CHOICES AND BENEFITS:
ALTERNATIVE ACCESS AND VENUE SITES FOR İSTANBUL OLYMPICS

by

ÖZGÜR BAŞAK ALKAN

B.A., Architecture
Princeton University, 1999

Submitted to the Department of Urban Studies and Planning and the Department of Architecture, in Partial Fulfillment of the Requirements for the Degrees of

MASTER IN CITY PLANNING

and

MASTER OF ARCHITECTURE

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This thesis is based on the idea that the Olympics, a global mega-project that interrupts and re-channels the forces of urban evolution in its host city, can be planned in ways that bring long-term benefits to that city. It is inspired by the urban regeneration of Barcelona in 1992 and the environmental achievements of the Sydney Olympics in 2000. The immense mobilization of resources for the Olympics, however, has a potential to deliver even more to the city. In this thesis, I will present an alternative Olympic plan for İstanbul, a three-time bidder for the Olympics that seeks to guide the city to a more environmentally sustainable future.

I begin the thesis with twelve photographs that convey my observations of Atlanta, Athens and İstanbul, in the post-Olympic, pre-Olympic and bidding stages of Olympic development. The photographs reveal the significance of sports venue location and transportation choices for the long-term impacts of the Olympic event on the environment. A quick survey of past host cities shows similar patterns of Olympic development; in Chapter I, I analyze the IOC's Manual for Candidate Cities to identify planning guidelines that limit planners' toolkit. Following a brief analysis of İstanbul's Olympic plan submitted for the 2008 Summer Games in Chapter I, I devote Chapter II to an exploration of environmental benefits that can potentially be derived from the Olympics, laying down the conditions for their realization. In Chapter III, I study the environmental history of İstanbul and generate a vision for a sustainable future that can guide site selection and transportation investments for the Olympics. The Alternative Olympic Plan for Istanbul introduced in Chapter IV is ambitious. It aims to reverse the trend of environmental destruction in İstanbul by channeling the city's growth away from environmentally sensitive zones in the north by strategically locating Olympic investments. The epilogue, in conclusion, contains reflections on the thesis topic and directions for future research.

Acknowledgments

My advisors *John de Monchaux* and *Anne Whiston Spirn*, and my reader *Nasser Rabbat* have contributed their time and intellectual energy to make sure that this thesis remains clear and focused. I would not have been able to do it without them. Professors Julian Beinart, who supervised a reading course on the subject in Spring 2003, and Michael Schuster, who followed it from its beginnings as a fledgling thesis proposal, have shared with me their insights and materials from their personal archives. *Kenneth Kruckemeyer* of MIT's Center for Transportation and Logistics has been an invaluable resource for the development of the alternative transportation system presented in this thesis. Professor Kruckemeyer was part of the panel of critics at my thesis defense on December 12, 2003, along with my thesis committee in addition to guest critics *Adelè Naudé Santos*, *Peter Lynch* and *Azime Tezer*. Many thanks to *Daniel Sheehan*, the Institute's spatial data specialist, who spent many hours patiently sorting through my GIS problems.

A summer travel grant from the *Agha Khan Travel Fund* has allowed me to visit Atlanta and Athens, the results of which are presented in the prologue of this thesis.

In Atlanta, I stayed with generous host *Luciana Leonardos* who gave me a resident's view of a city so hard to grasp otherwise. *Murat Engindeniz* kindly offered his services to drive me to all the former Olympic sites. *Jennifer Gathings*, Olympic Archivist at the Atlanta Historical Society, helped me browse through pages of unarchived material. *Reverend Austin Ford*, the eminent affordable housing activist, told me about the Olympics from perspective of Atlanta's poor communities and *Mary Presley* of Atlanta's Housing and Urban Development (HUD) chapter, told me about affordable housing in Atlanta and the Hope VI program.

In Athens, I met with architect *Thomas Doxiadis* (formerly of Athens 2004), architect *Julie Velissaratou* (Athens 2004) and urban planner *Stavros Mentos* (Ministry of Environment, Physical Planning and Public Works) who offered me insights into the urban history of Athens and the planning for the Olympics in 2004. Mentos kindly shared with me his pre-doctoral paper, "Les consequences des Jeux Olympiques sur le tissue urban: le cas de la candidature d'Athenes aux jeux olympiques de 2004," prepared at the Universite de Paris Sorbonne. I would like to extend my thanks to the owners of the family-run Art Gallery Hotel in Koukaki, especially to urban planner *Yannis Assimacopoulos* who put me in touch with Mentos.

I owe greatly to Professor *Handan Türkoğlu* of İstanbul Technical University (İTÜ) who generously shared with me her GIS base maps of İstanbul, the basis of many of the maps presented in this thesis. While in İstanbul I also met with architect *Mustafa Atun* of the İstanbul Olympic Bidding Committee headquarters in Ataköy known as the *Olimpiyat Evi* (Olympic House), where he offered me an insider's view of the city's Olympic project. I spent hours photocopying Official Reports and newspaper articles in their library, which has a small but impressive collection of material on past Olympic projects. My special thanks to Professor *Azime Tezer*, also of İTÜ, who gave me the few and hard-to-find works on the İstanbul Olympics and recent master plans of the city. She has given her unconditional support, reading earlier drafts of the thesis and coming to Boston from Amherst, MA, to participate in my defense.

Nirmal H. Trivedi, my most whole-hearted supporter, has helped me through the toughest moments and has also edited the final version of this thesis.

Last but not least, I would like to thank my family, *Orhan, Eren and Nilüfer Alkan* in İstanbul, for their unconditional support during my eight years at school away from home.

In memory of my grandmothers,
Dudu Alkan (1926-2003) and Saika Ergin (1927-1996)

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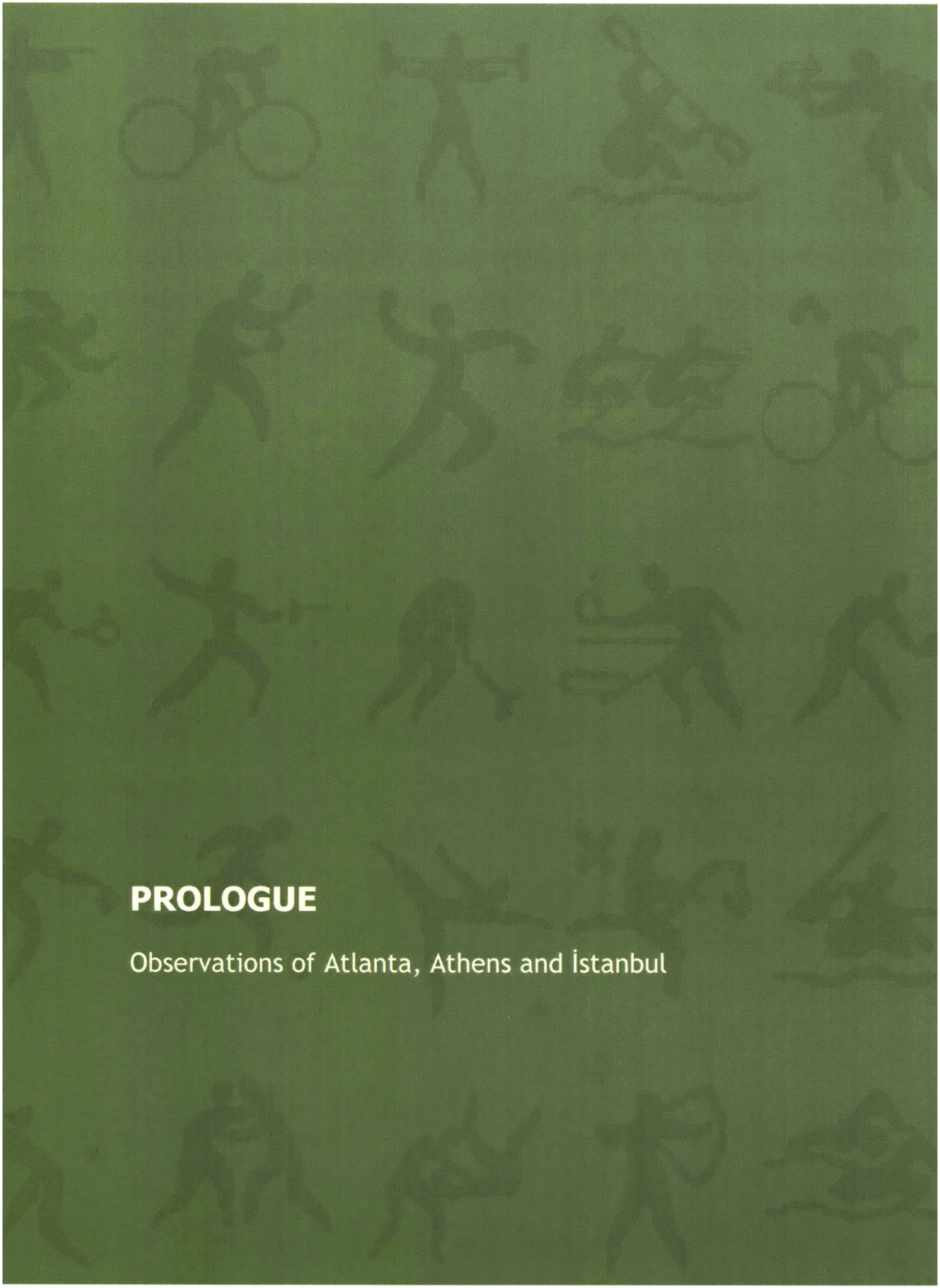


PROLOGUE

Observations of Atlanta, Athens and İstanbul

PROLOGUE

The Olympics is a global mega-project led by an international organization that interrupts and re-channels the forces of urban evolution in its host city making use of funds supplied by a consortium of powerful public institutions and private corporations. The Olympic Games are, nevertheless, accompanied by oddly high levels of euphoria among the residents and planners of those cities that bid for and host the Olympics and hailed as a one-of-a-king opportunity to improve the physical environment and the economic outlook of the city. Furthermore, since Sydney, the Olympics have been portrayed as an unique chance to improve the environmental conditions in a city, leaving a legacy of green development.

During my summer research trip to Atlanta, Athens and İstanbul, I set out to investigate the intended, perceived and actual environmental impact of the summer games in the post-Olympic, pre-Olympic and bidding stages. I met with planners, politicians and activists to learn about the planning process. What were the criteria for site selection for venues and what kinds of planning studies preceded the Olympic transportation plan? Their responses were striking. In Athens, where urban sprawl depletes natural resources in the surrounding countryside and pollutes the air, sports venues were located where it's most convenient for politicians and planners, and linked with four-lane highways without any foresight into the long-term effects. In Atlanta, where sprawl is equally devastating, the once dense inner city was 'revitalized' with Olympic parks and venues in ways that profited downtown corporations, displacing thousands of poor families to the periphery.

İstanbul, which has unsuccessfully bid three times for the Summer Olympics, has built a state-of-the-art Olympic stadium to increase its chances. It sits on a hilltop donated by the military, surrounded by valleys and pastureland beyond which are squatter settlements, an industrial complex and random outcrops of high-rise apartment complexes, all served by a winding country road. The 1400-acre Olympic park planned for this location will host more than half of the sports events: who will use these venues after the Games? The highways and subway extensions for the Olympic park, when built, will drag development along their paths into the countryside. This is hardly the best investment for the city's future.

What would the Olympics look like in Atlanta, Athens and İstanbul if venue sites were selected based primarily on environmentalist criteria such as preventing damage to natural resources or enhancing public transportation? How can we use the resources mobilized for the Olympics to guide the host city to a better, more sustainable future?

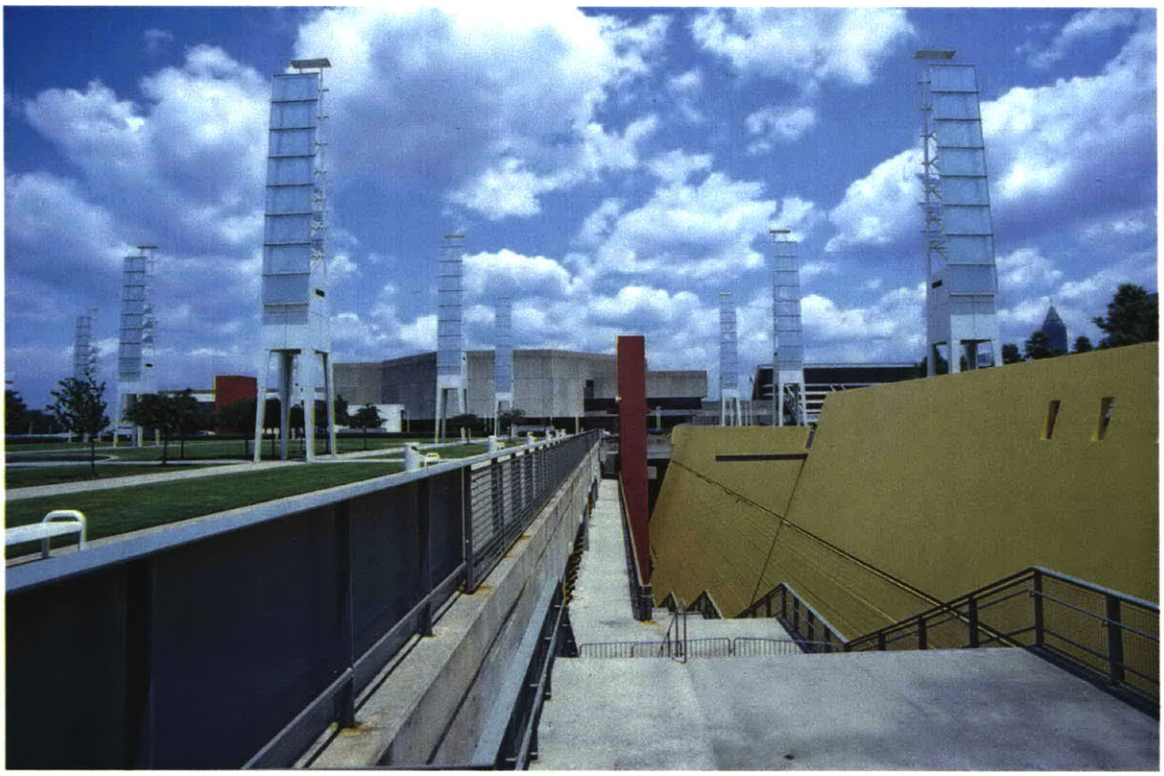
The first chapter of my thesis presents an overview of official Olympic guidelines to analyze the problems and limitations of Olympic planning, followed by a criticism of İstanbul's Olympic plan. The second chapter will present the ideal of 'Green Olympics', outlining the ways in which the Olympics can be used to promote a sustainable future for its host city. Following a brief analysis of İstanbul's environmental problems in chapter III, chapter IV will present an alternative Olympic plan that seeks to achieve a better Games and a better future for the city and its residents. The last chapter will demonstrate how this plan based on public transportation and river reclamation works at the neighborhood level.

Let us begin with twelve photographs from my summer trip that demonstrate the importance of venue location and transportation choices for the future of the host city.

ATLANTA 1996
Post-Olympic Stage

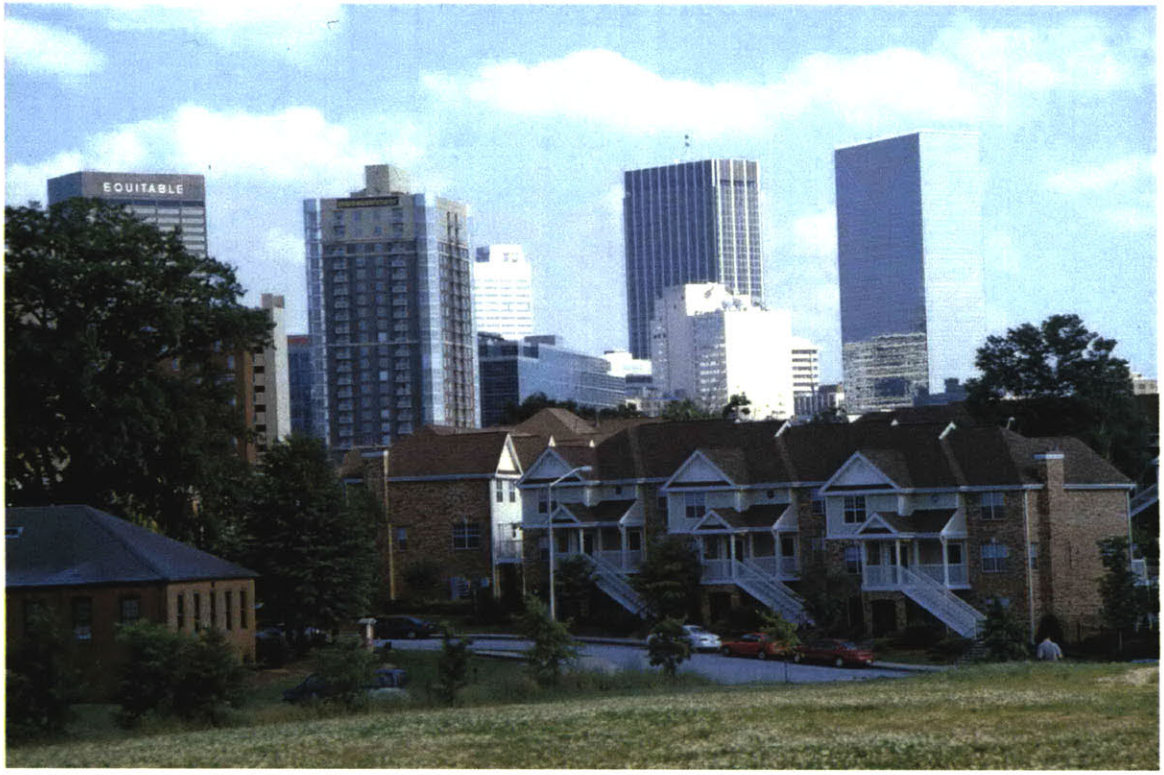
1. Pool in Centennial Olympic Park, downtown Atlanta

The world headquarters of CNN and the Omni Hotel face the Centennial Park, a controversial downtown revitalization project that replaced single residency hotels and homeless shelters in addition to abandoned warehouses; a number of high rise residential towers are currently being constructed around the park. Activities such as sleeping outdoors were criminalized prior to the Olympics leading to the incarceration of a large number of homeless individuals during the Olympics.



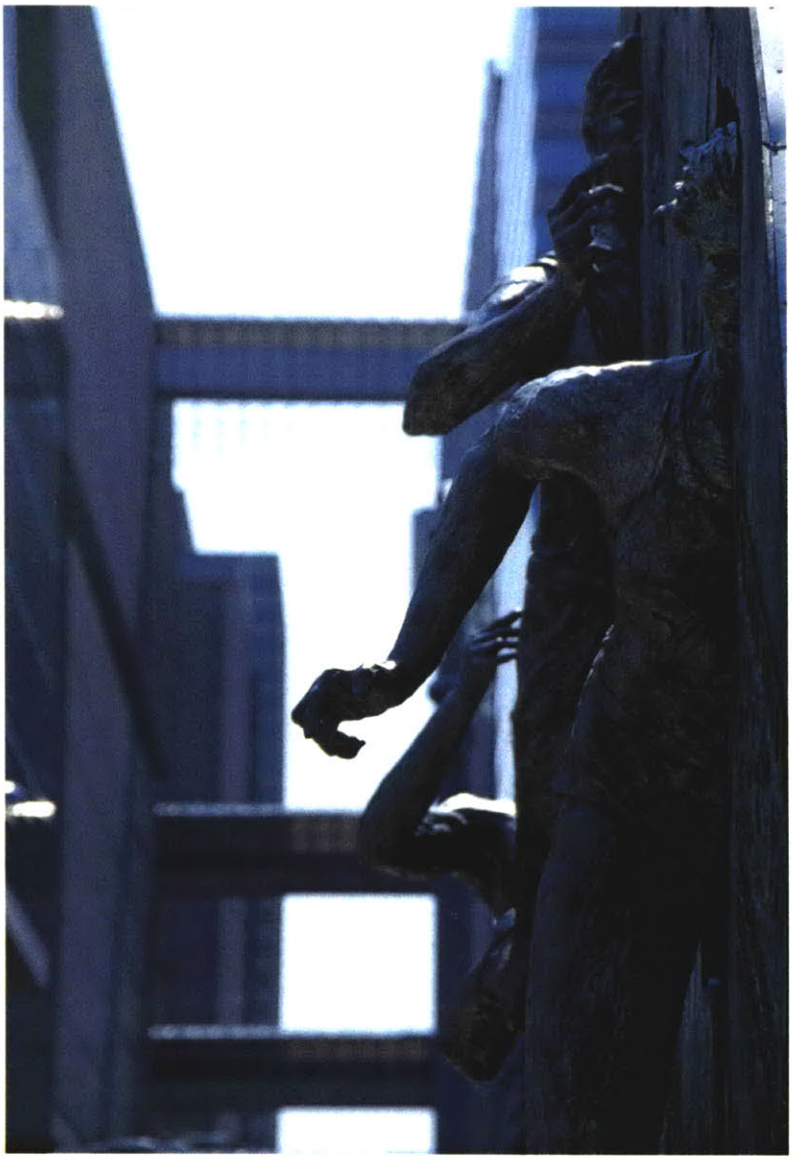
2. View of an Olympic Park with lighting towers located between the Omni Coliseum, Philips Arena and the World Congress Center, with stairs leading down to a parking structure

There is no one in this beautiful and well-tended downtown park on this sunny day. Situated between the Omni Coliseum (to the left, not seen), Philips Area (to the right, not seen) and the World Congress Center (background), the park is separated by highways from businesses, residences and schools.



3. Middle-income townhouses on the former site of the Techwood / Clark-Howell Public Housing Projects

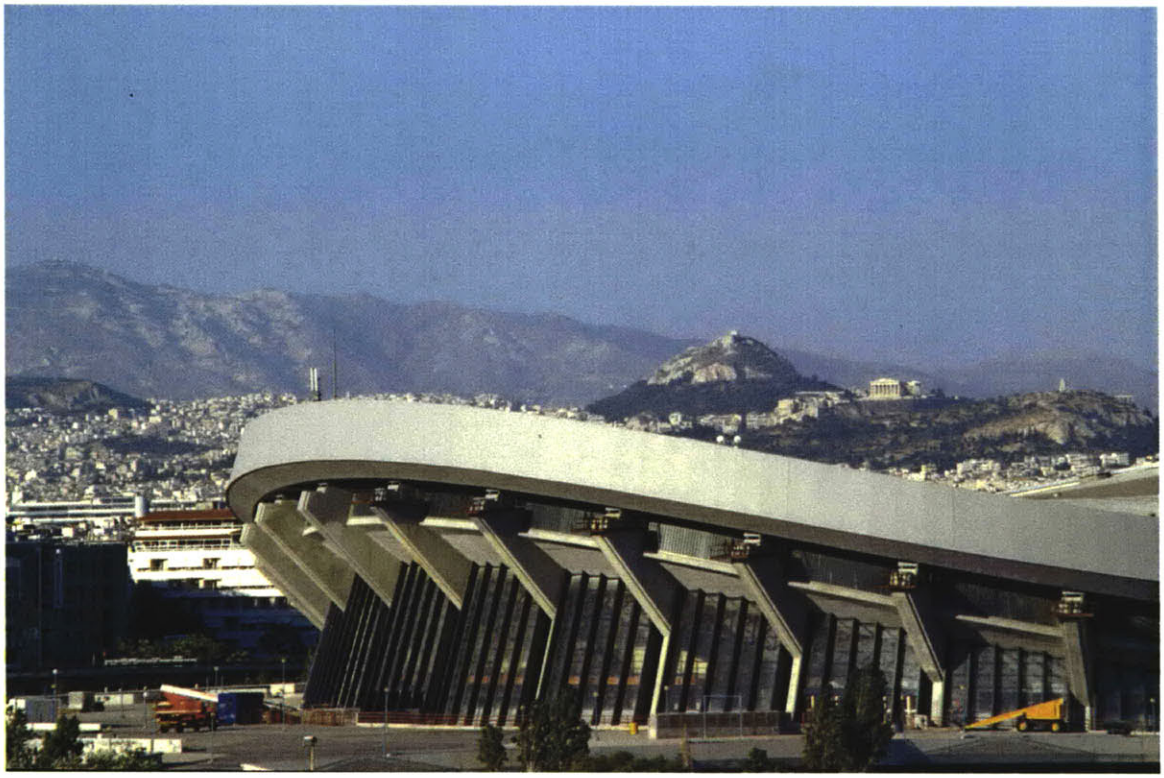
The 1081-unit Techwood / Clark-Howell Public Housing Projects, which stood between the Olympic Centennial Park and Georgia Tech dormitories that hosted the athletes, were torn down before the Olympics. A corner of the site was used for two dormitory buildings that served as part of the Olympic Village. The remaining area is occupied by Centennial Place, a private mixed-income development comprised of 900 garden apartments and townhouses with 781 fewer affordable units.



4. View of sculpture at the Centennial Olympic Park, with office buildings of downtown Atlanta seen in the background

These office buildings connected by bridges are part of architect John Portman's vision for corporate Atlanta. His efforts to revitalize Atlanta's downtown in the 1980s, followed by Olympic revitalization in 1996, contributed to the segregation between white corporate Atlanta and the city's black urban poor.

ATHENS 2004
Pre-Olympic Stage



5. View of the Peace and Friendship Stadium, with the Parthenon and the Lycabettus Hill in the background

The 15,000 seat Peace and Friendship Stadium, built in 1985, is part of the Faliro Coastal Zone Complex, where a new sports pavilion, beach volleyball center, marina and esplanade will also be built for the Olympics. Highways separate the complex from the neighborhood of Moschato to its north; a pedestrian bridge proposed to connect the coastal complex to the city will not be built before the Olympics and it may not be built afterwards.

6. View of wall along highway enclosing coastal construction sites at the Faliro Coastal Zone Complex with the neighborhood of Kastella seen through the haze of construction dust

The scale of sports structures at the Faliro Coastal Zone Complex, built in the course of seven years, stand in constrast to the delicate urban fabric of the Kastella neighborhood near the Port of Pireaus, which was created over centuries. The graffiti on the wall and in the area around the complex point to dereliction as well as the urban youth's desire to appropriate what does not belong to them.

7. View of cranes at work at the Athens Olympic Sports Complex (OACA) to the north of the city as seen behind a fence and concrete blocks along a new highway intersection

The Athens Olympic Sports Complex, a suburban site enveloped by three peripheral highways that separate it from the surrounding neighborhoods, will contain the Olympic Stadium, Olympic Tennis and Aquatic Centers, an Indoor Hall and the Olympic Velodrome. There are no plans for its post-Olympic use or its connection to surrounding residential areas.

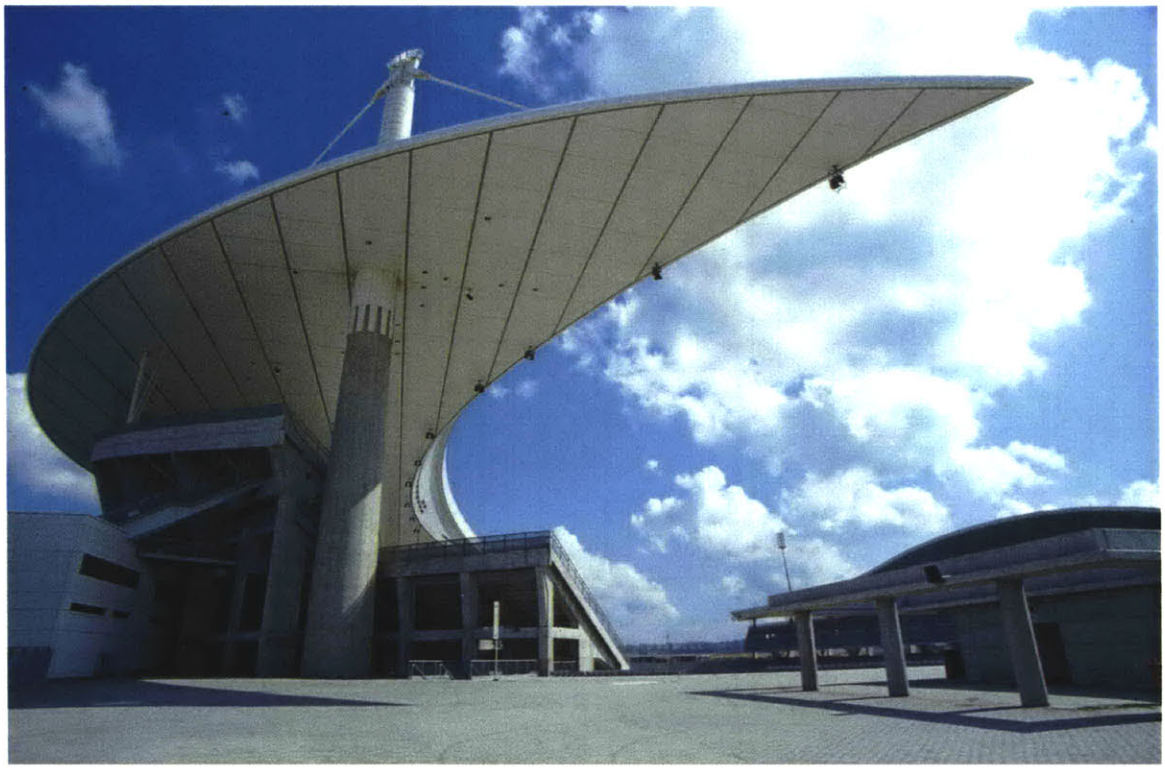
8. View of the Olympic Village to the north of the city with a new highway (along fence) built to connect the site to an interstate highway four kilometers to the southeast

Sponsored by the Worker's Housing Association, the Olympic Village is a public housing project situated at the urban periphery amidst abandoned fields, car dumps and factories, and remnants of a pine forest. This housing complex outside the city boundaries and the highway built to service it will further Athens' suburban sprawl.

İSTANBUL
Bidding Stage (Applicant 2000, 2004, 2008, 2012)

9. View of the Atatürk Olympic Stadium and its parking lot

The Atatürk Olympic Stadium, one of the many sports facilities to be built on this site to host an Olympics that İstanbul has not yet received, sits atop a hill at the periphery of the city without access to roads, water or public transportation. Its large impervious parking lot drains to rivers on either side that flow into the severely polluted Küçükçekmece Lake further south.

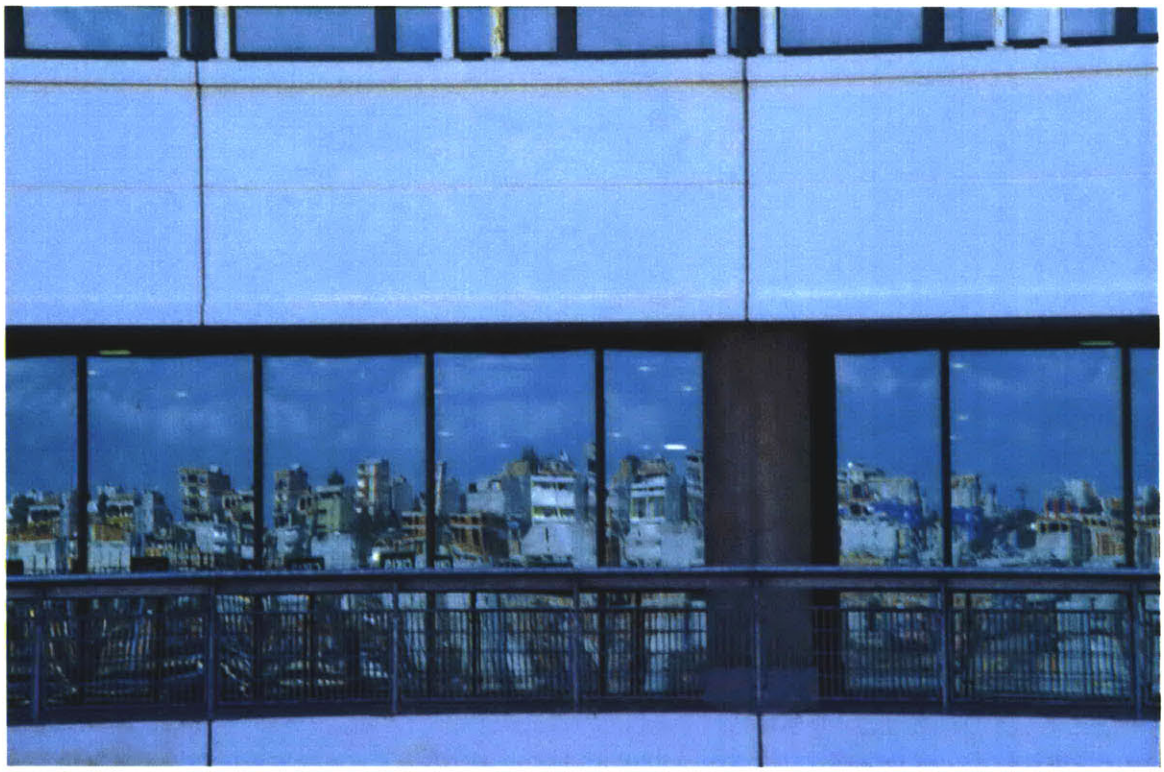


10. View of the Atatürk Olympic Stadium and high-rise edge-city development beyond

The remote location of the Atatürk Olympic Stadium, a former military site situated between an industrial complex and a squatter settlement outside the city, was justified as beneficial to the future residents of the Başak Estates, a speculative municipal project further north. The first soccer game hosted at this stadium, however, became a traffic nightmare for people coming from the city and players have complained about strong hilltop winds.

