UNIVERSITEIT VAN TILBURG

Master Thesis

Sustainable Olympic Games

A qualitative study on the decision-making process towards sustainable Olympic Games, and the opportunities and limitations of sustainable Olympic Games

B.P. Stadhouders, BSc

Master Leisure Studies

University of Tilburg

Sustainable Olympic Games

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The organization of sustainable Olympic Games and the opportunities and limitations of sustainable Olympic Games in terms of the hardware (Olympic venues and infrastructure) and the software (the people, the planet, the profit and the decision-making process) of the Olympic Games.

Bart Stadhouders, S242210

Under supervision of: Drs. G.C. Bartels

Second assessor: Prof. Dr. G.W. Richards

Master leisure Studies

Faculty of Social Sciences

Department of Leisure Studies

University of Tilburg

Tilburg, August 17th 2010

Only after the last fish has been caught,

Only after the last tree has been cut down,

Only after the last river has been poisoned,

Only then,

You will realize that money cannot be eaten.

'Cree-Indian Prophecy'


Atos
Origin


BMC
advies
management


Provincie Noord-Brabant


gemeente Tilburg


DESSO
The Floor is Yours


gemeente Eindhoven


rotterdam
TOPSPORT


provincie
Gelderland


topsport amsterdam


Ministerie van Volkshuisvesting,
Ruimtelijke Ordening en
Milieubeheer


NOC*NSF


Ministerie van Volksgezondheid,
Welzijn en Sport


OLYMPISCH NETWERK
BRABANT
samen met NOC*NSF


vrijetijdshuis | brabant


OLYMPISCH NETWERK
MIDDEN-NEDERLAND
samen met NOC*NSF


Sportservice
Noord-Holland


Context
Media


Provincie
Noord-Holland


CineMec Ede
film ▪ congres ▪ expo


Kennispraktijk
voor sport, onderwijs & gezondheid


denhaag.com
denhaagmarketing

PREFACE

The Olympic Games: the biggest event in the world with millions of viewers each day, thousands of athletes, spectators, media and volunteers; a sporting event that unites people from all over the world. As a young boy, I dreamed about winning a gold medal at the Olympic Games. Alas, the talent was not there… But when I walked through the streets of Vancouver a while ago and saw the preparations for the event, I again became influenced by the majesty of the event. Over there, in the streets of Vancouver, the idea emerges to write my thesis about this subject. Recently, there were many examples in the news of the so-called white elephants and the negative side effects of this beautiful event. I asked myself the question: Is it possible to prevent these negative side effects in the future and organize Olympic Games that have a sustainable legacy so that future generations can dream about winning gold medals at Olympic Games that are fully sustainable? With the Dutch Olympic Plan to organize the Games in 2028 in mind, I started this research and I have tried to connect the element of sustainability with mega sporting events such as the Olympic Games. An interesting combination that explores a new terrain and it is very likely that this will be the future trend in the organization of events. This research is a first exploration on this field and hopefully this will contribute to a greater awareness towards sustainable development in the organization of mega-events.

Therefore, I would like to thank all the respondents who participated in this research, especially Vrijetijdshuis Brabant that gave me the opportunity to do an internship besides this thesis. I was really surprised that so many people wanted to participate and this made it a really interesting project! I also would like to thank prof. dr. Greg Richards and especially drs. Gerard Bartels for all his support, his critical notions and his interesting anecdotes about football in the late 60's, and also Paul for the coffee breaks. I also want to thank my family and friends and especially Peggy who supported me the entire year! Last but not least, I would like to thank my brother Niek, who helped me find my way through the massive amount of data and gave me critical feedback about the thesis. The only thing he wanted in return for all this was a reference in the preface, so here it is: Bedankt Niekoss!

Bart Stadhouders

ABSTRACT

This research is focusing on sustainable development of mega sporting events such as the Olympic Games. This qualitative study explores the opportunities and limitations of sustainable Olympic Games. By taking into account the Olympic Plan 2028 of the Netherlands, this research first explored the field of sustainable development and all its connotations. Is it possible to organize sustainable Olympic Games? What are the opportunities and limitations of sustainable Olympic Games? How are the three 'P's' of sustainable development (People, Planet & Profit), integrated into the Olympic Plan 2028 and into the policy-making towards sports? And who should act first in the decision-making process towards the Olympic Games? These questions constitute the basis of this research and this led to the following research question:

Is it possible to organize sustainable Olympic Games, and what are the opportunities and limitations of sustainable Olympic Games in terms of the hardware (Olympic venues and infrastructure) and the software (the people, the planet, the profit and the decision-making process) of the Olympic Games?

The research started with an exploration of the field of sustainable development. By using the definition of sustainable development from the report 'Our Common Future' by the WCED, a broad point of view is taken. This broad definition on sustainable development made it possible to integrate several domains of sustainability (People, Planet and Profit) into this definition. Because the decision-making process towards a mega-event such as the Olympic Games is also important for the implementation of sustainable developments, an extra domain was added, which was the Political domain. This decision-making process towards the Games is complex and therefore the desk research started with an exploration of the theories on decision-making and this was followed by an exploration of the decision-making processes in past Games and the role of sustainability in the current Olympic Plan 2028. The Game Theory, the Social Decision-Making Theory and the Urban Regime Theory were forming the theoretical basis of this research. However, after analyzing the current situation towards the Olympic Games of 2028, the Urban Regime Theory proved to be not significant for this research. This is because the Urban Regime Theory is dealing with informal networks, while in the current process a formal network is created (Olympisch Vuur). The Game Theory proved to be an adequate measure to further understand the 'games' that are played in the process towards the organization of an event. In this decision-making process towards the Games the several actors in the 'game' had to be defined. The partners in the decision-making process are: the public sector, the private sector and Non-Governmental

Organizations (NGO's). The decision-making process towards the organization of the Olympic Games can be translated into a non zero-sum and sequential game with three actors.

Besides the decision-making process, the desk research towards past Olympic Games and the Olympic Plan 2028 resulted in the acknowledgment of several aspects of the event. The first domain is the Spatial Domain, which consists of the infrastructure and the spatial planning of the different sports. The second domain is the Sports Domain, which consists of the Olympic- and Paralympic venues. Together, these domains are forming the 'hardware' of the Olympic Games. The third domain is an Analysis of the Potential Costs and Benefits and consists of People, Planet, Profit and Politics. This domain is the 'software' of the Games. The sustainability awareness within these three domains influences the ultimate goal of sustainable Olympic Games. This resulted in a conceptual model and in eight expectations. To answer these expectations, 21 interviews were held with organizations from these sectors. By interviewing all these different stakeholders in the Olympic Plan and experts on the aspect of sustainable development, this resulted into an enormous amount of information on the relatively new field of sustainability in sports. These results are written down in the results chapter whereby a distinction is made between the three 'actors in the game'. These results are underlined with quotes from the interviews.

The expectations were:

1. *What are the infrastructural contingencies of organizing an event such as the Olympic Games?*
   The expectation is that there are several infrastructural adjustments needed to improve the transportation flows and the accessibility of the Netherlands and in particular of the Randstad area. It is likely that these infrastructural projects will have some contingencies. This expectation was confirmed based on the interviews. A deadline involved which can cause time pressure and increasing costs, and dealing with thousands of visitors which causes congestion and pollution are the main contingencies. A better accessibility of especially the Randstad Area is one of the main challenges in the organization of Olympic Games.

2. *What does the spatial planning of the Games look like?*
   A mega event such as the Games needs a good and well-thought spatial planning of for instance the Olympic Village and the Olympic Stadium. The expectation is that the spatial planning of the Games is complicated and that there are already some ideas about the visualisation of the

Olympics. This expectation was partly confirmed, because the exact location of some sports is still unsecure. The most important venues that are still missing for the Olympic Games are: an Olympic Stadium (with track-and-field athletics), an indoor arena that can host 18.000 people and an Olympic rowing area (Rotterdam is planning one at the moment).

3. *What is the role of sustainable development in the planning of new Olympic and Paralympic venues?*

   The expectation is that the importance of sustainable development in future venues will increase and that sustainability will become a major issue in future Olympic Games. This expectation could be confirmed. The most important trends are the building of temporary venues that could be transported to other events and the developing of multiple-use venues or multiple leisure centres.

4. *What are the social costs and benefits of the Games?*

   The expectation is that the Games will have many positive social side effects on the People domain, in order to overcome several social problems. This expectation could be confirmed according to the interviews, although it is not a 100% sure what the exact effects on the People domain will be when the Games are organized. These positive side-effects are for instance international prestige, increased participation in sports, decreasing the obesity problem and integrate ethnic minorities in society.

5. *What are the environmental costs and benefits of the Games?*

   The expectation is that the Games have a negative impact on the various environmental issues because the economic effects in the end will be more important than environmental issues. This expectation is partly recognized. A mega-event such as the Games will always have some kind of impact on the environment. The main goal however is to minimize this ecological footprint and reduce the amount of carbon emissions as much as possible. Cradle-to-cradle techniques, green energy, recycling of waste and green forms of transportation could help to reduce the footprint of the event.

6. *What are the economic costs and benefits of the Games?*

The expectation is that the Olympic Games will have a positive influence on the economy of the country. This expectation is not confirmed. The exact costs and benefits are difficult to determine because many projects that need to be implemented anyway are accounted to the event. Also many effects of the event are intangible and therefore the economic flow of this event is a much debated issue.

7. *What is the role of sustainable development in the sport policies at the governmental level*?
   The expectation is that the role of sustainable development in the current policies is important and that sustainable development is recognized by the actors in the decision-making process. This expectation is confirmed. Sustainability plays an important role in the Olympic Plan 2028 and also in the bidbook for the FIFA World Cup of 2018. However, a clear translation on sustainability could help to increase the role of sustainable development in organizations.

8. *Who should take the first actions towards the Olympic Infrastructure?*
   The expectation is that the national government should govern the decision-making process towards the formation of an actual bid for the Games in 2028. This expectation is not completely confirmed and the opinions about who should govern the 'road to the Olympics' are divided. The public sector and the NGO's indicated that the public sector should take the initiative, followed by the NGO's and the private sector. The private sector indicates that the NGO's should take the initiative, followed by a public-private collaboration.

The most important conclusion that can be drawn from this research is the growing importance of sustainable development in sports. Using a long-term planning towards 2028, the Olympic ambitions are focusing on several domains of the society. The most important opportunities of sustainable Games are the creation of a long-lasting legacy, sustainable tourism, the Olympic legacy (positive side-effects of a sustainable planning process), and organizing Games that are climate neutral and that generate international prestige. In this sense the Games could be used as a tool to fight the obesity problem, increase the participation in sports and integrate minority groups into society. The most important contingencies of the organization of such a mega-event could be the decision-making process, the international lobbying, external factors such as an economic crisis, the infrastructure in the Netherlands and the Olympic venues. With an insufficient planning, time pressure could become a contingency factor which could lead to increasing costs and a dominance of short-term economic strategies over a long-

term sustainable strategy. A strong organization in which the aspect of sustainable development is present from the start of the decision-making process, could finally lead towards sustainable Games that are climate neutral, gain international prestige and do have positive side effects on the mental and physical health of people in society. If these possible contingencies are managed properly, and if the awareness towards sustainable development is taken into account from the start of the decision-making process, the Netherlands is able to organize sustainable Olympic Games with a minimal ecological footprint.

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INTRODUCTION

1.1 INTRODUCTION TO THE TOPIC

The Olympic Games, the world's most prestigious sporting event, has been held for over one hundred years with significant consequences for the host cities (Chalkley & Essex, 1999, p.187). 'Various stakeholders see the Olympic Games as a media event, a tourism attraction, a marketing opportunity, a catalyst for urban development and renewal, a local image creator and booster, an inspiration for youth, and a force for peace and international understanding (Zhou & Ap, 2009, p.80)'. The hosting of such a world event has several implications for the host city and the environment where the games are held. An Olympic Games leaves a large print on a host city and this impact has increased since 1984 as the Games have become larger involving more athletes and sports and a greater media and sponsor presence (Cashman, 2002). For example, in May 2002, National Geographic reported that the Winter Games of 2002 in Salt Lake City were held in a natural environment with unique wildlife and plants. Because of the Olympic Games, several new ski slopes were built in the mountains and the implications for the environment were enormous. This particular example indicates that 'the ultimate objective is the sustainable use of natural resources through compromises between environmental risks on the one hand, and productivity concerns on the other (Ramakrishnan, 2005, p.551)'. 'After the International Olympic Committee (IOC) chose to make the environment the third strand of Olympism in 1994, cities has been expected to deliver cleaner and greener Games (Cashman, 2002, p.5)'. However, there is always a tension between a short-term view of maximizing the profit from the Olympics, and a long-term vision of organizing sustainable Games, with buildings developed for multiple functions and sustainable tourism. This research will try to explore this long-term vision of organizing sustainable Olympic Games and will look at the opportunities and limitations of sustainable Olympic Games by taking into account the decision-making process that leads towards sustainable Olympic Games.

