning and construction timeline, and the different stakeholder groups based on each stadium needs.

6.7 Limitation and Further Research Recommendations:

Time and data limitation have been the major factors that impacted the selection of sample. Choosing AlRayyan Municipality presented many research opportunities due to the existence of development of the selected districts. However, AlRayyan Stadium was the main challenge by the lack of the completion of the development such as AlKhor and AlWakra stadiums as other examples in Qatar. In addition, although such studies are important in the planning phase of a MSE, data acquisition was challenging, as its changes frequently.

Further research can be done on semi-urban and rural areas. While the case studies selected have good adaptability potential, AlRayyan stadiums remain the most challenging due to its semi-urban location. In addition, further research can be made on cities that are in the bidding process of hosting a MSE; this can help in creating a better adaptive strategy that is embedded in the bidding process.

MSEs have been presenting many development opportunities for hosting cities. Cities need to investigate the infrastructure development opportunities from the bidding phase. Planning the legacy before hosting the games can have a high impact on the hosting concept and the event experience. Time and budget are the top

challenges facing MSE legacies. Advanced legacy planning will help in optimizing the legacies of the MSE infrastructure that is aligned to the local needs.

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Appendixes

Appendix A: 1FIFA temporary facilities infrastructure



Appendix B: Adequacy Scale Rubric

Adequacy Scale Rubric based on New Urbanism Principles

Element/Score	4	3	2	1
Character	Identifiable as a whole district by the residents	Some areas are identifiable by the residents	Certain landmarks are identifiable by the residents	No identifiable areas by the residents
Mixed Use	More than 4 uses	3 To 2 uses	1 use	None
Walkability	Pedestrian pathway for accessibility and leisure	Pedestrian pathways for accessibility only	Pedestrian pathways for leisure only	None
Mixed Income Housing	4 and more housing options	2 to 3 housing options	1 to 2 housing options	None
Transit Corridors	Roads, railway and public transports	Roads and railway only	Public transports only	None
Building densities and land uses	High density and a minimum of 3 land uses	Medium density with 4 land uses or low density with 5 land uses	Low density and a minimum of 2 land uses	Low density, with single land use
Diversity of Activities	Civic, Institutional, and commercial activity	Only 2 types of activities	Only 1 type of activities	None
Parks and Open Spaces	Parks and Open Spaces	Parks only	open spaces only	None
Quality Urban design Codes	Graphic and writing requirements	Graphic requirements only	writing requirements only	None

Appendix C: Expert Interviews Questions

Supreme Committee for Delivery and Legacy Interview Questions

- 1- Can you please talk about your role or your organization role in Qatar 2022?
- 2- In what way are you or your organization involved in the preparation of Qatar 2022 sports infrastructure?
- 3- Who are the main stakeholders of Qatar 2022 legacy?
- 4- Can you please explain to me the role of Jeeran local engagement program?
- 5- What were the selection criteria for choosing the stadiums and their location?
- 6- How was the decision made on re-building, refurbishing, or building new stadiums?
- 7- What are the major challenges of reusing Qatar 2022 Stadiums?
- 8- What type of new uses is planned to be introduced to Alrayyan municipality stadiums and precincts? (AlRayyan Stadium, Qatar Foundation Stadium and Shaik Khalifa International Stadium)
- 9- Who are/could be potential stakeholder of involved in the mentioned stadiums master plans?
- 10- How can the stadiums and its precincts remain sustainable?
- 11- Who is the targeted population for the community engagement program that you worked with or planning to work with before 2022?
- 12- To what extend does the participants influence the master planning of Qatar 2022 stadiums design for and post the tournament (legacy mode)?
- 13- Who are the public or private stakeholders of the community engagement program?
- 14- What future plans or timeline do you have for community engagement?
- 15- What is the role of the legacy department in Supreme Committee for delivery and legacy?

16- What is the planned legacy for Qatar 2022 world cup? And is there a timeline for before, during and post the tournament?

17- To what extent does the legacy department involved in the delivery of its planned legacy?