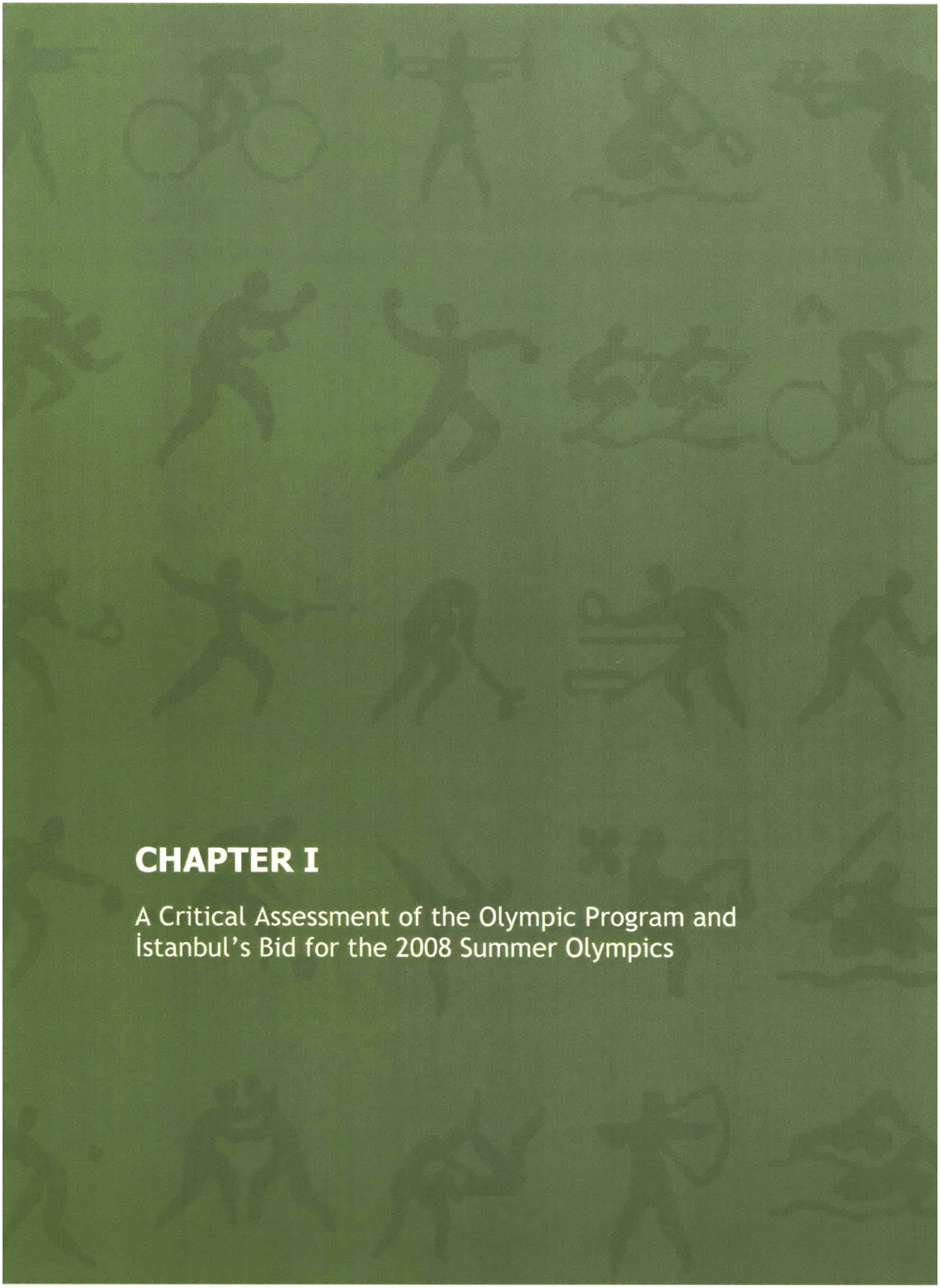
11. Bulldozers working at the edge of the Olympic stadium parking lot, with a residential neighborhood seen in the background

It is unclear whether the 80,000-seat stadium is a blessing or a curse for the unnamed shantytown across the valley to the west. It is clear, however, that the stadium and the highways that will come to it sometime in the near future will contribute to urban sprawl and the depletion of the city's natural resources



12. View of shantytown reflected in the tinted glass windows of the new Olympic Stadium

The lavish architecture of the Atatürk stadium stands in stark contrast to the poor, unplanned developments across the valley. One wonders if these two different worlds will ever be allowed to come in contact. Will the shantytown residents be given jobs here or be allowed to sell food or team paraphernalia during the Games? Will they be able to afford the tickets? Will neighborhood kids be allowed to practice football on its grounds or let alone in its parking lot?



CHAPTER I

A Critical Assessment of the Olympic Program and İstanbul's Bid for the 2008 Summer Olympics

Introduction to Olympic Planning

A Brief History of the Olympics

Athletic festivals had a special place among religious celebrations in Ancient Greece, with a history reaching back 3500 years from today. By the 6th century BC, games held at four locations – the Olympic Games at Olympia, the Pythian Games at Delphi, the Nemean Games at Nemea and the Isthmian Games at Corinth – rose to prominence. The Olympic Games, held every four years between August 6 and September 16, were by far the most popular. Recorded regularly from 776 BC to 217 AD, the Olympic Games were cancelled in 393 by Roman Emperor Theodosius I based on their pagan associations.

The modern Olympics were born out of the efforts of French educator and sportsman Baron Pierre de Coubertin (1863-1937). He founded the International Olympic Committee (IOC) on June 23, 1894 in Paris, which worked under the leadership of Demetrius Vikelas (1835-1908) towards the revival of the ancient games. The first Games were organized in Athens in April 1896 and were attended by 241 athletes representing 14 nations. The second Olympiad, held in Paris in 1900 as part of the *Exposition Universelle Internationale* (World Fair) had 1,225 athletes from 24 nations. Nineteen women competed in tennis and golf events in 1900. Although women competed in archery, gymnastics, skating and swimming at later Games, an alternative Women's Games was organized by Alice Milliat (1884-1957) of France in 1922 in response to the IOC's refusal to add women's track and field to their program.[1] The number of participating nations increased as more countries formed their National Olympic Committee, a prerequisite for participation. A record 10,651 athletes from 199 nations competed in the XXVII Olympiad held in 2000 in Sydney, Australia.

The modern Olympics have followed the traditional interval of four years between Games, though the Games of 1916, 1940 and 1944 were cancelled due to world wars. The Olympic Winter Games, held separately since 1924 in the winter following the Summer Games, have been scheduled since 1994 to occur two years after each Summer Games.[2] The Paralympic Games, or contests for athletes with disabilities, were born out of a sports competition organized in England in 1948 for World War II veterans with spinal cord injuries. Paralympic competitions are held at the end of each Winter and Summer Games and are supervised by the International Paralympic Committee (IPC).[3] The sports program for the Olympic Games, which included tug-of-war, cricket and golf in the early years, has changed over time and currently includes twenty-nine summer sports and seven winter sports.[4] Each host city can add up to two demonstration sports and must also prepare national exhibitions and

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1 Kidd, Bruce. "The Women's Olympic Games: Important Breakthrough Obscured by Time". CAAWS (Canadian Association for the Advancement of Women and Sport and Physical Activity) Action Bulletin, Spring 1994. http://www.caaws.ca/Milestones/Kidd_Olym.htm. See also Olympic Women Website. http://www.olympicwomen.co.uk/.

2 See Appendix A for listing of Olympic cities by year, from 1896 to 2010.

3 International Paralympic Committee Website. http://www.paralympic.org/.

4 See Appendix B for a historical survey of Olympic sports.

cultural events to accompany the sports competitions.[5]

In his 1988 analysis of the history of the Olympic Games, Julian Beinart considers the summer games in four successive periods: the first Games (1896), the proto Games (1900-1908), the middle Games (1912-1928), the established Games (1932-1984) (and a tentative post-modern Games after Los Angeles 1984).[6] Following the first Olympiad in Athens 1986, which served as a symbolic extension of the ancient Games, the proto Games were a minor addition to International Expositions and, with the exception of London in 1908, did not have facilities of their own. The middle Games began with Stockholm 1912 and were all held in Europe. Athletes did not have special accommodations and audience participation was relatively low.

The established Games, beginning with the 10th Olympiad in Los Angeles in 1932, were the first to create a feeling of community among athletes and spectators. Male athletes were housed in a single Olympic Village and the number of days of competition, which ranged from 11 to 187 days prior to 1932, was fixed at sixteen.[7] According to Beinart, the Los Angeles Games were also the first to communicate a feeling of goodwill and "communitas" to spectators who filled the 92,000-seat Coliseum for the opening and closing ceremonies and the track and field events. The torch relay, a trademark of Olympics today, was added in Berlin in 1936. The 1960 Summer Games in Rome are considered the first televised Olympics although selected events were broadcast to home television sets in the British Isles during the 1948 London Games. An estimated global audience of one billion watches the Summer Games today, and the sale of broadcasting rights has become a major source of funding for the IOC and the Host City in addition to ticket sales.[8] Corporate advertisers have also supplied large sums for the staging of the Games beginning with the Los Angeles Olympics in 1984.

Regardless of the expenses involved in staging the Olympics, an average of five cities bid to host each Summer Games.[9] The list includes a fair number of cities outside of Europe and America each year, even though Mexico City is the only city from a developing nation to have ever been awarded the Games. For most aspiring cities, attaining the prestige associated with Olympic cities appears to be more important than economic benefits. For Tokyo in 1964, hosting the Olympics was "*the passport to join western advanced society*" and an opportunity to showcase the nation's achievements after the war.[10]

Cities are rarely awarded the Games on their first time bidding and most

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5 "Olympic Games." Encyclopædia Britannica. 2003. Encyclopædia Britannica Online. 30 December 2003. http://www.search.eb.com/eb/article?eu=115022.
See also "Olympic Games". Official Website of the Olympic Movement. http://olympic.org/uk/games/index_uk.asp.

6 Beinart, Julian. "Olympic Form: Themes of Permanence and Transience" in Hosting the Olympics, 63-90.

7 See Appendix C for a historical survey of the Summer Games from 1896 to 2004.

8 "Olympics and Television". Website of the Museum of Broadcast Communications. http://www.museum.tv/archives/etv/O/htmlO/olympicsand/olympicsand.htm

9 See Appendix D for bidding history of the Summer Games from 1896 to 2004.

10 Izumi, Syinya. "The Social Impact of Olympics: Environmental Designer's View" in Hosting the Olympics, 126.

cities try more than once to attain the title. U.S. cities are among the most consistent bidders; Los Angeles, which was the only bidder for the 1932 and 1984 Olympics, has bid a total of nine times while Detroit holds the record for the highest number of unsuccessful bids at seven, followed by Lausanne (5), Philadelphia (4), Buenos Aires (4) and Budapest (4).[11] İstanbul, which is the subject of the latter part of this thesis, bid unsuccessfully for the 2000, 2004 and 2008 Olympics and is an applicant city in the upcoming 2012 Olympics. Let us now turn to the host city election process for a better understanding of Olympic planning.

Host City Election Process

The host city election process is governed by the Olympic Charter, a document that codifies the fundamental principles, rules and bylaws adopted by the International Olympic Committee and that sets the conditions for the celebration of the Olympic Games.[12] The election process, outlined in Rule 37, was amended in December 1999 to include a two-phase candidature procedure: the candidature acceptance phase and the candidature phase.[13]

In phase I, which lasts for ten months beginning nine years prior to the games in question, National Olympic Committees (NOC's) nominate their applicant city to the IOC. The application is made official with the deposit of a non-refundable fee of $150,000. The Bidding Committee of each applicant city must then fill out a detailed questionnaire outlining their Olympic project.[14] The answers are assessed by a panel of experts known as the IOC Candidature Acceptance Working Group, or the Working Group.

The Working Group for the 2008 Olympics comprised of the following members: IOC Director General, IOC Director of Sports, IOC Director of Control and Coordination of Operations, IOC Director of Legal Affairs and the IOC Director of Technology, the Director of the Department for the Organization of International Sports Events and International Cooperation of the Italian Olympic Committee, former Director General of the Lillehammer Olympic Organizing Committee, Barcelona Olympic Games Director of Security, experts on transportation and the environment and representatives of the International Sports Federations (IF's), NOC's and athletes. Several academic institutions and

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11 Bid counts, where applicable, include the times when city was selected as host. Rome and Amsterdam have hosted one game and bid six times, and Athens, the host for the 2004 Summer Games, has bid four times since hosting the first modern Olympics in 1896. With the exception of Montreal and Helsinki, cities have bid to host either the Summer or Winter Games.

12 For the full text of the Olympic Charter, see the Official Website of the Olympic Movement: multimedia.olympic.org/pdf/en_report_122.pdf

13 "Candidature Acceptance Procedure" for the 2008 Olympics. 18 February 2000, published 11 November 2003. Official Website of the Olympic Movement. http://multimedia.olympic.org/pdf/en_report_295.pdf.
See also "Choice of the Host City." Official Website of the Olympic Movement. http://www.olympic.org/uk/organisation/missions/cities_uk.asp

14 See "Questionnaire for cities applying to become candidate cities to host the Games of the XXIX Olympiad in 2008". 24 February 2000, published 13 March 2002. Official Website of the Olympic Movement.
http://multimedia.olympic.org/pdf/en_report_288.pdf

Games of the XXX Olympiad 2012 deadlines

Applicant Cities to reply to IOC questionnaire	15 January 2004
Examination of replies by IOC and experts	15 January – March 2004
Acceptance of Candidate Cities by the IOC Executive Board	18 May 2004
Games of the XXVIII Olympiad	Athens, 13 – 29 August 2004
Preparation of Candidature Files by the Candidate Cities	18 May – 15 November 2004
Receipt of Candidature Files at the IOC	15 November 2004
Analysis of Candidature Files by the IOC	15 November 2004 – end January 2005
Visit of the IOC Evaluation Commission to the Candidate Cities	February – March 2005
Evaluation Commission report	One month before election
Announcement by the IOC Executive Board of Candidate Cities to be submitted to the IOC Session for election	At the discretion of the IOC Executive Board
Election of the host city by the IOC Session, Singapore	July 2005

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13. Provisional Deadlines for the 2012 Summer Olympics

private research organizations were contacted for independent studies, all compiled into a comparative report in which applicant cities are graded on different aspects of their application. The Report of the Candidature Working Group forms the basis of a vote at the IOC Executive Committee that determines the cities to be accepted to the second phase. [15] In 2008, Osaka, Paris, Toronto, Beijing and İstanbul were selected as 'candidate cities' from a larger list including Bangkok, Cairo, Havana, Kuala Lumpur and Seville.[16]

In Phase II, candidate cities complete a detailed report known as the Candidature File or the Bidbook, based on the Manual for Candidate Cities for the Games of the Olympiad prepared by the IOC.[17] The Candidate City and its NOC must also undersign documents that outline their privileges and legal obligations. The Bidbook is made public after its submission to the IOC, at which point the candidate city can begin its promotion campaign. An Evaluation Commission consisting of IOC experts and representatives of the IOC, IPC, IF's and NOC's review the candidature files and visit each candidate city to inspect the proposed sites. Their findings are compiled in the Report of the IOC Evaluation Commission, wherein each candidate city is discussed separately following the thematic framework of the Bidbook.[18] The IOC Executive Committee reviews the report to select cities to be submitted to the IOC Election Session. For 2008, all of the five candidate cities were included in the final vote. Each candidate city gave a short presentation during the 112th IOC session on July 13, 2001 in Moscow, where Beijing was selected with 56 out of 105 votes in the second round, followed by Toronto with only 22 votes.

Upon election, the host city forms the Organizing Committee for the Olympic Games (OCOG), which is the main body responsible for the realization of the city's Olympic plan and the staging of Olympic events, as presented in the Bidbook. The OCOG executive board is constituted of the following members: The IOC member(s) in the country, the President and Secretary General of the NOC, an athlete representative and at least one member representing and designated by the Host City. The executive body may also include representatives of public authorities and other leading figures, and

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15 See "Report by the IOC Candidature Acceptance Working Group" for the 2008 Olympics. 18 August 2000, published 13 March 2002. Official Website of the Olympic Movement. http://multimedia.olympic.org/pdf/en_report_287.pdf

16 Eight other cities, which were listed as potential bidders, dropped out or were recalled by their NOC's prior to Phase I. In the U.S., the U.S. Olympics Committee voted against the application of Baltimore, Cincinnati and Seattle while Boston and Chicago dropped out of the contest. The Japanese Olympic Committee recalled Yokohama's application in support of Osaka. Monterrey (Mexico) and Edinburgh (UK) also did not proceed into the candidature acceptance phase. http://www.proxyone.com/cgi-bin/nph-srch.cgi/000000A/687474702f7777772e616c64617665722e636f6d2f

17 See "Manual for Candidate Cities for the Games of the XXIX Olympiad 2008", published nine parts, 13 March 2002. Official Website of the Olympic Movement. http://www.olympic.org/uk/utilities/reports/level2_uk.asp?HEAD2=47&HEAD1=11

18 See "Report by the IOC Evaluation Commission" for the 2008 Olympics. 3 April 2001, published 13 March 2002. Official Website of the Olympic Movement. http://multimedia.olympic.org/pdf/en_report_287.pdf

members of the candidature committee may continue service in the OCOG.[19] The OCOG often seeks funding and assistance from local, regional and national governments for the construction of a large number of sports venues and for transportation improvements. While it is possible to hold sports competitions in cheaper and easy-to-build temporary structures, host cities choose to build imposing sports complexes to impress the world during the Games, and to relay a saga of national glory to future generations.

Olympic Infrastructure

Sports infrastructure:

Olympic infrastructure consists of competition venues, training sites, the Olympic village, the Judges and Referees Village, Media Center (MC) and International Press Center (IPC), and the transportation networks that are existing or created to connect these nodes. The capacity of each competition venue is determined by the each OCOG based on consultations with the IOC and the International Federations (IF's) for each Olympic sport. In general, the required capacities are as follows: [20]

Sports	Type of Venue	Venue Capacity
Athletism	open	80,000
Archery	open (temporary)	4,000
Badminton	enclosed	5,000
Baseball	open	4,000
Basketball*	enclosed	15,000
Boxing	enclosed	10,000
Canoe/Kayak	open (temporary)	5,000
Cycling	velodrome	6,500
Equestrian	open	30,000
Fencing	enclosed	3,000
Hockey*	open	15,000
Football	+4 preliminary stadiums	-
Football (finals)	open	80,000
Gymnastics	closed	15,000
Handball*	closed	12,000
Judo	closed	8,000
Modern Pentathlon	polygon	2,500
Swimming*	open/enclosed	15,000
Table Tennis	closed	10,000
Tennis (finals)	8 courts	10,000
Volleyball*	closed	15,000
Weightlifting	closed	5,000
Wrestling	closed	5,000
Sailing	marina	5,000

*calls for a second venue

19 ibid., I, 11.

20 "Türkiye ve Olimpiyat" Sempozyumu, 40.

Accommodations:

The Olympic Charter requires a single Olympic Village that can accommodate all athletes. Required accommodations for other members of the Olympic family are as follows: [21]

Olympic Family Group	# Rooms	Type of Accommodation	Cost bearing
Athletes and team officials	16000	Olympic Village	OCOG-cost
"As" team officials	700	Hotels/campus	their cost
IOC, IF, NOC	1800	4-5 Official IOC hotels	their cost
IF executive board, staff	600	3-5 'headquarter' hotels	their cost
IF guests	200	hotel	their cost
NOC guests	1500-2000	3-5 hotels	their cost
Int'l judges and referees	1300	hotels close to venues	their cost
National judges	700	hotels close to venues	their cost
Media representatives	17000	hotels	their cost
Sponsors, marketing partners	7000	superior category hotels	their cost
Volunteers and security*	-	-	OCOG-cost
TOTAL	29500+	(excluding Olympic Village)	

There are no required accommodations for spectators, estimated around 2 million people.[22] Given the large number of hotel rooms taken up by the Olympic family, spectators are often lodged at hotels outside the city or choose to rent local apartments and houses at inflated daily rates. The Paralympic Games, which take place after the Olympic Games, use many of the same sports venues and accommodations.

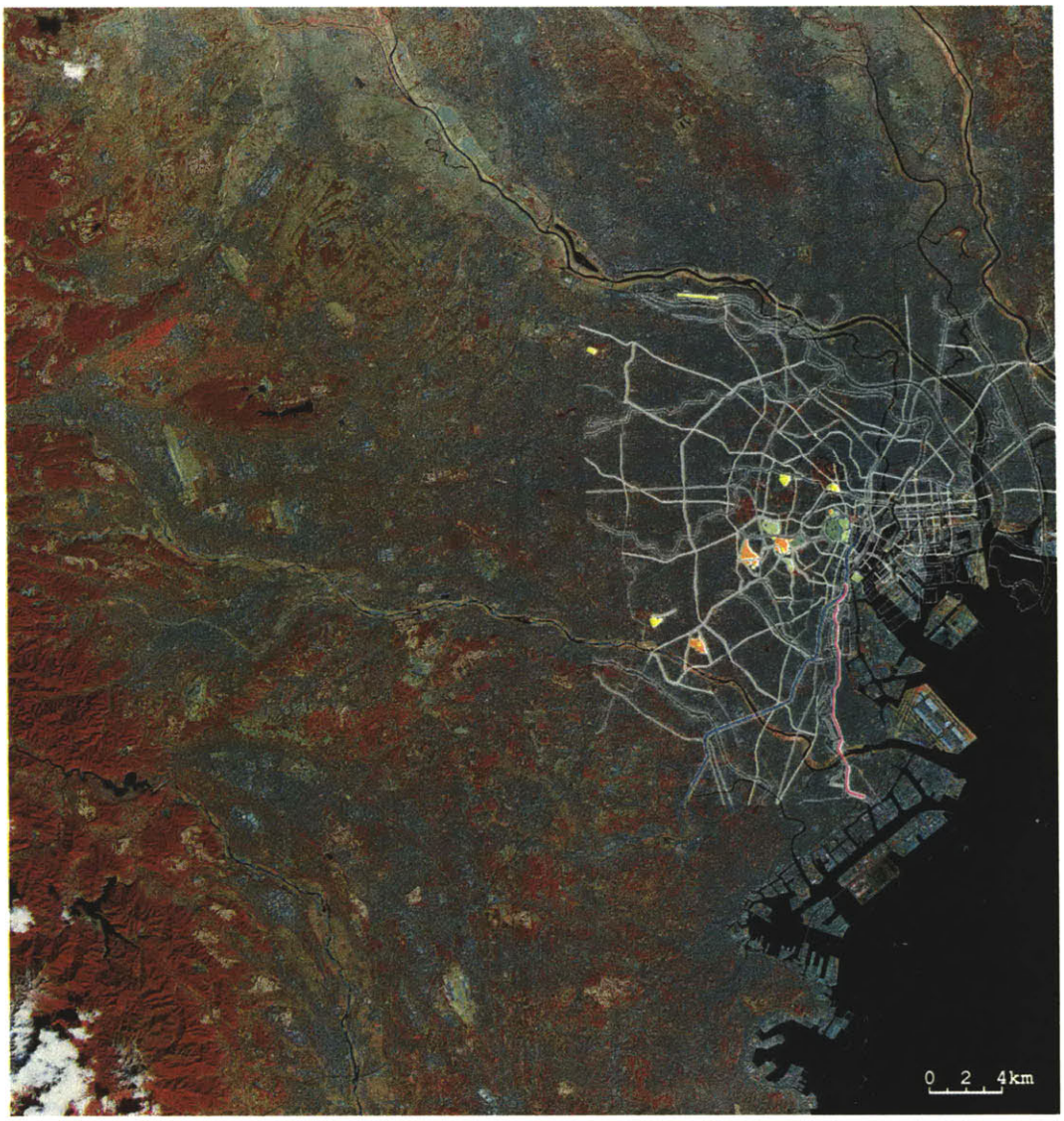
Olympic transportation:

While there are no set requirements for the transportations systems to be used during the Olympics, transportation is an important factor in the election of host city and is critical for the success of the Games. Athletes, team officials, judges and referees need to arrive on time for their games, while spectators need to be efficiently moved in and out of Olympic areas for the maintenance of the tight events schedule.

Beginning with Tokyo in 1964, many host cities responded to this challenge with heavy investments in local and regional road and rail networks. The Olympics is often used as a catalyst to marshal domestic resources for infrastructure improvements that were planned but not able to be realized prior to the Olympics. Between 1958 and 1964, Tokyo invested about 790 billion yen (about $ 25 billion in 2002 dollars) in transportation infrastructure, and an additional 83 billion yen (about $ 2,6 billion in 2002 dollars) in water and sewerage infrastructure. The city built a 70km highway between the Haneda Airport and the Olympic Village, 52km of new roads, 107km of new subway lines, a monorail service between the city and the airport, and a bullet-train line between Tokyo and southern Japan. The sum of all investments, 10 trillion yen, equaling 3.2 % of Japan's GNP in 1965. In his evaluation of the urban

21 "Manual for Candidate Cities for the Games of the XXIX Olympiad 2008", II, 68-69.
22 The Official Report of the Centennial Olympic Games, 500.

planning for Tokyo Olympics two decades after the Games, Shigeru Itoh notes that in spite of the exorbitant cost, the highways and expressways built before the Olympics quickly became inadequate for the rapidly growing city: *"By underestimating the growth of the Japanese economy, new facilities were developed without fully comprehending what the future needs would be. Moreover, the tremendous local and national effort that mobilized the resources for the Olympics could never be organized again. [...] The congestion of Tokyo's public transportation system, the congestion of roads and the shortage of affordable housing are the results of these misjudgments."* [23]

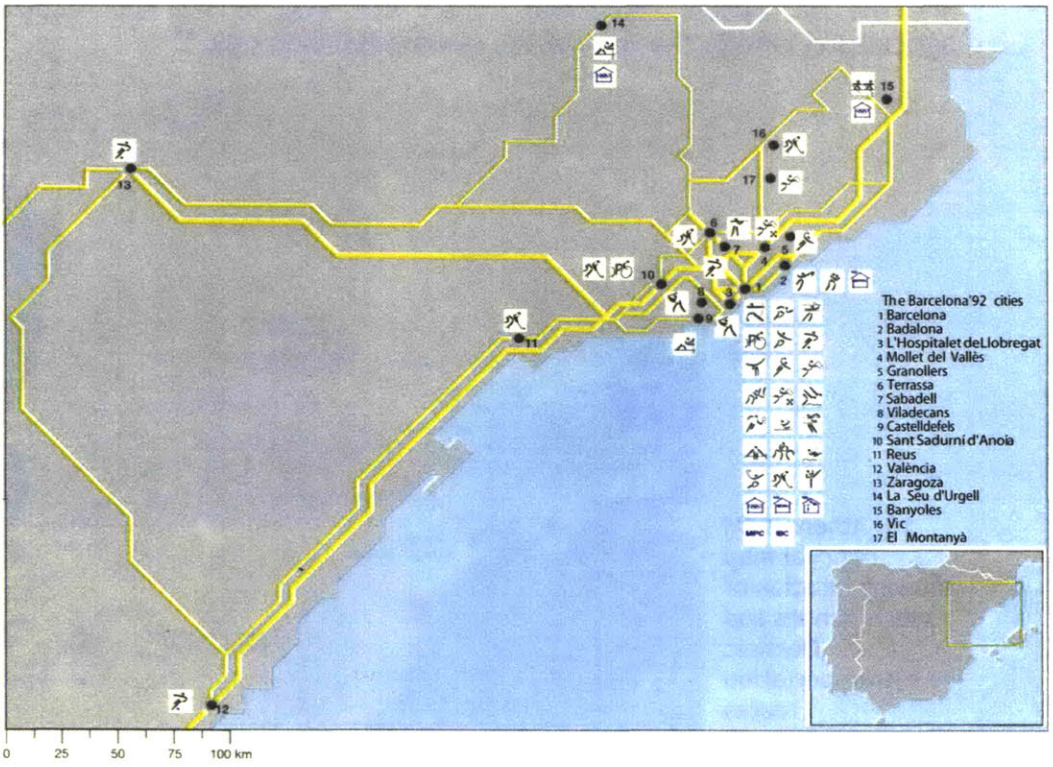


14. A contemporary aerial photograph of Tokyo City, showing the location of Olympic venues and the extent of transportation networks built for the Tokyo Olympics in 1964.

Three decades later, Barcelona would use the Games as a *"pretext, or*

23 Itoh, Shigeru. "Urban Planning Evaluation of the Tokyo Olympics" in Hosting the Olympics: The Long Term Impact, 92.

an opportunity [...], to transform and relaunch the city."[24] A significant amount of the money that the city invested to refashion itself and redefine its regional role was spent on road and rail networks. Unlike Tokyo, Barcelona had a well-calculated vision of its future and used the Olympics to achieve its long-term goals. The construction of the long-needed ring road was justified by the siting of Olympic venues at four corners of the city. Two tunnels were built through mountains to the north of the city that enabled connections with the hinterland and the seafront to the south was redesigned with numerous public functions.[25] Smaller competition venues were scattered in the Catalonia region, rendered accessible with new roads and rail lines, targeting areas where there is a base or tradition for a given sport, such as rowing or horseback riding. Only 38.5% of Olympic investments were located in the city, as opposed to 61.5% in the metropolitan area and 16% in the Catalonia region. As a result, the entire region profited in the long run from infrastructure built for the Barcelona Olympics. [26]



15. Location of sports venues, Barcelona 1992 Summer Olympics.

Athens, the host of the 2004 Olympics, is much larger than Barcelona with 3,192,600 people (2001 census), a third of the nation's population. The city, composed mostly of concrete apartment buildings from the 1930s,

24 Botella, Miquel. "The Keys to Success of the Barcelona Games" in The Keys to Success, 18.
25 Millet I Serra, Lluís. "The Games of the City" in The Keys to Success, 191-194.
26 Brunet, Ferran. "An Economic Analysis of the Barcelona '92 Olympic Games: Resources, Financing and Impact" in The Keys to Success, 209.

occupies an area of 29km^2 on a large coastal plain surrounded by mountains on three sides. Its sunken position, combined with a car-oriented plan and lack of public transportation, causes severe air pollution during the summer, which is an issue of ongoing concern for Olympic planners and athletes. [27]

To address these concerns, Athens has built 7.7 km of new metro lines and will be completing the construction of a 23.7 km long tram network and a 32km long suburban rail between the city and the new Athens International Airport. The city, however, is also upgrading 90km of roads and building 120 km of new roads and new parking lots for the Olympics. [28] This is no surprising, since three out of the four large Olympic complexes are located at the suburban periphery of Athens. Unlike Barcelona, where transportation routes were set down prior to the selection of Olympic sites, Athens appears to be building highways to arbitrary locations in the periphery of the city that do not address traffic congestion within the city. Environmental damage effected by Olympic construction aside, highways leading to the Schinias Rowing Center and the Markapoulo Equestrian Center will lead to the suburbanization of agricultural land to the west of the mountain-bound city. [29]

16. Athens 2004 regional map showing location of sports venues and Olympic transportation routes

27 Prusher, Ilene R. May 20, 1999. "Will the air over Athens be Olympic-ready?" Christian Science Monitor.

28 "Olympic Transportation." The Official Website of the Athens 2004 Olympic and Paralympic Games. http://www.athens.olympics.org/page/default.asp?la=2&id=200

29 "Olympics venue at center of environmental dispute," 25 February 2001. *Associated Press*. http://www.enn.com/news/wire-stories/2001/02/02252001/ap_row_42190.asp. See also Howden, Daniel. 6 August 2003. "Athens Organizers Fail Green Test, Groups Say." *Reuters News Service*. http://www.planetark.com/dailynewsstory.cfm/newsid/21744/newsDate/6-Aug-2003/story.htm

Problematic Requirements of the Olympic Program

Sports venues and transportation networks are the basic building blocks of the Olympic project. Our brief discussion of the Olympic transportation in Tokyo, Barcelona and Athens suggests that the siting of venues is a critical determinant of the long-term impact of Olympics on its host city. What, then, are the factors that determine site selection? Is it a coincidence that a majority of host cities have chosen to concentrate sports venues in one or more 'Olympic Parks' as opposed to distributing them throughout the city? Why are Olympic venues often built on the periphery of the city as opposed to the center? While answers to these questions may differ based on the particularities of a given host city, commonalities occur based on the specifics of the Olympic program, such as the requirement of a single Olympic village.

