



OLYMPIC GAMES: IMPACTS ON HOST CITIES SUSTAINABLE DEVELOPMENT

By

Noorhan Mustafa Hanafi Hussein

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
Architectural Engineering

OLYMPIC GAMES: IMPACTS ON HOST CITIES SUSTAINABLE DEVELOPMENT

By Noorhan Mustafa Hanafi Hussein

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
In
Architectural Engineering

Under the Supervision of

Prof. Dr. Ahmed Salah Eldin
Ahmed Ouf

Professor of Urban Design and
Community development
Department of Architecture
Faculty of Engineering, Cairo University

Prof. Dr. Ahmed Mohamed Saeed
Shalaby

Professor of Urban Design and Community
development
Department of Architecture
Faculty of Engineering, Cairo University

Dr. Sherin Aly Ahmed Gammaz

Assistant Professor
Department of Architecture
Faculty of Engineering, Cairo University

FACULTY OF ENGINEERING, CAIRO UNIVERSITY GIZA, EGYPT 2017

OLYMPIC GAMES: IMPACTS ON HOST CITIES SUSTAINABLE DEVELOPMENT

By Noorhan Mustafa Hanafi

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
Architectural Engineering

Approved by the
Examining Committee
Prof. Dr. Ahmed Salah Eldin Ahmed Ouf, Thesis Main Advisor
Prof. Dr. Ahmed Mohamed Saeed Shalaby, Thesis Advisor
Prof. Dr. Mohamed Mohamed El Barmelgy, Internal Examiner
Prof. Dr. Yehia Mostafa Mohamed, External Examiner Professor of Architecture and Vice Dean for Graduate Studies - Faculty of Fine Arts Alexandria University

FACULTY OF ENGINEERING, CAIRO UNIVERSITY GIZA, EGYPT 2017 Engineer's Name: Noorhan Mustafa Hanafi Hussein

Date of Birth: 24/3/1991 **Nationality:** Egyptian.

E-mail: eng.noorhanhanafi@gmail.com

Phone: +202 - 01113332846

Address: 2 A Faisal St., Giza, Egypt

Registration Date: 1/10/2012 **Awarding Date:**/2017 **Degree:** Master of Science

Department: Architectural Engineering

Supervisors:

Prof. Dr. Ahmed Salah Eldin Ahmed Ouf Prof. Dr. Ahmed Mohamed Saeed Shalaby

Dr. Sherin Aly Ahmed Gammaz

Examiners:

Prof. Dr. Yehia Mostafa Mohamed (External

Examiner)

(Professor of Architecture and Vice Dean for Graduate Studies - Faculty of Fine Arts - Alexandria University)

Prof. Dr. Mohamed M. El Barmelgy (Internal

Examiner)

Porf. Dr. Ahmed Salah Eldin Ahmed Ouf (Thesis

Main Advisor)

Porf. Dr. Ahmed Mohamed Saeed Shalaby (Thesis

Advisor)

Title of Thesis: "Olympic Games: Impact on Host Cities

Sustainable Development''

Key Words: Olympic Games; Sustainable Development; Urban

Transformation; Mega-events.

Summary:

The aim of the thesis is to explore the Olympic Games' impact on the host cities as a tool for sustainable development in different aspects; socially, environmentally, economically and governmental.

The research deals with three main case studies, Beijing Olympics 2008, London Olympics 2012 and Rio Olympics 2016 to show different development impacts in the host cities.

The study ends with recommendations on ways the Olympic Games assist city development on the long run.



Acknowledgments

"Sometimes the most inspirational moments don't involve medals at all"

I would like to express my gratitude in words to all those people who helped me in bringing this thesis into existence. Firstly, the accomplishment of this thesis benefits of the help of my honorific supervisor, Prof. Dr. Ahmed Salah Eldin Ahmed Ouf, who accepted me as his Master's research student and for his warm support for being my main supervisor till the end. Prof. Dr. Ahmed Ouf has directed me through his experts advise and Pre-master's lectures, which helped me a lot to open my mind to a new world of research thinking. A research that encouraged me to combine my passion for sports with my study and work field expressing it through a wonderful research work. Also, I would like to thank him not only for his tremendous academic and knowledge support, but also for his help and support until the very end I wouldn't have finished my dissertation successfully.

Many thanks to my second advisor Prof. Dr. Ahmed Mohamed Saeed Shalaby with his enthusiasm and willingness to help me in solving the confusions and assisting me with the final approach to my thesis results. It has been an amazing short experience.

Furthermore, I would like to show my grateful feeling to Dr. Sherin Gammaz, who once taught me and was my project supervisor on my graduation project. Dr. Sherin Gammaz has assisted and directed me through my thesis study period. Thereafter, she offered me so much advice, patiently supervised me, and always guided me in the right direction. To whom I wouldn't have finished my thesis without her incessant encouragement and support throughout my study period.