1.2 PROBLEM DEFINITION

In past Olympic Games, there often was a focus on generating as much funds as possible from the Olympic Games in a short time period. It seemed that a long-term and sustainable vision was lacking and while the Olympic Games moved to another city, the host city that made enormous investments in

accommodation, infrastructure and several other facilities, had to deal with the so-called 'white elephants' (investment projects with negative social surplus) (Robinson & Torvik 2005). With London's 2012 central theme: 'One Planet Olympics', the Games are linked to the environmental term posed by the WNF and the first steps are made to implement a sustainable strategy into the decision-making process towards a mega-event such as the Olympic Games (Collins, Jones & Munday, 2009). However, because of the 7-years period before the Games and the much longer Post-Games era, several decisions have to be made along this process. The literature about these decision-making processes shows that very often, actors involved in the decision-making process choose for a strategy that leads to the highest payoff for them (Paternoster & Pogarsky, 2009). In many cases this dominant strategy appears to be a non-sustainable, short-term strategy. If the actors involved in the decision-making process that leads towards the Olympic Games, want to make the Olympic Games sustainable, the dominant strategy in this decision-making process has to be a sustainable strategy. If we take into account that the political life cycle is short-term focused and there are numerous actors who want to make profit out of the Olympic Games, is it still possible to organize sustainable Olympic Games with a minimal impact? What are the opportunities and limitations of sustainable Olympic Games? And who should act first in the decision-making process towards the Olympic Games?

1.3 RESEARCH QUESTION

These questions are specified more in the following research question:

Is it possible to organize sustainable Olympic Games, and what are the opportunities and limitations of sustainable Olympic Games in terms of the hardware (Olympic venues and infrastructure) and the software (the people, the planet, the profit and the decision-making process) of the Olympic Games?

1.4 AIM OF THE RESEARCH

The goal of this research is to contribute to the existing theories on the sustainable organization of mega events such as the Olympic Games or the FIFA World Cup. This research examines further the opportunities and limitations of organizing the Olympic Games in a sustainable way, with a strong focus

on the impact of the Games for the people, the economy of the hosting city or country and the environment. By linking sustainable development to the decision-making strategies, while using the Olympic Games as a case study, a unique comparison is made that could provide useful recommendations. This research will provide interesting insights into the planning phase of the Olympic Games, into the awareness of sustainability in the three different sectors (public-, private sector and NGO's), and in the complex decision-making process that leads to the organization of the Olympic Games. This knowledge can be useful for policy-makers and organizing committees to implement the aspect of sustainability as a central theme in future Olympic Games, such as for instance the Dutch Olympic Plan 2028.

1.5 PRACTICAL AND SCIENTIFIC RELEVANCE

The scientific relevance regarding to this subject is that few scientific research has been done in this specific field and in order to gain more knowledge about the Olympic Games in relation to sustainability, more research is needed. By exploring the field of three central theories in this research (The Game Theory, Social Decision-making Theories and the Theories on sustainable development) and translating these into a long-term, sustainable decision-making process by using the Olympic Games as the central case, a unique combination is made in the scientific field. The practical or societal relevance can be found in the fact that this research will contribute to a broader perspective on hosting the Olympic Games in the future, for example the Olympic Plan 2028 in the Netherlands.

1.6 THEORETICAL FRAMEWORK AND STRUCTURE OF THE THESIS

The theoretical framework will start with an exploration of the field of sustainability, in order to derive a clear definition of sustainable development. After this definition, several aspects of the concept, such as the opportunities and limitations of organizing sustainable Games, will have a central position in the theoretical framework. The third chapter will focus on the strategic decision-making process and this chapter will further explore the collective decision-making process and the policy-making towards the Olympic Plan 2028 in the Netherlands. An important aspect of this chapter is to define the 'game' and its actors and explore who should act first in the decision-making process. The fourth chapter will provide a

summary of the research questions that are posed in the theoretical framework and this will lead to a conceptual model. In this chapter the qualitative research method that is used here, will be explained further. The fifth chapter will focus on the results of the desk- and field research. Several stakeholders (i.e. public sector, private sector and NGO's) in organizing sustainable Games will be interviewed. The sixth chapter will give a conclusion in which the results are summarized and answers to the research questions will be provided.

2. SUSTAINABLE DEVELOPMENT AND THE OLYMPIC GAMES: AN EXPLORATION

2.1 THE OLYMPIC GAMES: A SHORT OVERVIEW

'After a century of development, the modern Olympic Games have become the largest and most significant sporting event in the world' (Zhou & Ap, 2009, p.80). The Olympic Games are regarded as a political, cultural and economic phenomenon (Zhou & Ap, 2009) and organizing the Olympic Games has a huge impact on the people in a city, region or country, on the environment and on the economic situation. The first modern Olympic Games were held in Athens in 1896 and were founded by the Frenchmen Baron Pierre de Coubertin (www.nocnsf.nl). In these first Games, 285 athletes from 13 different countries were participating (compared to the 11.028 athletes from 204 different countries in Beijing, 2008). The Olympic Games were based on the ancient Olympics held every four years in Olympia, Greece from the year 776 BC until AD 393 (www.nocnsf.nl). The first Winter Games were held in 1924 in the French town of Chamonix and four years later Amsterdam was the hosting city of the only Olympic Games ever held in the Netherlands. Until the year 1992, the Winter Games were always held in the same year as the Summer Games but the IOC decided to separate these events. The first Paralympics were organized in 1960 in Rome and the first Paralympic Winter Games were held in Sweden in 1976. In 1980, the Netherlands organized their first Paralympics in Arnhem. The big star of the Olympic Games in Beijing, 2008, was the American swimmer Michael Phelps who won 8 golden medals. Famous Dutch athletes in Olympic history were Fanny Blankers-Koen, Anton Geesink, Pieter van den Hoogenband, Inge de Bruijn, Leontien van Moorsel and Anky van Grunsven.

2.2 THE OLYMPIC PLAN 2028 IN THE NETHERLANDS

After the success of the Dutch Olympians at the Sidney Olympics in 2000, the idea to organize the Games in the Netherlands started to emerge. The Dutch sport federation NOC*NSF started an alliance with several partners such as the Dutch Ministry of Health, Welfare and Sports, the cities Amsterdam, Rotterdam, The Hague and Utrecht and several other partners from the private sector. This alliance is called 'Het Olympisch Vuur' and this association is charged with the development of the Olympic Plan 2028. The mission of the Olympic Plan 2028 is:

The Olympic Plan 2028 is the ambition to use sports in the broadest way as possible to create extra value for the Netherlands in a way that the positive effects are visible now and also in the future. The ultimate and inspiring goal is the organization of the Olympic and Paralympic Games in 2028 in the Netherlands.

In order to achieve this goal and to create a sport climate in the Netherlands where both professional sport and recreational sport can flourish, 8 ambitions were formulated. The ambitions of the 'Olympisch Vuur' in anticipation towards the organization of the Olympic and Paralympic Games in 2028 in the Netherlands are formulated as follows:

Table 1: The Olympic ambitions for the Dutch Olympic Games in 2028.

1.	Professional sport	*In 2016, the Netherlands will have a functional and professional Olympic sporting climate, in which athletes could perform optimally.*
2.	Recreational sport	*In 2016, the Netherlands is a society in which participating in sports is an important quality of life for every age category. In 2016, at least 75% of the Dutch multicultural society is participating in sports.*
3.	Social-cultural ambition	*In 2016, the social climate in the Netherlands is one where people live together in harmony, are proud to be Dutch and want to contribute something to society.*
4.	Welfare	*In 2016, the Netherlands have a healthy society that consists of lively employees, vital elderly people and less people with obesity. Sufficient exercise and healthy nutrition are key elements.*
5.	Economy	*In 2016, the Netherlands have a strong and competitive economy, due to a larger participation in labor, an increased level of productivity, more innovation, and higher international prestige.*
6.	Spatial	*In 2028, the Netherlands is a country with sufficient sport accommodations, a country with good quality of life, and a good infrastructure, which helps to organize the Olympic and Paralympic Games in a better way.*

7.	Events	*In 2016, the Netherlands are famous around the entire world for their enormous ambition and skills in organizing large sports- and cultural events.*
8.	Media	*By enlarging and widening the media attention for sports, the sporting climate in the Netherlands in 2016 has positioned itself in the top 3 of Europe. By doing this, the amount of people participating in sports will increase.*

Source: www.noc-nsf.nl

2.3 DEFINITION OF SUSTAINABLE DEVELOPMENT

The literature on sustainability is replete with several notions on sustainability and sustainable development. Dobson (1996) indicates that there are more than 300 different definitions to define sustainable development. A common used definition of sustainable development is derived from the report 'Our Common Future' written by the World Commission on Environment and Development (WCED). Sustainable development could be defined according to the WCED (1987, p.2) as follows:

> *'Sustainable development is development that meets the needs of the current generation without compromising the ability of future generations to meet their own needs'.*

This definition indicates that sustainable development is focusing on the long-term perspective of the current generation. Sustainable development is a much debated issue: 'The notion of sustainable development has assumed a prominent place in policy discussions over the last two decades' (OECD, 2001, p.11). In order to deal with sustainability, governments are facing a complex challenge on finding the right balance in generating economic growth on the one hand, and sustain natural and social resources on the other hand (OECD, 2001). Economic growth is important in generating human welfare, and a key component of sustainable development (OECD, 2001). However, due to inappropriate incentives, economic activities have often taken a toll on the environment and natural resources, both nationally and globally (OECD, 2001, p.14). This tension between economic aspects and natural and

social resources was a central theme during previous Olympic Games, but 'as the IOC made the environment the third strand of Olympism in 1994, the Olympic Games have to be organized in a cleaner and greener way (Cashman, 2002, p.5)'. Sustainable development becomes an important issue in the organization of Olympic Games and in order to achieve sustainable development, structural changes and new working methods are required in all areas of economic, social and political life (Government of Catalonia, 2004). Sustainable development influences these several aspects of life and sustainable development implicitly requires a balancing between environmental and social priorities (OECD, 2001, p.46). The literature about sustainability is often referring to the three pillars of sustainability: people, planet and profit. The OECD (2001) converted these pillars into three dimensions of sustainable development: economic well-being, social development and environmental regeneration. Serageldin (in: Hermans & Knippenberg, 2006) is also discussing the social, economic and ecological domain in the 'three-pillar model'. This three pillar model will be further explored.

2.4 SUSTAINABILITY INTO PRACTICE: PEOPLE, PLANET, PROFIT

2.4.1 THE SOCIAL DOMAIN: THE PEOPLE

As we have seen in the introduction, Olympic Games leaves a large impact on a host city and the people in a host-city will experience positive and negative effects of the Olympic Games. Social impacts of major sporting events could be for example noise, congestion and pollution (Collins, Jones & Munday, 2009).

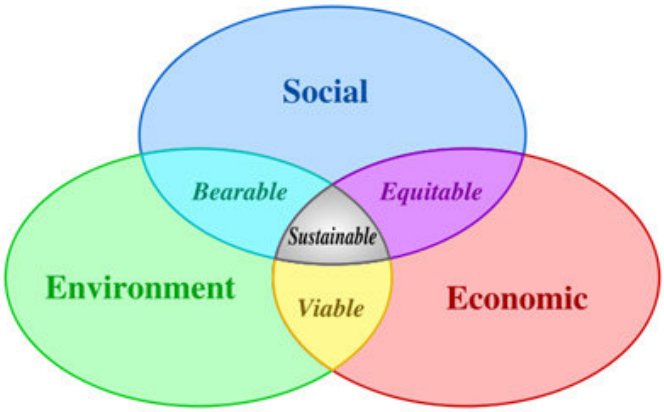


Figure 1. The triple bottom line (Source: www.indstate.edu/facilities/sustainability)

Residents have different perceptions on the impact of the Games and those people could be classified into two groups: the 'embracers' and the 'tolerators' (Zhou & Ap, 2009). This distinction will not be made in this research because one main goal of the Dutch Olympic Plan is to create enthusiasm for the Games so that everyone will embrace the Olympic Games.

The community perceptions and attitudes must be understood because if a community is very positive towards the Olympic Games, the community will enhance the spectators' and tourists' experiences and contribute to a destination's overall attractiveness (Madrigal, in: Zhou & Ap, 2009). The organizing committees of Olympic Games are most of the time pointing towards the several benefits for the community, such as urban renewal, improved transport or better sporting facilities (Cashman, 2002). It is possible that as time progresses towards the opening of the event, 'residents' perceptions towards the Olympic Games may change (Zhou & Ap, 2009, p.80)'. Therefore it is necessary to explore the opinions and attitudes of the people in a host city to define possible tensions and to overcome these tensions in order to generate an enduring common enthusiasm towards the Olympic Games.