In this section of the thesis, we will turn to IOC's Manual for Candidate Cities for the Games, the framework for the Candidature File to disclose those rules – stated and obscured – that define and limit the urban planner's palette. Where appropriate, supporting information will be pulled from reports of the Working Group and the Evaluation Commission that reveal priorities and biases that may conflict with the interests of the urban planner.

The Insufficiency of the Bidbook as Master Plan

The Candidature File, or the Bidbook, is comprised of answers to a detailed questionnaire entitled the Manual for Candidate Cities for the Games (Manual), distributed during the candidature phase. The Olympic Bidding Committee of each candidate city takes six months to prepare answers to 149 questions. Cities that have applied to previous Olympics often submit the same answers with modifications based on commentary in the report of the Working Group and, if the city was chosen to proceed to Phase II, the report of the Evaluation Commission. The questions are collected under eighteen themes:

Themes of the Candidature File

1. National, Regional and Candidate City Characteristics
2. Legal Aspects
3. Customs and immigration formalities
4. Environmental Protection and Meteorology
5. Finance
6. Marketing
7. General Sports Concept
8. Sports
9. Paralympic Games
10. Olympic Village
11. Medical / Health Services
12. Security
13. Accommodation
14. Transport
15. Technology
16. Communications and Media Services
17. Olympism and Culture
18. Guarantees

The IOC has emphasized that the candidature file *"represents a city's master plan for organizing the Olympic Games."* [30] In light of urban planning challenges that are posed by the Olympic project, however, the Bidbook is inadequate as a master plan. This is caused by four limitations built into the host city bidding process: the inalterability of the Bidbook, the lack of public input in the preparation of the Bidbook, the conflict between the OCOG and non-OCOG budget and the demands for guarantees.

The Bidbook has the force of obligation:

Bidbooks prepared by Bidding Committees of candidate cities are submitted to the IOC seven and one half years before the Olympics in question. Once submitted, their contents are considered commitments for which the Organizing Committee of the selected city will be held responsible. This is stressed in various points in the Manual: *"All the declarations, guarantees and agreements contained in the Candidature File have the force of obligations, as do all the other commitments made by the Candidate City, the NOC and the Candidature Committee, and all declarations made during official presentations."* [31] Host cities are often asked to make changes to their project based on the suggestions of the IOC or the IF's, yet the time frame does not allow for major changes. It may, indeed, seem fair to expect the selected city to deliver as promised. The obligation, however, becomes problematic if we consider the promotional nature of the Bidbook, and the discrepancy between the corporate body that makes the promises (the Bidding Committee) and the public bodies that are expected to deliver (Municipalities and Ministries).

The Bidbook is produced behind closed doors:

The Bidding Committee often consults with the NOC, and representatives of local and regional governments while preparing the Bidbook, and their decisions often leak to the media. Nevertheless, cities are prohibited from sharing contents of their Bidbook with residents or the general public prior to its submission, at which point – as discussed above – the Bidbook becomes inalterable: *"The candidature file may not be distributed or made public until it has been submitted to the IOC and the IOC's written authorization has been obtained."* [32] This requirement effectively prevents the formation of a public debate about important decisions such as location of infrastructure investments that are of direct concern to host city residents.

The Bidbook promises money out of the local and national government coffers:

As the story would have it, the idea for the Games came to Atlanta businessman Billy Payne *"during a sleepless night in 1987, following the successful conclusion of a fund-raising effort that he had led for his Dunwoody church and the dedication of a new organ."* The Atlanta Chamber of Commerce would not support his vision, but Payne was able to collect the funds necessary to pay for the application fees and the preparation of the Bidbook (over $7.3 million) from his corporate friends, such as Horace Sibley of the Coca-Cola

30 "Manual for Candidate Cities for the Games of the XXIX Olympiad 2008," II, 11.
31 ibid., I, 8.
32 ibid., I, 8.

Corporation.[33] The bidding adventure of İstanbul, likewise, was fueled by the energy and vision of one man: NOC head and former member of the Turkish national volleyball team, Sinan Erdem.[34] Given the entrepreneurial nature of Olympic bidding, it is rare to find instances such as in Beijing, where the Bidding Committee is fully integrated with local, regional and national governments. Even though they may undersign 'guarantees' for funds and other resources, governments do not fully enter the scene until after the Olympics is awarded to the city. And once they do, the Bidbook becomes an endless source for inter-agency conflict wherein everyone wants their piece of the pie but no one wants to cover the exorbitant expenses prescribed by the Bidbook.

The mismatch between promises and means is caused by the dual categorization of expenses in the Bidbook. The IOC asks cities to present two separate budgets: OCOG expenses and non-OCOG expenses, where investments that are "*integrated into a long-term urban development plan*" fall under the latter category. The surplus/deficit from the Olympic project is determined by comparing the revenues (ticket sales, sale of TV rights, etc.) with the OCOG expenses. The non-OCOG budget includes a majority of capital investments such as new roads, railways, airport renovations, and even the Olympic Village, that are to be paid for by "*the city, regional and state authorities and private sector.*" [35] A quick survey of Olympic plans, however, show that a fair number of the roads and railways built for the Olympics, such as highways linking the Olympic Village to the airport, are of little value to the city after the Games. Once these items are moved into the OCOG budget, the emerging negative balance will be indicative of the mismatch between Olympic spending and the long-term needs of the host city. Paying for the Olympics, even with the help of corporations, drains the coffers of local and regional governments in the short-run. The wide-spread notion that the Olympics comes with large international funds is not only false but also misrepresents a situation where the city pays continuously to the IOC in order to host the Games: the elected city submits a guarantee deposit of $1,000,000 (minus the application fee of $150,000) to the IOC within ten days of singing the Host City Contract, and is asked to gradually increase this amount to $5,000,000, drawing on the OCOG revenue.

The Bidbook calls for guarantees that limit the planner's toolkit:

The IOC Manual requires candidate cities to submit, at the time of bidding, signatures of approval from owners of sports facilities to be used during the Olympics Games as well as from land-owners on whose property new facilities will be erected. [36] The difficulty of obtaining these guarantees prior to the awarding of the Games can be said to effectively limit the city's ability to develop sites under private ownership, such as a derelict neighborhood of empty warehouses. As a result, most bidders settle on readily available state-owned lots outside the city and fail to explore opportunities for adaptive reuse

33 Rutheiser, Charles. 1996. Imagineering Atlanta, 228

34 Erdem, who led the Bidding Committee from its formation in 1992, passed away this summer. He was replaced by Togay Bayatlı.

35 ibid., II, 31.

36 ibid., II, 43.

and brownfield development within the city.

The Dates and Duration of the Olympic Games

The eight Olympic Games between Athens 1896 and Amsterdam 1928 lasted between 83 to 180 days. Los Angeles Olympics in 1932 was the first Olympics to take place within two weeks and the Olympic schedule has since not exceeded 17 days. A shorter schedule limits the duration of interruption with daily life in the host city. However, it also creates a larger economic and physical impact that is felt mostly on transportation and accommodations. In Atlanta, between 700,000 and 1,400,000 spectators rode the bus during the 16-day competition period. Stretching the competitions over the span of a month might reduce daily transportation loads while resulting in a net increase in the number of spectators that visit the city for the Games. Cities would not have to resort to emergency measures to provide for the spectators and less money would be spent overall for transportation improvements. A longer Olympics would allow venues to be used for competitions in more than one sport, thus reducing the need for multiple venues for similar sports.[37] The negative effect of the Olympics on affordable housing in the host city, caused by an acute housing shortage during the Games and increase in real estate values after the Games, can also be controlled better with a longer, less busy Olympic schedule.

The IOC also sets the date of the Olympics during the bidding period, seven years prior to each Games.[38] There are no adjustments made based on the priorities and schedules or the climate of the selected host city. In Athens, the Olympics will take place during the hottest days of summer between the 13th and 29th of August with high temperatures around 90°F (31°C). Shifting the schedule to May or September would allow the city to save money and energy, for example, by using less air conditioning during the Games.

The Preference for Concentration of Venues and Accommodation

There are no strict IOC rules that guide the location of Olympic venues in the host city. The IOC asks cities to consider, among other things, transport, security and catering while choosing Olympic sites. Since Atlanta in 1996, cities are also advised not to use competition venues that are more than 50 kilometers away from the city center.[39] Each site, in particular sites for those sports dependent on the elements, is required to comply with the relevant IF rules.[40] A closer reading, however, reveals that cities are not so free in their

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37 The IOC recommends the use of multi-purpose sport complexes for competitions: "*Site versatility is a great advantage both for the Games and for future use, as long as it is approached sensibly. During the Games, it may be possible to schedule different activities to take place at the same venue (more than one sport, or different events in the same sport).*" ibid., II, 43. However, this is not always possible given the busy competition schedule.

38 ibid., II, 40. "The Games of the XXIX Olympiad will be held in the last week of July and the first week of August 2008," and "The duration of the competitions of the Games of the Olympiad and the Olympic Winter Games must not exceed 16 days."

39 ibid., II, 19.

40 ibid., II, 42.

planning choices. The IOC emphasizes its preference for site concentration in the Manual for bidding cities:

> *Specific requirements for the sports programme, the future objectives of the city and the country, urban planning, respect for the environment, etc., are factors which should be considered and evaluated together when formulating a general policy [...] Proximity of sites to each other and to the nerve centers of the Games (Olympic Village, IBC, MPC, etc.,) and to the city center is highly recommended.* ***Site concentration*** *[their emphasis], if planned sensibly, will certainly ease the running of the Games.* [41]

The Main Press Center (MPC) and the International Broadcasting Center (IBC), which could be housed in one structure, are also advised to be located near the Olympic stadium and the main competition venues.[42]

The Requirement of the Single Olympic Village

The Los Angeles Games in 1932 was the first Olympic Games to house all male athletes in one Olympic Village. The Olympic Village has since become a symbol of world peace and accord. A single village housing athletes of all nations is now a requirement that is enforced by the Olympic Charter and the Host City Contract.[43] The Sydney Olympic Village housed 10,651 athletes and about 5000 team officials from 199 different countries. While it allows the athletes to *"prepare for competition without being disturbed by the outside world (e.g. media, visitors, sponsors)"*[44], this requirement has significant consequences for Olympic Planning. Competition venues, including new structures that could be distributed throughout the city are, as a result, found clustered within a certain radius of the Olympic Village.

The location of the Olympic Village is the single most important determinant for the choice of competition venues. Yet the Village is now frequently placed on isolated sites outside of urban boundaries to ensure security of athletes while alternative proposals prioritizing long-term urban benefits, such as the Paris 2008 bid, are not always supported. Paris proposed to rehabilitate part of a former industrial district to the northeast of the city for the Olympic Village. Rejecting the idea of an Olympic Village surrounded by light industrial properties and public housing, the IOC evaluation commission remarked that *"there is a challenge in producing and operating an Olympic Village as part of an urban development in a City center Games."*[45] Osaka's proposal to locate the Olympic Village on an island was considered to be an attractive option except for the long travel times to some mainland venues.

Further comments by the Evaluation Commission on the "potential for congestion and access problems" implicated by the Paris scheme suggests that an Olympic Games that takes place *outside* the host city may indeed be the

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41 ibid., II, 42.
42 ibid., II, 88.
43 ibid., II, 56.
44 ibid., II, 56.
45 "Report of the IOC Evaluation Commission for the Games of the XXIX Olympiad in 2008", 34.

most attractive option for the IOC. The sheer number of athletes and team officials that will be housed in the village require the use of typologies such as gated communities, holiday villages or campus-style developments that are not easily integrated into the city fabric. The requirement of the single Olympic Village, in short, calls for a suburban Olympics.

A Limited Understanding of the Environmental Impact

The International Olympic Committee's (IOC) decision to 'green' the Olympics, taken in part due to pressure from Greenpeace in Sydney, has led to the tightening of environmental guidelines for future bidders. The IOC has aligned itself with the United Nations' Sustainable Development Program (Agenda 21) to demonstrate its commitment to the environment. Since Sydney, applicant cities increasingly advertise their bid as the "Green Games" while environmentalists around the world —among them critics of Sydney's hasty cleanup of the Homebush bay— watch with skepticism.

The IOC Manual requires candidate cities to submit environmental impact statements (EIA) for all Olympic sites and facilities that includes the following areas of analysis:

-architecture, design and landscaping
-reuse of facilities wherever applicable
-restoration of derelict areas
-avoidance of destructive land use
-protection of habitats and biodiversity
-minimize consumption of non-renewable resources
-minimize emissions of pollutants
-sewage treatment
-solid waste handling
-energy consumption
-water and air quality
-environmental awareness

With the exception of 'avoidance of destructive land use' and 'protection of habitats and biodiversity' (which are elusive aims for anyone familiar with the science of ecology and land use planning), the Olympic EIA makes no reference to the long-term impacts of venue locations or road construction. A sailing venue located in a National Park and its access roads, however sensibly built, will affect the ecosystems of the park in the long run. While it is important to reduce the consumption of water and energy during the Games, the emphasis should be placed on changes that are permanent. Moreover, there is no evidence that the IOC prioritizes environmental concerns over security or the ease of transportation in its choice of the host city.

The IOC must change some key policies before it can honestly claim its commitment to the environment. One of these policies is the organization's lack of accountability for environmental damage in the host city: "*The main responsibility for the environment, however, rests with the Candidate and Host Cities, as a function of governance and legislation.*" [46] Experts in ecology and land use should be appointed as members of the Working Group and the

46 ibid., II, 16.

Evaluation Commission. The IOC members, who make the final choice on the host city, should be urged to consider the environmental impact of each scheme. The employment of an independent monitoring organization to ensure compliance with environmental promises and guidelines in the pre-Olympic stage is indispensable for the realization of the Green Games.

Lack of Planning for Spectators

The IOC Manual for candidate cities requires the following hierarchy for access and the priority of movement: Athletes, Officials, Referees, Media, VIPs and Guests, Sponsors, Spectators, Organizers. The categories are reduced to four for consideration of transportation demand: Olympic family including athletes and officials, media, OCOG and spectators.[47] Based on this hierarchy, the level of planning for spectators is less important for the success of a bid than the provisions made for the athletes: "*Athletes are at the heart of the Games. The organisation should be geared towards providing them with the best possible competition conditions: facilities, equipment, accommodation, transport, food, etc.*" [48] The 'Accommodations' theme of the Bidbook is comprised of a long list of hotels that will have rooms available at pre-determined rates for the Olympic family, media and sponsors only. Candidate cities are not required by the Manual to demonstrate the availability of accommodations and transportation for spectators.

From a planning point of view, the movement and housing of spectators poses a much larger organizational problem than providing for the Olympic Family. Estimated at 2 million, spectators have the most significant impacts on housing, transportation and the environment in a host city. [49] Encouraging cities to not plan for spectators will inevitable generate an Olympics that is destructive to the host city.

The Candidature Timeline

How much time is enough to plan and build for the Olympics? How much time is enough to plan and build an Olympics that brings the greatest benefits to its host city? My conversations with architects and planners involved in Athens 2004 point to the following: once awarded the Games, cities have about a year to revise their plans to finish construction of their infrastructure in time for the Olympics. If an applicant city has not conducted research into long-term impacts of its Olympic Plan during the bidding phase, it will not have the time or resources to prevent any negative impacts in the Pre-Olympic phase. Athens has also had to eliminate a fair number of planned improvements that were not directly related to the successful operation of the Games. There is evidence to suggest that eight years is not enough time for the planning and organization the Olympics.

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47 ibid., II, 76.

48 ibid., II, 44.

49 Spectator estimate from The Official Report of the Centennial Olympic Games, 500.

Problems and Limitations of İstanbul's 2008 Bid

The Turkish Olympic Law

İstanbul's Olympic adventure began in 1992 when the parliament passed an Olympic Law (the only example of its kind in the history of the Olympics) in support of the city's and the Turkish Olympic Committee's aspirations to host the Summer Games. The law calls for the institution of an İstanbul Olympic Bidding Committee (IOBC) under corporate status and describes its constitution of twelve members under the presidency of the Minister of Youth and Sport:

- Governor of İstanbul
- A consul appointed by the Ministry of Exterior
- The Mayor of Greater İstanbul and two appointed members
- The Director for Youth and Sports and two appointed members
- The President of the Turkish Olympic Committee and two appointed members
- The General Secretary of the Turkish Olympic Committee

The income of the IOBC is composed of the following:

- 1 % from sports lotteries,
- 5 % from the previous year's net income from the National lottery,
- 1 % collected each month in the National Housing Fund,
- Income allocated in each year's national budget,
- 1 % from the approved budget of the Greater İstanbul Municipality,
- 1 % from ticket sales from bets on horse races, and
- other income

The percentages can be increased up to five-fold by order of the government. The law gives the IOBC exemption from taxes on all income and expenses and instructs all public and government institutions, directorates and municipalities to prioritize any IOBC requests related to Olympic preparation and organization. The land needed for the organization of the Olympic Village, once chosen by the IOBC, will be apportioned to the organization by order of the cabinet. With this budget and privileges, the IOBC is expected to perform the following functions:

- designating and preparing Olympic areas,
- evaluating plans and projects for all Olympic venues and constructing those that are approved,
- modernizing existing sports venues to meet Olympic standards
- planning and constructing the Olympic Village and working in conjunction with local and national governments for the provision of all communications and transportation infrastructure,
- hiring all local and foreign employees necessary for Olympic preparation and designating their salaries,
- accepting all types of contributions,
- conducting all international communications related to the Olympics,
- buying, constructing and commissioning all necessary materials and services,
- operating, renting, buying and selling all types of facilities, and

- performing other functions determined by the executive committee

The law also organizes for the dissolution of the IOBC upon İstanbul's election and the subsequent transfer of the ownership and operation of all sports venues constructed by the IOBC to the General Directorate for Youth and Sports and the Greater İstanbul Municipality. The IOBC's budget and expenses are subject to the scrutiny of the Supreme Council of Inspection of the Prime Minister.[50]

The IOBC, as defined by the Turkish Olympic Law, has two major flaws that are of significant consequence for the future of Istanbul. First, the law gives the committee singular authority to make and execute planning decisions that will affect the future of the city. It is empowered to make demands from all kinds of public institutions without having to consult them. Second, and most important of all, the IOBC is required by law to build all necessary Olympic infrastructure *before* İstanbul is awarded the Games. The Turkish Olympic Law takes the already non-democratic structure of the Olympic Bidding process to a higher level by institutionalizing the Bidding Committee's unaccountability to the residents, neighborhood organizations, municipalities and service providers of Istanbul for decisions affecting the future of the city. Keeping this in mind, let us now introduce the Istanbul 2008 Olympic Plan prepared by the IOBC in 2001.

Location of Olympic Venues

İstanbul's Olympic plan, as presented in the Bidbook for the 2008 Olympics, consists of venues located primarily on the European side of the city. A majority of the sports venues are concentrated at two locations: Ataköy and İkitelli, located at 2 and 5 kilometers from the Atatürk International Airport. The Olympic Village, which is part of the Halkalı Public Housing Project, is situated on the route from the airport to the İkitelli Olympic Park.

The site for the Olympic Park was donated by the military prior to İstanbul's application for the 2000 Olympics. It is a flat and empty hilltop flanked by the İkitelli industrial zone and an old squatter settlement across two valleys to the east and west. It is accessible by a winding country road and sits about one kilometer to the north of the second ring road which is largely responsible for the development of this part of the urban periphery. The Olympic Park will contain venues for nineteen of the thirty-four Olympic sports. Five other venues will be at Ataköy although not in close proximity to each other. The Asian side of the city, which holds close to a third of the city's population, will host sailing and football events at existing venues. The siting of all new sports infrastructure on the European side has been met with opposition from a consortium of municipalities on the Asian side who have prepared a report explaining their need for sports facilities.[51] Their demands are justifiable given that the IOBC has prioritized the travel needs of Olympic athletes (a prerequisite for winning the Games) over the sports needs of local municipalities when deciding on the locations for new sports facilities.

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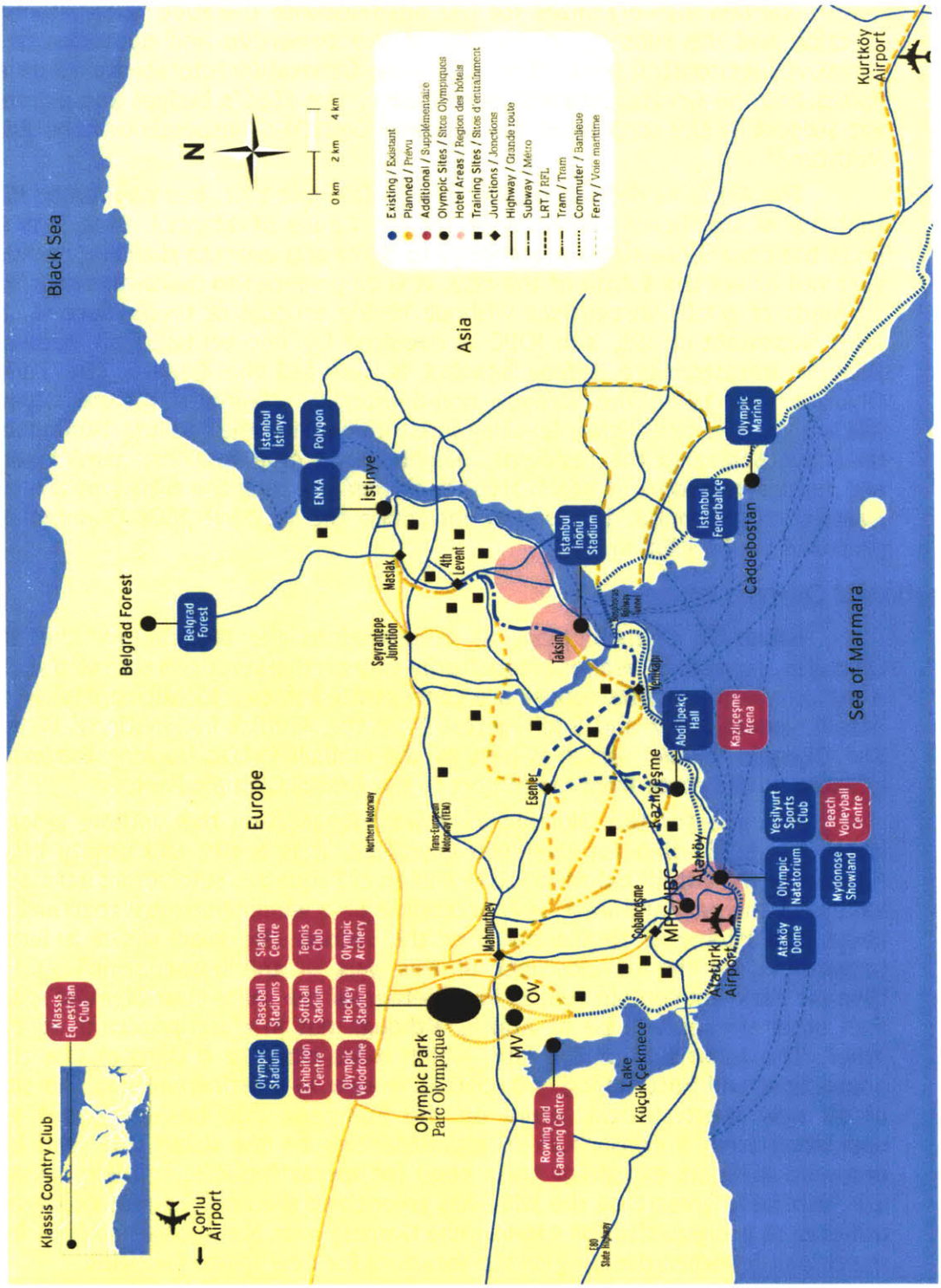
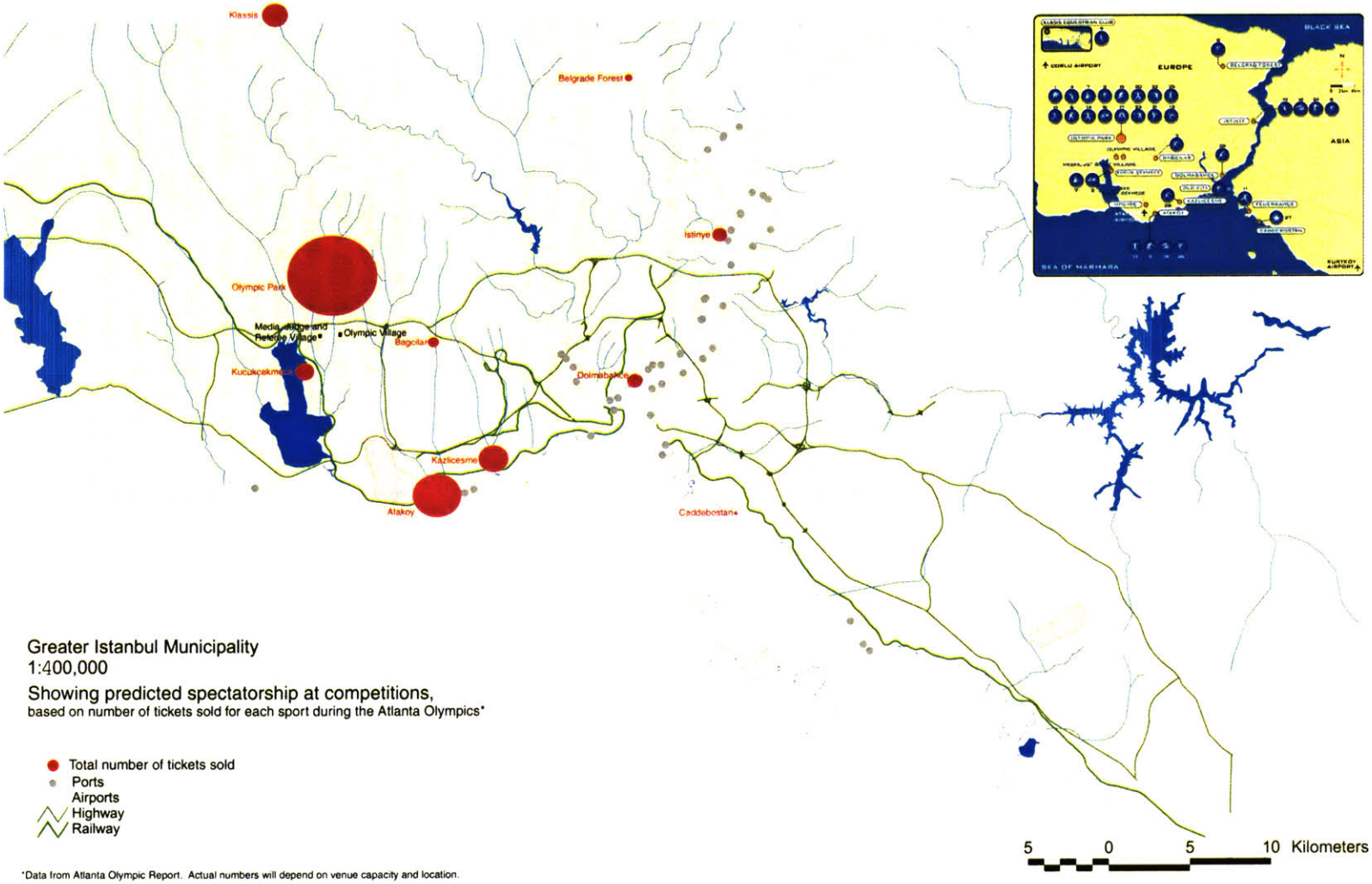
50 "Turkish Olympic Law". http://www.olympist.org/images/en/pdf/olympic_law.pdf

51 "İstanbul ve Anadolu Yakası Spor Dosyası: Problemler ve Çözüm Önerileri." 2000. İstanbul: İstanbul Anadolu Yakası Belediyeleri.



17. İstanbul 2008, Olympic plan showing existing and planned infrastructure.



Greater Istanbul Municipality
1:400,000

Showing predicted spectatorship at competitions,
based on number of tickets sold for each sport during the Atlanta Olympics*

- Total number of tickets sold
- Ports
- Airports
- Highway
- Railway

*Data from Atlanta Olympic Report. Actual numbers will depend on venue capacity and location.

Olympic Transportation

The proposed transportation improvements in İstanbul's bid for the 2008 Olympics are victim to the location of venues: neither the subway extension to the Olympic Park or the new highways marked in yellow on their map would be built for any other reason than the Olympics. In other words, the millions of dollars spent for the new transportation infrastructure will provide no daily benefits to İstanbul residents. Moreover, the highway built to the north of the Olympic Park will drag urban sprawl further north towards the city's water reservoirs and forests.

A quick analysis of the intensity of use at Olympic venues also forecasts the inability of the proposed improvements to meet the spectator demand for transportation (Figure 18). Given the location of the Olympic Park to the west of the city, all spectators will need to use the same single rail line or one of two highways going away from the city. For the opening ceremony, this means a load of more than 80,000 people traveling in the same direction. The lack of multi-modal or multi-directional transportation at this location will generate a traffic quagmire, already experienced during the first football game held at the newly completed Olympic Park. Similarly, chaos may be expected in accommodations where the reported 51,091 rooms in hotels, motels, guest houses and campuses, minus the 30,000 or so rooms required for the Olympic family, will not be enough even for a tenth of spectators who will visit the city during the Games. [52] A public poll conducted by the Association of Turkish Travel Agencies reports the lack of transportation and accommodation, along with a lack of organizational experience and the risk of embarrassment as the reasons why İstanbulites do not desire to host the Olympics in their city.[53] The same poll provides the following reasons for İstanbulites who want the Olympics: Turkey will be advertised around the globe; foreign currency will enter the country; there will be an increase in sports venues and an increase in the types of sports practiced in the country. Are these risks worth undertaking to obtain this set of benefits?

Lack of Public Debate

The Turkish Olympic Law asks the IOBC to continue applying to the IOC until the city is awarded the Games. Although İstanbul has already applied three times and is getting ready to apply a fourth time, the general public is unaware of the Candidature Committee's Olympic plan for the city. While it can be said that the public, incredulous that İstanbul can ever be awarded the Olympics, does not take the application process seriously, the lack of debate on this subject is also due to the lack of attention in the media to the planning and organizational aspects of the Olympics rather than the mere excitement of the selection process. There are a mere handful of articles or reports published that discuss İstanbul's Olympic plan and there is no comprehensive planning study that critically approaches the bid and provides alternatives.

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52 İstanbul 2008 Bidbook III, 61

53 "2008 Olimpiyatları istiyoruz." February 2001. TÜRSAB, 204.