Finally, thanks, but not least, to me, my mother, my father, my brother and my sister for being there for me and supporting me the way long. They are the most important people in my world and I dedicate this thesis to them.

Table of Contents

Acknowled	gments.		V
Table of Co	ntents		vi
List of Tabl	les		xii
List of Figu	res		xiv
Nomenclatu	ıre		xviii
Abstract	•••••		xviii
Chapter 1 :	Introdu	oction	-1-
1.1	Intro	duction.	- 1 -
1.2	Resea	arch issue questions, aims and objectives.	- 3 -
	1.2.1.	The objective of this study is to understand.	- 4 -
	1.2.2.	Research questions scope.	- 4 -
1.3	Resea	arch design methodology.	- 5 -
	1.3.1.	Data Collection.	- 7 -
	1.3.2.	Data analysis.	-7-
	1.3.3.	Final results expectations.	- 7 -
Chapter 2:	History	through Olympics	- 9 -
2.1	Introdu	ction .	- 9 -
2.2	History	through Olympics.	- 10 -
2.3	Ancient	Olympics site development through time.	- 11 -
	2.3.1	Olympia Sanctuary.	- 11 -
	2.3.2	From Ancient to Modern – The Greek Olympic Games (1889).	(1859 – - 12 -

2.4 I	Rise of the Modern Games.	- 13 -
	2.4.1 Olympic urban development through modern days (189	06 – 2000). - 14 -
	2.4.1.1 The World Fair's influence on the Olympic Games	- 16 -
	2.4.1.2 The Modern Olympic built environment.	- 17 -
	2.4.1.3 The rise of the Olympic Quarter.	- 19 -
	2.4.1.4 Engaging city urban development with host cities pl	ans - 21 -
	2.4.1.5 Environmental considerations – "Towards sustainal host".	ole Games - 28 -
2.5 (Conclusion.	- 29 -
Chapter 3 : 0	Olympic Games Towards Sustainable Actions	- 30 -
3.1.	Introduction.	- 30 -
3.2.	The organizational system of the Olympic Movement and its go process.	overnance - 30 -
3.3.	Sustainable pillars Vs. Olympic Games Legacy.	- 35 -
	3.3.1. Sustainability and Legacy Commission (1995).	- 37 -
	3.2.1.1 Cultural, Social and Political Legacy and Impact.	- 38 -
	3.2.1.2 Environmental Legacy and Impact.	- 41 -
	3.2.1.3 Economic Legacy and Impact.	- 42 -
	3.2.1.4 Urban Legacy and Impact.	- 44 -
3.4.	The Olympic Movement's Agenda 21 (1999).	- 45 -
	3.4.1. Improving socio-economic conditions.	- 46 -
	3.4.2. Conservation and management of resources for su development.	ustainable - 48 -
	3.4.3. Strengthening the role of major groups.	- 50 -
3.5.	Green Olympic Environmental Guidelines – Greenpeace	Guideline

	3.6.	The Sport, Environment and Sustainable Development (2007)	- 52 -
	3.7.	Conclusion.	- 53 -
Chapte	r 4 : U	Urban Elements for Shaping the Sustainable Olympic Games	- 54 -
	4.1.	Introduction.	- 54 -
	4.2.	Urban design elements Versus Olympic city Components.	- 55 -
		4.2.1. Planning design level.	- 56 -
		4.2.2. Urban design level.	- 56 -
		4.2.3. Architecture design level.	- 57 -
	4.3.	Urban Transformation and regeneration impacts of the Olympi on the Hosting City.	c Games - 57 -
		4.3.1. "Direct Impact" – Olympic Games necessities.	- 58 -
		4.3.1.1. Physical planning and bid location.	- 58 -
		4.3.1.2. Providing and building Venuses and sports building f	acilities. - 59 -
		4.3.1.3. Olympic villages for athlete's accommodations, and villages.	d media - 60 -
		4.3.1.4. Providing telecommunication and broadcasting international broadcast center (IBC) and the main pres (MPC).	•
		4.3.2. "Indirect Impact" – Olympic Games auxiliaries.	- 61 -
		4.3.2.1. The Transit and infrastructure systems of the chocandidate.	osen city - 61 -
		4.3.2.2. Tourists and visitor's accommodation places.	- 63 -
		4.3.2.3. Urban recreational areas and parkland entertainment.	ds for - 63 -
		4.3.2.4. Landmarks Vistas, Buildings, and Sculptures.	- 63 -
		4.3.3. "Secondary Impact" – Olympic Games additives.	- 64 -