2.4.2 THE ECOLOGICAL DOMAIN: THE PLANET

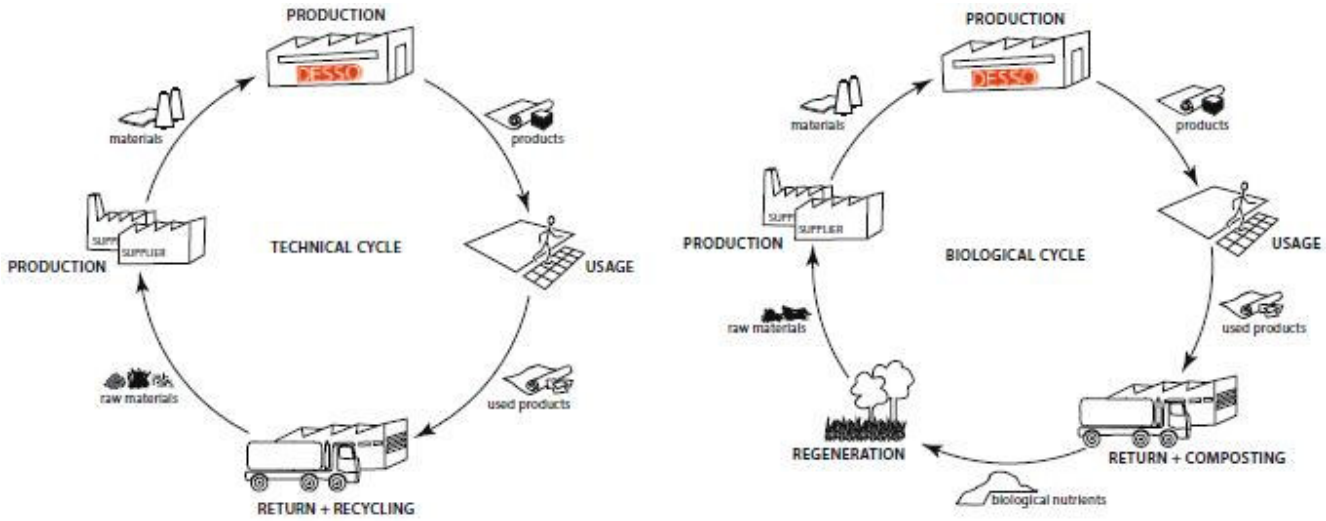
The forthcoming Olympic Games in London in 2012 are presented as 'One Planet' Olympics (a term developed by the WWF) and this indicates a strong awareness of the ecological aspect of Olympic Games (Collins et al., 2009). 'Sports institutions, teams and sponsoring organizations have recognized the need to better understand the environmental impacts of the activities they sponsor, host and regulate (Collins et al., 2009, p. 829)'. The Olympic Games and especially the Winter Games could have an impact on local ecosystems and contribute to carbon emissions leading to climate change (Jones, in Collins et al., 2009). For instance, the decision to host the 1992 Winter Olympics in Albertville in the French Alps led to a very considerable debate about their potential impacts, both environmental and socio-economic (May, 1995, p.269). The IOC is aware of the possible negative outcomes for the environment and future host cities have to take the environment into account. Steiner (2006, p.1) contributes: 'From the Games in Lillehammer in 1994 through to Sidney 2000, and more recently in Torino in 2006, the environment has increasingly become a key and a winning competitor in the Olympic Games'. There are different ways to reduce the possible impact of the Olympic Games on the environment. For example, in Torino 2006 they were reducing greenhouse gas emissions, minimizing the water use in snow making, promoting eco-friendly hotels and reducing carbon emissions (Collins et al.,

2009). In order to establish sustainable Olympic Games, environmental awareness needs to be generated among citizens, athletes, policy-makers, sponsors and so on. With the recent public discussion about the lack of snow at the Vancouver Winter Olympics (itself owing to unseasonably warm weather attributed by many to the effects of global warming) and the considerable fracas around the safety of the luge run (owing to a fatal accident) the element of sustainability will be pushed up the agenda for brand sensitive corporate sponsors as well as sporting federations and committees (Ionescu-Somers & Duffy, 2010, p.2).

Cradle-to-cradle

Cradle-to-cradle is a new vision towards sustainable development, developed by Braungart and McDonough, and starts with the notion waste = food (Boers & Elfring, 2009). In this concept the waste materials are transformed into new products or as food for nature, to the effect that an eco-effective cycle emerges. This eco-effective cycle in which original materials are recycled into new products or returned into a biological system is applied already in the sport sector. For example, Desso a European manufacturer of durable carpets developed Cradle-to-Cradle carpet tiles. This company installed a Grassmaster system in two venues that were used for the FIFA World Cup in South Africa. This system consists of a natural grass surface, into which 20 million artificial turf fibres have been injected to a depth of 20cm (www.desso.com). This combination of artificial and natural grass, made from pure components that are easy to disassemble, creates a sustainable pitch that is reliable in all weather conditions. By using the Cradle-to-Cradle concept new products in both the technological and the biological cycle are created and this process is called ‘up-cycling’ (www.desso.com).

Figure 2: The Cradle-to-Cradle Technical and Biological Cycle



Source: www.desso.com

2.4.3 THE ECONOMIC DOMAIN: THE PROFIT

Besides the impact on the social and environmental domains, the Olympic Games will influence the economic domain as well. As we have seen before, governments have to mediate between generating economic growth on the one hand, and minimize the impact on the environment on the other hand (OECD, 2001). Organizing a mega event such as the Olympic Games will have several economic implications. For instance, the Olympic Games generate an increase in tourism and from Barcelona to Sidney and Athens, the host cities of the Games and their countries experiences inbound tourism booms before, during and after the Games (Zeng & Luo, 2008). Besides this increase in touristic activity, a lot of economic investments have to be made as well. For instance, during the Barcelona 1992 Games, investments were made in road and transportation structures, housing, offices and commercial venues, telecommunications, hotel and sport facilities and environmental infrastructures (Brunet, 1995). From these investments, 32,7% of the financing came from the private sector and the other 67,3% was generated by the public sector (Brunet, 1995). Another important effect on the economic domain is the impact of the Olympic Games on the employment rate. For instance, in Barcelona and in the entire region of Catalonia, the labour market improved substantially during the period of preparation for the

Olympic Games (Brunet, 1995). According to Serageldin (1993), an integration of the viewpoints of the three disciplines (economy, ecology and sociology) is needed to achieve sustainable development.

2.5 FACTORS OF SUCCESS AND FAILURE IN SUSTAINABLE GAMES

'The costs and benefits of Olympic Games are matters of continuing debate before, during and after the Games' (Cashman, 2002, p.7). It is very hard to determine the actual costs of organizing Olympic Games, because many organizing committees and local governments fear that the disclosure of the full costs of staging an Olympic Games might diminish the degree of public support for this event (Cashman, 2002, p.7). The benefits for a community are usually intangible and vague and it is hard to measure and evaluate these positive benefits of hosting an Olympic Games (Cashman, 2002). Negative impacts are easier to determine and examples could be overcrowding, increased costs and taxes and disruption due to Olympic-related building (Cashman, 2002). These positive and negative impacts are different for each person. 'There has been much discussion about who benefits most from the Games in the host city – and the host country for that matter – and whether the costs and burdens are shared equally' (Cashman, 2002, p.7).

The organization of Olympic Games has positive and negative impacts. In order to minimize the negative impacts, sustainable Olympic Games might be a solution. But what are the key factors of success and failure in sustainable Games? The factors of success and failure are now analyzed during three different time periods: the period before the Games, the Games itself and the post-Games period.

2.5.1 THE PERIOD BEFORE THE GAMES

In order to create successful sustainable Games, the organizing committee must develop a plan that is attractive to the IOC, but also to the host community and to the key interest groups in the city (Cashman, 2002). Sustainable commitments have to be made with all the actors involved and this has to happen quickly, because there is a very short time frame. There are several factors that could lead to failure during this short time frame such as: high expectations that needs to be met, a complex political landscape, inconvenience and disruption due to building sites, hidden costs and agendas, negative publicity and unexpected external crises (Cashman, 2002). Factors that could help to achieve successful Games are for instance technological innovations such as biotechnology or alternative sustainable

sources of energy (Faber & van Welie, 2004). Technological innovations could contribute to sustainable development, if they take into account the long term continuity of economic, ecological and social-cultural aspects (Faber & van Welie, 2004).

2.5.2 THE GAMES ITSELF

The staging of the Olympic Games has a huge impact on a city. Besides a sustainable pre-period, striving for a sustainable event could also lead to successful Games. London 2012 has underlined the importance of sustainable Games by implementing the term: 'One Planet' Olympics. 'If the Games are successful, the people of the host city can bask in the fun and glory of the event and for instance in Sidney in 2000, there was a festival atmosphere for the two weeks of the Games' (Cashman, 2002, p.12). However, possible residents' concerns about for instance price increases, overcrowding, pollution and traffic congestion could lead to lower support for the Games (Zhou & Ap, 2009). External threats such as terrorist attacks could lead to failure of Olympic Games which happened during the Olympic Games of Munich in 1972. Also since the 11 September terrorist attacks in New York, the security and insurance costs have increased dramatically (Cashman, 2002, p.5).

2.5.3 THE POST-GAMES PERIOD

The post-Games period is much longer than the period before the Games and sustainable development has a much greater influence in the post-Games era. By creating buildings with multiple functions, the possible failure of the so-called 'white elephants' could be prevented. White elephants are according to Robinson & Torvik (2005) investment projects with negative social surplus. In past Olympic Games the host cities were often building big, expensive stadiums for the event and after the event, the stadiums were hardly used anymore. 'At the Legacy Conference in November 2002 Dr. Rogge spoke out against Olympic 'luxury' projects that would become 'white elephants' after the Games preferring developments that would be sustainable after the Games and have some post-Games use' (Cashman, 2002, p.9). Buildings with different functions are examples of sustainable development on the long-term. Cashman (2002) indicate that the community should benefit from Olympic precincts and venues. Besides the sustainable buildings, another important aspect in the post-Games period is sustainable tourism. By organizing the Games, the host-city receives enormous global media attention and because

of the investments in global promotion it is important to attract tourists, not only during the event, but also after the Games. This can only be achieved by implementing a well-developed plan which enables a city to gain ongoing benefits and reduce possible ongoing burdens (Cashman, 2002). Other success factors of sustainable Olympic Games could be a better infrastructure and an increased participation in sports.

3. SUSTAINABILITY IN DECISION-MAKING

3.1 INTRODUCTION

After the theoretical exploration of sustainable development and the opportunities and limitations of sustainable Olympic Games, this chapter will focus on the aspect of sustainability in the decision-making process and how this will lead to sustainable Olympic Games. In order to organize a mega event such as the Olympic Games, a long period of policy-making and strategy development is needed to establish successful Olympic Games. In order to generate sustainable Games, the aspect of sustainable development has to be implemented in the decision-making process. This chapter will start with an exploration on different theories about how the decision-making process could be mediated. Theories such as the Game Theory and Social Decision making Theories will be further explored in order to understand the underlying process that leads to strategic decision-making. The second paragraph will define the different partners who are involved in the decision-making process and will concentrate on the concept of the formation of coalitions in order to organize an enormous event such as the Olympic Games. In the third paragraph the aspect of sustainability becomes important and the question will be further explored how sustainable development could be integrated in the strategic decision-making process and how this can lead to Sustainable Olympic Games.

3.2 SPORT POLICY IN THE NETHERLANDS AND THE ROLE OF SUSTAINABLE DEVELOPMENT

The Netherlands are divided into 12 provinces and each province is developing their own policies on sport. The cities within these provinces are implementing their own sport policies and there is also the Ministry of Health, Welfare and Sports (VWS) that is active in policy-making. Although this seems a complex system of policy-making with different governmental layers, the system seems to work. With the development of the current Olympic Plan 2028 and the support of the National Government for this plan, the provinces and cities need to refine their sport policies to the Olympic ambitions described in the plan. In the current sport policies there is minor attention for sustainable development. Where sustainability is already a well-know aspect in for instance the private sector, the sport sector is still struggling with the idea to combine sports and sustainable development. However, the Olympic Plan

2028 shows that sustainable development will become an important issue in the bid for the Olympic Games of 2028. So the aspect of sustainable development is acknowledged by the NOC*NSF, but a concrete translation is missing in the Olympic Plan 2028. Also in the sport policies towards the Holland/Belgium bid for the FIFA World Cup in 2018, the aspect of sustainability plays an important role and by presenting the bid book to the FIFA by bike, a strong signal is given to the rest of the world that Holland and Belgium are willing to organize a sustainable event.