5 5 BUDGETING

5 5 1 OCOG Budget for the 2008 Istanbul Olympic Games

A. REVENUES	US$(000)	%	B. EXPENDITURE	US$(000)	%
1 Television rights[1]			B1 Capital investments		
- USA	374,000	20.9	13 - Sports facilities	250,750	14.2
- Europe	185,000	10.3	- Olympic, Media and		
- Japan	75,000	4.2	Js' & Rs' villages	57,000	3.2
- Rest of World	77,000	4.3	- MPC & IBC	-	
	711,000	39.7		307,750	17.4
2 TOP sponsorship[1]	171,000	9.5	B2 Operations		
3 Local sponsorship[1]	150,000	8.4	14 Sports Events	275,000	15.5
4 Licensing	40,000	2.2	14 Olympic Village	75,000	4.2
5 Official suppliers	75,000	4.2	14 MPC & IBC	225,000	12.7
	436,000	24.3	15 Ceremonies and Programmes	60,000	3.4
6 Olympic Coin Programme	5,000	0.3	16 Medical Services	20,000	1.1
6 Philately	3,000	0.2	17 Catering	25,000	1.4
7 Lotteries	6,000	0.3	18 Transport	50,000	2.8
	14,000	0.8	19 Security	55,000	3.1
			20 Paralympics	50,000	2.8
8 Ticket sales	200,000	11.2	21 Advertising and Promotion	60,000	3.4
9 Donations	5,000	0.3	22 Administration	225,000	12.7
10 Disposal of assets[2]	-		23 Pre-olympic events &		
11 Subsidies[3]	390,000	21.8	coordination	35,000	2.0
12 Other	35,000	2.0	24 Other[4]	309,000	17.4
	430,000	24.0		1,464,000	82.6
		100.0			100.0
25 SHORTFALL			25 SURPLUS	19,250	
Total	1,791,000			1,791,000	

NON-OCOG BUDGET

C Capital Investments	US $ (000)
- Transport (Light rail, highway)	170,000
- Sports venues	5,000
- Olympic Village, Judges' and Referees' and Media villages	350,000
Total	525,000

- US $ / TL exchange rate used in preparing the budget: 677,500
- Date of finalisation of the budget: 22 December 2000

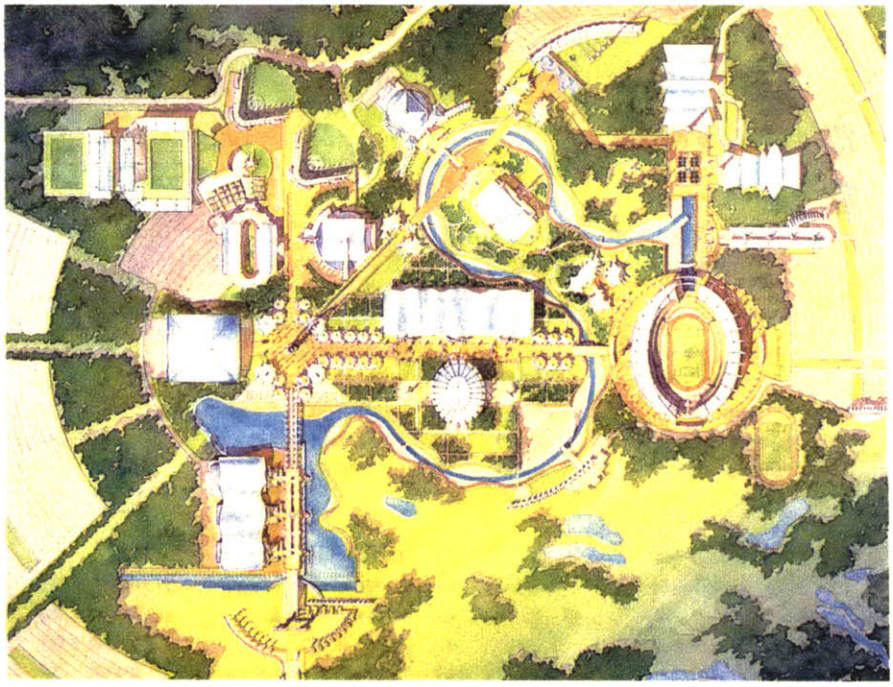
[1] The US$833 million expected from TV rights and US$200 million expected from TOP VI sponsorship programme, were discounted from these 2008 values to 2000 values at a rate of 2 percent per annum. The US$111 million value portion of TOP sponsorship revenues, and the US$100 million value portion of local sponsorship revenues, are assumed incoming value-in-kind.

[2] Pursuant to the Turkish Olympic Law, all assets owned by the Istanbul OCOG at time of its liquidation will be transferred to the General Directorate of Youth and Sports, with no further cost to the latter.

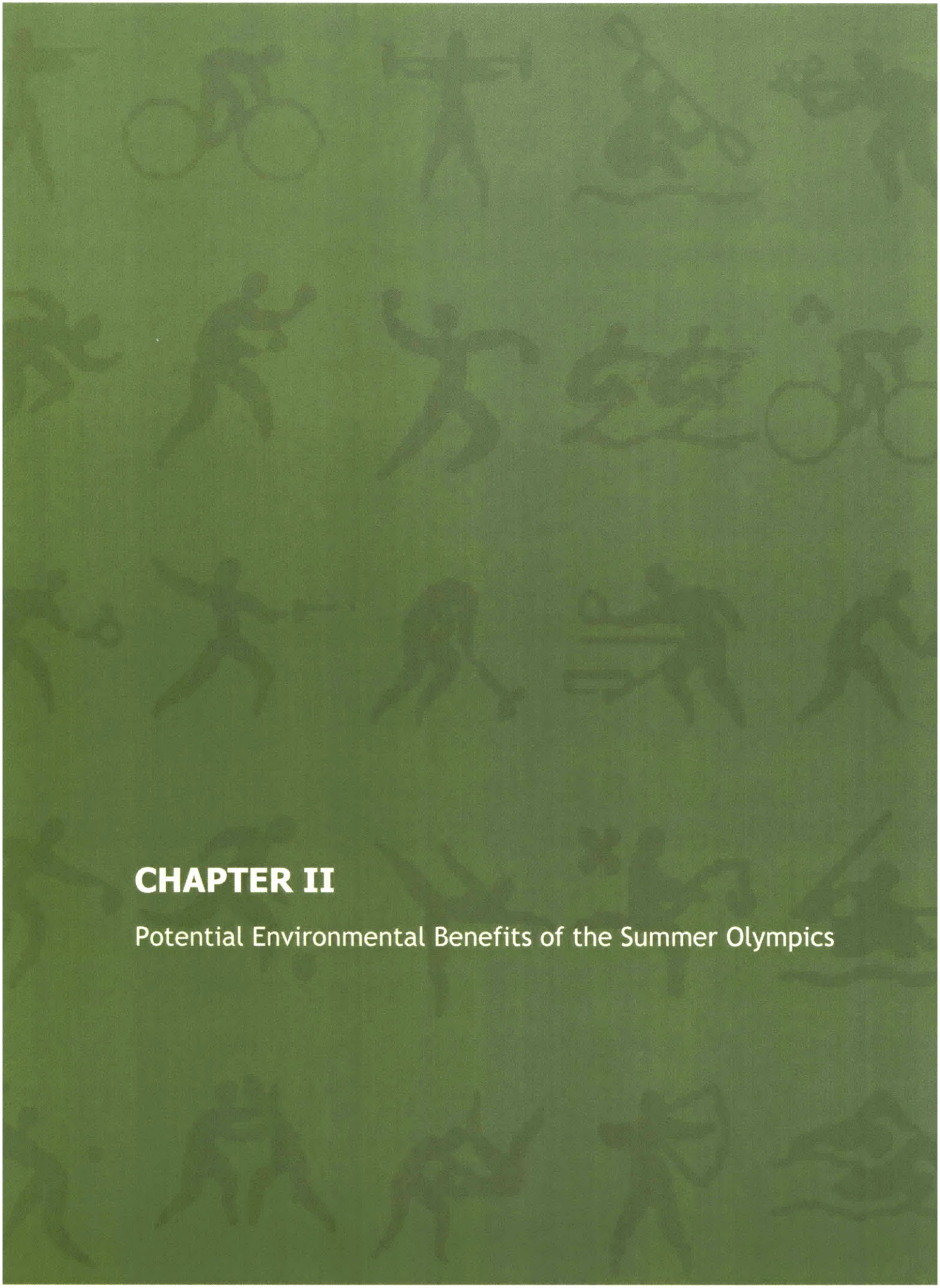
[3] Estimate of the Istanbul OCOG's earmarked revenues, as defined by the Turkish Olympic Law in percentage stipends from several public funds (see explanation under paragraph 5.1), which totalled US$20 million per annum, on average, since the foundation of the IOBC in 1992. The budgeted estimate takes for granted that, following the transformation of the IOBC to the Istanbul OCOG, the Cabinet will increase such stipends threefold for the period 2002-2007, and twofold for the year 2008. Please note that this amount (US$390 million), plus the forecast cash balance of the IOBC at time of its transformation to the Istanbul OCOG (US$16.5 million, see the OCOG cash flow forecast provided under the paragraph 5.5.3 below), will suffice to cover the sum of OCOG capital investments (US$307.75 million) and the OCOG's repayment of credit used by the IOBC to finance the construction of the Olympic Stadium (US$94 million, see note 4 below).

[4] Includes US$94 million allowed for the repayment of due portion of the credit (principal and interest) the IOBC used to finance the construction of the Olympic Stadium. For details please refer to the OCOG cash flow forecast provided under paragraph 5.5.3 below.

19.



20. A shaded plan view of the İstanbul Olympic Park from the İstanbul 2000 bid.



CHAPTER II

Potential Environmental Benefits of the Summer Olympics

Introduction to "Green Olympics"

Among the ways that the Olympic project affects its host city, environmental issues have attracted the utmost attention. In 1986, IOC president Juan Antonio Samaranch declared environment as the third tier of Olympism after sports and culture.[1] The opportunity to realize this goal came in 1992 with the election of Sydney, which bid in cooperation with Greenpeace, for the 2000 Summer Games.

For Greenpeace, an international environmentalist organization based in Australia, the well-publicized international event was an opportunity to raise awareness of global environmental issues such as climate change, ozone depletion, the production and disposal waste and the depletion of natural resources. Following the choice of a Greenpeace design at the anonymous design contest for the Athlete's Village, the organization – in cooperation with other environmental organizations – helped the city develop its "Green Games" concept with specific Environmental Guidelines that were submitted as part of Sydney's bid. The Government of New South Wales made the Guidelines into law in 1993, shortly after Sydney was awarded the Games.[2]

I have had the chance to study with Professor Barry Webb, who comes to MIT every spring from Sydney to teach a course on architectural lighting, the story behind the zero-energy lighting system that his office developed for the Olympic Park in his hometown. Cutting-edge innovative technologies were put to work to create lighting towers equipped with photovoltaic panels for the Homebush Bay Olympic promenade that exchanged energy with the system to maintain a balance between energy used and produced. This technology, combined with dimmable lamps is now being adapted for use on the streets of Sydney. Photovoltaic panels are also part of the design of the Athlete's village which has been enlarged after the Olympics to become the largest solar residential development in the world.[3] In addition to the active use of solar power for lighting and for transportation, the Sydney Games also pioneered in the following fields of environmentalist design: [4]

- Car-free Olympics: The city's local and regional rail network and a fleet of natural gas powered buses were used to transport spectators and the Olympic family, reducing the impact of Olympic transportation on air quality.
- Water conservation: About half the water used at Olympic

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1 Quote from International Olympic Committee President Juan Antonio Samaranch, Greenpeace Green Olympic Campaign Homepage.
http://www.greenpeace.org.au/archives/olympics/sporty/
See also "The Environment: The Third Dimension of Olympism".
http://www.olympic.org/uk/organisation/missions/environment_uk.asp

2 Greenpeace Olympic Environmental Guidelines, 2. See also "The Greenpeace Green Olympics Campaign: Sydney 2000.
http://www.greenpeace.org.au/archives/olympics/sporty/

3 See "Newington: Sydney's Solar Suburb." Greenpeace Website.
http://www.greenpeace.org.au/climate/solutions/renewables/casestudies.html

4 "Sydney's Green Game Successes." Greenpeace Website.
http://www.greenpeace.org.au/archives/olympics/sporty/2.html

venues and at the Athlete's Village was reclaimed from storm water and sewage affluent collected on the site.

- Habitat protection: Habitat for specific rare species was conserved during the reclamation of former industrial sites at Homebush Bay for Olympic development.

- PVC-free Olympics: Safer alternatives were used in construction of the Olympic venues and the Athlete's village to minimize the amount of dioxin (a toxic chemical produced in PVC manufacture) produced for the Olympics.

Greenpeace and other environmental organizations who monitored the Sydney Olympic project from bidding stage to completion have also recorded a number of 'environmental disappointments', including – above all – the hasty and insufficient clean-up of the Homebush Bay Olympic site, one of Australia's worst toxic dumps. Refrigerants known to be damaging to the ozone layer such as chlorofluorocarbons were used throughout Olympic sites for air conditioning and refrigeration.[5]

The International Olympic Committee's (IOC) decision to 'green' the Olympics, taken in part due to pressure from Greenpeace Australia in Sydney, has led to the tightening of environmental guidelines for future bidders. The IOC has further aligned itself with the United Nations' Sustainable Development Program (Agenda 21) to demonstrate its commitment to reducing human impacts on the environment. The slogan "green games" currently permeates the bidder cities' discourse as environmentalists all around the world – among them critics of the Homebush Bay cleanup – watch with skepticism.

Potential Environmental Benefits of the Olympics

In his post-games analysis of Barcelona's Olympic project, which is derived from the city's plans (developed before the Olympics) to redefine itself, Lluís Millet i Serra questions whether Barcelona would have been able to do the same without the impetus of the Olympics:

> *Without the Olympic Games, I believe that we would still be putting the city together bit by bit and the metropolitan dimension that we spoke of earlier would not have been reached. [...] The instrument needed to supply the necessary energy, consensus and hope to strengthen the transportation system, create facilities, define the central space, and balance out the city, was the project for the Olympic Games.-* [6]

Landscape ecologist Richard Forman has modified the environmentalist motto "think globally, act locally" to better identify the framework of sustainable land planning: "*think globally, plan regionally, and then act locally.*" [7] Analyses conducted at the regional scale provide planners with a better understanding of ecosystems such as river watersheds whose local

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5 Posner, Rupert. "How green are the "Green Games?" August 15, 2000. http://www.onlineopinion.com.au/view.asp?article=362

6 Millet i Serra, Lluís. "The Games of the City" in The Keys to Success, 192.

7 Forman, Richard. Land Mosaics: The Ecology of Landscapes and Regions, 435.

effects (such as flooding) are caused by the totality of forces operating at the regional level. Proposals for a sustainable project, therefore, must take the regional picture into account to be truly considered green or sustainable.

The Summer Olympics is a global mega-event whose enormous impact is focused on a particular location every four years. It is also an event, however, that kidnaps political and economic resources at the regional level. While most host cities have built infrastructure for the Olympics that has impacted patterns of development at the regional level, the possibility of using the Olympics to promote a sustainable regional plan has not been discussed by advocates of "Green Olympics." The enormity of the Olympic task requires the active collaboration of governmental organizations at the local, regional and national level and as such, holds great potential for affecting a positive change in the environment. Inordinate amounts of the host city and nation's money are spent in an undeclared competition to outdo the previous host city's achievements. With better planning, this money can be used to create a great Olympics as well as a great future for the city. This is especially true for poorer candidate cities, such as İstanbul, which should not spend their limited resources for the imagined benefits of the Olympic trophy. The expense, if not spent to provide for the future of the city, is hardly worth undertaking for the benefits of advertisement.

In the previous chapter, I have outlined aspects of Olympic planning established by the IOC guidelines that limit the planner's toolkit. In this chapter, I will outline potential benefits that can be harnessed from the Olympic project that can guide the host city towards a more sustainable future.

Institution of an Alternative Transportation System

An alternative transportation system, such as metro or light rail, can be put in place for the Olympics that can serve the residents of the city after the Games and can help restrain sprawl in the long run. It should be possible to host the Olympics without building one meter of additional roads.

Development of Parks and Greenways

Parks and greenways, built as part of the Olympic plan, can help improve the environment and raise the quality of life in the host city. Public parks constitute an important part of Olympic plans where sports venues are often linked to the Olympic village or to transportation centers with landscaped pedestrian corridors. Barcelona in 1992 clustered its Olympic venues in four large public parks: Montjuïc, Parc de Mar, Vall d'Hebron and Diagonal, positioned at the four corners of the city. [8] Open spaces and parks were also part of Sydney's Olympic development, such as the 1000-acre Millenium Park. [9] Rather than taking away space in the inner city allocated for parks and green spaces (like in Tokyo where open spaces were consumed by

8 "Overall planning" in Official Report of the Games of the XXV Olympiad Barcelona 1992, 147

9 The Olympics: Providing the Best Infrastructure for Future Urban Form, 3-4.

new hotels for the Olympics) [10], planners might focus on generating more open space in the city for recreation as part of the Olympic effort. This can easily be achieved with the confluence of political power and economic resources that allow Organizing Committees for the Olympics and host city municipalities to acquire land through eminent domain. Land around rivers or lakes, for example, can be purchased to create green corridors with recreational, ecological and flood prevention functions.

Clean-up and Rehabilitation of Brownfields

Land required for the construction of new sports facilities can be generated by cleaning up brownfields within the city. Seoul in 1988 and Sydney in 2000 have located their Olympic Parks on polluted land that was capped or cleaned prior to the construction of Olympic facilities. Every city has an abandoned industrial complex, an old airport or an unused rail yard that is waiting for its turn for improvement. If the environment is the third tier of Olympism why not require every host city to build on brownfields?

Introduction of Sustainable Technologies

Sustainable technologies can be introduced into the design and construction of Olympic facilities and to the production of energy and the treatment of waste during the Olympics. Many cities are waiting for the right time and space to experiment with wind turbines and water reclamation while others have not even instituted recycling of plastics and storm water management. Why not set up a pilot program for Olympic sites?

Showcasing Environmentally Sustainable Development

Olympic Projects with strong environmentalist design can become showcase environmental projects that inspire and guide future projects. Where would we be today with the Olympics without the aspirations and achievements of Sydney? Would applicant cities still be talking about a "Green Games"? The Olympics, a well-funded project with a strict timetable is the perfect opportunity to realize something visionary and radical. As such, they can communicate two important messages to the rest of the world: a) it is do-able b) this is how one does it.

Building Working Relationships for the Future

Working relationships established between the government, academia, NGO's and citizens can continue to generate great projects after the Olympics. No Green Olympics can be truly green without the participation and supervision of environmentalist NGO's, environmental agencies, environmental lawyers, concerned citizens, professors, professional organizations, citizen groups. Olympic projects provide a unique opportunity to bring people together. The Mayor of Sydney is still working with lighting expert Barry Webb after the Games to bring photovoltaic technology used for the Olympics to city streets.

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10 Shigeru, Itoh. "Urban Planning Evaluation of the Tokyo Olympics" in Hosting the Olympics: The Long Term Impact, 109.

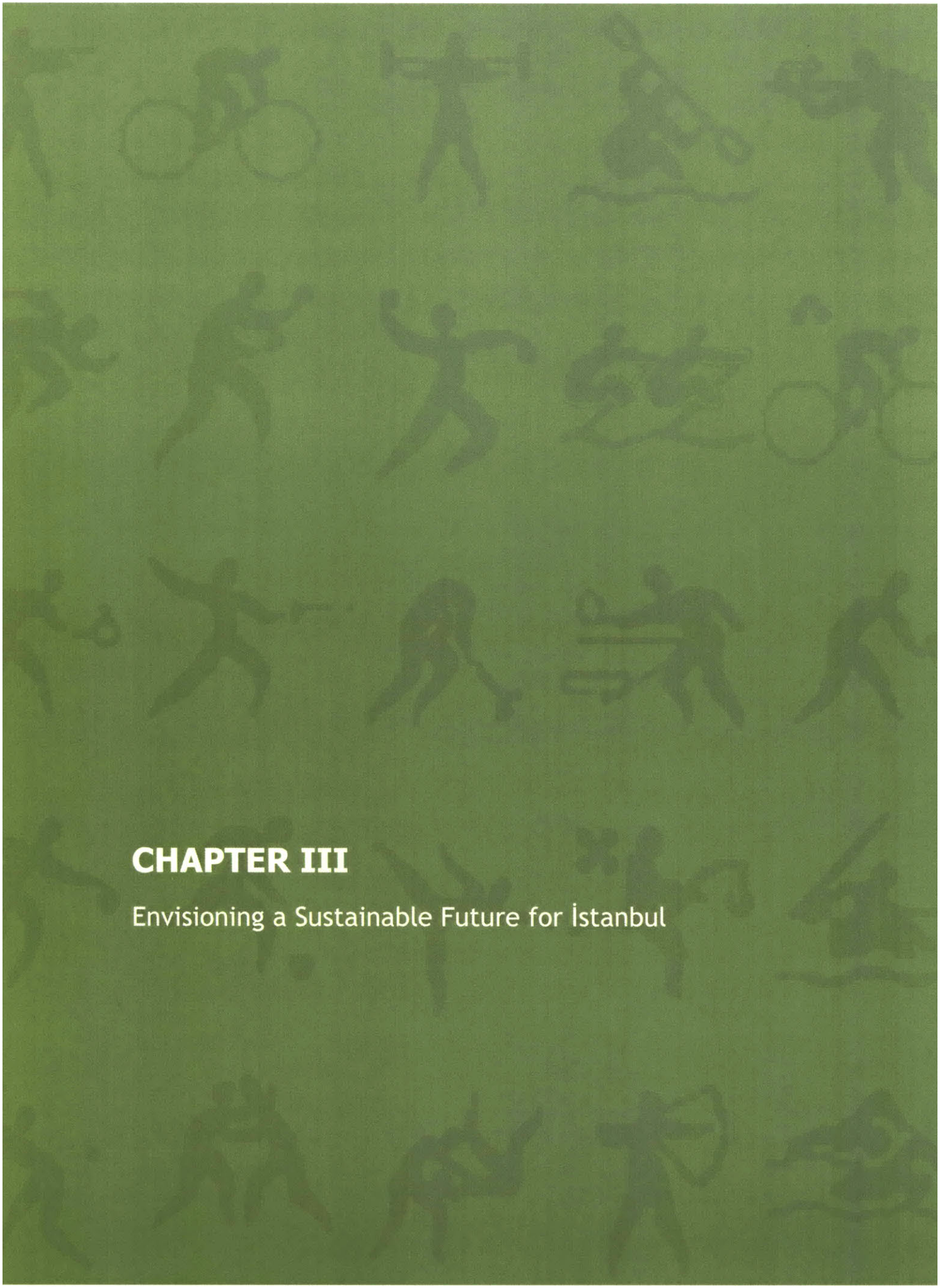
Raising Environmental Awareness

Green Olympics is a unique opportunity to raise environmental awareness among the local population and among especially children, the future owners of the host city. Olympic planners for Seoul arranged for thousands of volunteers to plant street trees for the Olympics. If we are using the Olympics to green the city why not also use it as an opportunity to educate city residents about the environment?

A Note on Social Impacts

Before we proceed any further, it is important to pronounce a cautionary note about the social impacts of Olympic planning. As mentioned in Chapter I, Olympic planning is not democratic and the bidding process has been traditionally initiated and led by corporate figures. Environmentalist planning, such as the one we are imagining for the Green Olympics, cannot be conducted in this manner. The planner, furthermore, should be aware of the gentrifying nature of environmental projects and take the necessary precautions to ensure that improvements can be enjoyed by current residents. Consulting neighborhood groups on a regular basis and involving them in the decision-making process may slow progress but cannot be omitted from the process. Exploring social impacts of the Olympics should be required for an environmentally sustainable Olympics, but is not possible to achieve within the scope of this thesis. Guidelines for a socially responsible Olympic Games, prepared by Toronto Bread Not Circuses Coalition in 1998 and Lenskyj's analysis of the social impacts of Sydney 2000 provide important lessons for Olympic planners in this aspect. [11]

11 Guidelines are included in the conclusion of The Best Olympics Ever? Social Impacts of Sydney 2000. 228-231.



CHAPTER III

Envisioning a Sustainable Future for İstanbul

İstanbul's environmental problems

How does one generate a vision for an environmentally sustainable future? No vision for the future can be complete without a detailed analysis of the status quo. In this chapter, I present an environmental history of İstanbul that summarizes the multi-disciplinary research that was conducted in support of the design process. I have focused specifically on water pollution, which — next to earthquakes — is the most significant environmental threat to the future of the city and its residents of all species. A historical analysis of the city's hydrological systems will illustrate this point. The research is compiled at the end of this chapter into a set of maps that will form the basis of an alternative Olympic plan for İstanbul.

An overview of the environmental problems

The ancient city of Byzantium was established as a trading colony on a peninsula located at the southern tip of the Bosphorus, the 30km (19mi) long water channel that together with the Gallipoli channel further west, links the land ridden Black Sea with the Aegean and the Mediterranean. The waters surrounding the city on three sides, the Golden Horn to the north, the Bosphorus to the east and the Marmara Sea to the south, helped the city prosper through trade and provided for its defense. The lack of fresh water resources on the peninsula, however, urged city leaders to build channels and aqueducts to bring water from lakes and rivers outside the city walls to the west, initiating centuries of dependency between Byzantium — then Constantinople, then İstanbul — and the surrounding countryside.

Today İstanbul is a dense metropolis of 12 to 15 million people surrounded by an ever expanding ring of squatter settlements, edge cities and gated villa communities that threaten the very resources that the city depends on for clean air, drinking water and produce. Its story, shaped by late industrialization, rural to urban migration, speculative land use, unplanned growth and globalization, is not unique. But like all cities beleaguered by these conditions, it requires a unique set of solutions to resolve the place-specific effects of these forces. In İstanbul, the problem is centered on water and its solution lies in the preservation and expansion of city parks, river corridors, forests, reserves and rural agricultural land. It is a problem of boundaries, densities and intensities of use. Unlike ancient Byzantium whose growth and boundaries were determined by the location of natural barriers and resources, modern İstanbul's growth and boundaries are determined by powerful localizations of private and public capital investments, which are either utterly blind to the physical attributes of the city or tuned solely towards its real estate ramifications.

The residents of İstanbul have learned that life in the city comes with a bill that includes health, social and psychological costs of air, water and sound pollution. While the situation has improved somewhat in selected neighborhoods that have switched to natural gas for heating, the 9 to 10 tons of coal used in poorer neighborhoods creates a dense shroud of sulfur dioxide

and particulate matter around the city each winter.[1] Exhausts from a million or so cars, buses, trucks and boats contribute to the problem. Buildings with poor insulation, erected all around town in concrete with brick infill by unskilled migrant labor, are also to blame for the pollution. Industry scattered around poorer neighborhoods except for a few organized clusters releases dust and organic matter into the air breathed by over 10 million residents of the city and 17 million in the larger Marmara region, which is doubly polluted by industrial establishments scattered in the hinterland of İstanbul.[2]

The pollution of water resources is worrisome. İstanbul's drinking water, supplied from a few reservoirs to the northeast and northwest of the city, and is threatened by illegal residential development. Factories neglect to properly dispose of water mixed with industrial solvents, by simply discarding it. The lack and shortage of drainage combined with the burial of riverbeds and asphalting of watershed areas, leads periodically to floods valleys at the heart of the city. These rivers and sewers, along with the hundreds of ships that pass through the Bosphorus every year, have brought an end to the recreational use of the 17 mile strait and the Sea of Marmara. The Black Sea to the north is already polluted by the Danube River. There is always the risk of more sea accidents, as occurred in 1992 when a Lebanese vessel sank in the Bosphorus with its cargo of 13,000 ships and goats, or in 1994, when a tanker spilled 15,000 tons of oil that burst into flames near the coast.[3]

Pollution and waste in İstanbul, like in other cities, affects the poor in more ways than the rich. A methane explosion in an over-capacity landfill in Üsküdar killed 39 people in the nearby squatter settlement in 1993. The landfill was subsequently capped and made into a soccer field with exhaust pipes intermittently spewing methane. There is no more space to put the 8-10 tons of waste created in İstanbul every day and the amount of waste increases as packaged goods gradually dominate the food market. Beside domestic waste, special treatment is also needed for industrial and hospital waste. A few corporations lead consumer recycling efforts, but most of what gets recycled is still collected from individual bins by the poor who get paid by what is known as the 'garbage mafia'. Next to water and air pollution and problems associated with waste, İstanbul residents are also affected by sound pollution from crowds, traffic and industry. The cultural and historical richness offered by the city do not compensate for the lack of a healthy urban environment.

İstanbul and water: a brief history

Russian Geologist Pierre de Tchihatchef, who visited İstanbul in 1847 as part of an eleven year journey in the lands of the Ottomans, wrote the following regarding the city's hydrological system:

Any improvement that can be made to İstanbul's hydrological system to

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1 Töröz and Meriç. 380

2 Official population numbers from the 2000 census. The unofficial population of the city alone is estimated to be at 12-15 million people. <http://www.die.gov.tr/nufus_sayimi/2000Nufus_Kesin.htm>.

3 Kinzer, Stephen. 1998. "Turks fear an oil disaster as the Bosphorus gets busier" in Times, January 11 (Sunday late edition.)

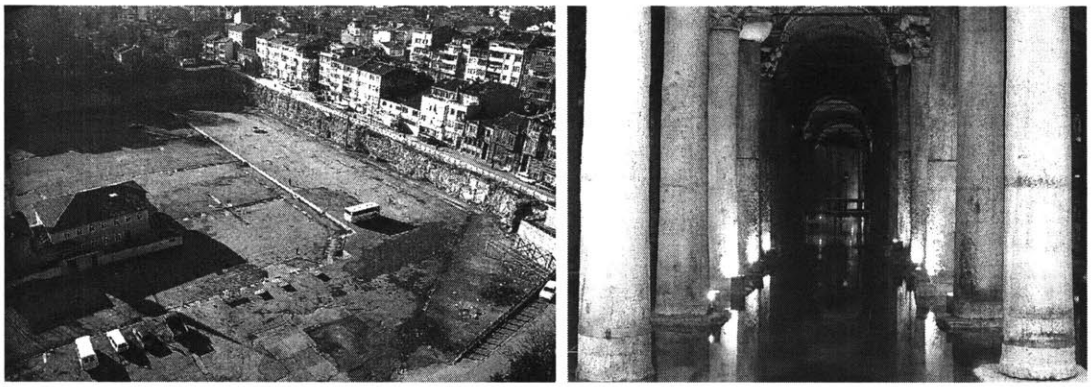
raise it to the level of modern science will not remedy two inherent faults of this system; its dependence on variable atmospheric conditions to supply a vast city and its inability to match limited resources to a population that steadily rises. In fact, reservoirs supplied primarily by rain cannot provide for the entire population during dry periods. And, on the other hand, however abundant the rains are, the maximum area of collection is set by the volume of the reservoirs which will become inadequate as the population increases. It is therefore evident that it will soon be necessary to fill this dangerous gap by building a new system of reservoirs supplied by artesian wells or by long pipelines connected to large bodies of water in the vicinity of İstanbul such as the Maritza [Meriç River] whose closest tributaries are nevertheless twenty-five miles away from the capital. In time, and it's impossible to determine when, it may be necessary to undertake this long, difficult and expensive task because the geological constitution of the Bosphorus, with its broken clay beds mixed with large areas of sandstone, calcite and other pervious conglomerations, does not bode well for artesian wells; and since the entire region has the same prominent geological composition, there is no reason to expect that the clay beds will be continuous below depths that have been inspected to so far. In any case, the breaks and inconsistencies that characterize the surface of this region do not provide the necessary conditions for the formation of water layers that can be forced upwards with an artesian well. [4]

As expressed clearly by Tchihatchef who foresaw the shortage of water that İstanbul would be suffering in the following century, the city's existence is inextricably linked to the resources of its countryside. While the first settlers at this geography were able to supply water from wells, the need to create a more dependable and abundant water resource became apparent as the city grew under Roman rule beginning in the 1st century. Hadrian (117-138) was first to build pipelines to bring water from outside the city walls and Valens (364-378) build dams across springs in the Belgrade Forest and around the source of the Kağıthane river to bring water into the city; one of his aqueducts is still standing on the historic peninsula in the neighborhood of Fatih. His successors followed his lead by adding more lines to the structure; they also built open and closed cisterns inside the historic city for use during siege. The open cisterns persist today as large voids in the dense city fabric. These structures were used and repaired by the Byzantine rulers yet fell into disrepair towards the end of the Byzantine Empire.

After his successful siege and conquest, Mehmed II brought settlers to Constantinople to repopulate the city that he declared his capital. The increase in population necessitated the repair and amendment of water systems left from the Byzantines and the Romans. New pipelines added by subsequent rulers and aristocrats to bring water to their new charitable and religious endowments and failed to serve the entire population. Süleyman I, in 1555, ordered the construction of a comprehensive water distribution system fed by

4 Tchihatchef, Pierre de. 1864. Le Bosphore et Constantinople, avec perspectives des pays limitrophes. Paris: Th. Morgand. Translation mine.