	4.3.3.1. Sustainable and environmental actions and impacts.	- 64 -
	4.3.3.2. Cultural and Heritage preservation.	- 65 -
4.4.	Research Logical Framework approach.	- 65 -
	4.4.1. How it works.	- 66 -
Chapter 5 : (Case studies	- 68 -
5.1.	Introduction.	- 68 -
5.2.	Beijing Summer Olympic Games 2008.	- 69 -
	5.2.1. City before the bid (Initial city, state).	- 69 -
	5.2.2. Olympic Games Preparation "One World One Dream".	- 72 -
	5.2.3. The BOCOG plans and actions for the Pre-O Preparations.	Olympic - 76 -
5.3.	London Summer Olympic Games 2012.	- 93 -
	5.3.1. 2012 Olympic Games city vision, objectives, and promise	s. 95 -
	5.3.1.1 Promises towards delivering a "One Team, One Goal"	' Game. - 95 -
	5.3.1.2 Sustainable development objectives for future legacy.	- 96 -
	5.3.1.3 London effective operating model framework for the Games.	he 2012 - 97 -
	5.3.2. The LOCOG plans and actions for the Pre-O Preparations.	Olympic - 101 -
5.4.	Rio de Janeiro 2016 Summer Olympic Games.	- 123 -
	5.4.1. Integrative strategic development plan approach for Rio t	the City. - 125 -
	5.4.1.1. The ROCOG theme and vision.	- 126 -
	5.4.2. The ROCOG plans and actions for the Pre-O	Olympic - 128 -

5.4.3. Comparative Sustainable framework analysis on Olympic case studies.	selected - 151 -
5.4.3.1. Physical planning and bid location sus approaches.	stainable - 151 -
5.4.3.2. Providing and Building Sports Venues and I conducted approaches.	Facilities - 152 -
5.4.3.3. Olympic villages sustainable approaches.	- 153 -
5.4.3.4. Media and telecommunication conducted sus approaches.	stainable - 153 -
5.4.3.5. Transit and infra-structure, sustainable pla approaches.	ns and - 154 -
5.4.3.6. Touristic and accommodation conducted, de approaches.	eveloping - 155 -
5.4.3.7. Urban Recreational parklands sustainable approach	es.156 -
5.4.3.8. Vistas, landmarks and identity elements approaches.	- 157 -
5.4.3.9. Sustainable environmental actions and approaches.	- 157 -
5.4.3.10. Cultural and heritage conducted preservation app	oroaches. 158
5.4.4. Conclusion.	- 159 -
Chapter 6: Conclusion	- 160 -
6.1 Findings and recommendations.	- 160 -
6.2 Further Research plans.	- 163 -
Reference	- 164 -
Appendix I	- 171 -
Appendix II	- 172 -
Appendix III	- 176 -
Appendix IV	- 179 -

Appendix V	- 181
Appendix VI	- 182
الملخص	- 188

List of Tables

<u>Chapter 2:</u>
Table 2. 1 The Barcelona major objectives and strategic visions towards strategic plan of the
city 2000 26 -
Chapter 4:
Table 4. 1 Impacts of Olympic Games and its functional areas
Table 4. 2 Logical Research Framework approach analyzes chart
<u>Chapter 5:</u>
Table 5. 1: Beijing population growth through time69
Table 5. 2: Beijing Main Olympic Venuses sustainable design principles and post usage
Plans80
Table 5. 3: Communication and Media Centers Buildings for the host and city operation
system future plans
Table 5. 4: Existing no. of rooms available in the city for any mega-event planned no. of
rooms for event. (surrounding the venues location and 50 km away from the site 1 hour away
from Venus)86
Table 5. 5 London Olympic City strategic plans on Sites
Table 5. 6 Existing, planned and additional sports venues legacy plans107
Table 5. 7 LOCOG sustainable implementation plans in action
Table 5. 8 RIO Olympic City strategic plans on Sites and site Background130
Table 5. 9 Existing, planned and additional sports venues legacy plans137
Table 5. 10 The Expected design for the Barra Olympic Park versus reality143
Table 5. 11 The Rio Golf Course Before and After144
Table 5. 12 Rio's Vistas and Identity of the City
Table 5. 13 Sustainable objectives and actions on Ground
Table 5. 14 Physical planning and bid location sustainable approaches, comparative analysis
and sustainable results
Table 5. 15 Providing and Building Sports Venues and Facilities sustainable approaches152
Table 5. 16 Olympic villages sustainable approaches
Table 5. 17 Media and telecommunication sustainable approaches
Table 5. 18 Transit and infra-structure, sustainable plans and approaches154