3.3 AN EXPLORATION OF THE THEORIES REGARDING THE DECISION-MAKING PROCESS

The preparations for staging the Olympic Games are an enormous task that needs to be done in a relatively short-time frame (Cashman, 2002). Because of this short-time frame, 'there is usually limited community consultation and the over-riding of local concerns is justified as being in the city and the country's interest (Cashman, 2002, p.6)'. Because of the organization of such a mega-event within this short-time frame, the decision-making process is complex and requires a lot of co-operation between different partners. In order to deal with this increasing complexity of organizing this event and the problems of communication within complex organizations and their networks, the process of gaming/simulation proved to be an appropriate measure to deal with this problem (Geurts, Duke & Vermeulen, 2007). One of the dominant theories in this particular field is the Game Theory that conceptualizes a decision-making situation. The Game Theory systematically describes several decision-making situations and the Game consists of the 'capacity to act' of different actors, the outcomes resulting from this 'capacity to act', the preferences of the actors towards those outcomes and the information that is available to the actors (van Hees, in: Pellikaan & Hout, 1998). One of the underlying principles in the Game Theory is that individuals act rationally (van Hees, in: Pellikaan & Hout, 1998). The Game Theory could consist of a situation with only two actors involved or a situation with several actors involved. Examples of both games will be provided later in this chapter. One of the key elements in the Game Theory is the Nash-equilibrium, which can be defined as 'a constellation of individual strategies in which no player could still improve his or her own outcome by unilaterally switching to another available option' (Scharpf, 1997, p. 100). The most important elements in the Game are the players, the strategies and the payoffs. Before determining these concepts in the game, it should be clear that the game is a zero-sum Game or not. A zero-sum Game is a game where the gain of one actor

equals the loss of the other (Davis, 1970). The total amount of payoff is in this situation zero. However, in the decision-making process towards the Olympics, the game that is played is a non zero-sum Game because every partner receives some amount of payoff. A common used analysis derived from the Game Theory is the 'Prisoner's dilemma' which says that strategic behavior will lead to a suboptimal outcome (van Hees, in: Pellikaan & Hout, 1998). However, in the Prisoner's dilemma, there is a situation where both actors do not know the actions of the other actor. In the case of the Olympic Games, actors are collaborating and do know what strategy the other party will take. Therefore, this chapter will focus more on collective decision-making in which actors are aware of the strategy of the others.

The Game theory can be implemented within another important theory that provides insights in the decision-making process: the Social Decision-Making Theory. The Social Decision-Making Theory looks at the relation between individual preferences towards certain alternatives and social or collective decision-making towards these alternatives (van Hees in: Pellikaan & Hout, 1998). It is very common that a group of actors with very different views and opinions, have to take decisions about a certain issue and the Social Decision-Making Theory is looking at the characteristics of these formal or informal decision-making procedures (van Hees in: Pellikaan & Hout, 1998). These decision-making procedures are rules to translate the preferences of actors into a common group decision (van Hees in: Pellikaan & Hout, 1998). Within this decision-making process, before making a choice, human beings compile and weigh information about the choices they have (McCarthy in: Paternoster & Pogarsky, 2009, p.104). This notion is derived from the Rational Choice Theory which assumes that actors carefully, thoroughly or thoughtfully make choices and decisions which influence the short- and long-term outcomes (Paternoster & Pogarsky, 2009). Essential in this process is the gathering of information. Besides that, the availability of information to actors is also a key point in the Game Theory. In order to understand this complex process of decision-making towards an event such as the Olympic Games, more information is needed about: the partners that are co-operating in the decision-making process (public-private collaborations), the other alternatives in the process (organizing the Olympic Games in a sustainable or a non-sustainable way), and the individual preferences towards these alternatives (van Hees in: Pellikaan & Hout, 1998).

3.4 PARTNERS IN THE DECISION-MAKING PROCESS LEADING TO THE ORGANIZATION OF THE OLYMPIC GAMES

The organization of the Olympic Games is in the hands of an Olympic organizing committee but because the Olympic Games are such a mega-event, several different collaborations are needed for a successful decision-making process. The Olympic Games are characterized as a public good and a public good can be defined according to Olson (1971, p.14) as: 'any good such that, if any person in a group consumes it, it cannot feasibly be withheld from the others in that group'. A possible 'solution' of this 'Public Good dilemma' is to promote the in-group identity and this could influence decision-making process such as the process to establish sustainable Olympic Games (van Dijk in Steensma et al., 1993). Another important tool to improve the co-operation in dealing with public good dilemmas could be found in increasing the flow of communication between the people involved (van Dijk in Steensma et al., 1993). With a strong in-group identity and communication, a strong coalition could emerge. The people who are involved in the long-term decision-making process for the Olympic Games are governmental actors, the business community/private sector, the civil society, knowledge and research institutions, the media and intermediary organisations (NGO's) (Meuleman & in 't Veld, 2009). In the Game theory that can be used in the policy-making process, a common notion is that the smaller the difference between the actors, the more likely they are to co-operate or as Axelrod (1970, p.167) is saying: 'the less conflict of interest there is in a coalition, the more likely the coalition will have long duration of formed'. Another theory that is pointing at the importance of sustainable decision-making is the Regime Theory. As we have seen before, the decision-making procedures could exist in a formal or an informal way. If the decision-making process is organized by using informal networks, the notion of regimes becomes important. Regimes are defined by Stone (1989, p.4) as: '*informal, yet stable coalitions of actors with access to institutional resources, which able them to play a sustainable role in public decision-making*'. These regimes can help to organize the decision-making process in a sustainable way and Dowding (2001) is referring to the importance of these coalitions between public and private partners to stimulate the developments in a city. However, when coalitions have to be formed, there is a need to keep the number of actors in the coalition as small as possible (van Dijk in Steensma et al., 1993). These regimes can have a tremendous impact on the policy-making process of for instance organizing the Olympic Games or as Stone is saying: 'A regime is identified by its ability to make and carry out governing decisions' (Stone, 1989, p.179). However, in order to actually influence the decision-making process, a common agenda is needed and in the process of striving towards this common agenda, games

are played. So, regimes can help in the decision-making process but there are several other players in the field.

Because of the enormous impact of the Olympic Games on the city, the region and the entire country, several different organizations wants to get involved in the Games. Olympic Games planners, organizers, and host governments for instance, must take the views of the host residents and communities into consideration if the event and its host destinations are to be sustainable (Zhou & Ap, 2009). In this research, the partners in the decision-making process will be: the public sector, the private sector and the NGO's.

3.5 SUSTAINABLE DEVELOPMENT INTEGRATED IN THE DECISION-MAKING PROCESS: THE FOURTH 'P' (POLITICS)

As we have seen before, there are many different actors involved in the decision-making process towards organizing the Olympic Games. In order to deal with this great variety of partners and to overcome possible problems, the decision-making process needs to be clearly defined and communicated. 'On the political level, the realisation of long term concepts like sustainable development requires an adequate political and societal decision making system' (Meuleman & in 't Veld, 2009, p.7). The Social Decision Making Theory and more specific the Game Theory could provide useful insights in how this decision-making process is occurring and how this is translated in actual policies and strategies towards the organization of the Olympic Games. However, the question here is how to integrate sustainable development (and a sustainable strategy) in this decision-making process? How can the integration of sustainability into policy-making help to establish sustainable Olympic Games? The problem in the current decision-making process is that too many times, decision-makers choose for a strategy that leads to the most value in the short-term. A 'normal' strategy is often the dominant strategy in decision-making. However, in order to establish sustainable Olympic Games, a sustainable strategy needs to be the dominant strategy in the decision-making process. How could the Game Theory help to transform the dominant strategy into a sustainable strategy? And does this sustainable strategy actually lead to sustainable Olympic Games? In order to answer these questions, it is interesting to add a fourth 'P' to the 'three-pillar model' posed by Serageldin (in: Hermans & Knippenberg, 2006). The fourth 'P' stands in this case for 'Politics'.

3.5.1 THE POLITICAL DOMAIN

The achievement of positive sustainable outcomes from the Olympic Games implies a long-term, open-ended, complex and integrated process and this process requires governance in order to succeed (Government of Catalonia, 2004). The notion of governance implies that there is a need to build strong coalitions to address the several issues that are occurring on the path towards sustainable Olympic Games. It is here that strategic decision-making comes in, because strategic decision-making can improve governance for sustainable development. Politicians that are dealing with strategic decision-making towards for instance an event such as the Olympic Games, are most of times not looking further than the next elections and could therefore have a more short-term view which could lead to inconsistencies and unsustainable practices. Correcting these inconsistencies is crucial for sustainability (OECD, 2001). Meuleman & in 't Veld (2009) are also mentioning the short-term political life cycle of a government and long-term decisions conflict with this short time frame because the potential successes are not harvested during the ruling period. However, in order to establish long-term outcomes, decisions have to be taken today. Some of these decisions are focusing on a certain point in the future, while others have a more indefinite time horizon, such as to have the Olympic Games in the Netherlands in 2028 (Meuleman & in 't Veld, 2009). The OECD (2001, p.48) defines some important elements of sustainable development policies such as: a long-term planning horizon, cost effectiveness, environmental-effectiveness, policy integration, transparency and accountability. However, because of the continuous flow of people in politics, it is difficult to implement the long-term aspect in the political decision-making process. If we now take the Game Theory as a model and integrate sustainability into the decision-making process, what would than theoretically be the dominant strategy? And does this dominant strategy lead towards sustainable Olympic Games?

3.5.2 GOVERNANCE

Concerning the Olympic Plan 2028, some critical notions are rising towards the governance role of this Olympic Plan 2028. With the development of the Olympic Plan an important step is made, but what the next step should be seems a little unsecure. If a long-term vision is taken, a sufficient planning can be made in which sustainability plays an important role. If a short-term vision is taken, it is likely that economic advantages will be dominant over attention for the environment. If we now take the Game

Theory to further investigate this situation, the strategic or normal form of the Game Theory with two players could provide better insights.

Normal or Strategic Form of the Game Theory with two players

Because strategic decision-making could improve governance for sustainable development, the strategic or normal form of the Game Theory is used here. This indicates that the decision-making process is described in terms of the players, the strategies and the different payoffs (van Hees, in: Pellikaan & Hout, 1998). We now take the situation where there are two different players involved in the decision-making process towards the Olympic Games: the public sector and the private sector. Because there are only two players in the Game, the Game can be presented in a matrix, where the strategies of the players are indicated in the rows and columns (van Hees, in: Pellikaan & Hout, 1998). This game is a sequential game because one actor takes the initiative and then the other actor will choose a strategy. The cells in the matrix describe the possible combinations of strategies and the numbers in the cells are an indication of the payoff that is received by the players (van Hees, in: Pellikaan & Hout, 1998). The first number is the payoff of the row player and the second number indicates the payoff received by the column player (van Hees, in: Pellikaan & Hout, 1998).

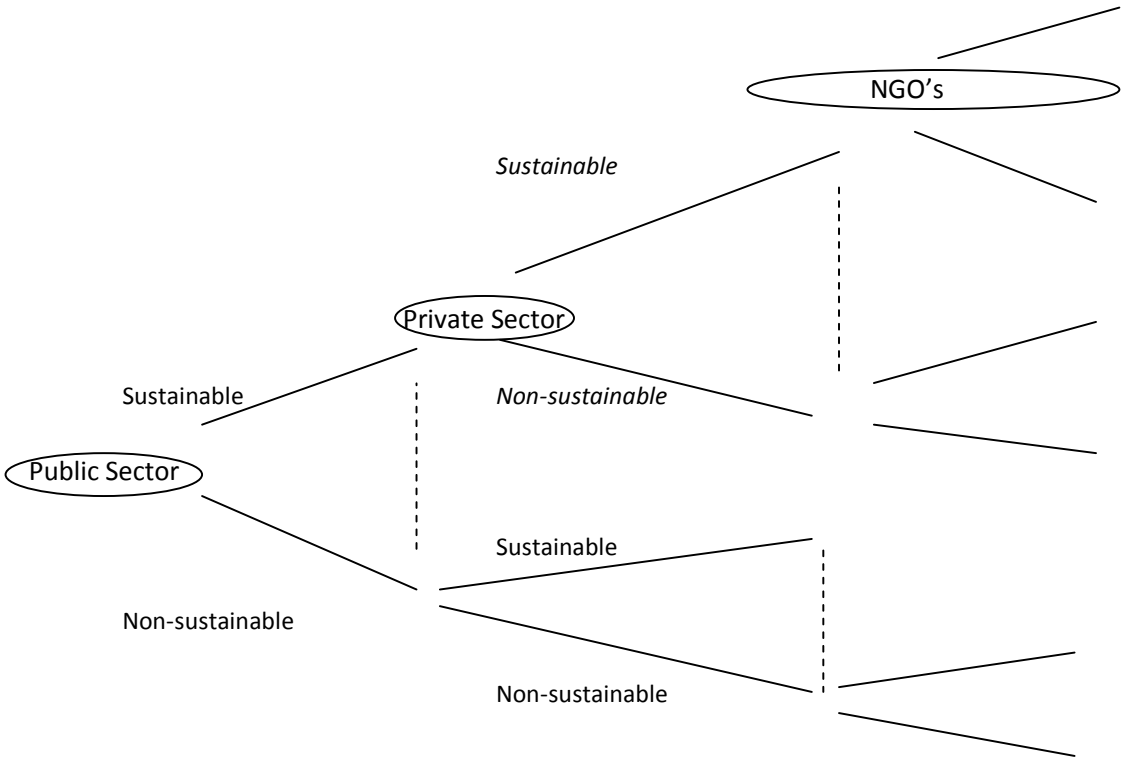
Figure 3: The Strategic- or Normal Form of the Game Theory