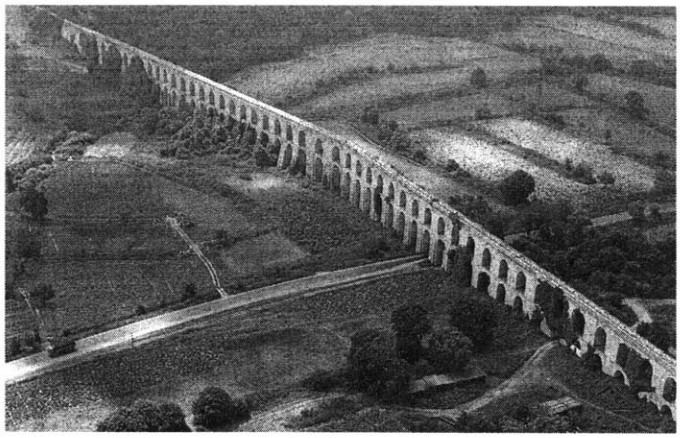
new pipelines in the countryside. Known as Kırkçeşme (forty fountains) waters, this new system collected water in pools at the source of the Alibey and Kağıthane rivers and carried it into the city in pipes carried over four aqueducts some of which were repaired from Roman ruins. (The lack of pumping technology necessitated a consistent fall in slope from the source to the city). The system, when completed in 1563, provided 4200 m^3 water daily at 158 locations in the historic city.



21,22. Two types of Byzantine water sources in the city: on the left, the Aspar open reservoir in Fatih and, on the right, the Yerebatan underground cistern in Sultanahmet

The capacity of this system was increased with new dams built in the Belgrade Forest in the two centuries that followed. Some of these dams provided water to the Galata neighborhood across from the Historic peninsula, providing for its growth beginning with the Taksim water distribution center in 1732. Water was also distributed from springs along the Bosphorus, such as the Hamidiye Springs, which are still used today. In 1868, the water infrastructure of Ottoman İstanbul was handed over to a French company which rehabilitated the existing systems and built new infrastructure at the Terkos Lake along the Black Sea to the northeast of the city in 1883 to bring water to İstanbul. The city's first water treatment plant was built along the Kağıthane river in 1926. The Elmalı dam was built on the Elmalı River on the Asian side of the city in 1893 with water pipelines extending along the coast all the way to Bostancı.

In 1932, two foreign companies operating the city's waters on the European and Asian sides, the Water Companies of Terkos and Üsküdar-Kadıköy, were bought by the İstanbul Water Administration (İstanbul Sular İdaresi). At that time, the daily amount of water supplied to the city peaked at 35,000 m^3 and new improvements were made at the source and distribution with electrical pumps instead of the steam-pumps. Artesian wells were drilled around the Çırpıcı River. New dams were also added by the State Water Works (Devlet Su İşleri İdaresi). Through rural to urban migration in the 1960s and later in the 1980s, however, water once again became a problem in the expanding metropolis. In 1981, a new authority, İstanbul Water and Sewerage Administration (İstanbul Su ve Kanalizasyon İdaresi) was established with greater authority and a larger budget.



23. The Uzunkemer Aqueduct was rebuilt by Mimar Sinan in 1563 from the remains of a Byzantine aqueduct, as part of the Kırkçeşme water system. It is 711 meters long with 50 arches and the water is carried at a channel covered by a saddle roof at the top level.

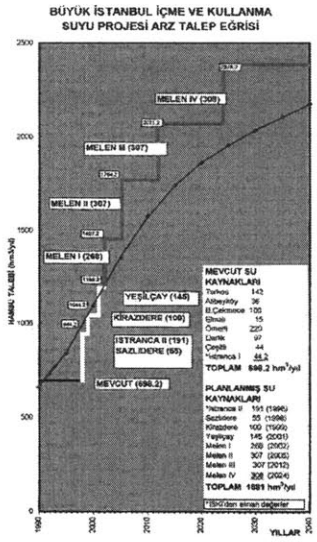
Environmental problems facing İstanbul's hydrological system today

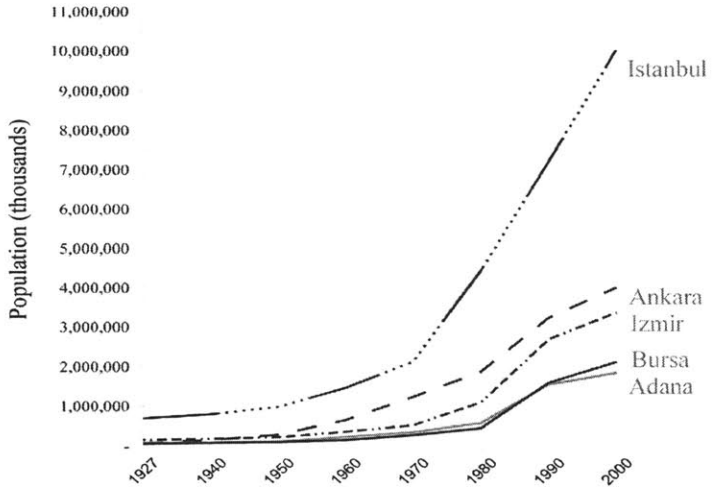
Today, İstanbul's water is supplied from seven large reservoirs: the Istranca Reservoir (44 hm^3), the Büyükçekmece Lake (100 hm^3), Terkos Lake (142 hm^3), Alibey Dam (38 hm^3) on the European side of the city and the Ömerli Dam (130 hm^3), Elmalı Dam (15 hm^3) and the Darlık Dam (97 hm^3) on the Asian side of the city, a total of 698 cubic hectometers of water per year. As predicted by Tchihatchef a century and a half ago, İstanbul Water and Sewerage Administration (İSKİ) is currently working on the Melen project, when complete, will bring an additional 1,1090 hm^3 per year from a tributary of the Meriç River, and is predicted to oversupply for an estimated 17million people who will inhabit inside the municipal boundaries of Greater İstanbul by the year 2040. Their population estimate, however, is based on a declining pace of growth, which is unrealistic if one considers the history of population growth in İstanbul.

The 2000 census found 10,072,470 people living within the boundaries of Greater İstanbul municipality. This is a six-fold increase from the city's population in the mid 1960s when the transition from an étatist to a liberal economy under the direction of the World Bank resulted in large numbers migration from villages to cities. While population has increased in cities all over Turkey, İstanbul received the largest number of immigrants, which helped the city regain its status as the commercial and industrial capital of the country after three decades of disinvestments beginning with the relocation of the capital to Ankara in 1923. The building of highway networks crossing the country through the 1960s accelerated the population growth. Housing left behind by minorities and Europeans who formed İstanbul's cosmopolitan character in late 19^{th} century filled quickly as newcomers began setting up villages overnight on government owned land on the periphery of the city. Populist governments who periodically issued pardons to illegal settlements reinforced the trend of illegal and unplanned development that transformed the city over the three decades that followed. A second wave of Kurdish immigrants arrived at the city throughout the 1980s and 1990s, fleeing civil war in the east. Recently, İstanbul has also been receiving immigrants - legal and

illegal- from other third world countries such as Pakistan, Malaysia, Iraq, Nigeria, from former Soviet Republics and former Yugoslavia, and from Russia.

Short of a disaster, there is no reason to expect a population decrease in the foreseeable future to İstanbul and its growing hinterland, which is once again a regional center of culture, industry and commerce.





24, 25. On the left, graph showing the estimated rise of population versus the amount of drinking water today and in the future, with proposed improvements. The declining level of population increase shown in this graph is, however, not consistent with the constant rise of İstanbul's population since the 1970's, shown in the adjoining graph. The official count of 10,072,470 people in the 2000 census is already considered to have underestimated the city's actual population by 2 to 5 million people.

The demand-based approach of İSKİ, which is reinforced by the State Waterworks Agency (DSİ) underplays the role of water conservation, pollution prevention and storm water management in increasing water supply for any given population. While planning ahead to increase the city's water supply with new projects, İSKİ finds itself unable to prevent residential development in the vicinity of its reservoirs. The Ömerli reservoir, located in the uplands of the Asian of the city and fed by waters from an area of 590 km^2 excluding the lake surface, is perhaps the most poignant example of this mishap. It is the city's largest reservoir and the source for 31.8% of its water, yet its watershed holds an increasing population of 800,000 people that has grown a hundred fold from 8000 people in 1970. The largest increase in population so far has occurred between 1985 (31,680) and 1990 (159,925) and can be directly attributed to the construction of the second Bosphorus Bridge, built from 1986 to 1988. One of the connecting highways for the bridge passes within a few kilometers of the Ömerli Lake and has carried residential sprawl outward along its path.

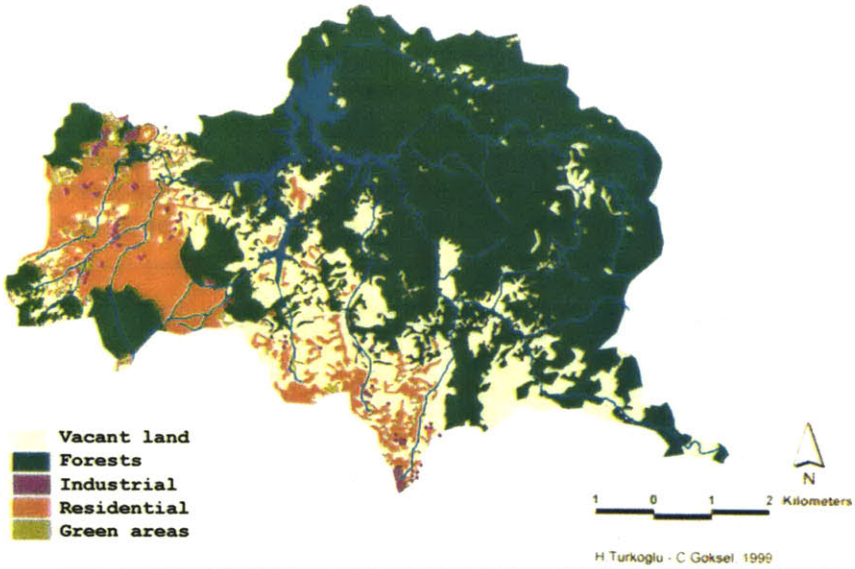
In 1987, these new developments were incorporated into the newly established Sultanbeyli Municipality while a majority still lacks proper water

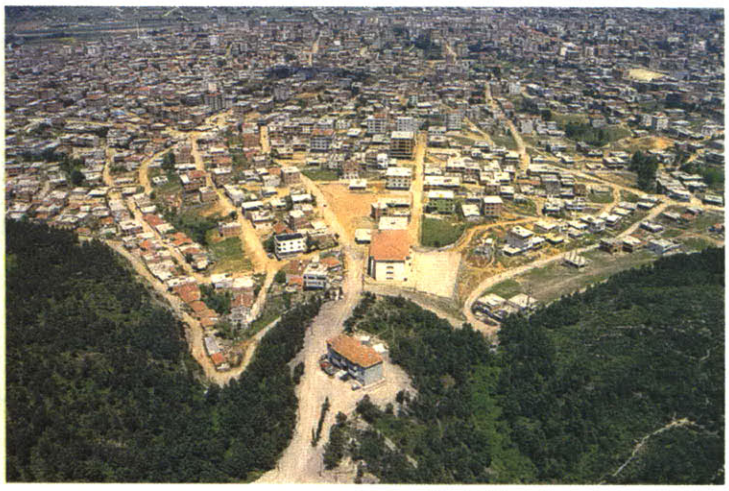
and sewerage networks. The highway has also become an industrial corridor; a study conducted in 1992 has counted 344 industrial establishments within the Ömerli watershed, including metal works (60), chicken farms (58), forestry (32) and plastics and chemical production (39).[5] The reservoir, which is fed largely by surface flow from its watershed is subject to an increasing amount of pollution from untreated sewage and industrial flows and garbage.

26.(right) Map showing land use in the watershed of the Ömerli reservoir.

27.(below, left) The Second Bosphorus Bridge seen under construction.

28.(below, right) Photograph showing sprawling nature of development in the Ömerli watershed.



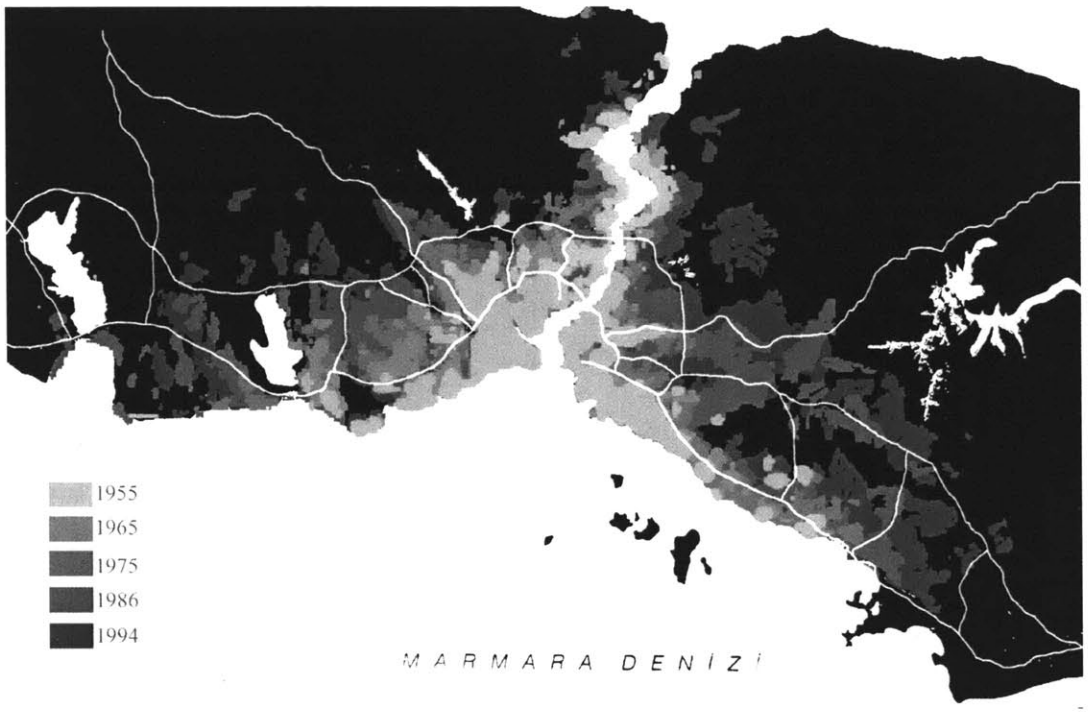


As seen in this example, unplanned residential and industrial development generated by population increase, car-oriented development and populist politics is polluting water resources that İstanbul depends on for its future. The uncontrollable sprawl of the city also depletes the forests, river corridors, heath land and agricultural land that lie in its path. Forests and rivers are especially instrumental to the hydrological system of the city. Forests regulate the humidity and temperature in a region, prevent erosion of

5 F. Bölen, A. Özsoy, G. Erkut, H.D. Türkoğlu, T.B. Levent, A. Tezer. "Kentleşme-Doğa Karşıtlığı: Ömerli Havzası Örneği" in Istanbul: Su 34 (July 2000), 95-100.

the topsoil and help charge aquifers in addition to their well-known contribution to air quality. It is clear, from the location of highways and the lack of investment into the cleaner alternative of rail transportation that İstanbul has not planned its transportation investment to avoid damage to its forests. In fact, one of the two alternatives proposed for a third bridge crossing the Bosphorus situates it to the north of the city where it would pass through pine forests in the vicinity of the Black Sea.

This alternative has encountered obstacles in the last decade as community groups organized in opposition to a third bridge routed between the historic neighborhoods of Arnavutköy and Kandilli between the two existing bridges.[6] The discussion around the construction of a third bridge, posed against the alternative of an underwater rail tunnel at the southern tip of the city has once again brought the city, its local governments and planning agency in conflict with the national government and the Ministry of Public Works.



29. Map showing highways and extent of urban development in İstanbul in 1955, 1965, 1975, 1986 and 1994, demonstrating the effect of transportation routes on the patterns of growth.

The issue remains unresolved even though the second bridge is known to have increased vehicle transport across bridges by 1180% in its first six years

6 See the Homepage of the Arnavutköy Neighborhood Coalition for more information: http://www.arnavutkoy.bilkom.com.tr/

against a 173% net increase in the number of passengers.[7] A study conducted by the İstanbul Metropolitan Municipality in 1995 found that of the 5,296,339 passengers that traveled within the city daily, 88.1% of them took land transportation, a third of which was comprised by public buses. Only 4.2% took sea transportation, largely public, while 7.7% took rail transportation. The increase in car ownership encouraged by the bridges and highways has quickly consumed the benefits of their construction and worsened air pollution. The paving of surfaces for roads and parking throughout the city have drastically reduced the amount of rainwater that trickles down below the earth's surface. In the absence of a separate storm drainage system, rainwater floods the sewerage system and the natural drainage basins such as lakes and river floodplains.

The pollution of water reservoirs is invisible to the large middle-class in İstanbul who can afford to pay for water that requires expensive purification efforts. The pollution and flooding of the city's rivers, however, directly affects everyone who lives in any given neighborhood, rich or poor. İstanbul's rivers, once popular areas of recreation, have turned into open sewage channels that bring the problems of the poor periphery to rich neighborhoods lining the Marmara coast. Let us illustrate this point by looking in detail to two rivers, Kurbağalıdere and Ayamama, which flow into the Marmara Sea on the European and Asian coast of İstanbul, respectively.

Imagining a better future: principles

The solution to this composite problem also lies in a complex system of amendments that can be summarized as: the preservation and expansion of city parks, river corridors, forests, reserves and rural agricultural land; a transformation of the existing transportation system to decrease car ridership and the need to build more roads (such as the current proposal to add a third bridge with connecting highways to the north). It is, above all, a problem of boundaries, densities and intensities of use. I am primarily interested in defining the inner and outer boundaries of urban growth and devising ways - beyond laws and regulations - to maintain those boundaries. Unlike ancient Byzantium whose growth and boundaries were determined by the location of natural barriers and resources, modern İstanbul's growth and boundaries are determined by powerful localizations of private and public capital investments, which are either utterly blind to the physical attributes of the city or tuned solely towards its real estate ramifications.

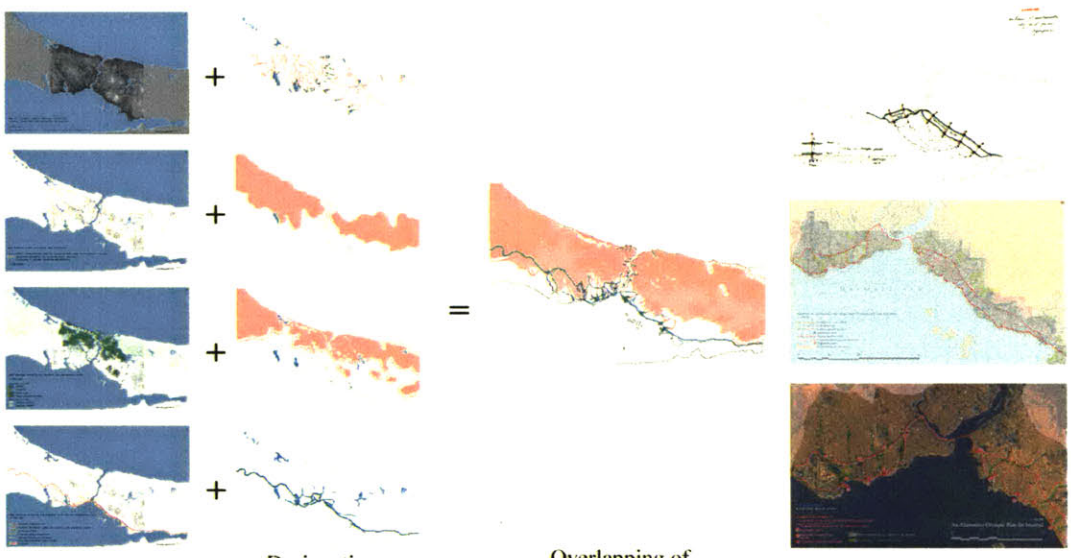
The Olympics, a global mega-project that prompts the construction of millions of dollars worth of capital investment in host cities, is not an exception to this rule. Unlike mega-projects of its scale, however, it deploys a rhetoric of environmental sustainability and Olympic legacy. While not trying to transform the Olympics into something which it is not, that is a solution to all the city's problems, I am seeking to develop an alternative Olympic plan that can promote a sustainable future for the city through infrastructure investments that are part of Olympic planning in host cities.

In this section of the thesis, I will develop design principles for a Green

7 http://www.arnavutkoy.bilkom.com.tr/facts.html

Olympics in İstanbul that localizes Olympic investment in ways that catalyze - by their sheer force and example - a reversal of the current urbanization trends that pollute the city's water and wildlife resources to an end of no return. The analysis is composed of a series of maps that define the locations and boundaries of the aforementioned resources, and a series of overlays that are defined from those maps that identify areas that of environmental concern (red) and opportunity zones (green) that can reverse the existing development trends (and that can, potentially, be considered for 'Green Olympics' investment). Finally, a composite map of the overlays can be used to guide the next stage of the thesis, the development of an alternative Olympic plan.

Identifying the Boundaries of the Sustainable City of the Future



Environmental studies

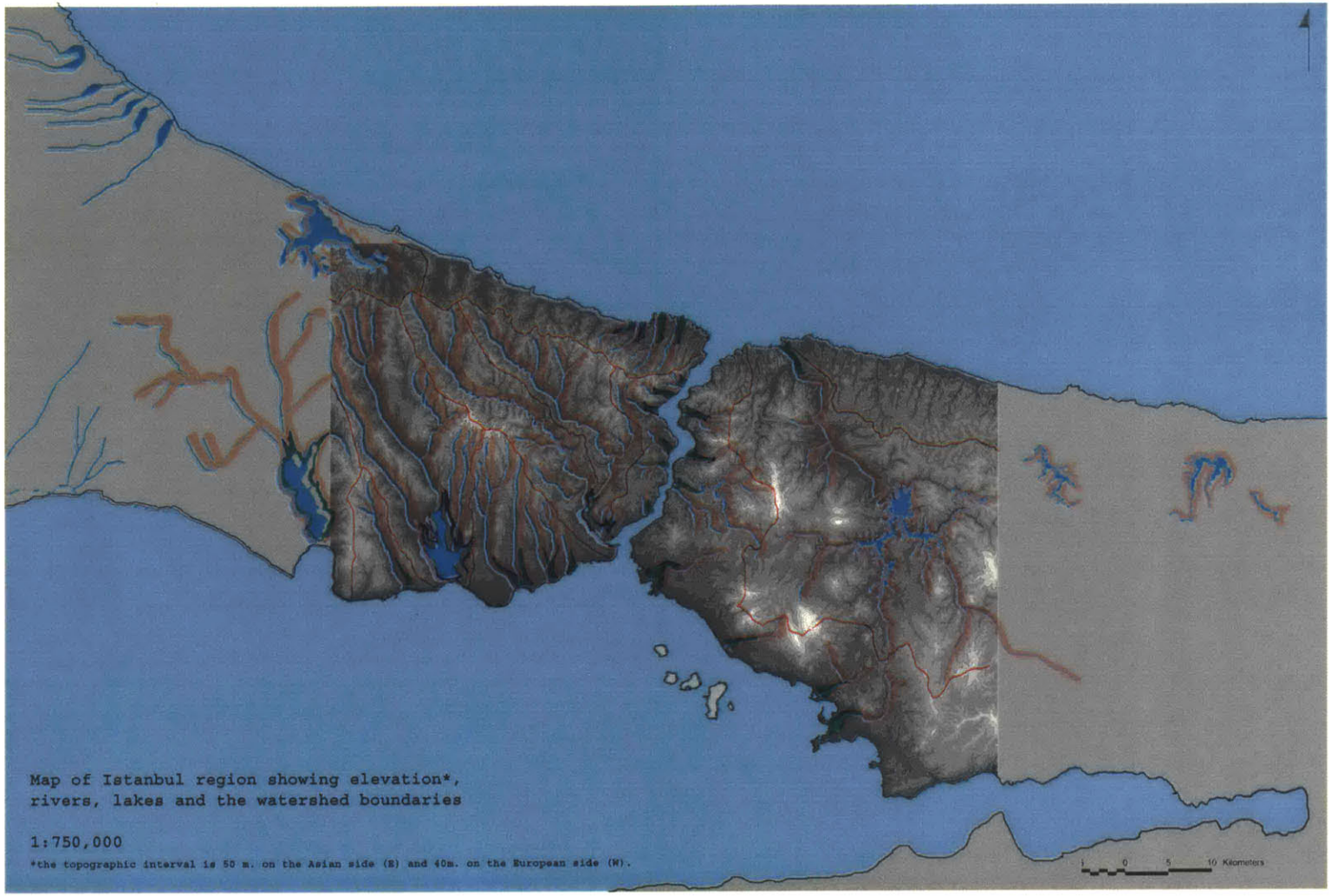
Designating environmentally sensitive zones

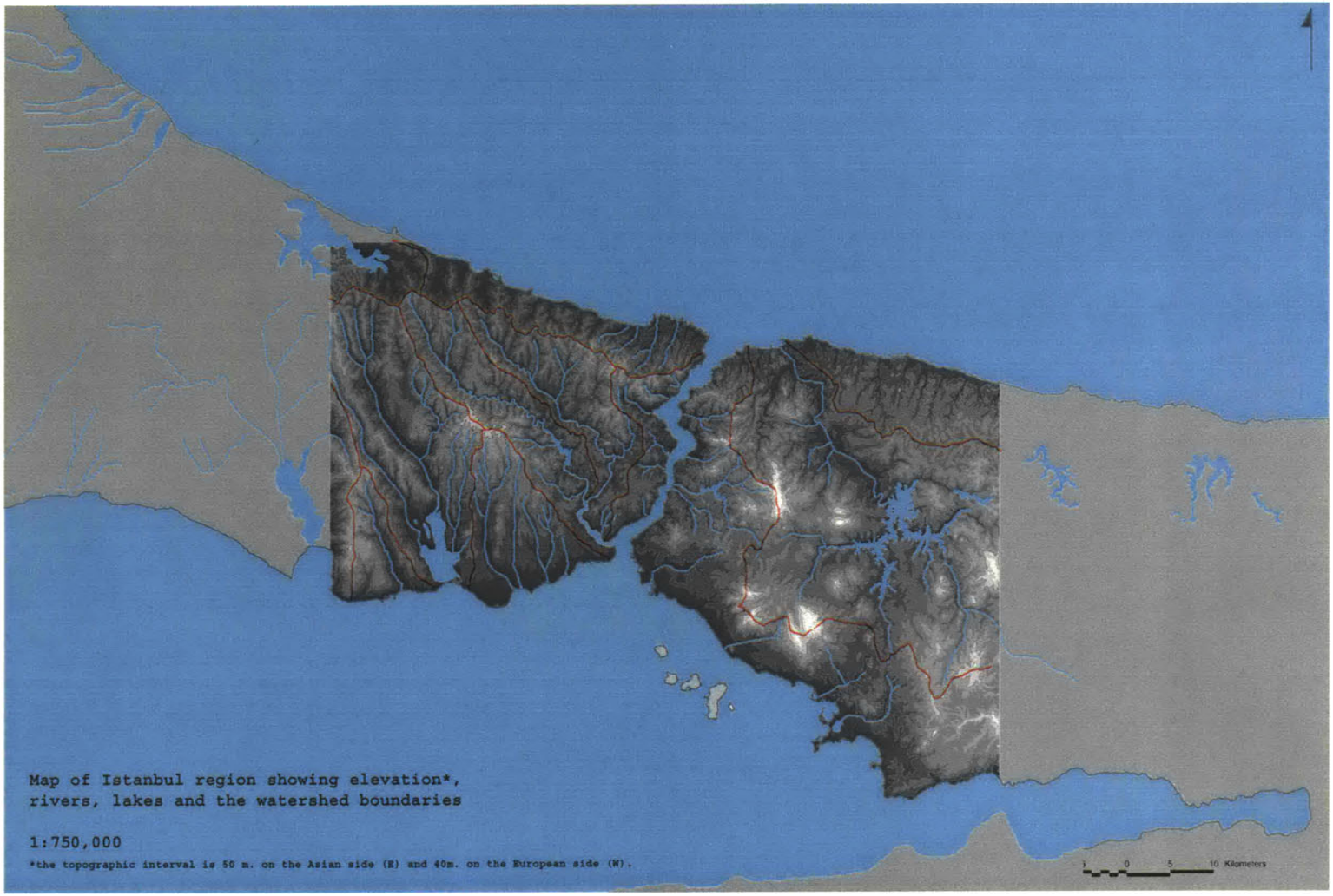
Overlapping of environmentally sensitive zones: template for a sustainable future

An alternative plan for the Istanbul Olympics

30.


NASA Earth Observatory composite SRTM image
and NASA Aster Satellite photograph


Map of Istanbul region showing elevation*,
rivers, lakes and the watershed boundaries
1:750,000
*the topographic interval is 50 m. on the Asian side (E) and 40m. on the European side (W).
0
5
10 Kilometers


Map of Istanbul region showing elevation*,
rivers, lakes and the watershed boundaries
1:750,000
*the topographic interval is 50 m. on the Asian side (E) and 40m. on the European side (W).
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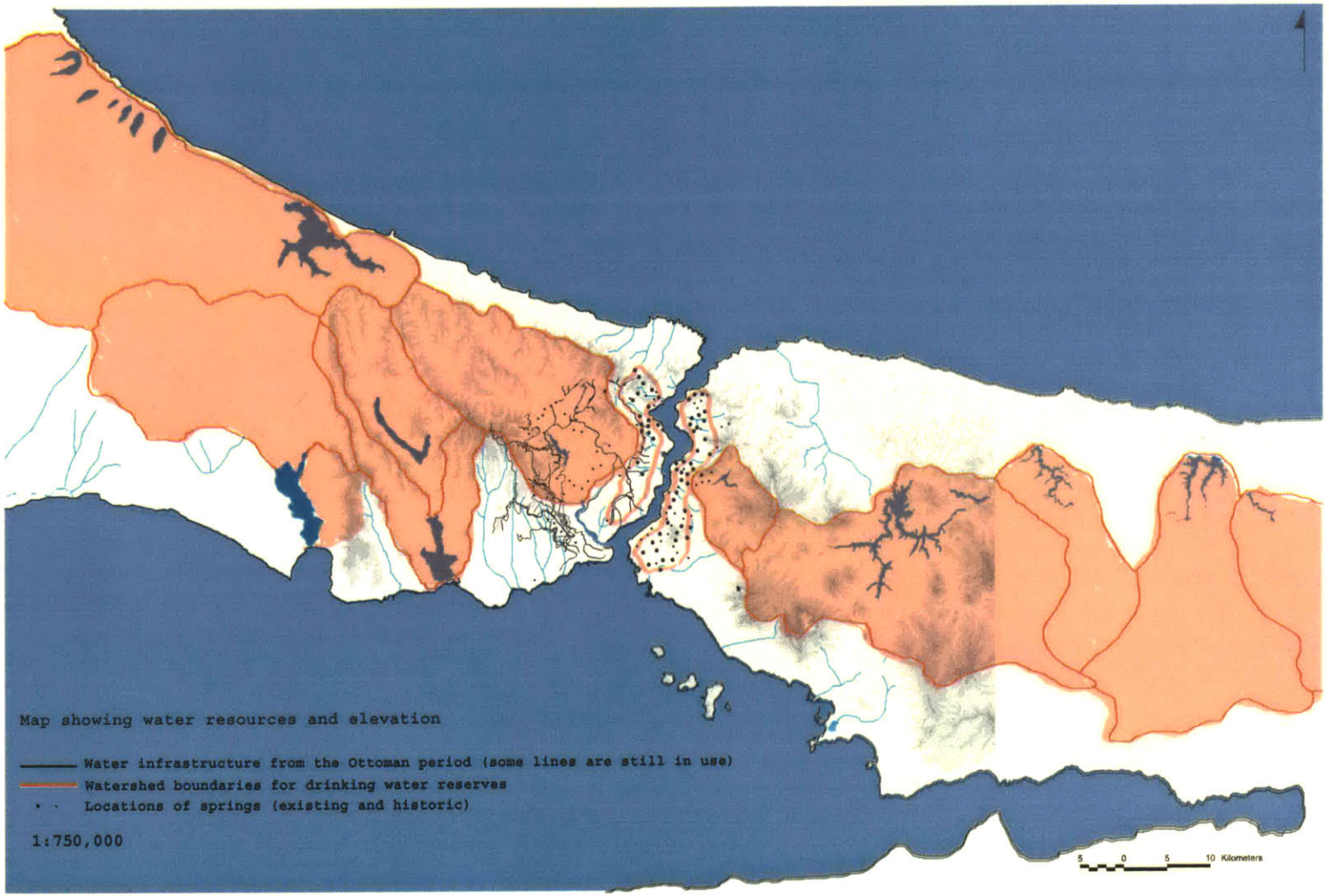
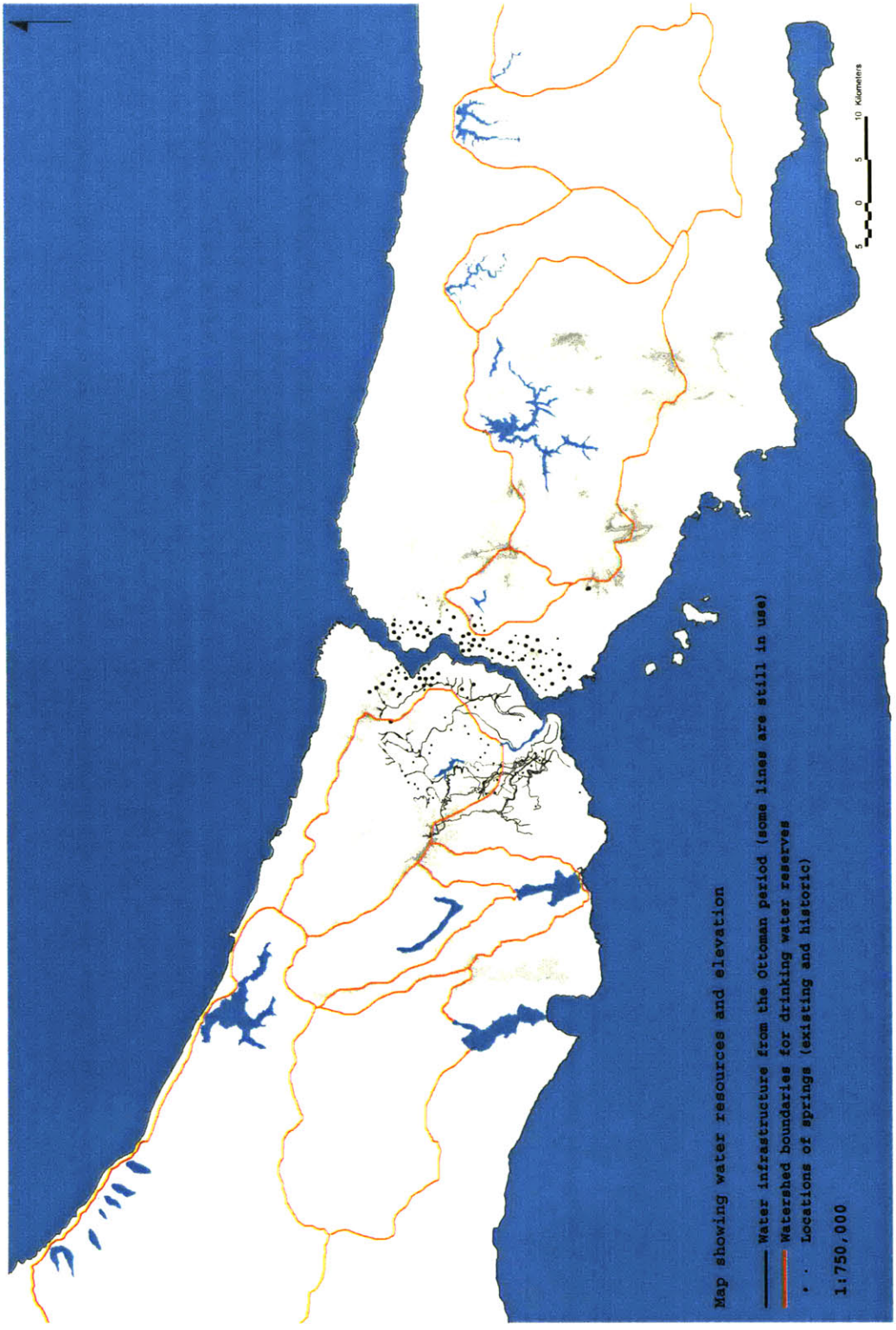

Map showing water resources and elevation
Water infrastructure from the Ottoman period (some lines are still in use)
Watershed boundaries for drinking water reserves
Locations of springs (existing and historic)
1:750,000
5 0 5 10 Kilometers

34.