Aspire Zone Foundation Interview Questions

1. Can you please talk about your role or your organization role in Qatar 2022?
2. In what way are you or your organization involved in the preparation of Qatar 2022 sports infrastructure?
3. In what way can Shaik Khalifa International stadium be used post Qatar 2022 world cup?
4. Who are the main stakeholders of Shaik Khalifa International Stadium?
5. To what extent are these stakeholders involved in the master planning and delivery process?

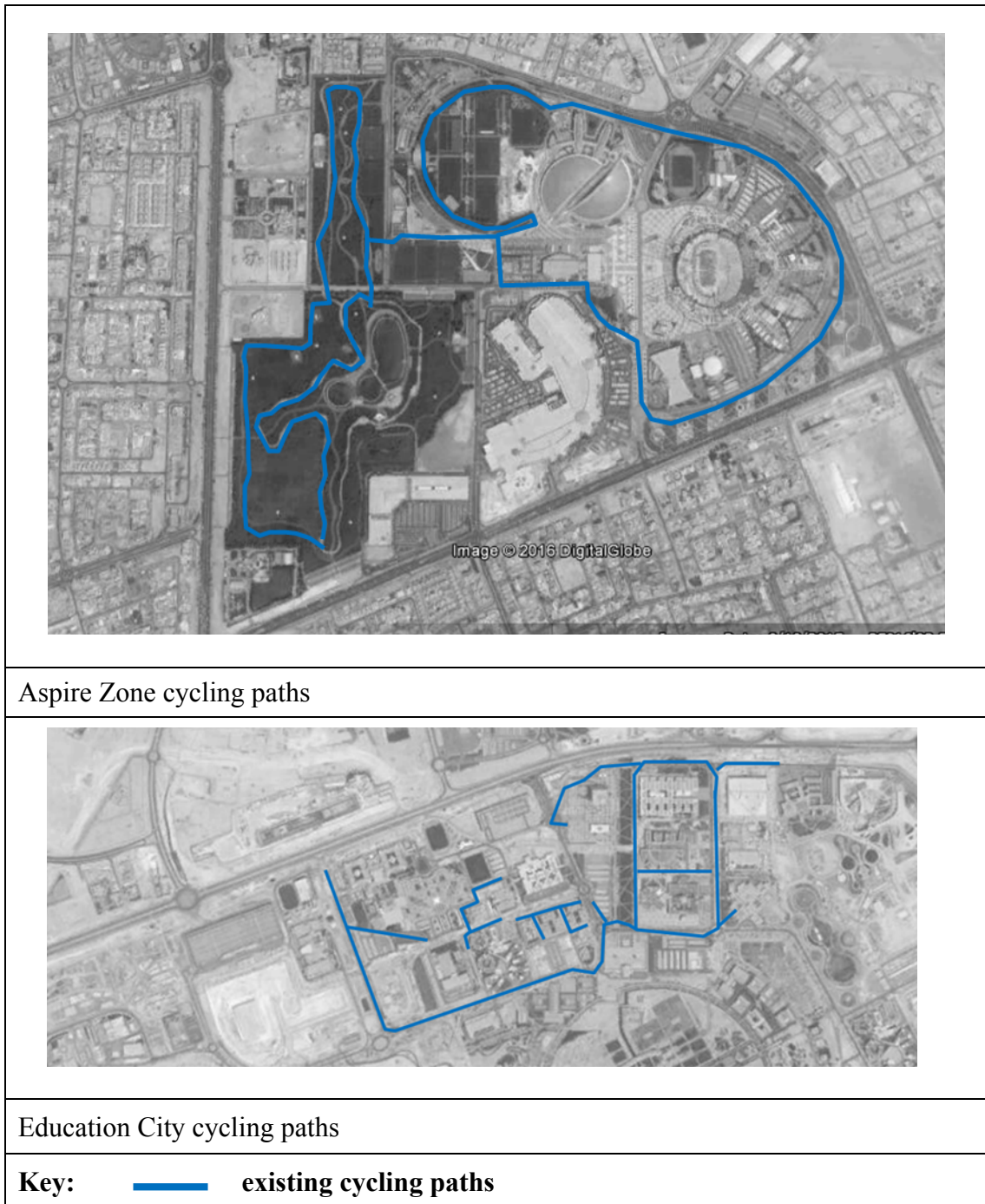
ASTAD Project Management

1. Can you please talk about your role or your organization role in Qatar 2022?
2. With all the expected changes requirement of FIFA after Russia 2018 how is the QF stadium stakeholder's communication is going and what challenges does it face?
3. When challenges arise to reduce the stadium legacy versus the stadium quality which one is chosen over the other?
4. There are three health and wellness large project in Qatar Foundation; Al Shaqab, QF stadium and the oxygen park. How does all these parks are linked and integrated in the Education City?
5. What are the utilization expectations of QF stadium and its precincts in the legacy mode?
6. Is the local/cultural needs are taking into considering in the stadium design?