	Column player (private sector)		
Row player (public sector)		Sustainable strategy (long-term)	Normal Strategy (short-term)
	Sustainable strategy (long-term)	2,2	3,2
	Normal Strategy (short-term)	3,1	4,4

The literature (i.e. OECD, 2001) indicated that sustainable development generates less income in the short-term than normal development, but more income in the long-term. Because of the short period of governance, it is expected that for most politicians the preferred strategy is a short-term normal strategy. However, if the private sector chooses a normal strategy, the payoff for the public sector to choose a sustainable strategy is higher because they could win more votes by being sustainable. If the private and public sector choose both for a normal strategy, a strong coalition is created so the payoff is equally high for both parties. If both parties choose a sustainable strategy there is also a strong coalition, but this is valued lower because in case of a normal strategy the expected short-term income will be higher than in the sustainable situation. So when the private sector chooses a normal strategy, the public sector will choose a normal strategy as well because the payoff is then 4 instead of 3. When the private sector chooses a sustainable strategy, again the normal strategy has a higher payoff for the public sector. If the public sector chooses a sustainable strategy, the private sector will likely choose the same because the payoff of 2 remains the same but if they both choose the same strategy, a stronger coalition is created. If the public sector chooses a normal strategy, the private sector will choose a normal strategy as well because a payoff of 4 is higher than 1. So in this particular example, no matter what the private sector will do, the public sector will choose for a normal strategy. The normal strategy and not the sustainable strategy is in this case the dominant strategy for the public sector.

This sequential Game could also be enlarged with an extra player and this situation can be described in terms of a figure in which one player acts first and chooses a strategy that is followed by a decision from the other player. This situation is also applying for the Olympic Games in which a sequential game is played with in this case three actors (public, private and NGO's). This is schematically represented in Figure 4.

Figure 4: Example of a sequential Game



4. METHODOLOGICAL APPROACH

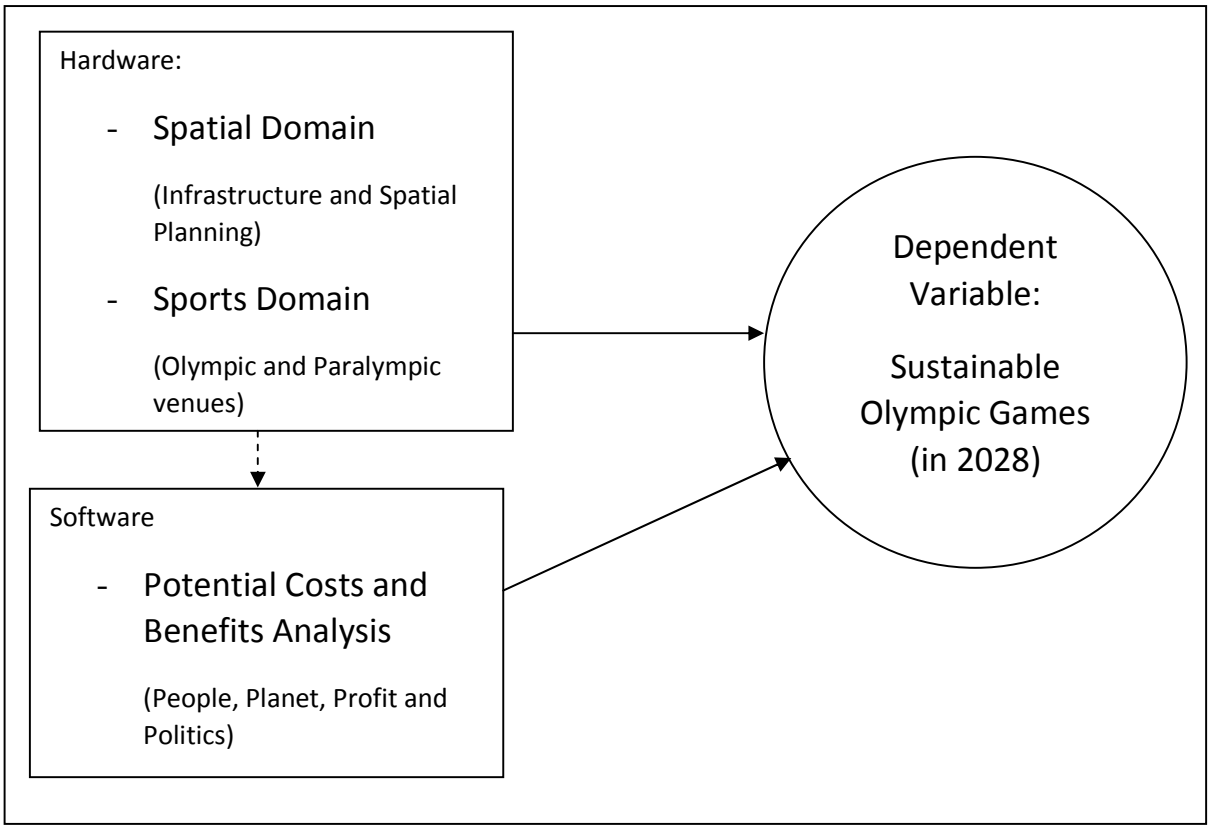
4.1 INTRODUCTION

This chapter will describe the methodological approach that is used to answer the research question, the expectations and the several sub questions. This chapter will start with a description of the conceptual model (paragraph 4.2). From this model, several expectations are derived (paragraph 4.3). Because this is an exploratory research, expectations are used and not hypotheses. The third paragraph (4.4) will describe the research methods. The final paragraph (4.5) will give information about the analytical techniques and instruments of the collected data.

4.2 CONCEPTUAL MODEL

After this theoretical framework, the following conceptual model can be found in figure 5. The conceptual model is a schematic representation of the relationship between the independent and dependent variables. The central element in the research is the notion of sustainable Olympic Games (in 2028). The sustainable development in mega events such as the Games is influenced by several aspects such as the Spatial Domain (infrastructure and spatial planning), the Sports Domain (Olympic and Paralympic venues) and the potential Costs and Benefits analysis (People, Planet, Profit and Politics). This has led to the following conceptual model:

Figure 5: Conceptual Model



In this model, there is a relation between the Spatial/ Sports domain and the Potential Costs and Benefits of the Games but this relation is outside the scope of this research. The three independent variables are based on the desk research on what is needed to organize a sustainable event. In the current situation towards the Olympic Plan 2028, the ministry of Housing, Spatial Planning and the Environment is investigating the spatial aspect of the Games. This includes the infrastructure that is needed for the Games and the spatial planning of the different sports. The Sports domain is governed by the Ministry of Health, Welfare and Sports and is dealing with the different venues that are needed for the Games. The final domain is an initiative of the NOC*NSF and includes social-cultural aspects and environmental and economic aspects. By looking at the opportunities and limitations of sustainable development in these three domains, this could lead to the organization of sustainable Olympic Games.

4.3 EXPECTATIONS

This research is exploratory and the expectations that are given below are predictions based on the literature and the desk research towards past Olympic Games and the aspect of sustainable development in past Olympic Games and in current sport policies.

9. *What are the infrastructural contingencies of organizing an event such as the Olympic Games?*
   The expectation is that there are several infrastructural adjustments needed to improve the transportation flows and the accessibility of the Netherlands and in particular of the Randstad area. It is likely that these infrastructural projects will have some contingencies.

10. *What does the spatial planning of the Games look like?*
    A mega event such as the Games needs a good and well-thought spatial planning of for instance the Olympic Village and the Olympic Stadium. The expectation is that the spatial planning of the Games is complicated and that there are already some ideas about the visualisation of the Olympics.

11. *What is the role of sustainable development in the planning of new Olympic and Paralympic venues?*
    The expectation is that the importance of sustainable development in future venues will increase and that sustainability will become a major issue in future Olympic Games.

12. *What are the social costs and benefits of the Games?*
    The expectation is that the Games will have many positive social side effects on the People domain, in order to overcome several social problems.

13. *What are the environmental costs and benefits of the Games?*
    The expectation is that the Games have a negative impact on the various environmental issues because the economic effects in the end will be more important than environmental issues.

14. *What are the economic costs and benefits of the Games?*

The expectation is that the Olympic Games will have a positive influence on the economy of the country.

15. *What is the role of sustainable development in the sport policies at the governmental level*?
    The expectation is that the role of sustainable development in the current policies is important and that sustainable development is recognized by the actors in the decision-making process.

16. *Who should take the first actions towards the Olympic Plan 2028?*
    The expectation is that the national government should govern the decision-making process towards the formation of an actual bid for the Games in 2028.

4.4 RESEARCH METHODS

In order to find answers to these expectations and to the research question, a qualitative research method is used. A disadvantage of qualitative research is that the causality of the outcomes is debated and the results are difficult to interpret scientifically. However, this research method is needed to gain information about the still unexplored field of sustainability in sports. After the desk research, interviews were held and from these interviews more information is generated about the relation between the independent variables and the dependent variable.

4.4.1 DESK RESEARCH

The first method of data gathering was desk research and this was forming the basis for the rest of the process of data gathering. In order to increase the knowledge about this subject, an in-depth analysis of the available literature about these concepts is needed. This desk research includes policy notes, scientific reports and other available information about (past) Olympic Games in different cities and about the Olympic Plan 2028. Mainly the Olympic Games of Beijing 2008, Vancouver 2010 and the forthcoming Games in London 2012 have or had a stronger focus on the importance of sustainable development. By looking at the policy reports, outcomes and literature from these Olympic Games, more insight could be created in the organization of such a mega event.

4.4.2 FIELD RESEARCH: INTERVIEWS

In order to gain more knowledge about the opportunities and limitations of sustainable Olympic Games, face-to-face interviews with experts on this subject could be a useful tool to obtain important data. In order to talk to the persons that add the most value to this research, the method of snowball sampling was used, where respondents brings you in contact with other experts (Baker, 1999). Because the Netherlands started their Olympic Plan 2028 to prepare a bid to organize the Olympic Games in 2028, people from the public sector are co-operating with for instance the Dutch Olympic Committee (NOC*NSF) to set the basis for this Olympic Plan 2028. In-depth interviews with people from these organizations provided useful insights into the research question and the expectations. In order to create a heterogeneous sample of respondents, people with different backgrounds and from different sectors (Government, NOC*NSF, Universities, Sport associations, Research Centers etc.) were interviewed. With at least five interviews from each sector (public, private and NGO's), the possibility of a unilateral analysis will be diminished and the subject was investigated from different viewpoints. An overview of the respondents is given below:

Table 2: Overview respondents:

Public Sector:	
1.	Programma Manager Olympisch Plan 2028; Ministerie van Volksgezondheid, Welzijn en Sport (VWS)
2.	Pitch en debat over het thema met oud-minister Cramer van Volkshuisvesting, Ruimtelijke Ordening en Milieu (VROM)
3.	Beleidsmedewerker Sport; Provincie Noord-Brabant
4.	Beleidsadviseur Sector Jeugd, Zorg & Welzijn; Provincie Noord-Holland
5.	Programma adviseur sport; Provincie Gelderland
6.	Beleidsontwikkelaar Sport; Gemeente Eindhoven
7.	Hoofd Sportontwikkeling; Gemeente Tilburg
8.	Topsport Coördinator Den Haag Marketing
9.	Directeur; Vrijetijdshuis Brabant
Private Sector:	
10.	Programma Manager Marketing & Communications; ATOS Origin
11.	Marktgroepmanager Sport; BMC Group
12.	Zelfstandig ondernemer en oprichter van Sooloo
13.	Eventorganisator en oprichter van Context Media
14.	Commercieel medewerker; CineMec Ede
NGO's:	
15.	Coördinator Olympische Kennis; NOC*NSF (Olympisch Vuur)
16.	Manager communicatie/ manager topsportaccommodaties; Topsport Amsterdam
17.	Adjunct directeur/ projectmanager; Rotterdam Topsport
18.	Manager Olympisch Netwerk Noord-Brabant

19.	Programmacoördinator; Olympisch Netwerk Noord-Holland
20.	Coördinator Verenigingenadvies; Olympisch Netwerk Midden-Nederland
21.	Directeur; Kennispraktijk Nijmegen/ Zwolle

4.5 ANALYTICAL TECHNIQUES AND INSTRUMENTS

The semi-structured topic list that is used in the interviews contains several notions to answer research questions. During the interviews, a voice-recorder was used to record the data and the gathered data is transcripted and analyzed by using different steps in the analyzing process. First of all, 'open coding' (Strauss & Corbin, 1998) is used to label the quotations of the respondents and this will result in a list of codes which can be further fragmented into semi-structured data displays (Miles & Huberman, 1994). By marking interesting quotes and giving the subparts different colours that belongs by the specific topics on which the expectations are based, a clear overview is created. From these different quotes a story is made in which some interesting quotes are used as examples to underline the statements. Because the interviews were held in Dutch, the quotes had to be given in Dutch as well.