Map showing water resources and elevation
Water infrastructure from the Ottoman period (some lines are still in use)
Watershed boundaries for drinking water reserves
Locations of springs (existing and historic)
1:750,000
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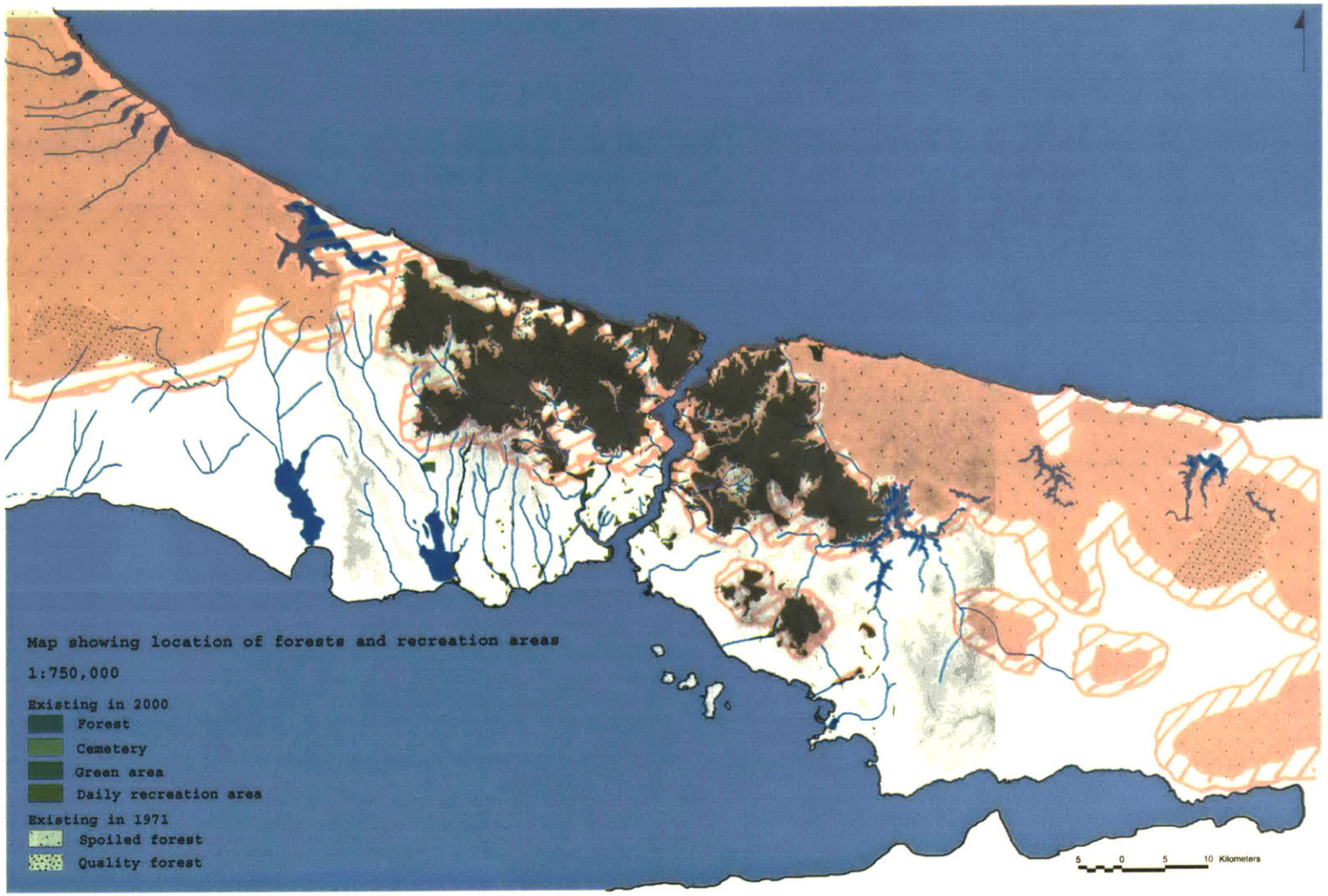
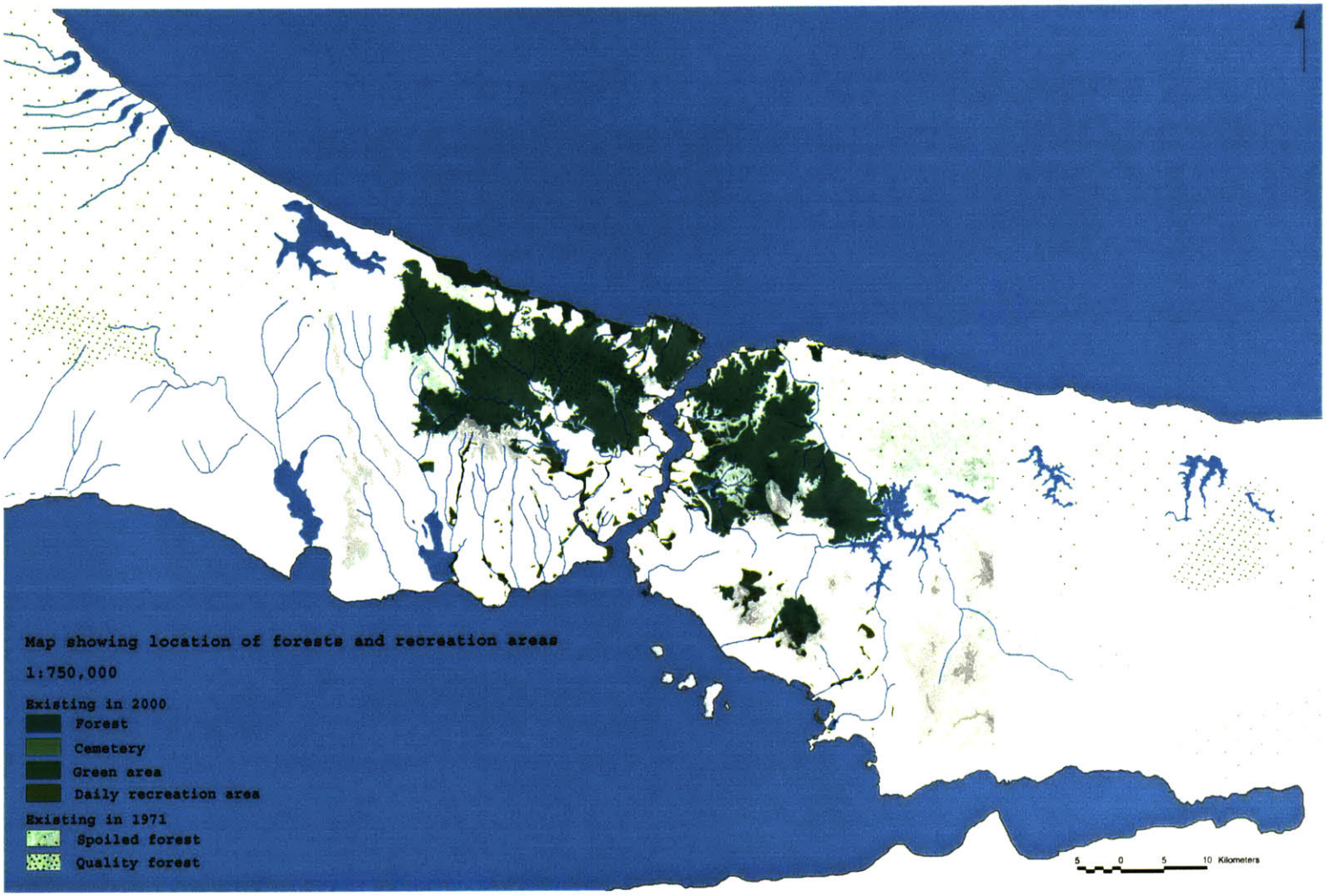

Map showing location of forests and recreation areas
1:750,000
Existing in 2000
Forest
Cemetery
Green area
Daily recreation area
Existing in 1971
Spoiled forest
Quality forest
5 0 5 10 Kilometers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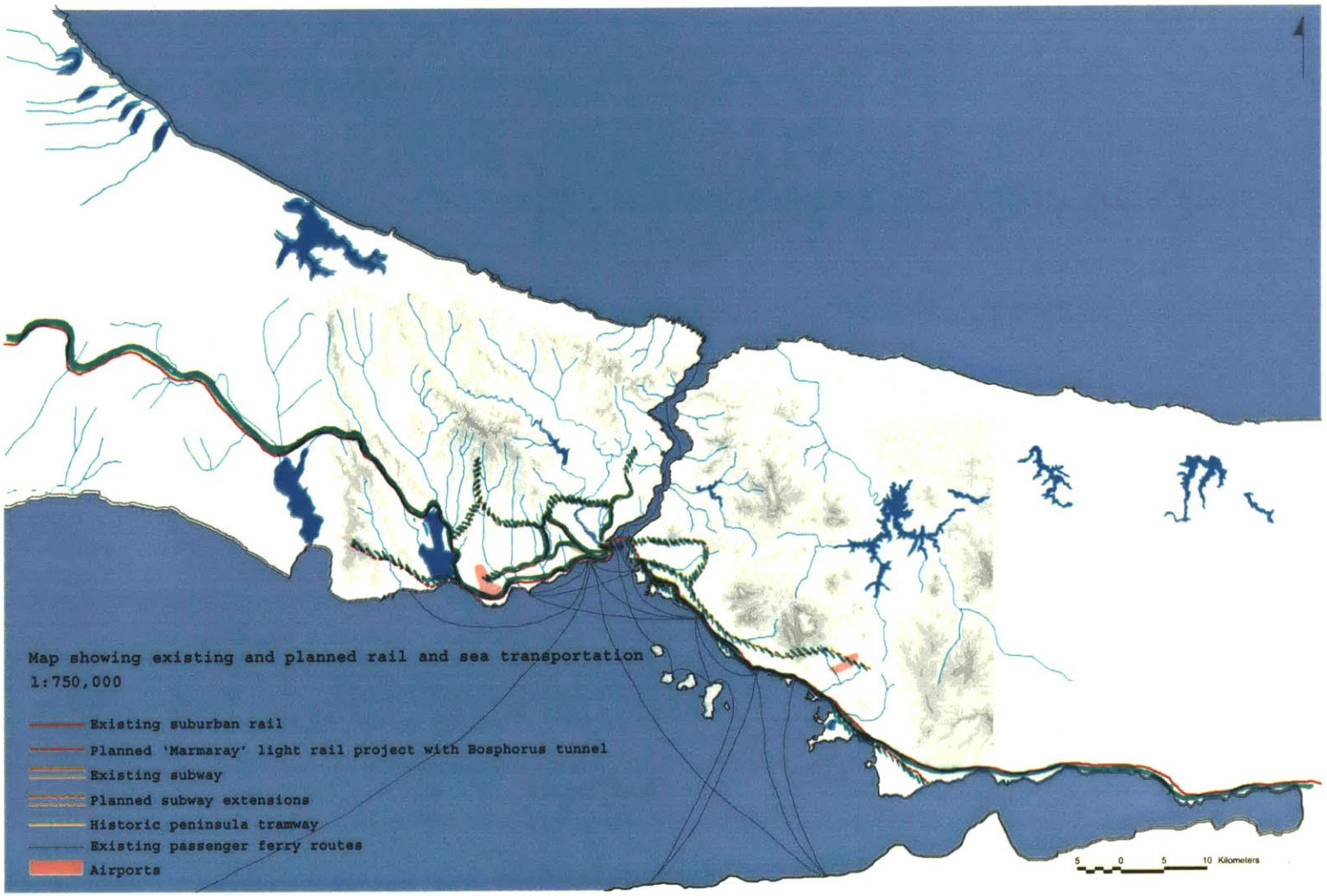
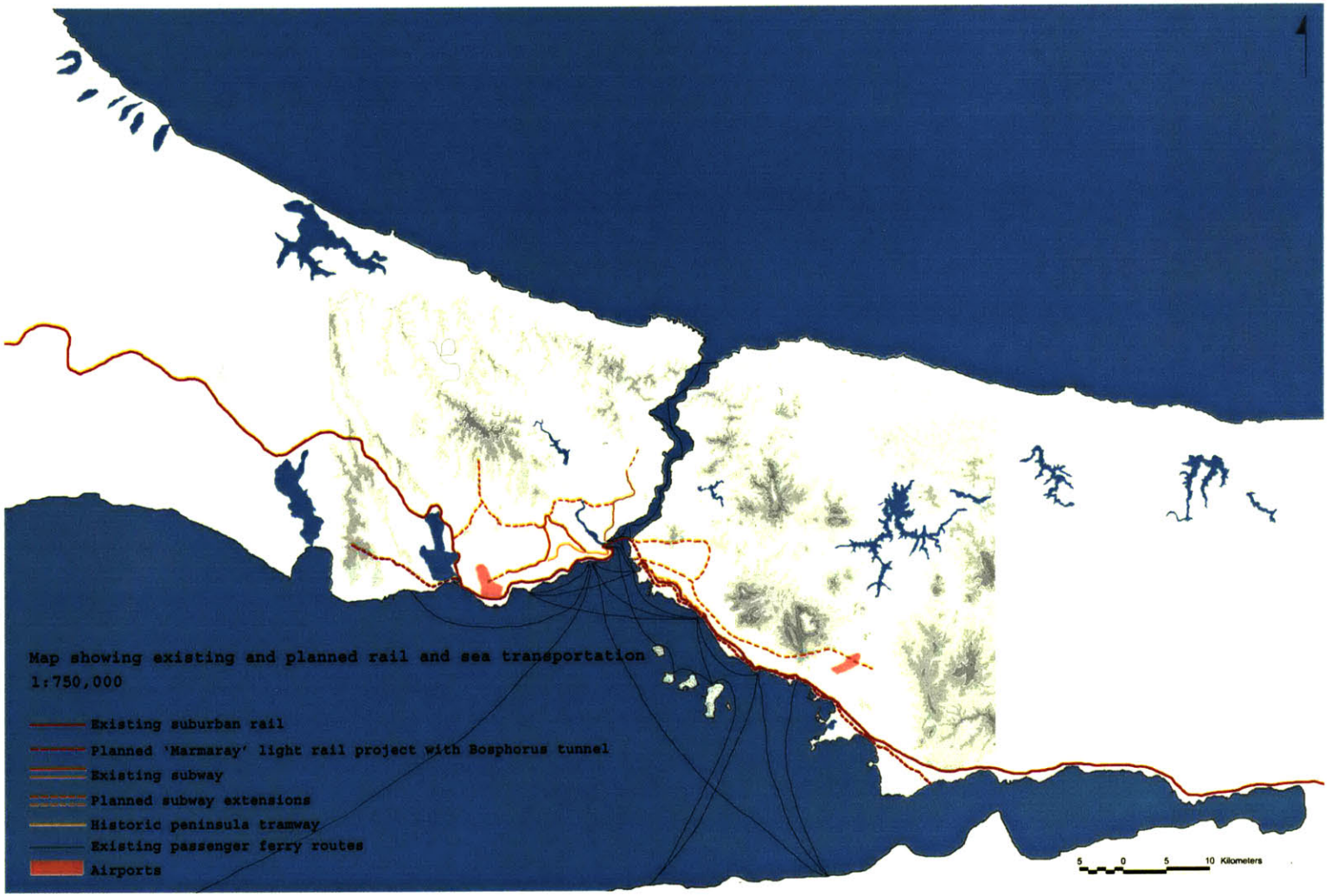
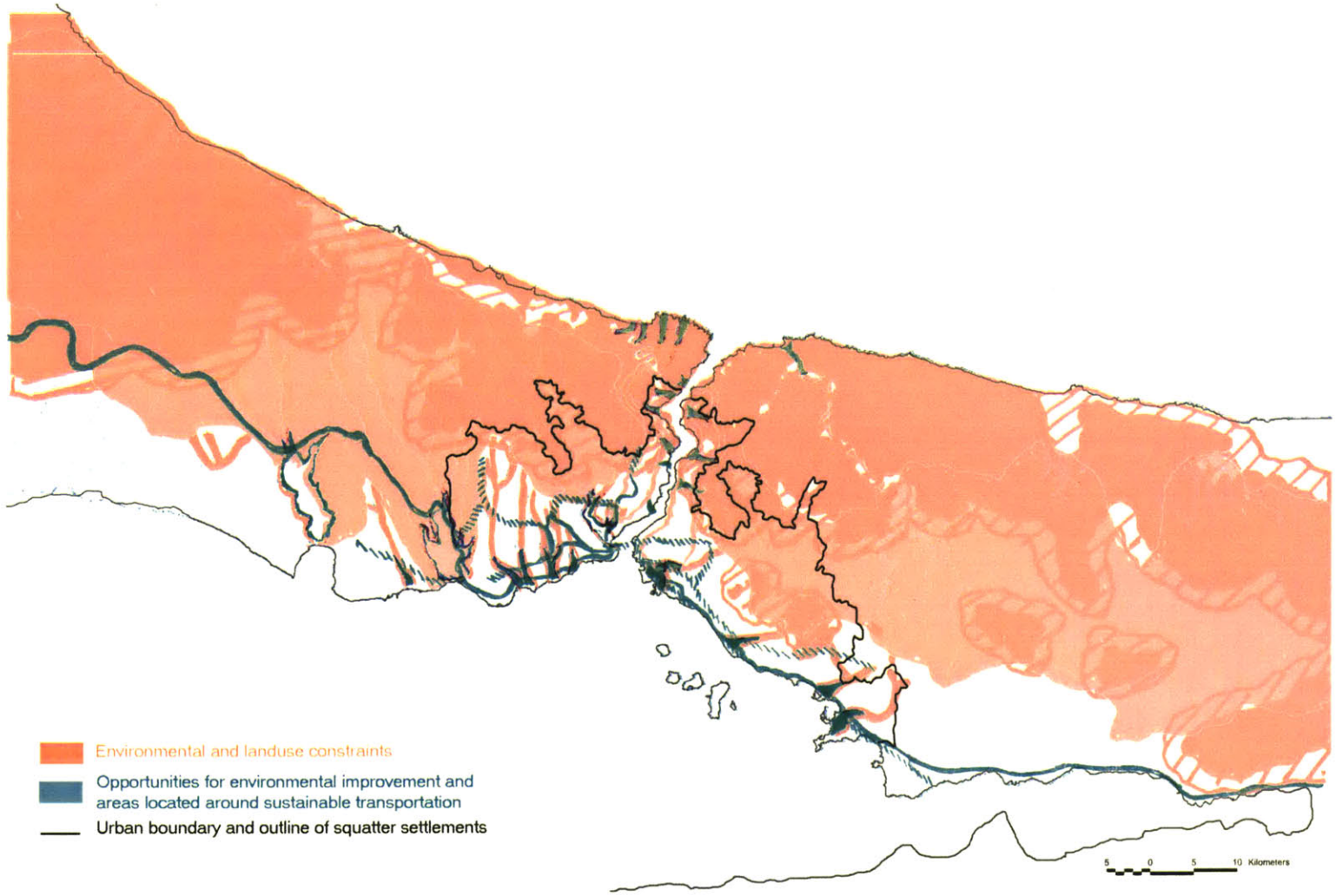
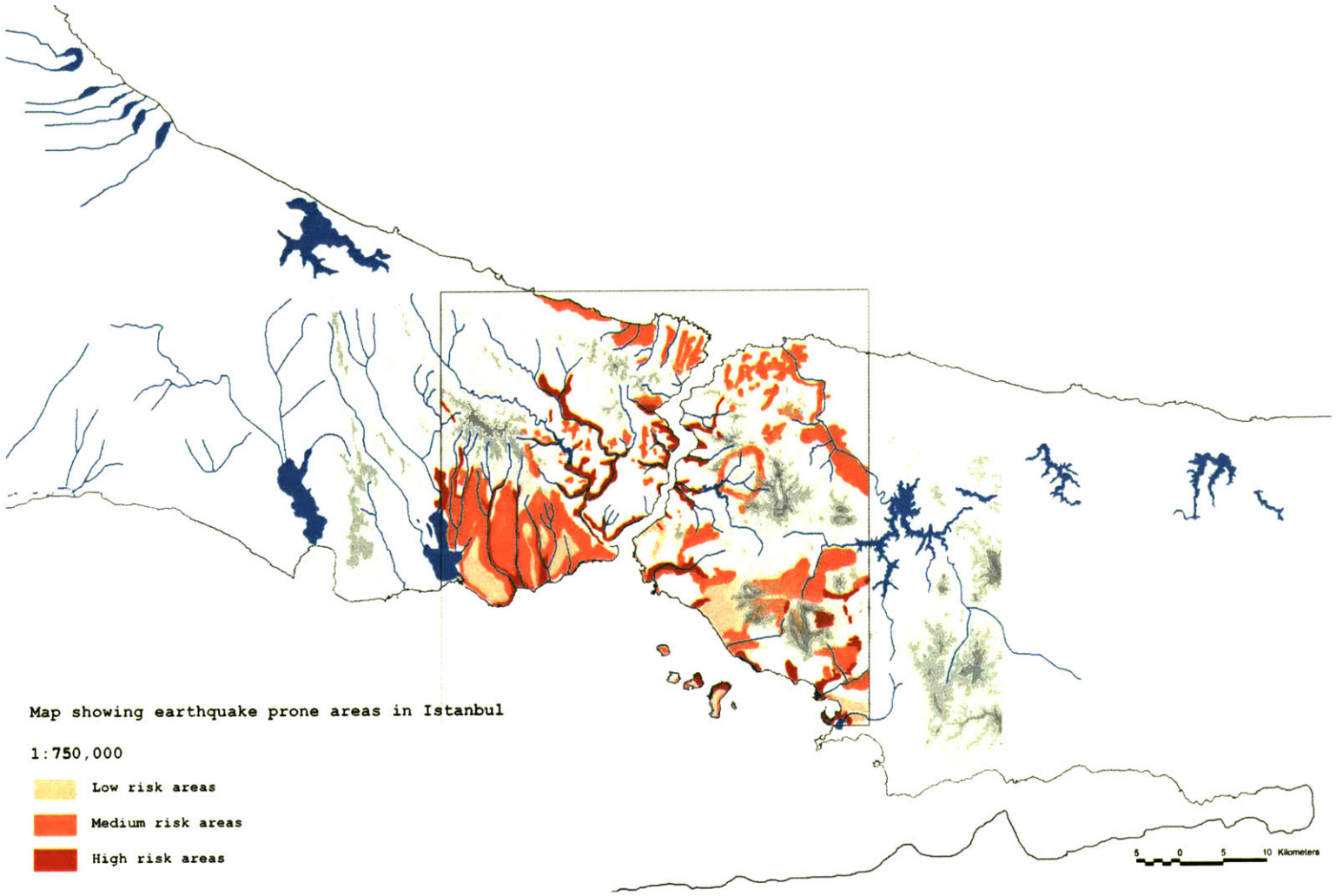
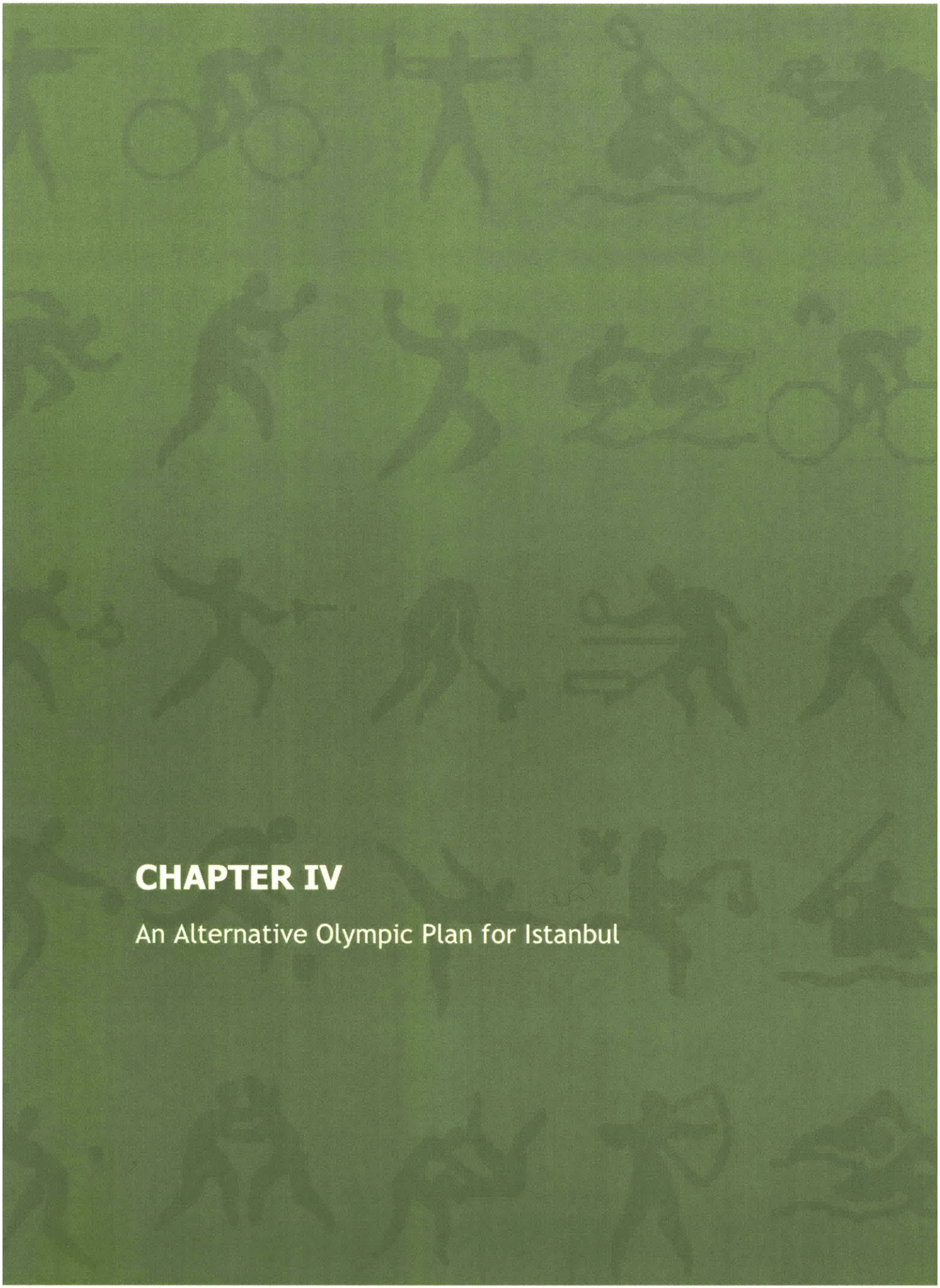
1:750,000
Existing in 2000
Forest
Cemetery
Green area
Daily recreation area
Existing in 1971
Spoiled forest
Quality forest
5 0 5 10 Kilometers


Map showing existing and planned rail and sea transportation
1:750,000
Existing suburban rail
Planned 'Marmaray' light rail project with Bosphorus tunnel
Existing subway
Planned subway extensions
Historic peninsula tramway
Existing passenger ferry routes
Airports
5 0 5 10 Kilometers


Map showing existing and planned rail and sea transportation
1:750,000
Existing suburban rail
Planned 'Marmaray' light rail project with Bosphorus tunnel
Existing subway
Planned subway extensions
Historic peninsula tramway
Existing passenger ferry routes
Airports
5 0 5 10 Kilometers


Environmental and landuse constraints
Opportunities for environmental improvement and areas located around sustainable transportation
Urban boundary and outline of squatter settlements
5 0 5 10 Kilometers


Map showing earthquake prone areas in Istanbul
1:750,000
Low risk areas
Medium risk areas
High risk areas
5 0 5 10 Kilometers



CHAPTER IV

An Alternative Olympic Plan for Istanbul

Principles of Design

In the first two chapters of this thesis, we have explored –in principle– the limitations and potential benefits of Olympic planning. We have shown how host cities have traditionally used the Olympic event as an excuse to achieve goals non-related to the Olympics for their city, and revealed –from an environmental planner's perspective– that they have often failed to do so. It is impossible to articulate on paper the political, economic and social possibilities and constraints that define and direct the planning process. It is possible, however, to create a vision that guides that planning process. While it need not be burdened by the so-called realities of the day, a strong vision that people can hold onto must necessarily identify trends, strengths and weaknesses of a system. In Chapter III, we have identified environmental hazards that jeopardize the future of İstanbul as the bountiful, peaceful and attractive city that can promise a good life to anyone who chooses it as home and pointed out its rivers and rich topography as a starting point for reorientation. The following chapter aims to produce a vision, one of the many possible, for the future of İstanbul that can be realized through the Olympics. Where necessary, the Olympic Program will be adjusted to allow the Olympic infrastructure to better interlock with the urban structure to achieve a richer Olympics with a great urban legacy.