Other Experts Interview Questions

1. What can be done in order to avoid abandoned sport facilities post 2022 world cup?
2. What are the major challenges of reusing Qatar 2022 sport facilities?
3. What are some examples of successful reused sport facilities worldwide or in Qatar?
4. What type of new uses can be introduced to sport facilities in Qatar?
5. Who could be potential stakeholder of these new uses?
6. How can these new used facilities remain sustainable?
7. Any other thoughts....

Appendix D: Aspire Zone and Education City Existing Cycling Tracks



Appendix E: Education City Schools and Universities

Schools	Program	Degree/ Certificates
HBKU Law School	Juris Doctor program	JD
HBKU College of Science and Engineering	Master's and Ph.D. in Biomedical and Biological Science, Master's and Ph.D. in Sustainable Energy and Sustainable Environment, Bachelor of Science in Computer Engineering, Executive Master in Energy and Resources	Ph.D., MS, B.S.
HBKU Translation and Interpreting Institute	M.A. in Translation Studies, M.A. in Audiovisual Translation	MA
HBKU Faculty of Islamic Studies	M.A. in Islamic Studies in Contemporary Fiqh, M.A. in Public Policy in Islam, M.Sc. in Islamic Finance, M.A. in the Study of Contemporary Muslim Thought and Societies, M.A. in the Islamic Studies in Comparative Religions, M.Sc. in the Urban Design and Architecture in Islamic Societies, Diploma in Islamic Finance, Diploma in Public Policy in Islam, Diploma in Islamic Studies	M.A., M.Sc., Diploma
Virginia Commonwealth University in Qatar	Design Studies, Fashion Design, Graphic Design, Interior Design, Painting & Printmaking, Foundation Courses, Non-credit community classes, Non-credit portfolio development classes	MFA, BFA
Academic Bridge Program	Co-educational, pre-university preparatory program. English, Science, Math, IT.	Certificate of Completion.
Weill Cornell Medical College in Qatar	Pre-Medical Program, Medical Program	MD
Texas A&M University at Qatar	Chemical Engineering, Electrical and Computer Engineering, Mechanical Engineering, Petroleum Engineering, Chemical Engineering, Chemical Engineering	BSc, MS, M Eng.

Carnegie Mellon University in Qatar	Biological Sciences, Business Administration, Computational Biology, Computer Science, Information Systems	BSc
Georgetown University - School of Foreign Service in Qatar	Foreign Service and International Politics, Foreign Service and Culture and Politics, Foreign Service and International Economics, American Studies, Arab and Regional Studies	BSc, Certificate in American Studies Certificate in Arab and Regional Studies Youth Programs
Qatar Academy Sidra	Co-educational, English medium school, Preschool 3 to Grade 8, Arabic, Arts, English, Islamic Studies, Math, Physical Education, Sciences, Technology, Humanities/Social Studies, Foreign Language	
Northwestern University in Qatar	Journalism, Communications	BSJ, BSc
HEC Paris in Qatar	Executive MBA, Specialized Master's Degree	Business Administration, Strategic Business Unit Management MA, MSc, MA
University College London Qatar	Archaeology of the Arab and Islamic World, Conservation Studies, Museum and Gallery Practice	
Qatar Academy	Bilingual, co-educational. KG to Grade 12. Arabic, Arts, English, Islamic Studies, Math, Physical Education, Sciences, Technology, Humanities/Social Studies	International Baccalaureate (IB) Diploma.
Awsaj Academy	Bilingual, co-educational. Grades 1 to 12. Math, English, Social Studies, Science, Arabic, Physical Education, Islamic studies, Art, IT, Health	Youth Programs