5. DATA ANALYSIS AND RESEARCH RESULTS

5.1 INTRODUCTION

After the desk research, the next step in the data gathering process is the qualitative research. Therefore, interviews have been held with several organisations. The selection of organisations was based on the theoretical framework where three different 'actors' in the game were defined. These actors consisted of organizations in the public and private sector and in intermediary organizations (NGO's). From these different fields, potential organizations from these sectors were asked to participate. Because the topic of sustainability in relation to sports is such a broad theme, the sample consisted of several organizations with totally different backgrounds. The Olympic Program or Olympic Plan 2028 was the basis of this research so several actors involved in the Olympic Plan 2028 are contributing to this research, for instance: the Dutch Olympic Committee NOC*NSF, the Ministry of Health, Welfare and Sports (VWS), the Olympic Networks and the five largest cities in the Netherlands. These organisations represent the sport sector in this research. In order to learn more about the aspect of sustainability, interviews were held with multinationals such as ATOS Origin and other companies from the private sector, but also with universities, research centres and organizations who know more about sustainable innovations in sports. In total, 21 face-to-face interviews were held, and in addition an extra pitch was held in front of the former minister of Housing, Spatial Planning and the Environment (Jacqueline Cramer of VROM) and the Desso Company about the topic. The results of this qualitative research are presented below. The main aspect of the results section is the organization of mega events like the Olympic Games. The Olympic Plan and its eight ambitions is developed in order to create a basis on which the Netherlands can create a professional sport climate, where sports is used to combat the obesity problem, to integrate minority groups in society and to generate lots of other positive side-effects. Therefore it does not matter if the Netherlands will get the games in 2028 or not, the country would still benefit from all these positive side-effects.

The build-up of the results section is based upon the three research domains of the current Olympic Plan 2028. The first domain which falls under supervision of the Ministry of Housing, Spatial Planning and the Environment (VROM) is the Spatial Structure of the Olympics. This domain is dealing with aspects such as infrastructure and accessibility. The second domain is the sport component which is governed by the NOC*NSF in collaboration with several other stakeholders. This domain is an exploration of the Olympic

venues in the Netherlands. The final and third domain falls under supervision of the Ministry of Health, Welfare and Sports (VWS) and is an analysis of the costs and benefits of the Games. The People, Planet and Profit triangle is integrated in this domain. After the theoretical analysis and the data collection, an extra 'P' is added which is the Political domain. This includes the aspect of sustainable development in current sport policies and in the Olympic Plan 2028 as well as the governance role towards the Olympic Games in 2028 in the Netherlands. For each of these domains, the results will be differentiated for the public sector, the private sector and NGO's. The chapter will end with the opportunities and limitations of sustainable Olympic Games.

5.2 THE SPATIAL DOMAIN (THE HARDWARE)

The spatial domain will be dealing with the infrastructure and the spatial planning of the Olympic Games. Respondents were asked about the spatial planning of the Olympic sports and about the infrastructural adjustments that are needed to host a mega event such as the Games. Within these subjects questions were asked about the role of sustainable development.

5.2.1 INFRASTRUCTURE

Organizing the Olympics has several implications for the infrastructure of a country. This is in many cases characterized by huge investments in public transport, roads and highways. The event attracts thousands of visitors, tourists, athletes, coaches, people of the press and others and therefore the transportation of all these people is a key issue in the organization of the Games.

The public sector about the infrastructural implications:

Because of the influx that mega sporting events cause on the infrastructure of a country, it is an enormous challenge for the Ministry of Housing, Spatial Planning and the Environment to finish the infrastructural projects, which are necessary for these events, in time. Respondents from the public sector indicate that the Olympic Games could in this sense function as a catalyst for these projects because a deadline is involved. Concerning the Olympic Plan 2028 in the Netherlands and the bid for the World Cup in 2018, this means that the infrastructural plans that were already on the table for a better accessibility of the Dutch Metropolitan Area called the 'Randstad,' are now integrated into these events.

If the country is elected to organize the Games, the main focus of the Games will be directed towards the Randstad where the four biggest cities in the Netherlands are situated: Amsterdam, Rotterdam, Utrecht and The Hague. These infrastructural projects could become a possible bottleneck for the country with this kind of population density, but besides this contingency factor the common opinion is that the Netherlands are able to organize the infrastructure for the Olympics:

> "A*ls Griekenland het kan met dat kleine landje en die onmogelijke wegen en als China het kan met zijn 7 ringen rondom de stad dan moet Nederland dat ook kunnen."*

The rule of the IOC is that the athletes should travel no longer than 45 minutes from the Olympic village to the Olympic venues so this has to be incorporated into the infrastructural plans. Because of the small scale of the Netherlands as a country, this requirement should not be the main contingency factor. If we again take a look at the Games in Beijing, the horseback riding was in Hongkong, which is a 3-hour flight from Beijing and also the sailing was located far from all the other sports. The solution used by the Chinese was the construction of a separate Olympic village on both locations, which is not the most sustainable option, but which was necessary to follow the rules of the IOC. The infrastructure for the forthcoming Games in London 2012 looks promising. The London – Stratford area is transformed into a compact Olympic area that is easily accessible from the main land of Europe because the Channel Tunnel is extended towards Stratford. Where the London games choose a greater accessibility by train to promote more sustainable forms of transportation, the Netherlands is using the existing infrastructure for bikes. A first step that is made by the Holland/Belgium World Cup Bid for 2018 is that the aspect of sustainability is forming the key component of the Bid Book. Both countries want to provide two million bikes around the stadium to make sure that people are travelling by bike to the match. These greener modes of transportation are interesting initiatives but then a new infrastructure around the Olympic venues is needed that is suitable for bikes. Also the air traffic could be transformed to a more sustainable way of transportation. For instance the Dutch airline KLM is investing in a new model that reduces this impact on the environment and the ultimate goal is 'to fly green'. One of the biggest impacts on the footprint is the travel-to and travel-from the site, whereby the biggest polluter is the airplane. So when carbon emissions are reduced in air traffic, the footprint of the event will be reduced.

The Private sector about the infrastructural implications:

The respondents from the private sector indicate that the most important aspects of the (Olympic) infrastructure in relation to sustainability are the multifunctional use of the current and future infrastructure and the implementation of strategies to reduce the environmental footprint.

Regarding the multifunctional use of infrastructure, the example of the organization of the first stages of the Giro d'Italia in the Netherlands could be given. In this event, the element of sustainable development was playing a role. The first stages of this mega cycling event were held in the Netherlands, and for safety reasons the organization had to remove several traffic islands. In order to organize other cycling events in the future, the organizing committee chose to invest in removable traffic islands and pedestrian refugees which were more expensive but enable the follow-up of this event.

NGO's about the infrastructural implications:

The Olympic Games will have several infrastructural implications and this is also acknowledged by the NGO's in the interviews. They indicate that the 45 minute traveling time from the Olympic village to the different venues that we saw before, is not an exact rule but more a guideline. A significant percentage of the athletes should be accommodated in a short travel range of the Olympic venues, according to the IOC. Respondents indicate that the Olympic sports with the largest amount of athletes are swimming, track and field athletics and gymnastics. If you are able to organize these three sports close to the Olympic village, this percentage of the IOC is almost achieved. This means that you are able to organize other Olympic sports elsewhere. The same development occurred in London where the Olympic Park includes, besides the Olympic stadium and the Olympic village, also these three Olympic sports. If all the main Olympic activities are centralized in one area, the organization of the event is easier and also the security of the athletes is better to guarantee.

Conclusion:

The spatial domain included the infrastructure and the spatial planning of the Olympic Games. Concerning the Olympic infrastructure, the public sector sees the 'Randstad' area as the key area for infrastructural projects and adjustments, whereas the private sector and the NGO's think that the Games need to be spread more across the Netherlands. In that case, the Olympic infrastructure would be implemented in a larger area. All three sectors acknowledge the importance of the use of existing

infrastructure. The IOC states that the athletes should be housed within a range of 45 minutes travel time to the venues. NGO's conclude that this is more of a guideline so if you are able to organize the swimming, track-and-field athletics and the gymnastics within this range, this criteria is achieved. If we now translate these results to the Game Theory, the first step in the sequential game can be made by the public sector to plan new infrastructural projects. Then the other actors will follow and start to implement sustainable infrastructure in their business and events.

Sustainability check:

In the decision-making process towards sustainable Olympic Games, the dominant strategy should be a sustainable strategy. To monitor the attention for- and the awareness of sustainability in the three sectors, a sustainability check based on the interviews is done for each aspect of the event (Hardware and Software). A '+' is dedicated to each element, so the more plusses, the higher the attention for sustainability of the sector.

Table 3: Sustainability check infrastructure

	Sustainable developments	**Checklist**
Public Sector	- Use existing infrastructure - Sustainable forms of transportation	+ +
Private Sector	- Infrastructure with multiple functions	+
NGO's	- Centralized Olympic infrastructure with low security costs	+

5.2.2 SPATIAL PLANNING OF THE SPORTS

Besides the infrastructural implications, the spatial planning of the several Olympic sports is an important aspect of the Spatial Domain. In order to facilitate the Olympic Games in 2028 in the Netherlands and to increase the participation in sports, efficient use of the available space is necessary. Architects, planning departments and agencies are developing innovative ideas, varying from sport facilities on the roofs of buildings, to pitches build over highways.

The public sector about the spatial planning of the Olympic sports:

Respondents from the public sector indicate that the Olympic sports will be mainly situated in the Randstad area. The available space in the Netherlands and the way this space should be used is a much debated issue. Some respondents indicated that there is still enough available free space that could be developed, for example to build an Olympic village. Others however think that the spatial planning specifically in the Randstad area will become difficult.

The spatial planning for the several Olympic sports is still subject of current research. However, several respondents indicate that the location of some sports is obvious. For instance, the beach sports and the sailing will be held at the coastal area of Scheveningen in The Hague, the Olympic cycling matches will be designated to the south of the province of Limburg and the equestrian events will be held in the province of Noord-Brabant or a region in the east of the Netherlands called 'de Achterhoek'. These outdoor sports could be held outside the Randstad area. Other sports are less obvious such as the Olympic rowing matches. Amsterdam has a famous rowing area, called 'de Bosbaan'. However, this rowing area is too small according to the Olympic norms and an enlargement of this water does not fit into the spatial plans of the city of Amsterdam. The city of Rotterdam is building with its 'Willem-Alexander baan' a rowing area that is Olympic proof. Also the indoor cycling events could be held outside the Randstad area because the city of Apeldoorn has a venue (Omnisport) with the A-status for indoor cycling events. Although there is still some debate about where all the sports need to be situated, it is likely according to the public sector that almost all of the Olympic sports will be designated to the Randstad area. This Randstad area could be divided into a northern half (Amsterdam - Utrecht area) and a southern half (Rotterdam- The Hague area). The Olympic core that consists of an Olympic stadium, an Olympic village, Aquatic Centre and a media centre, should be situated in the southern or the northern area of the Randstad. However, you need both areas to organize the Olympics.

The private sector about the spatial planning of the Olympic sports:

Respondents from the private sector are indicating that the Netherlands is able to organize Olympic Games in a sustainable way if the entire country is involved. So the spatial planning of the several Olympic sports should connect the Randstad area with the other provinces. However, there are different opinions about this subject because if you choose for sustainable Games, an option could be to develop a big stadium with multiple functions so that almost all the Olympic sports could be organized in that

building. The Games are centralized which reduces costs for security measures, infrastructural projects and transportation. On the other hand, if enthusiasm and commitment is created within society towards the event by spreading out the event over the entire country, this could also lead to positive side effects such as a long-lasting social legacy, integration of minority groups and an increased participation in sports.

NGO's about the spatial planning of the Olympic sports:

Whereas the public sector indicates that the Olympic sports will be mainly situated in the Randstad area, the NGO's are hoping that the Olympic Games will involve a larger area.

> *"Nederland staat sowieso voor een heel lastig dilemma omdat de ruimte beperkt is in het land, vooral in het westen van het land. Het gaat vooral om de Randstad-plus zeg maar tot en met Flevoland, en een stuk van Gelderland, tot en met Noord-Brabant zeg maar, dat is dus die hele cirkel eromheen."*

It is possible, according to the NGO's that the Olympic Games could be organized in a city or a small area, but the intention of the Olympic Plan is that if the Games will be organized in the Netherlands, all people should support the event. Therefore the event will be involving a larger area than the Randstad area. Besides this, the NGO's are also indicating that the main goal is not to organize the event itself, but the most important aspect is that the Olympic infrastructure is sufficient, because then you are able to organize the Games.