The alternative plan for the Green Olympics in İstanbul presented in this chapter is derived from the following guiding principles:

I. An alternative plan for a Green Olympics in İstanbul will avoid investment in parts of the city/region that are environmentally sensitive or that would lead to development in environmentally sensitive areas by;

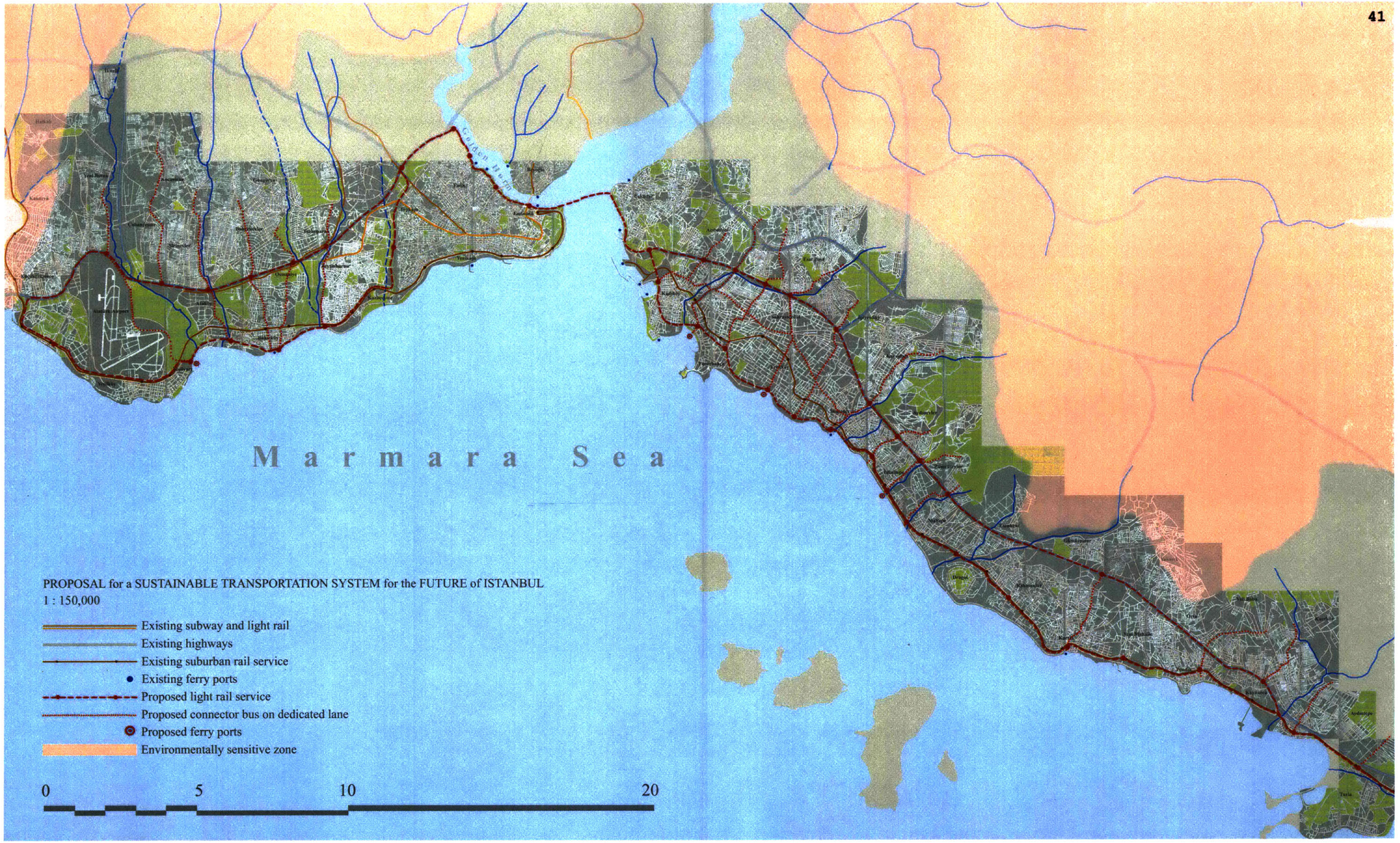
building, as part of the Olympics, a public transportation scheme that discourages development in environmentally sensitive zones and encourages densification of areas outside of these zones,

placing new sports facilities outside of environmentally sensitive zones and along public transportation routes, giving preference to those areas that are in need of environmental reclamation.

II. An alternative plan for the Green Olympics in İstanbul will ensure the use of Olympic investment to benefit the city in the long term by;

distributing new sports facilities evenly throughout the city to best serve recreational needs of the urban population after the Games,

locating transportation improvements and new networks along routes that can be used by the urban population after the Games.


Golden Horn
Marmara Sea
PROPOSAL for a SUSTAINABLE TRANSPORTATION SYSTEM for the FUTURE of ISTANBUL
1 : 150,000
Existing subway and light rail
Existing highways
Existing suburban rail service
Existing ferry ports
Proposed light rail service
Proposed connector bus on dedicated lane
Proposed ferry ports
Environmentally sensitive zone
0
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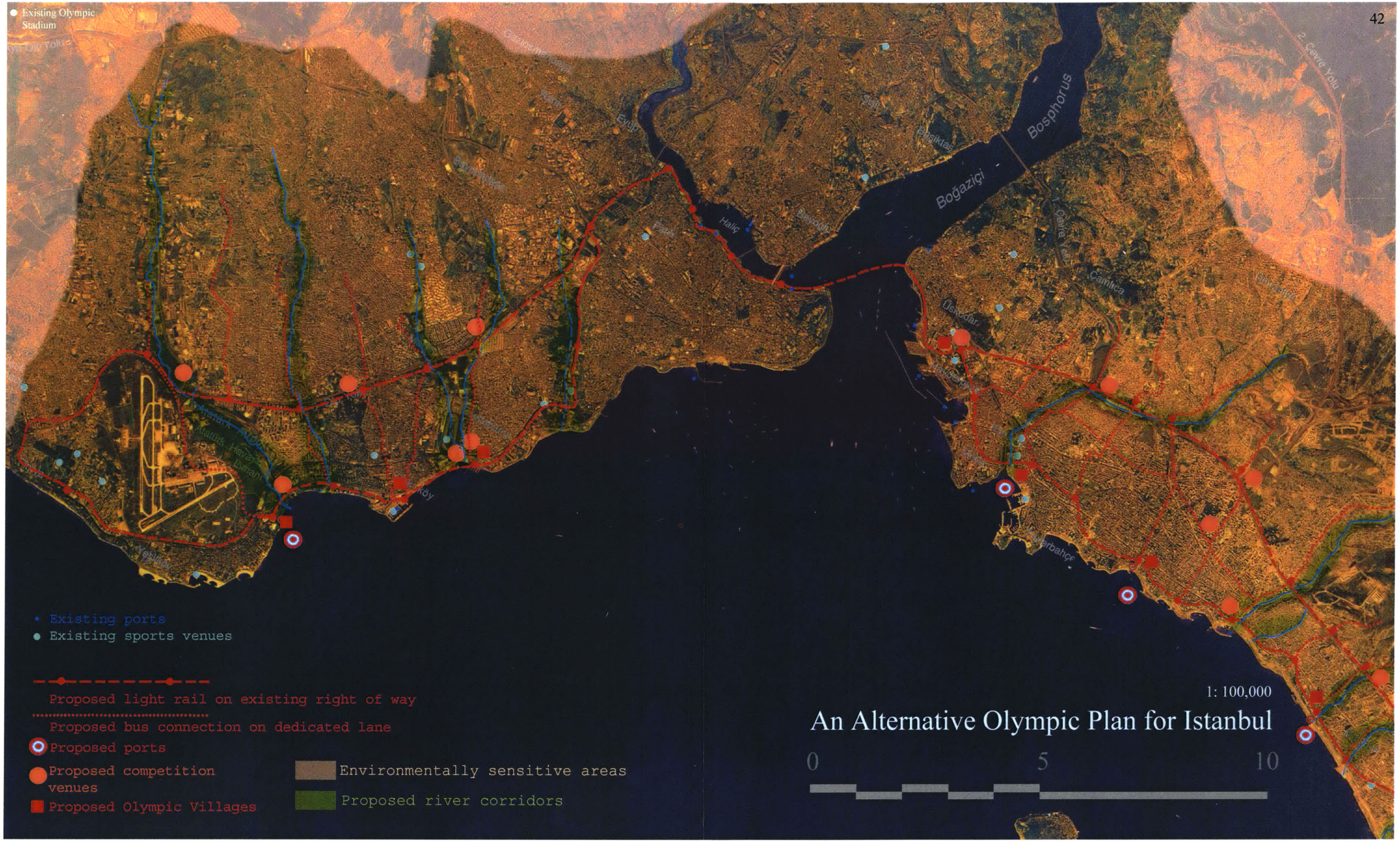

Existing Olympic Stadium
Boğaziçi
Bosphorus
Halıç
Beşiktaş
Üsküdar
Çamlıca
Kuzguncuk
Ataköy
Yenikapı
Sarıyer
Rumeli Hisarı
Bebek
Arnavutköy
Ortaköy
Kabataş
Fındıklı
Beyoğlu
Galata
Eyüp
Fatih
Sütlüce
Kasımpaşa
Haydarpaşa
Kadıköy
Moda
Fenerbahçe
Maltepe
Pendik
Tuzla
Atatürk Havalimanı
Sabiha Gökçen Havalimanı
2. Çevre Yolu
1. Çevre Yolu
Existing ports
Existing sports venues
Proposed light rail on existing right of way
Proposed bus connection on dedicated lane
Proposed ports
Proposed competition venues
Proposed Olympic Villages
Environmentally sensitive areas
Proposed river corridors
1: 100,000
An Alternative Olympic Plan for Istanbul
0
5
10

Olympic Transportation

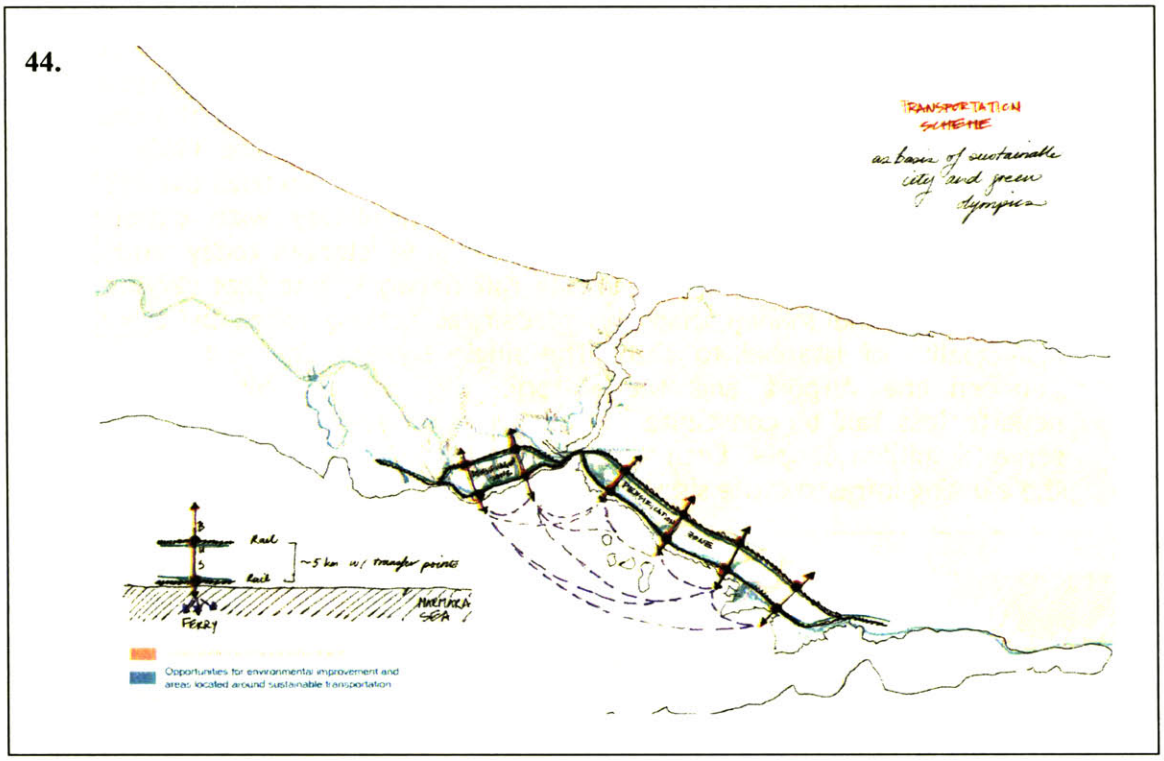
Experience from Sydney has shown that a multi-modal and efficient public transportation system with a significant rail component is required to operate a car-free Olympics. The alternative Olympic plan for İstanbul, presented on the previous page, is also based on a rail system that is supported by a network of connecting buses and ferry transportation. It reinforces a number of existing right of ways to channel development pressure away from the forests and water reservoirs in the north of the city. The idea is not radical, yet it demands a paradigm shift that can only be achieved through something as large as the Olympics.

İstanbul's public transportation system today is comprised primarily of buses that contribute to traffic congestion within the city. Although plans have been made since late 19th century to build a subway network, the challenges posed by the hilly topography and the dominance —since the 1960s— of car-oriented development has delayed subway construction up until the 1990s. The existing suburban rail, which shares the right-of-way with national rail, accounts for a mere 7.7 % of daily trips. Few in İstanbul today would argue against the need to establish a viable rail network, one that requires more effort, time and money than the piecemeal actions taken by the Greater Municipality of İstanbul to date. The single subway line and the light rail between the Airport and the historic city are exemplary efforts that nevertheless fail to constitute a transportation system that can effectively serve 10 million people. Even with the amendments proposed in the 2008 bid, the existing infrastructure simply cannot support the Olympic demand.

43. Map showing Marmaray (red and white lines), connections with existing and proposed light rail service (solid and dashed pink line) and an extended subway service (blue line).

The current debate on the future of transportation in İstanbul is divided into camps supporting the construction of a third bridge across the Bosphorus versus those who advocate the construction of a rail tunnel passing underneath the Bosphorus. The latter project is known as Marmaray and includes the institution of a light rail line along the suburban rail right-of-way. Although the Marmaray project, developed by the Ministry of Transportation, is currently in the bidding phase, the ministry has thrown its support behind the bridge alternative after a change in administration. Regardless, Marmaray when built will inherit shortcomings of the suburban rail, such as the impossibility of rail-to-ferry connections and as such, may not succeed in reducing land travel.

44.



My proposal, seen in Figure 44, is based on a double rail system composed of a coastal line and a parallel inner line located five to seven kilometers inland. The coastal line runs along the coastal highway and stops at ports where passengers can transfer onto ferries traveling to other parts of İstanbul or to other destinations across the Marmara Sea. The inner line occupies the median of the first peripheral highway. The two lines merge at Eminönü and Üsküdar to cross the Bosphorus in an underwater rail tunnel. The train stops every two to two and a half kilometers. Residents who do not live within walking distance (about 1km radius) of a train station can use the 'feeder buses', frequently-run buses that use dedicated lanes perpendicular to rail corridors, to reach the station. (See Figure 41 for more detail) Curitiba-style platforms can be used to facilitate rail-to-bus transfers.

In addition to streamlining transportation in the southern part of the city, the proposed system will also encourage development in the zone located between the two lines or the 'densification zone'. Combined with

disinvestments in transportation elsewhere within the city, this system can effectively facilitate future development along the Marmara coast, away from the forests and water reservoirs located in the north of the city. The densification zone on the Asian side may support a greater population with its bedrock foundation than corresponding sections on the European side that have alluvial geology. Popular neighborhoods of the Asian side, in fact, are already being densified with 10 to 15 story apartment buildings erected in place of the 5 to 6 story structures of the 1960s. The suburban rail right-of-way, a narrow winding route passing through neighborhoods located between the two proposed rail lines can still be used for inter-city train services; however, it is bound to become obsolete in the near future with the introduction of bullet trains in Turkey. In light of these circumstances, it is best to convert this right-of-way into a recreational bike trail that can encourage biking as a means of transportation.

45, 46. On the left, view looking down the peripheral highway on the Asian side of the city. On the right, view looking across rail tracks emanating from the Haydarpaşa station, the terminus of the inter-city and suburban rail on the Asian coast of İstanbul, built between 1906-1909.

Just like Barcelona, which justified the use of Olympic investment for peripheral highways by placing its Olympic parks along the proposed route, İstanbul can justify the construction of the above system by placing competition venues along the inner and coastal highways. Spectators, who will be traveling from a variety of different locations within the city, can be encouraged to use trains, buses and ferries by giving free rides to Olympic ticket holders. A fleet of natural gas powered buses can transport athletes to venues along dedicated lanes on highways and other roads. The following section will discuss in greater detail the arrangement of Olympic venues and accommodations that corresponds to the transportation system described in this section.

Location of Olympic Venues

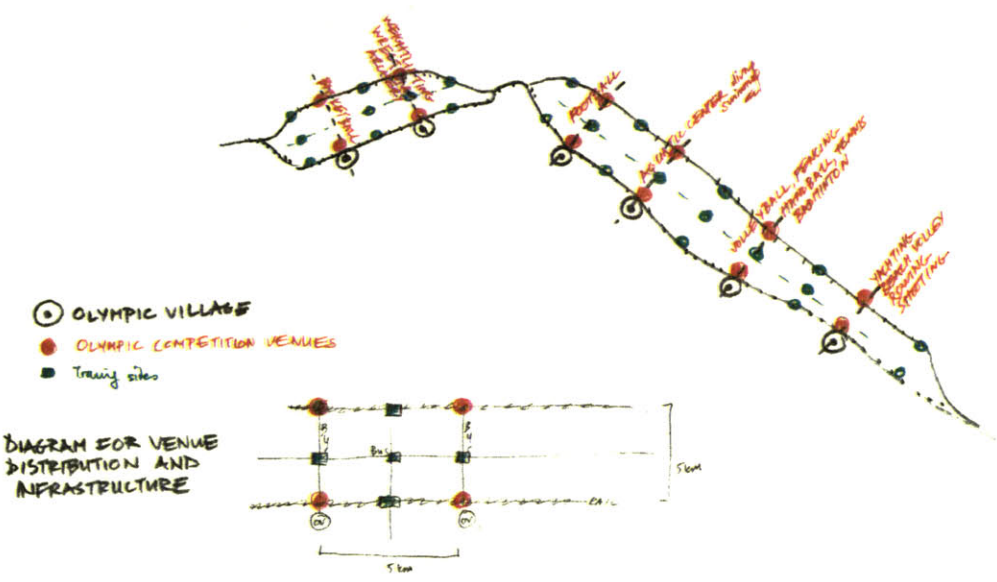
The benefits of dispersal

Most host cities choose to concentrate sports venues in one or more Olympic Parks that are of little use to the city after the Games. This is a pattern of development that follows from the IOC requirement of the single Olympic Village. What if Olympic planners were allowed to spread the Olympic

Village over a few selected sites? What would be the benefits of the resulting dispersed plan in comparison to the concentrated one? A dispersed Olympic plan brings many benefits to the operation of the Olympics that cannot be achieved through a 'world-fair' type concentration of venues; it also can help reduce the impact of the Olympics on the host city while increasing long-term benefits to transportation and recreation.

Olympic planners have resorted to extraordinary measures to provide transportation for the two million or more spectators that descend on the city for a period of fifteen days. The concentration of this demand at specific points has caused organizational nightmares; the dispersal of competition venues would help spread the load throughout the transportation system, reducing the need for emergency measures. A dispersed system would bring the transportation behavior of Olympic spectators closer to that of normal residents of the host city; originating from their rented apartments in various residential neighborhoods, spectators would use the public transportation service to reach a variety of different destinations throughout the city to attend their ticketed events. In this scenario, transportation improvements put in place for the Olympics will naturally benefit the residents of the host city after the Games.

47.



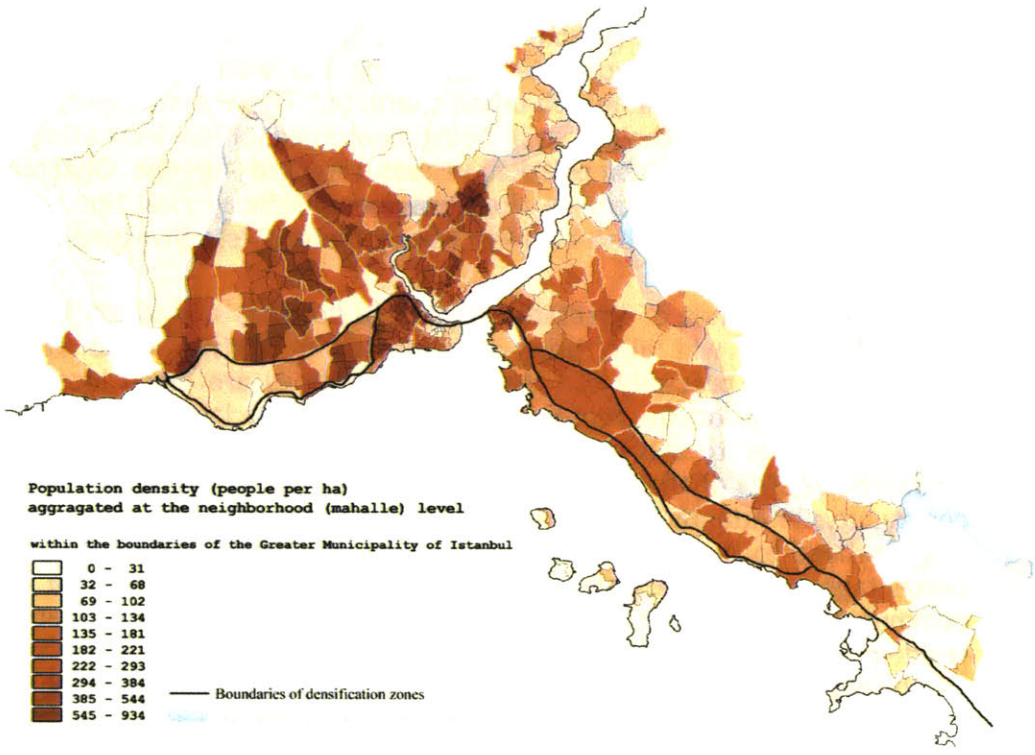
A dispersed Olympic plan is also the best way to leave a lasting sports legacy in the host city, especially in those cities like İstanbul where sports facilities are few and investment opportunities are hard to come by. This reason alone should be sufficient to justify the adoption of a dispersed Olympic plan in İstanbul. The diagram above shows one possible arrangement of Olympic sites based on the transportation template introduced in the previous section. Let us now discuss the specific attributes of three types of Olympic sites: Olympic Villages, competition venues and training facilities, within the frame of an alternative Olympic plan for İstanbul.

Olympic Villages

The requirement of the single Olympic Village is the most important obstacle to achieving an even distribution of Olympic investment throughout the host city due to the prioritized travel needs of athletes. The alternative plan for the Olympics in İstanbul is based on the idea of multiple athletes' villages whose locations are determined based on the location of sports venues at which those athletes will be competing. Athletes competing in a given family of sports such as aquatics or gymnastics, for example, can be housed at separate villages that are close to the appropriate venue as opposed to staying in a single village that is close to a cluster of venues.

It is important to consider the patterns of income distribution and density that characterize the 'densification zones' defined by the alternative Olympic transportation plan above before designating a physical location for the Olympic Villages. Neighborhoods get wealthier, typically, as one gets closer to the Marmara coast and poorer as one approaches the inner highway. The inner highway largely defines the boundary between settled neighborhoods and squatter settlements, although this boundary has been moving further inland based on real estate demands. Income levels drop the further one travels away

48.



from the mouth of the Bosphorus along the Marmara coast, where the two highways merge and turn into an industrial corridor stretching out all the way to İzmit. The inner highway also divides more settled and wealthier neighborhoods from poorer neighborhoods on the European side where industry clusters are found along a highway route that leads inland from the airport, between the inner highway and the second peripheral. Some of the denser

settlements of the city are located in these neighborhoods, which are also considered to be at medium to high risk for earthquakes. (See Figure 40)

As a general rule, I will be placing Olympic Villages along the coastal highway where the neighborhoods are almost entirely residential where it is not uncommon to build up to 10 to 15 stories. If we envision six equal-size villages with 2670 athletes in each, it would be necessary to build fifteen 12-story apartment buildings at each location that have four 2 or 3 bedroom apartments on each floor with one or two athletes in each room. The denser perimeter-block typology, while uncommon in Turkey, may be used to save space and increase security. Considering that a large number of athletes become spectators after participating or being eliminated from earlier races, it makes sense to locate Olympic Villages at train stations for greater access. The location of the villages will also effectively separate spectator traffic from athlete traffic, with athletes traveling on routes perpendicular to the light rail system to reach competition venues, described below.

Competition Venues

Two of the three football stadiums in İstanbul (İnönü and Fenerbahçe Stadiums) and the Veli Efendi Hippodrome are built on flatlands found at the mouths of rivers. They are now surrounded by dense residential neighborhoods, but were located on the periphery of the city when first built. We would be hard-pressed to find comparable sites along the waterfront today to build stadia that reflect the same rich urban character. There is still space along the inner highway, even though it is being consumed at an increasing rate by shopping malls. Large competition venues required for the Olympics must therefore be placed at stations along the inner highway /rail line, preferably on sites to the north of the highway where there is less investment in public services.

The thousands of spectators that flow towards a stadium for a sports event, however, will also bring an increase in traffic, noise and uncivil behavior; this is precisely the reason why facilities are often located in the urban periphery or in poorer neighborhoods that lack the political and economic power to sway government and business decisions. Some of the declared benefits of these investments are often not delivered to the affected community: In Atlanta, the residents of Summer Hill who lost a section of their neighborhood to the new Turner Field had to fight to be able to divert a small percentage of the parking revenues from the baseball stadium to their community development fund.[1] A democratic planning process that involves resident groups can help mediate the negative impacts of large venues to nearby neighborhoods while guaranteeing their benefit for hosting the venue.

The list of Olympic requirements, moreover, contains sports venues of all kinds and sizes and more often than not, such investments are considered to be an asset for the municipality and the community hosting the facility. In Athens, smaller sports facilities required for the Olympics, such as the weightlifting hall, were distributed among the poorer municipalities with the hope that such investments will trigger an economic revitalization of the area. Managed by public agencies or by private entities committed to community

1 Rutheiser, Charles. Imagineering Atlanta, 252.

service, these sports venues are of significant recreational and educational value to poorer municipalities that often lack such facilities.

Training Facilities

Perhaps the least glorified of all Olympic infrastructures are the training facilities for athletes. In Atlanta, athletes used fifty-one training facilities — high school gymnasiums, university stadiums, private tennis centers, and even a ballroom — for training purposes, in addition to the twenty-seven venues used for competition. [2] The IOC requires training facilities to comply with the same material standards as the competition venues, which often requires an extensive upgrading of existing facilities. The Bidbook for İstanbul 2008 lists only twenty-six training sites that are all located on the European side of the city.[3] A quick survey of existing sports facilities in İstanbul will reveal the need to build more and better training facilities for the athletes.

While sites for larger venues should ideally be located away from residential neighborhoods, training facilities hold a lot of potential for neighborhood-scale development. Training facilities have not been considered an important part of Olympic planning in the past; this is a missed opportunity. An alternative Olympic plan for İstanbul will strategically site new training facilities to best serve the population after the Games. The training facilities and smaller Olympic venues also present an opportunity to get local municipalities, non-profits and citizen groups involved in the Olympic planning process. A commission representing the Organizing Committee can contact each neighborhood, or a cluster of neighborhoods to inquire about the availability of sites where a multi-purpose sports facility can be built for the Olympics. Preferably, these sites should be located on main routes served by feeder-buses, or within walking distance of light rail stations. Once built, these Olympic training facilities can serve local teams, neighborhood schools and provide daily recreation opportunities for the neighborhood residents.

River Reclamation for the Olympics

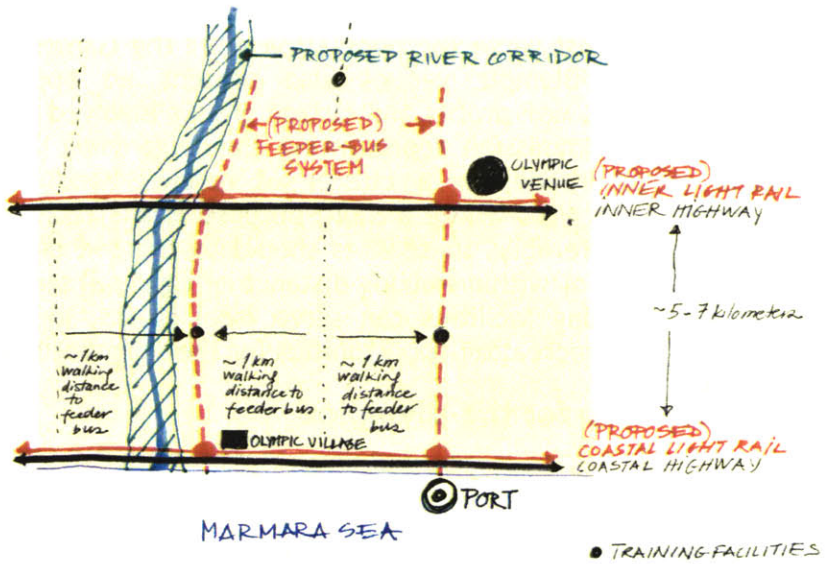
49, 50 (above) Two views of Kurbağalıdere, circa 1940.

2 The Official Report of the Centennial Olympic Games, 388.

3 Istanbul 2008 Bidbook III, 73.

All host cities 'clean the house' before the Olympic guests show up; new trees and flowers are planted, sidewalks and streets are repaved and new street furniture is put up. The clean-up effort is especially noticeable in tourist zones and areas immediately surrounding Olympic sites. In İstanbul, the proposed light rail transportation system is crossed at many points by rivers that have become open sewage channels and dumpsters. (See Figures 31 and 32 for a map of rivers). Younger generations know them only by their awful smell, while older residents will remember that they were popular spots for sports and recreation a couple decades back. Locating transit stations, Olympic Villages and sports venues at the intersection of rivers and the railways can be the first step towards a systematic reclamation of rivers.

Rivers are the backbone of the feeder-bus system that will be instituted as part of the Olympic transportation system. Both systems run against the grain of the income divide that is generated by the highways, among other factors. Restoring a river corridor can help link the different types of neighborhoods that are located along its path.



51. Diagram showing river corridor, Olympic transportation system and sports infrastructure

In this scheme, a river corridor will be developed over time along the rivers that can support storm water drainage while serving recreation and ecological functions. Buildings that fall within the boundaries of the designated corridor will not be replaced, thus allowing for the creation of a buffer zone over time. Where necessary, the riverbed will be restored to its original condition and holding ponds will be created along the river corridor to reduce the risk of floods. Landscaping of sections adjoining Olympic villages or venues can provide an example and an incentive for the continuation of work after the Games. The İstanbul Water and Sewerage Administration is already at task building treatment plants at a number of the most polluted rivers. Even after the Games, the presence of light rail stations at rivers will ensure the continuation of reclamation efforts.

52. (left) A section of Kurbağalıdere today. **53.** (right) Kurbağalıdere overflows its concrete channel and flooded nearby streets after rainstorm in 1999.

The transformation of Ayamama from a rural river in the countryside to a channeled flow polluted by industrial effluents is exemplary of how the rivers of İstanbul have come back to haunt the city's residents with floods, subsidence and disease. In 1910, the countryside around Ayamama was scattered with small villages and dairy farms, with the exception of the towns of Bakırköy (Makriköy) and Yeşilköy (Ayastefanos) on the Marmara coast. A railroad was built along the coastline at the turn of the century, with factories for gunpowder, shells and matches built on its route. Ayamama retained its rural surroundings until the 1960s when it was crossed by an intercity highway and the westward extension of the city. A second highway route was built further inland in the 1980s. The connecting road between the two highways, which follows the course of the river, has since become an industrial corridor that has generated shantytown settlements on either side of the river. The first highway separates the upper-middle class housing projects known as Ataköy from low-middle income housing and shantytowns to the north. Fumes and chemical effluents from the river affect both communities. Most recently, the open floodplains adjoining the Atatürk airport to the west of Ayamama were opened up for the development of hotels and entertainment centers. The Ayamama valley, which floods after heavy storms, is also one of the most dangerous earthquake zones in the city with its alluvial base. The Olympics is a unique opportunity to reverse this destructive trend.