Table 5. 19 Touristic and accommodation developing approaches	155
Table 5. 20 Urban Recreational and parklands sustainable approaches.	156
Table 5. 21 Vistas, landmarks and identity elements approaches	157
Table 5. 22 Sustainable environmental actions and approaches themes.	157
Table 5. 23 Cultural and heritage preservation approaches.	158
Appendix I:	
Table A 1 The Olympic chronology and periodization (Liao, H., & Pitts, A, 2009)	171
Appendix II:	
Table B 1 Guidelines and tools towards improving socio-economic conditions	172
Appendix IV:	
Table C 1 Capacity of spectators during consecutive Olympic Summer Games	179 -
Appendix VI:	
Table D 1 Beijing 2008 Summer Olympic Games On city development process	182 -
Table D 2 London 2012 Summer Olympic Games On city development process	184 -
Table D 3 Rio 2016 Summer Olympic Games On city development process	186 -

List of Figures

<u>Chapter 1:</u>
Figure 1. 1 Theoretical research stage diagram approach 5 -
Figure 1. 2 Research structure. — 5 -
Figure 1. 3 Methodological research study frame.
<u>Chapter 2:</u>
Figure 2. 1 An artistic painting for the ancient Olympia context 10 -
Figure 2. 2 Showing the development of Olympia through time 11 -
Figure 2. 3 Shows the The Panathenaic stadium during the first day of the 1896 Olympics
Athens 15 -
Figure 2. 4 The Kalimarmaro stadium in Athensbuilt since 1896 nowadays holding up to
45,000 spectators 15 -
Figure 2. 5 The Fascinating architecture technological theme of the industrialized era 16 -
Figure 2. 6 The World Fair and Olympic Games Path conflict timeline 17 -
Figure 2. 7 An Ariel photo taken showing the White city stadium as a new landmark to the
Olympic context in London 1908. — - 17 -
Figure 2. 8 The Olympic Village urban context in Los Angeles 1932 Olympic Games 18
Figure 2. 9 The Olympic Quarter model for Olympic Games of Berlin 1936 19
Figure 2. 10 Berlin Olympic Stadion Quarter 1936 and its surrounding elements 20 -
Figure 2. 11 The urban context of the Olympic quarter all in one location Berlin 1936 20 -
Figure 2. 12 The Olympic Park 1952 Helsinki and the sports location on-site 21 -
Figure 2. 13 The Helsinki Olympic integrating the Green park 22 -
Figure 2. 14 The Munich Olympic Park 23 -
Figure 2. 15 The Montreal Olympic Park and Stadium a land mark in the center of the city
24 -
Figure 2. 16 Barcelona waterfront slums 26 -
Figure 2. 17 Iconic buildings and towers to promote new friendly European identity of
Barcelona's new touristic theme to the world. ————————————————————————————————————
Figure 2. 18 Economic chart vision for Barcelona Games 92' 27 -
Figure 2. 19 Sydney 2000 turning wastelands to wetlands 28 -

Figure 2. 20 Historical periodical development phase chart for the Olympic Games...... - 29 -

Chapter 3:

Figure 3. 1 The organizational structure of the Olympic Movement committees 3	31 -
Figure 3. 2 The Candidature Process introduced in the Olympic Agenda 2020 applied for the	he
first time to the Candidature Process 2024 3	32 -
Figure 3. 3 Lifecycle flow of the OCOG in helping cities to host the Games	.34
Figure 3. 4 The functional areas of the OCOG and its responsibility for Sustainable	
deliverance	.34
Figure 3 .5 The main UN sustainable pillars.	.36
Figure 3. 6 The Athens 2004 opening ceremony festival representing the heritage and cultu	ıre
of the city through showing their historical outfits, buildings and status of the old ancient	
Greece	.39
Figure 3. 7 Mexican team outfit resembling their culture image to the world	.39
Figure 3. 8 Sydney 2000 Olympic Games logo	.40
Figure 3. 9 Recycling and waste management awareness in 2012 London Olympic Games.	42
Figure 3. 10 Classification of economic impacts on Olympic Games	.44
Figure 3. 11 The Olympic Movement's Agenda 21 document – sport for sustainable	
development	.45
Figure 3. 12 The main 3 objectives discussed in the Agenda 21 announced in the Rio Earth	L
Summit 1992	.46
Figure 3. 13 The main Greenpeace guideline principles outlined for hosting the Games	.51
Figure 3. 14 The main urban fields highlighted in orange affected by the development cause	ed
by the Olympic Games	.52
Chapter 4:	
Figure 4. 1 Highlighted directly related Urban design elements the OCOG functions during	5
the evaluation and preparation process for host cities.	.55
Figure 4. 2 Different Spatial Urban planning strategies and Olympic cluster distribution and	d
location choices	.59
Figure 4. 3 London Olympic and Paralympic village 2012 near the Basketball arena	.60
Figure 4. 4 Sydney Olympic 2000 parkland engaged with nature	.63
Figure 4. 5 The pyramidal shape of Montreal Accommodation buildings an iconic building	
since then.	.64