> *"De Olympische hoofdstructuur moet dusdanig zijn dat je ook Olympische Spelen kunt organiseren."*

To organize this Olympic infrastructure in a sustainable way, respondents indicate that an analysis of the current situation is needed. You have to analyze the location of the current sport activities, the economic activities, the infrastructural projects that are necessary and the venues that are needed. However, the current sport infrastructure in the Netherlands is already quite impressive. For instance, the equestrian events can be held in a temporary venue and the football stadiums could be used for Olympic sports such as field hockey, tennis and swimming. The NGO's indicate that the most important elements that are still missing in order to organize the Olympic Games in the Netherlands are:

- A stadium for the track-and-field athletics that is large enough for an event such as the Olympics.

- An indoor arena that could host 18.000 people (The city of Amsterdam recently build an arena that can host 15.000 people, so in terms of sustainable development and a long-term planning it was better to enlarge this venue to the requested 18.000 seats).
- An Olympic rowing area. The city of Rotterdam is developing new rowing facilities on an Olympic level.
- An Olympic stadium. The Olympic stadium that was used to organize the Olympic Games in 1928 in Amsterdam is too small and because the stadium is a monument it is very expensive to enlarge the capacity of the stadium.

To implement these developments in a sustainable way, is a challenge for organizing committees and therefore creative solutions are needed. One of these creative solutions could be to use existing venues for the opening- and closing ceremonies so that the Olympic stadium is only hosting the track and field athletics and therefore a capacity of 60.000 is sufficient. This is also implemented by the organizing committee of Rio de Janeiro for the Games of 2016.

Conclusion:

The main conclusion that can be drawn from the different opinions on the spatial planning of the Olympic Games is that the focus of the event will be mainly towards the Randstad area. The NGO's are hoping that this area will be expanded to other provinces, but the Olympic core (Olympic stadium, Olympic village, Aquatic Centre and Media Centre) will be in the southern half of the Randstad area (Rotterdam, The Hague) or in the northern half (Amsterdam, Utrecht). The NGO's are indicating that the most important venues that are missing at the moment in order to organize the Games are: an Olympic Stadium (with track-and-field athletics), an indoor arena that could host 18.000 people and an Olympic rowing area. If we now translate these results to the Game Theory, the first step in the sequential game can be made by the NGO's in collaboration with the public sector to designate the Olympic core to an area. This step is followed by the private sector that can co-finance the venues that are still missing.

Figure 6. Example of the Spatial Planning of some Olympic sports.

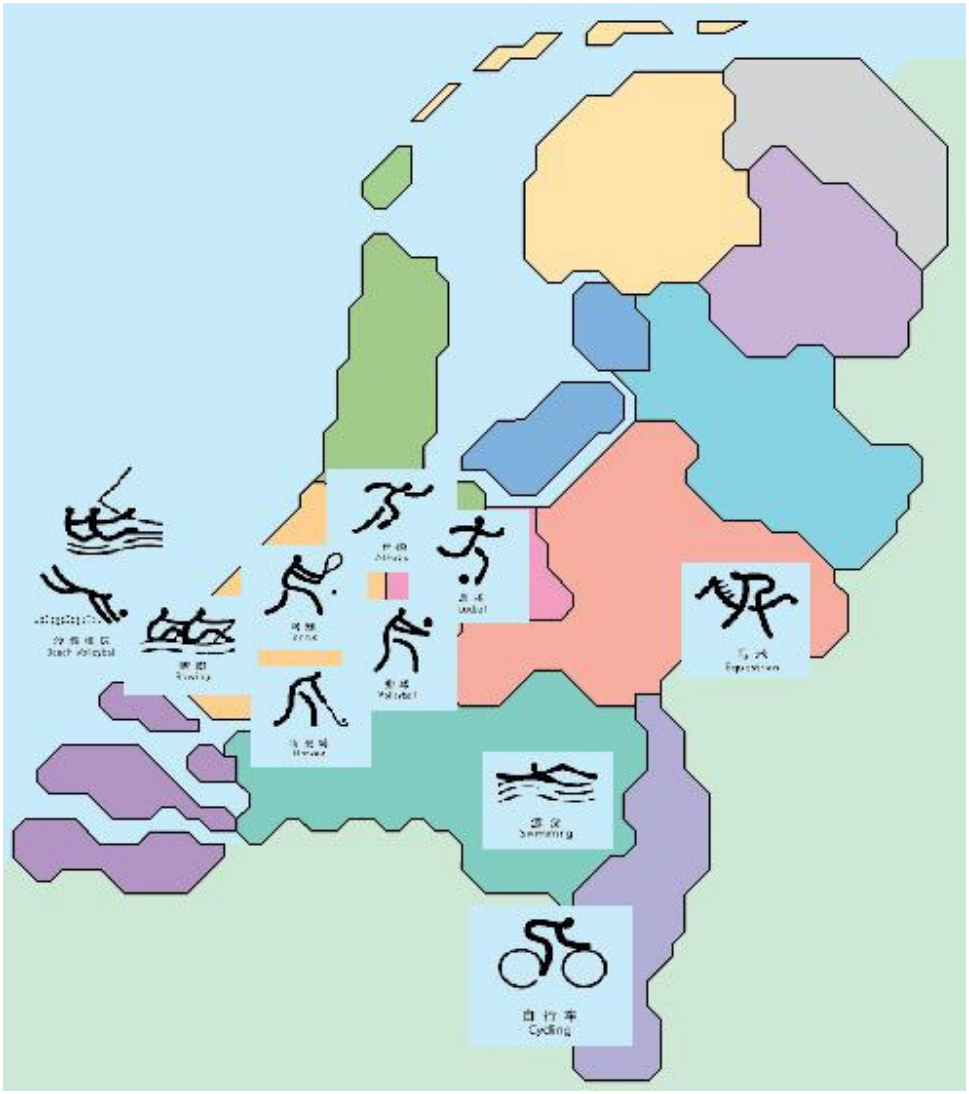


Table 4: Sustainability check spatial planning

	Sustainable developments	Checklist
Public Sector	-	
Private Sector	- Centralized Games with one big stadium where almost all the sports could be organized. - Positive side effects when the event is involving a larger area	+ +
NGO's	- Analysis of the current situation to develop a long-term sustainable strategy - Temporary venues - Use existing venues	+ + +

5.3 THE SPORTS DOMAIN (THE HARDWARE)

The second domain is the sports domain and this will include the Olympic and Paralympic venues in the Netherlands supported by examples of venues in other countries. Questions that were asked in the interviews about this topic were:

- What particular venues need to be built for the organisation of the Olympic Games?

- What is the status of the current venues?

- What is the role of sustainable development in the development of (Olympic) venues?

5.3.1 OLYMPIC VENUES

The organization of the Olympic Games has several implications. Olympic venues need to be build, in order to host the supporters, the athletes, and all the other stakeholders.

The public sector about the Olympic venues:

Respondents from the public sector indicate that, given the current situation in the Netherlands, there are only a few accommodations that are already on an Olympic level. There are too few venues available for the organization of mega sporting events so in order to organize the Olympic Games in the Netherlands, a new Olympic infrastructure needs to be created. This (sports) infrastructure consists of Olympic venues, trainings facilities, hotels, an Olympic Village and Stadium, but also a transport system that is able to deal with thousands of people travelling at the same time to the same spot. The greatest fears of the IOC are the so-called 'white elephants' so in order to get the Games, a clear Bid book needs to be developed in which the multifunctional use of these venues need to be addressed. Respondents indicate that the IOC is very keen on the sustainability aspect because their image will be damaged when Olympic Games are very costly. In the opinion of many people, the IOC is accountable for these huge investments. Although the environment is already the third pillar of the Olympics since the early 90's (see Cashman, 2002), up to recently there are plenty of examples of short-term planning in which venues with multiple functions are not recognized. For instance, after the Games in Athens in 2004, the yearly estimated maintenance costs of the Olympic venues in Athens that are still waiting for a new function, are 100 million Euros. And if we now take a look at the FIFA World Cup in South Africa, where millions are invested in enormous stadiums, the follow-up of the World Cup is probably one with empty stadiums, while lots of people are still living in poverty. The FIFA World Cup in South Africa is mainly a project for the international prestige of the country and the Netherlands has no need for this anymore. Respondents indicate that the decision-making process towards the possible organization of the Olympic Games in 2028 is extremely long and therefore it is difficult to predict how certain aspects will develop. However, implementing this long-term planning towards the Olympics prevents that the Games will be organized only for the event itself.

The public sector mentions that in the development of the Olympic Games, two important trends become visible: an increased attention for the environment and sustainable development and secondly the building of temporary venues. Building temporary accommodations is more sustainable than building fixed venues. However, this option is still not completely sustainable. These temporary venues are solutions to overcome the problem of the 'white elephants'. For instance, an Olympic swimming accommodation needs a capacity of 10.000 to 15.000 seats. Even in a country such as Australia where swimming is extremely popular, this capacity is too large to exploit. The Sidney International Aquatic

Centre had a capacity of 17.000 during the Games, but this capacity was reduced after the Games and currently holds 10.000 people. Also in preparation of the World Cup Swimming 2011 in Shanghai, China is working with temporary venues and the two permanent venues will be used after the World Cup as recreation areas. Also the Games of 2008 in Beijing were a good example of the use of temporary venues. For example, the field hockey stadium in Beijing was a temporary one which was disassembled after the Games and the only thing left was an artificial hockey field that is now used by the University. Also the baseball stadium was a top-class temporary venue that was dissembled completely after the Games. Almost every Olympic venue in Beijing has found a new function. For instance, the Water Cube, in which the Olympic swimming tournament took place, is now transformed into a water recreation park. The only venue that is still waiting for another function is the 'Bird's Nest' but this was originally build by the Chinese to serve as a tourist attraction, a landmark, and as a museum. So during the Games of 2008 in China, buildings with multiple functions were taken into account and this will be the future trend as well.

These examples provide the Netherlands with a useful framework for constructing multifunctional buildings for the Olympic Games. Venues with multiple functions, such as the new training facilities at Papendal, are already developed in the Netherlands. These facilities use new sustainable techniques to reduce the waste of energy and are therefore 'energy neutral'. Also on the architectonical level there are several innovations in sustainable buildings. Creative and futuristic ideas are emerging such as a big stadium build on water, where they don't change the stadium for every sport, but they change the floor. So you only need one stadium and with the use of boats, new undergrounds for different sports can be transported via the water into the stadium. In the decision-making process towards the building of accommodations, research and business cases are needed to investigate the relationship between investments and exploitation.

<u>The private sector about the Olympic venues</u>:

As the amount of free time is declining and the amount of money that people earn is increasing, people want to use their scarce free time as efficient as possible. In England this concept is already popular for a couple of years, where multifunctional leisure centres are built. People are not only attracted to the stadium to see a sports match, but are going there to be entertained. In and around the stadiums there are pubs, restaurants, playing areas for children, cinemas etc. Therefore, big companies from the private sector want to invest in these multi-leisure centres and the stadiums could become bigger.

Concentrating on the aspect of sustainable development of these multi-leisure centres, the future challenge is to build these centres and the Olympic venues fully climate neutral. In reducing the carbon emissions and the ecological footprint, the concept of 'cradle-to-cradle' in venue-building could become an important tool.

NGO's about the Olympic venues:

Whereas the public sector indicates that the two most important trends are the building of temporary venues and an increased attention for the environment, the NGO's think that besides the building of temporary venues, the other important trend is the development of enduring venues that have a maximal exploitation rate. The building of multiple-use venues is in between these two trends. NGO's indicate that this is also one of the USP's of the Dutch Olympic Plan, because with such a long-term planning, multiple-use venues are easier to develop. These multiple-use venues are more sustainable than venues only build for the event itself, which happened for instance at the FIFA World Cup in South-Africa. In too many cases, the Games or the FIFA World Cup are tools to generate international prestige. For example, the Stade de France in Paris that was build for the FIFA World Cup in 1998 is a national stadium that is used only a couple of times a year for football matches of the French national team. In the Holland/Belgium bid for the FIFA World Cup of 2018, both countries have to make huge investments to upgrade the current stadiums and make them Olympic proof. 'De Kuip', which is the stadium of Feyenoord Rotterdam, is too old to host the World Cup in 2018 so a new stadium needs to be build. This new stadium will hold 80.000 people and is the candidate for the World Cup final. In order to make this investment profitable, the aspect of multifunctionality is taken into account. Therefore, the stadium will not only be used by the football team of Feyenoord, but will also host mega concerts and matches of the Dutch National football team. In the development of this new stadium, the aspect of sustainability plays an important role. For instance, the location of the stadium will be close to the river 'de Maas' and the water from this river is used to flush the toilets and to drain the pitch. Besides that, solar energy is used to generate green energy and together with several other innovations regarding sustainability, this stadium will become a state-of-the-art sustainable venue.