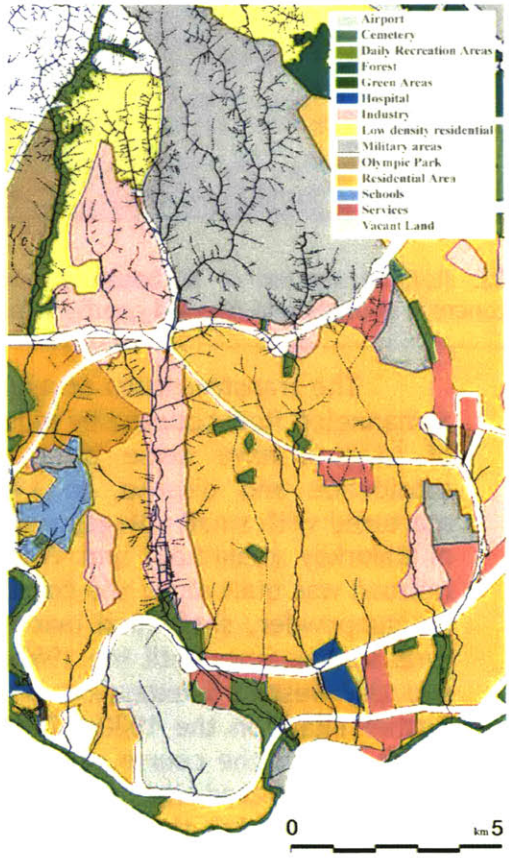
Guidelines for river reclamation

There are currently nineteen projects underway to treat the waters entering some of Istanbul's rivers; the treatment facility for Ayamama alone will cost 300 million dollars. Long-term solutions for the rivers, however, should address the destruction caused by current patterns of development. The reclamation of İstanbul's rivers, once well-financed and catalyzed by the Olympics, should proceed in accordance with the following guidelines:

** Prevent development in river floodplain*

Given that anything built in the floodplain is in danger of subsiding and flooding, regulations that exist should be enforced and augmented to provide

for the purchase of any property that lies within the floodplain to facilitate its conversion into a river corridor. River corridors, or vegetated areas along rivers, provide food, habitat and cover for wildlife and can be used for educational and recreational functions.



54. (left) Map showing topography of the Ayamama watershed and the extent of development in 1910, 1970 and 1996. **55.** (right) Map showing land use in the vicinity of the Ayamama river, with industrial zones seen along the river.

* *Promote local use and ownership of river*

The lack of ownership that residents in a neighborhood feel towards a river that flows next to their houses stands in the way of any improvement that can be made to that river. Since a majority of the current residents of Istanbul have not experienced the rivers as anything other than a burden, a public education campaign may be necessary to bring back awareness of the river's history and its recreational use. If synchronized with improvements to the river and its corridor by the local municipality, such a campaign can help transform the river's negative image and promote a sense of neighborhood pride that can motivate community groups to actively take part in realizing their dream for a better environment. The education campaign should include information about the ecological functions of a river to raise awareness about the consequences of floodplain development, paved surfaces and dumping. At later stages of the

project, youth groups can be employed to maintain the river landscape and school children can use the river corridor for nature education. When promoted in this way, rivers can bring together communities of different income levels that are divided by highways.

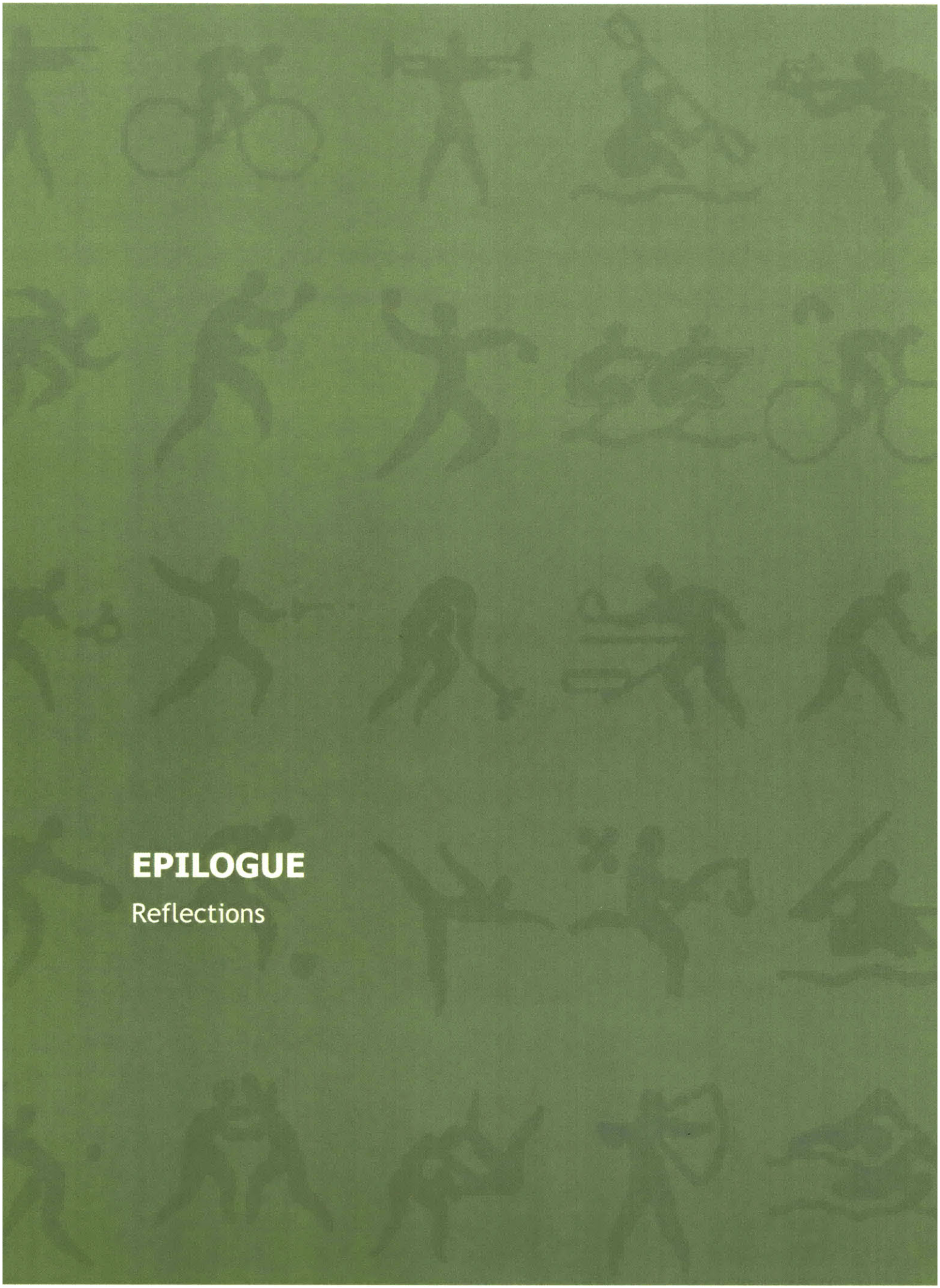
* *Clean industrial and residential wastewater before releasing into the river*

The city cannot afford to have its industries and residents dump their wastewater into the rivers. The cost of not treating wastewater will return as cost of treating health problems of the urban population and of permanent loss of wildlife.

* *Institute reuse of storm water and reduce surface flows*

In 1971, the World Health Organization provided funds to the Municipality of Istanbul to contract out a study of storm water management for the city. The report, prepared by DAMOC consortium, prepared data, created maps and engineering guidelines as well as a cost and management proposal. A quick look at the city after a storm will show that not much has been implemented. Storm water management projects today have successfully combined man-made and natural systems to create multi-functional systems of drainage channels and holding ponds; given its dependence on rainwater, there is no reason why Istanbul should continue to pollute and waste its storm water. When collected and treated, storm water can be used for a variety of domestic, commercial and industrial purposes, including use as drinking water. It is important, nonetheless, to ensure that a fair amount of the rainwater is allowed to make its way to the city's aquifers which sustain its flora and contribute to its drinking water reservoirs: after all, the earth's crust is one of the best filters of water.

The Alternative Olympic Plan presented in this Chapter is focused on maximizing the long-term benefits of Olympic investment on İstanbul's environment. It is not the only alternative that can achieve this goal, neither is it the only alternative plan for the İstanbul Olympics. The design strategy presented in Chapters III and IV can easily be altered by focusing on sectors other than the environment, such as affordable housing or economic development in order to generate a plan that maximizes the benefit of Olympic investments in that sector. Other alternative plans may sample from potential benefits in multiple sectors. What is important, above all, is that enough alternatives are explored before settling on any prescribed solution. This is what I hope for the future Olympic bids of İstanbul.



EPILOGUE

Reflections

The thesis presented here contains the seeds for three separate theses that, if expanded, could each stand on their own: The Problems and Limitations of Olympic Planning; An Environmental History of İstanbul and Proposal for Improvements; and, A Proposal for the Green Olympics in İstanbul. Research being endless, there are a few points in the thesis that would have benefited from further development and research if I had more time.

The first, is transportation. How long would it take a spectator or an athlete to get from their room to the Olympic venue in the alternative plan? How frequently would buses need to be run on the dedicated lane for a certain number of athletes to be transported to their venues? How would this affect local traffic? How expensive would it be to create a light rail system on the highway median and how would that affect highway traffic? These are a few of the many transportation-related questions that still occupy my mind; I wish I had the knowledge to do a back of the envelope calculation.

The second, is organizations and their inter-relationships. What kind of an organizational matrix would it take to realize an Olympic plan such as the one presented in this thesis? The need to restructure the sinews, centers and density of İstanbul's growth is a constant, independent of the success of the 2012 Olympic bid. Will those bodies of government that have failed at this task change their methods and attitudes when it comes to the Olympics? If not, what kinds of organizational changes are necessary for İstanbul to recover? If we could not do it today without the Olympics, can we do it in the future with the Olympics?

APPENDICES

Appendix A: Olympic Cities

SUMMER GAMES			WINTER GAMES		
1896	I	Athens, Greece			
1900	II	Paris, France			
1904	III	Saint Louis, Missouri U.S.			
1908	IV	London, England			
1912	V	Stockholm, Sweden			
1916	VI	*cancelled*			
1920	VII	Antwerp, Belgium			
1924	VIII	Paris, France	1924	I	Chamonix, France
1928	IX	Amsterdam, Netherlands	1928	II	St. Moritz, Switzerland
1932	X	Los Angeles, California U.S.	1932	III	Lake Placid, New York U.S.
1936	XI	Berlin, Germany	1936	IV	Garmisch-Partenkirchen, Germany
1940	XII	*cancelled*	1940	-	*cancelled*
1944	XIII	*cancelled*	1944	-	*cancelled*
1948	XIV	London, England	1948	V	St. Moritz, Switzerland
1952	XV	Helsinki, Finland	1952	VI	Oslo, Norway
1956	XVI	Melbourne, Australia	1956	VII	Cortina d'Ampezzo, Italy
1960	XVII	Rome, Italy	1960	VIII	Squaw Valley, California U.S.
1964	XVIII	Tokyo, Japan	1964	IX	Innsbruck, Austria
1968	XIX	Mexico City, Mexico	1968	X	Grenoble, France
1972	XX	Munich, West Germany	1972	XI	Sapporo, Japan
1976	XXI	Montreal, Canada	1976	XII	Innsbruck, Austria
1980	XXII	Moscow, U.S.S.R.	1980	XIII	Lake Placid, New York U.S.
1984	XXIII	Los Angeles, California U.S.	1984	XIV	Sarajevo, Yugoslavia
1988	XXIV	Seoul, South Korea	1988	XV	Calgary, Alberta, Canada
1992	XXV	Barcelona, Spain	1992	XVI	Albertville, France
1996	XXVI	Atlanta, Georgia U.S.	1994	XVII	Lillehammer, Norway
2000	XXVII	Sydney, Australia	1998	XVIII	Nagano, Japan
2004	XXVIII	Athens, Greece	2002	XIX	Salt Lake City, Utah U.S.
2008	XXIX	Beijing, China	2006	XX	Torino, Italy
			2010	XXI	Vancouver, Canada

Appendix B: A Historical Survey of Olympic Sports

	2004 ATHENS	2000 SYDNEY	1996 ATLANTA	1992 BARCELONA	1988 SEOUL	1984 LOS ANGELES	1980 MOSCOW	1976 MONTREAL	1972 MUNICH	1968 MEXICO CITY	1964 TOKYO	1960 ROME	1956 MELBOURNE	1952 HELSINKI	1948 LONDON	1936 BERLIN	1932 LOS ANGELES	1924 PARIS	1920 ANTWERP	1912 STOCKHOLM	1908 LONDON	1904 ST. LOUIS	1900 PARIS	1896 ATHENS	
	28 sports	28 sports	26 sports	28 sports	25 sports	23 sports	21 sports	21 sports	23 sports	20 sports	19 sports	17 sports	17 sports	17 sports	17 sports	19 sports	14 sports	17 sports	22 sports	14 sports	22 sports	17 sports	18 sports	9 sports	
Aquatics	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	Aquatics
Archery	■	■	■	■	■	■	■	■	■									■		■	■	■	■		Archery
Athletics	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	Athletics
Badminton	■	■	■	■					■																Badminton
Baseball	■	■	■	■	■	■																			Baseball
Basketball	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■						■			Basketball
Boxing	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■			Boxing
Canoe/Kayak	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■									Canoe/Kayak
Cycling	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	Cycling
Equestrian	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			■		Equestrian
Fencing	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	Fencing
Football	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■		Football
Gymnastics	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	Gymnastics
Handball	■	■	■	■	■	■	■	■	■																Handball
Hockey	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■				Hockey
Judo	■	■	■	■	■	■	■	■	■		■										■				Judo
Modern Pentathlon	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■					Modern Pentathlon
Rowing	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		Rowing
Sailing	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■		Sailing
Shooting	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	Shooting
Softball	■	■	■																						Softball
Table Tennis	■	■	■	■	■																				Table Tennis
Taekwondo	■	■		■	■																				Taekwondo
Tennis	■	■	■	■	■	■				■								■	■	■	■	■	■	■	Tennis
Triathlon	■	■																							Triathlon
Volleyball	■	■	■	■	■	■	■	■	■	■	■														Volleyball
Weightlifting	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			■		■	Weightlifting
Wrestling	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	Wrestling
Basque Pelota				■						■													■		Basque Pelota
Rink-Hockey				■																					Rink-Hockey
Water-skiing									■																Water-skiing
Polo																■		■	■		■		■		Polo
Rugby																		■	■		■		■		Rugby
Tug of War																			■	■	■	■	■		Tug of War
Lacrosse																					■	■			Lacrosse
Jeu de Paume																					■				Jeu de Paume
Rackets																					■				Rackets
Water Motorsports																					■				Water Motorsports
Golf																						■			Golf
Roque																						■			Roque
Cricket																							■		Cricket
Croquet																							■		Croquet

Appendix C: Numerical Data from Past Olympics

Year	City	NOCs	Athletes	Events	Sports	Volunteers	Media	Opening Date	Closing Date	# days
2000	SYDNEY	199	10,651	300	28	46,967	16,033	Sep 15, 2000	Oct 1, 2000	16
1996	ATLANTA	197	10,318	271	26	47,466	15,108	Jul 19, 1996	Aug 4, 1996	16
1992	BARCELONA	169	9,367	257	28	34,358	13,082	Jul 25, 1992	Aug 9, 1992	15
1988	SEOUL	159	8,465	237	25	27,221	11,331	Sep 17, 1988	Oct 2, 1988	15
1984	LOS ANGELES	140	6,797	221	23	28,742	9,190	Jul 28, 1984	Aug 12, 1984	15
1980	MOSCOW	80	5,217	203	21	-	5,615	Jul 19, 1980	Aug 3, 1980	15
1976	MONTREAL	92	6,028	198	21	-	-	Jul 17, 1976	Aug 1, 1976	15
1972	MUNICH	121	7,123	195	23	-	-	Aug 26, 1972	Sep 11, 1972	16
1968	MEXICO CITY	112	5,530	172	20	-	-	Oct 12, 1968	Oct 27, 1968	15
1964	TOKYO	93	5,140	163	19	-	-	Oct 10, 1964	Oct 24, 1964	14
1960	ROME	83	5,348	150	17	-	-	Aug 25, 1960	Sep 11, 1960	17
1956	MELBOURNE	67	3,184	145	17	-	-	Nov 22, 1956	Dec 8, 1956	16
1952	HELSINKI	69	4,925	149	17	-	-	Jul 19, 1952	Aug 3, 1952	15
1948	LONDON	59	4,099	136	17	-	-	Jul 29, 1948	Aug 14, 1948	16
1936	BERLIN	49	4,066	129	19	-	-	Aug 1, 1936	Aug 16, 1936	15
1932	LOS ANGELES	37	1,408	117	14	-	-	Jul 30, 1932	Aug 14, 1932	15
1928	AMSTERDAM	46	3,014	109	14	-	-	May 17, 1928	Aug 12, 1928	87
1924	PARIS	44	3,092	126	17	-	-	May 4, 1924	Jul 27, 1924	84
1920	ANTWERP	29	2,669	154	22	-	-	Apr 20, 1920	Sep 12, 1920	145
1912	STOCKHOLM	28	2,547	102	14	-	-	May 5, 1912	Jul 27, 1912	83
1908	LONDON	22	2,035	110	22	-	-	Apr 27, 1908	Oct 31, 1908	187
1904	ST LOUIS	13	689	91	17	-	-	Jul 1, 1904	Nov 23, 1904	145
1900	PARIS	24	1,225	95	18	-	-	May 1, 1900	Oct 28, 1900	180
1896	ATHENS	14	241	43	9	-	-	Apr 4, 1986	Apr 15, 1986	11

Appendix D: Past Olympics Host City Election Results with round-by-round count of votes (Cities with no vote counts are finalized candidate cities that were not included in the final vote)

Source: Modified from "Past Host City Election Results" on Gamesbids.com: An Authoritative Review of Olympic Bid Business. http://www.gamesbids.com/english/archives/past.shtml

DATE	LOCATION AND SESSION		GAMES	BID CITY (Winner in BOLD)	Round					
					1st	2nd	3rd	4th	5th	6th
7/13/2001	Moscow, Russia	112	2008	**Beijing, China**	**44**	**56**				
				Toronto, Canada	**20**	22				
				Paris, France	**15**	18				
				Istanbul, Turkey	**17**	9				
				Osaka, Japan	6	-				
				Bangkok, Thailand						
				Cairo, Egypt						
				Havana, Cuba						
				Kuala Lumpur, Malaysia						
				Seville, Spain						
9/5/1997	Lausanne, Switzerland	106	2004	**Athens, Greece**	**32**		**38**	**52**	**66**	
				Rome, Italy	**23**		**28**	**35**	41	
				Cape Town, South Africa	**16**	**62**	**22**	20	-	
				Stockholm, Sweden	**20**		19	-	-	
				Buenos Aires, Argentina	**16**	44	-	-	-	
				Istanbul, Turkey						
				Lille, France						
				Rio de Janeiro, Brazil						
				Saint Petersburg, Russia						
				San Juan, Puerto Rico						
				Seville, Spain						
9/23/1993	Monte-Carlo, Monaco	101	2000	**Sydney, Australia**	**30**	**30**	**37**	**45**	-	
				Beijing, China	**32**	**37**	**40**	43		
				Manchester, United Kingdom	**11**	**13**	11	-		
				Berlin, Germany	**9**	9	-	-		
				Istanbul, Turkey	7	-	-	-		
				Brasilia, Brazil						
				Milan, Italy						
9/18/1990	Tokyo, Japan	96	1996	**Atlanta, USA**	**19**	**20**	**26**	**34**	**51**	
				Athens, Greece	**23**	**23**	**26**	**30**	35	
				Toronto, Canada	**14**	**17**	**18**	22	-	
				Melbourne, Australia	**12**	**21**	16	-	-	
				Manchester, United Kingdom	**11**	5	-	-	-	
				Belgrade, Yugoslavia	7	-	-	-	-	
10/16/1986	Lausanne, Switzerland	91	1992	**Barcelona, Spain**	**29**	**37**	**47**			
				Paris, France	**19**	**20**	23			
				Belgrade, Yugoslavia	**13**	**11**	5			
				Brisbane, Australia	**11**	**9**	10			
				Birmingham, United Kingdom	**8**	8	-			
				Amsterdam, Netherlands	5	-	-			
9/30/1981	Baden-Baden, West Germany	84	1988	**Seoul, South Korea**	**52**	-				
				Nagoya, Japan	27					
5/18/1978	Athens, Greece	80	1984	**Los Angeles, USA**	**-**	-				

10/13/1974	Vienna, Austria	75	1980	**Moscow, USSR** Los Angeles, USA	**39** 20	-				
5/12/1970	Amsterdam, Netherlands	69	1976	**Montreal, Canada** Moscow, USSR Los Angeles, USA	**25** **28** 17	**41** 28 -				
4/25/1966	Rome, Italy	64	1972	**Munich, Germany** Detroit, USA Madrid, Spain Montreal, Canada	**29** 6 16 6	**31** - 16 13				
10/18/1963	Baden-Baden, West Germany	60	1968	**Mexico City, Mexico** Detroit, USA Lyon, France Buenos Aires, Argentine	**30** 14 12 2					
5/26/1959	Munich, Germany	55	1964	**Tokyo, Japan** Detroit, USA Vienna, Austria Brussels, Belgium	**34** 10 9 5					
6/15/1955	Paris, France	50	1960	**Rome, Italy** Lausanne, Switzerland Brussels, Belgium Budapest, Hungary Detroit, USA Mexico City, Mexico Tokyo, Japan	**15** 14 6 8 6 6 4	**26** 21 - 1 11 - -	**35** 24 - - - - -			
4/28/1949	Rome, Italy	43	1956	**Melbourne, Australia** Buenos Aires, Argentina Mexico City, Mexico Chicago, USA Detroit, USA Los Angeles, USA Minneapolis, USA Philadelphia, USA San Francisco, USA Montreal, CAN	**14** 9 9 1 2 5 1 1 0 0	**18** 12 3 - 4 4 - - - -	**19** 13 - - 4 5 - - - -	**21** 20 - - - - - - - -		
6/21/1947	Stockholm, Sweden	40	1952	**Helsinki, Finland** Los Angeles, USA Minneapolis, USA Amsterdam, Netherlands Detroit, USA Chicago, USA Philadelphia, USA Athens, Greece Lausanne, Switzerland Stockholm, Sweden	**14** 4 4 3 2 1 0 0 0 0	**15** 5 5 3 - - - - - -				
-	-	-	1948	**London, UK** Baltimore, USA Lausanne, Switzerland Los Angeles, USA Minneapolis, USA Philadelphia, USA						
-	-	-	1944 *(Games cancelled, World War II)*	**London, UK** Rome, Italy Detroit, USA Lausanne, Switzerland Athens, Greece Budapest, Hungary Helsinki, Finland Montreal, Canada	**11** 2 1 0 0 0 0					

-	-	-	1936	**Berlin, Germany** Barcelona, Spain Alexandria, Egypt Budapest, Hungary Buenos Aires, Argentina Cologne, Germany Dublin, Ireland Frankfurt, Germany Helsinki, Finland Lausanne, Switzerland Nuremberg, Germany Rio de Janeiro, Brazil Rome, Italy	**43** 16					
4/10/1929	Lausanne, Switzerland	27	1932	**Los Angeles, USA**						
			1928	**Amsterdam, Netherlands** Los Angeles, USA						
			1924	**Paris, France** Amsterdam, Netherlands Barcelona, Spain Los Angeles, USA Prague, Czechoslovakia Rome, Italy						
			1920	**Antwerp, Belgium** Amsterdam, Netherlands Atlanta, United States Budapest, Hungary Cleveland, United States Havana, Cuba Lyon, France Philadelphia, United States						
			1916 *(Games cancelled, World War I)*	**Berlin, Germany** Alexandria, Egypt Amsterdam, Netherlands Brussels, Belgium Budapest, Hungary Cleveland, United States						
			1912	**Stockholm, Sweden**						
			1908	**London, England** Milan, Italy Berlin, Germany Rome, Italy *(originally selected but later switched f or financial reasons)*						
			1904	**St. Louis, USA** Chicago, USA *(originally selected but later switched)*						
			1900	**Paris, France**						
			1896	**Athens, Greece**						

Appendix E: The Total Number of Tickets Sold at Sports Events, Atlanta 1996
(Source: The Official Report of the Centennial Olympic Games)

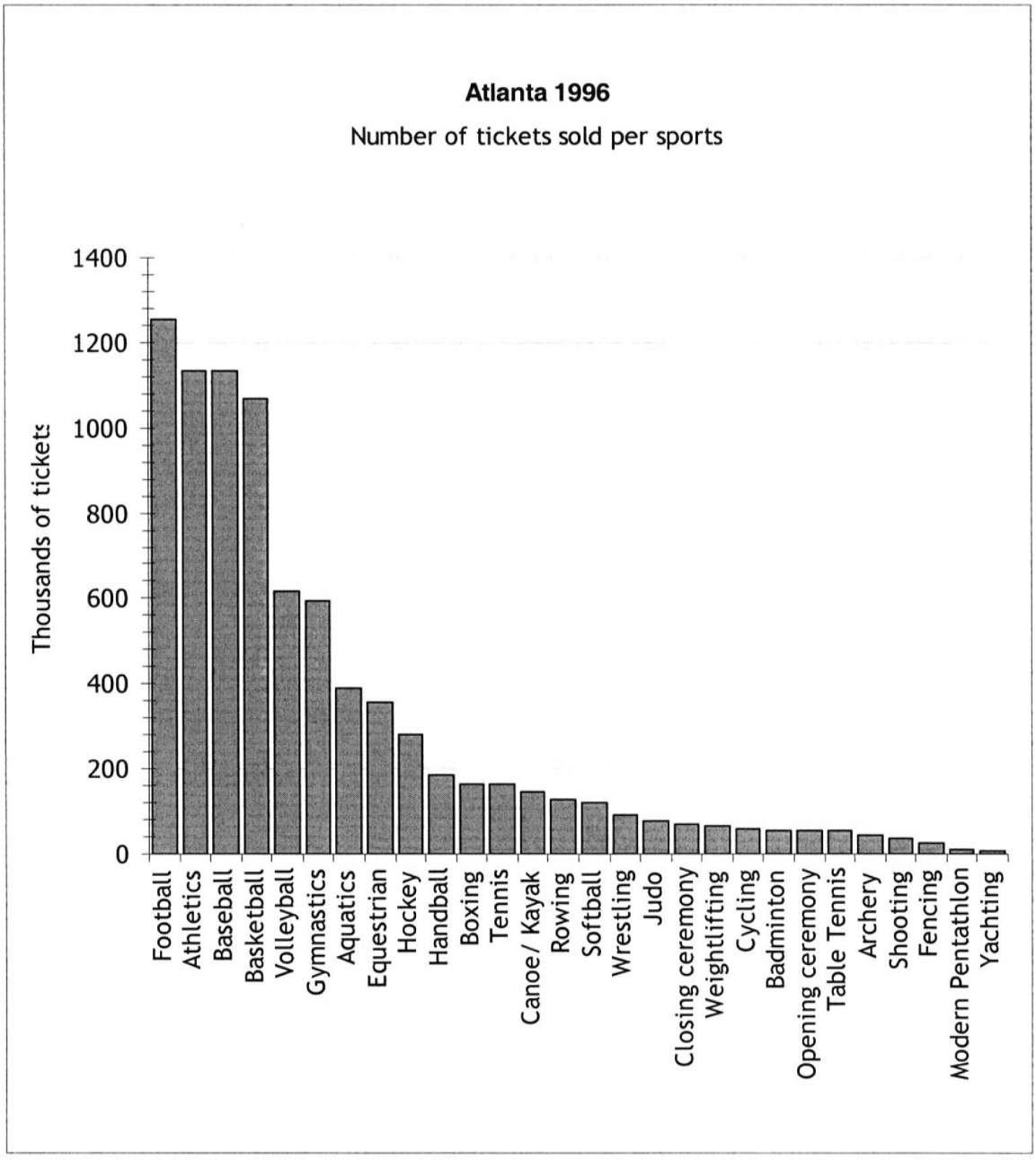


Illustration credits

1.-12. 35mm slide, August 2003. Agha Khan Travel Grant. Özgür Basak Alkan

13. Extracted from "Provisional Deadlines" (en_report386.pdf). 17 October 2003. International Olympic Committee. http://www.olympic.org/uk/utilities/reports/level2_uk.asp?HEAD2=53&HEAD1=11

14. December 2003. Özgür Basak Alkan. Satellite photograph of Tokyo on March 22, 2000 from Aster's (Advanced Spaceborne Thermal Emission and Reflection Radiometer) Satellite Image Gallery. http://asterweb.jpl.nasa.gov/gallery/images/tokyo.jpg. Map of Olympic infrastructure for Tokyo 1964 from Mid-Tokyo Maps. http://www.mid-tokyo.com/

15. Official Report of the Games of the XXV Olympiad Barcelona 1992,

16. Athens 2004 Website. http://www.athens.olympics.org/page/?la=2&id=2041

17. İstanbul 2008 Bidbook III, 73.

18. December 2003. Özgür Basak Alkan

19. İstanbul 2008 Bidbook I, 65.

20. Istanbul 2000: Olympic Report II, 58.

21. Color original in Çeçen, Kâzım. The Longest Roman Water Supply Line, 33.

22. Color original in Çeçen, Kâzım. The Longest Roman Water Supply Line, 24.

23. Color original in Çeçen, Kâzım. Sinan's Water Supply System in İstanbul, 92.

24. Modified from original on "Büyük İstanbul İçmesuyu II. Merhale Projesi: Yeşilçay ve Melen Sistemleri". General Directorate of State Waterworks Website. http://www.dsi.gov.tr/isttr.htm

25. Excel graph, December 2003. Özgür Basak Alkan. Data from Danielson and Keleş, p:50, amended with recent population census data from State Statistical Institute internet site (http://www.die.gov.tr/) for the years 1990 and 2000 and from cumulative data for Turkey at Utrecht University Library homepage (http://www.library.uu.nl/wesp/populstat/Asia/turkeyt.htm) for the years 1927 and 1940.

26. F. Bölen, A. Özsoy, G. Erkut, H.D. Türkoğlu, T.B. Levent, A. Tezer. "Kentleşme-Doğa Karşıtlığı: Ömerli Havzası Örneği" in Istanbul: Su, 97.

27. Photograph by Ergun Çağatay from İstanbul: Yoksa 3. Köprü mü?, 64.

28. F. Bölen, A. Özsoy, G. Erkut, H.D. Türkoğlu, T.B. Levent, A. Tezer. "Kentleşme-Doğa Karşıtlığı: Ömerli Havzası Örneği" in Istanbul: Su, 98.

29. Compiled from originals (one per year) provided by Azime Tezer from unpublished PHD Thesis: Tezer, Azime. Modeling the Interaction Between Land-use and Transportation in Urban Transportation Planning (UTP): An Evaluation on Istanbul.

30. Composite image from three satellite photographs.
In background: "Bosphorus Strait and Istanbul, Turkey". February 2000. NASA Earth Observatory Website. http://earthobservatory.nasa.gov/Newsroom/NewImages/images.php3?img_id=8757.
At center: "Istanbul". July 16, 2000. NASA Aster (Advanced Spaceborne Thermal Emission and Reflection Radiometer) Website. http://asterweb.jpl.nasa.gov/gallery/gallery.htm?name=Istanbul
Top, right: "Western Turkey". ESA MERIS (Medium Resolution Imaging Spectometer) Image, 30 October 2002. European Space Agency Website. http://earth.esa.int/showcase/env/Middle_East/Turkey_MER_FR_Orbit03482_20021030_20030327.htm

31 - 40. December 2003. Özgür Basak Alkan

41. December 2003. Özgür Basak Alkan. Street maps displayed in the background are pieced together from İstanbul A-Z Rehber-Atlas. [1989-?] İstanbul: Aysa Limited.

42. December 2003. Özgür Basak Alkan. Satellite photograph in background scanned from color poster reprinted by Keskin Color, İstanbul. Original: September 1991 GUS-Spacestation MIR multispectral photograph; Produced in 1992 at the University of Klagenfurt, Austria, Department of Geology by Prof. Martin Seger with assistance of Dr. Friedrich Palencsar and Jutta Gradenegger.

43. Extracted from "Marmaray.pdf", Ministry of Transportation Website. http://www.ubak.gov.tr/tr/alt/marmaray.pdf

44. December 2003. Özgür Basak Alkan

45. Photograph from Freephoto-i.net. http://www.freephoto-i.net/users/3501/29535

46. Trains of Turkey Website. (http://www.trainsofturkey.com/stations.htm#Istanbul%20Haydarpasa)

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