> *"Duurzaamheid moet eigenlijk een eis worden, ingebakken natuur.. dat het niet eens meer de vraag is, ga je schoon drinkwater gebruiken om toiletten door te spoelen of het veld water mee te geven.. als je daar over nadenkt dat je kostbaar schoon drinkwater voor gebruikt, geen mens die dan zegt daar heb ik helemaal geen moeite mee…"*

The Holland/Belgium bid for the FIFA World Cup of 2018 underlines the importance of sustainable development. This was symbolized by a sustainability tour around the candidate cities in both countries, where the bid book was transported from city to city on a sustainable way (by train or by bike).

The other trend that was mentioned by the NGO's was the development of temporary venues that could be enlarged for the event. Such temporary venues will be used already at the Olympics in London 2012 and London is building temporary venues that could be transferred to the next Olympic Games in Rio de Janeiro in 2016. Also, if the old Dutch Olympic stadium that was used for the Olympic Games in 1928 will be enlarged with temporary stands, these stands could also be used for other events such as the World Cup rowing. This could be an interesting trend that contributes to sustainable development at the Olympic Games. Besides this, the event should be integrated within the existing spatial plans. If a city or region wants to build more houses, the Olympic stadium could be transformed after the Games into houses. This too is a way of sustainable thinking.

> *"Het is zaak om na de Spelen de gebouwen zo gebruiken dat je ze ook had kunnen gebruiken als de Spelen er helemaal niet zijn geweest."*

Another interesting development in venue-building could be the creation of multi-leisure centres in which all kinds of leisure activities are centralized. NGO's however think that this notion could be developed further by building some kind of theme park in which all kind of leisure activities are present. By using temporary venues in this theme park, the Olympic Games could be organized as well. So there will arise some kind of a 'Theme Park Holland' that goes further than a multi leisure centre with only a restaurant and some retail.

<u>Conclusion:</u>

The main conclusion that can be drawn from these different opinions on the Olympic venues is that all three actors mention the importance of venues with multiple functions. The public sector defines two important trends in the building of venues. The first trend is the building of temporary venues and the second trend is an increased attention for sustainable development with a long-term planning. The NGO's underline the first trend but focus more on the exploitation costs. New venues should have a maximal exploitation rate. The private sector is pointing towards the development of multi-leisure centres where all kind of recreational activities could be practised. The NGO's however think that these multi-leisure centres could be developed even further. If we now translate these results to the Game Theory, the first step in the sequential game can be made by NGO's to invest the maximum exploitation

rate of new venues. This will be followed by a public-private collaboration that could invest in (temporary) venues with multiple functions.

Table 5: Sustainability check Olympic venues

	Sustainable developments	**Checklist**
Public Sector	- Sustainable venues with multiple functions - Long-term planning - Environmental awareness - Temporary venues - Green energy	+ + + + +
Private Sector	- Leisure centers with multiple functions - Climate neutral venues - Cradle-to-cradle materials	+ + +
NGO's	- Temporary venues - Long-term planning - Green energy - Sustainable transport	+ + + +

5.3.2 PARALYMPIC VENUES

In this research, the main focus is on the Olympic Games, but there is also some attention for the Paralympics. In the interviews, respondents were asked questions about the venues with special adjustments for people with a disability, and if sustainable development plays a role in these Paralympic venues. For instance, respondents point towards the Ronald McDonald Centre in the north of Amsterdam, which is a mega sporting complex with excellent facilities for people with a physical or mental disability. There are two swimming pools which are suited for people with multiple disabilities, a track-and-field stadium with gravel courts, and a special sporting floor which has won the innovation award last year. This sustainable floor is using innovative LED technology to create the lines for different pitches so that all different kinds of sports could be played on the same floor. Besides these facilities,

the centre consists also of judo facilities, a fitness centre and several other trainings facilities all adjusted for people with a physical or intellectual disability (www.kinderfonds.nl). Therefore, this could be an interesting location to organize the Paralympics.

5.4 AN ANALYSIS OF THE POTENTIAL SOCIAL COSTS AND BENEFITS OF THE OLYMPIC GAMES (THE SOFTWARE)

The third domain is dealing with the potential costs and benefits of the Olympic Games. These potential costs and benefits are described by using the dimensions of People, Planet and Profit. However, a new element is added after the theoretical exploration and the data collection phase, which is Politics. This final element includes the governance role towards the Olympic infrastructure.

5.4.1 PEOPLE

In order to generate sustainable Olympic Games, the sport sector needs to play an important role in the application of sustainable development into the sport. The social role and function of sport clubs is acknowledged and more and more is expected from the sport sector to deploy activities and generate extra value in the domains of health care, welfare and social relations (Boers & Elfring, 2009). Using sports as a way to decrease obesity, increase personal health, integrate ethnic minorities into society and improve social relations in the society, is forming the key component of the 'People' domain.

<u>The public sector about social development through the Olympics</u>:

The public sector underlines the importance of social development through the Olympic Games. One of the ambitions of the Dutch Olympic Plan 2028 is to increase the level of sport participation in the Netherlands. This implicates that the role of sports in society should be investigated. In order to involve everyone in different sports and give people access to sport facilities, the position of sport in the cities and villages is important. These sporting facilities and locations should be used intensively and therefore multifunctional.

> *"Als Nederland willen we graag de sportparticipatie verhogen, dat is één van de belangrijke doelstellingen in het kader van het Olympisch plan, in het kader van Nederland sportland. Dat betekend ook dat er intensief gebruik gemaakt moet worden en kunnen worden van sportlocaties en dat je ook op een andere manier naar sport en bewegen moet kunnen kijken.*

Dus niet op de traditionele manier dat er alleen maar hockeyvelden, voetbalvelden, korfbalvelden aangelegd worden voor het gebruik van verenigingen, maar dat je kijkt of je die locaties intensiever kan gebruiken ook voor schoolsport en kunstgrastoepassingen."

The public sector indicates that sports need to be promoted in schools in order to create enthusiasm and involve young people in sports. By organizing clinics at schools, given by former Olympians, professional sports could create this enthusiasm and attention for sports. This could influence recreational sports in the Netherlands. Also the London 2012 Games are emphasizing the importance of the 'People' domain. The big selling point of the London Games is an effort to involve the youth in the Games, which is acknowledged by the IOC. The creation of a social legacy that lasts long after the Games is an important factor in the London 2012 Olympic Games. For instance, this social legacy includes many things such as nutrition. A healthy diet in combination with sports could diminish the obesity problem. Therefore in the striving towards a sustainable event, nutrition is also an important element:

"In een duurzame accommodatie investeren we in een gezonde leefstijl, dan kun je niet aan de andere kant zeggen van we proppen die kantine vol met allerlei slechte waren."

One of the Olympic ambitions in the Dutch Olympic Plan is to involve at least 75% of the people in sports. This ambition indicates that sport is used as a tool to combat the obesity problem. Collaborating with research centres such as Food Valley in Wageningen could help to generate more knowledge about healthy nutrition and this together with promoting more sporting activities in schools could help to diminish the problem.

<u>The private sector about social development through the Olympics</u>:

Respondents from the private sector take other social factors into account besides the obesity problems and the participation in sports, and are focusing on the ageing of the population. The ageing of the population is likely to increase further and will be an important issue in 2028. The event could therefore serve as a tool to deal with the ageing population by transforming the Olympic facilities into facilities for the elderly. For example, the Olympic village could be used for housing and the trainings facilities could be made suitable for elderly people. Furthermore, private companies are promoting the sustainability of behavior. If employees are involved in the company and are aware of the company's sustainable development policy, employees might act as responsible corporate citizens. Examples of sustainable behavior could be driving a hybrid car to reduce carbon emissions and working at home. Other respondents indicate that social development could be integrated into an event such as the Olympic

Games to promote sports under children, integrate ethnic minorities into society, promote healthy nutrition and promote participation into sports.

NGO's about social development through the Olympics:

The legacy of the Olympic Games is an important issue that is recognized by almost all the respondents. The legacy of the Games involves a long-lasting aftermath that includes positive effects from the event such as a positive international image, long-term tourist flows and an increased participation in sports. A successful event could increase the participation in sports, which forms the basis for Olympic sport in the future. However this relationship between recreational sports and professional sports is a dialectic one, because the real significant effects from sporting events on the level of participation are difficult to measure.

> *"Want ze zeggen altijd wel mooi van topsport en breedtesport zijn onlosmakelijk aan elkaar verbonden. Want topsport inspireert breedtesport, En breedtesport is weer de kweekvijver voor de topsport, en dat is natuurlijk ook wel zo, maar ik weet dus niet in hoeverre zeg maar topsportevenementen ook echt die invloed langdurig, duurzaam heeft op het stimuleren van breedtesport".*

Conclusion:

The main conclusion from the People domain is that the public sector and the NGO's give attention to the participation in sports. The public sector believes that by providing sufficient sport facilities in cities and villages, the participation level could be increased. Also, promoting sporting activities in schools could help to achieve this goal. Another important social aspect that is mentioned by the public sector is the obesity problem. This could also be diminished by providing education on healthy foods and increasing the participation in sports. The NGO's are focusing more on the social legacy of an event such as the Olympic Games. The legacy of successful Olympic Games could generate international prestige and could also help to increase the participation in sports in the future. If we now translate these results to the Game Theory, the first step in the sequential game can be made by the public sector to start educational programs to involve the youth in the event. The next step can be made by the NGO's to promote the Olympic Games and create societal support. The third to act is the private sector that could promote business sports and contribute financially to sustainable events.

Table 6: Sustainability check People

	Sustainable developments	Checklist
Public Sector	- Participation in sports - Sport facilities with multiple functions - Involve children and youth in sports - Healthy nutrition to combat the obesity problem	+ + + +
Private Sector	- Ageing of the population - Responsible Corporate Citizens - Social development to integrate ethnic minorities and promote participation in sports	+ + +
NGO's	- International prestige - Sustainable tourism - Increased participation in sports	+ + +

5.4.2 PLANET

The minimization of the environmental impact of an event is a key component of the 'Planet' domain. The organization of a climate neutral event with a minimal ecological footprint is a challenge for organizing committees. Even recently, with the public discussion about the lack of snow at the Vancouver Winter Olympics (attributed by many to the effects of global warming), the attention for the environment has increased and will probably increase even further.

<u>The public sector about the environmental issues</u>:

The environmental implications are acknowledged by respondents from the public sector. The environmental domain is a domain where progression could be made. For example, the public swimming accommodations are using a lot of energy and therefore the prices are high. With new sustainable techniques to reduce the energy use, exploitation costs are decreasing and this result in

lower entrance prices. Therefore, the public sector is willing to invest in further research towards this topic, and this has already led to initiatives to promote innovation such as the CTO's (Centres for Professional Sports and Education) and the co-operation between Food Valley in Wageningen, Health Valley in Nijmegen and University of Technology Twente. The public sector further indicates that innovations such as cradle-to-cradle techniques are used more and more in the organization of events. For example the yearly running event 'Zevenheuvelenloop' in Nijmegen is using these techniques in every aspect of the event. By promoting sustainable ways of transport, using biological food and products and reducing the amount of paper, important steps are made towards a sustainable event. Also the city of Eindhoven is collaborating with the University and Philips to promote sustainable innovations. This co-operation has resulted in technological innovations such as LED-technology to reduce energy use and light pollution, which is already implemented at sporting venues in the city. Another development is the use of biomass centres at indoor swimming accommodations to exploit sustainable energy.

The private sector about the environmental issues:

The private sector indicates that the carbon emissions could be further reduced and that a clear checklist for a sustainable event is necessary. The IOC has proposed goals to reduce the emissions of carbon and decrease the impact on the environment. In order to achieve these goals, several organisations from the private sector are helping the IOC. For example, ATOS Origin, the IT partner of the IOC since 2001, is trying to cut the carbon emissions by 30%. The initiatives that are deployed by ATOS Origin are focusing on the virtualization of the IT infrastructure so that electricity use is decreased, and taking usage of an online Accreditation System to reduce paper consumption. However to organize a mega event such as the Olympic Games that is completely climate neutral is something totally different. Either the huge carbon emissions need to be compensated or new innovations are needed to offset the carbon emissions. Some respondents indicate that it could be possible to organize climate neutral Olympic Games, but then this has to be implemented from the beginning in the decision-making process. An example of sustainable awareness in the decision-making process is the sustainability checklist for business events, designed by Tourism Australia (see appendices), which can assist business event operators to plan and deliver cleaner and greener events (www.businessevents.australia.com). Other international guidelines on sustainable development are the ISO guidelines. These guidelines are different for every organization, but this is forming a basis that is in important in the communication and

implementation of sustainable development. During the recent Olympic Winter Games in Vancouver, the IOC supported the use of the 'sustainable sports and events toolkit' which was the sustainable guideline for the Vancouver Olympics.

One of the respondents gave the following advice:

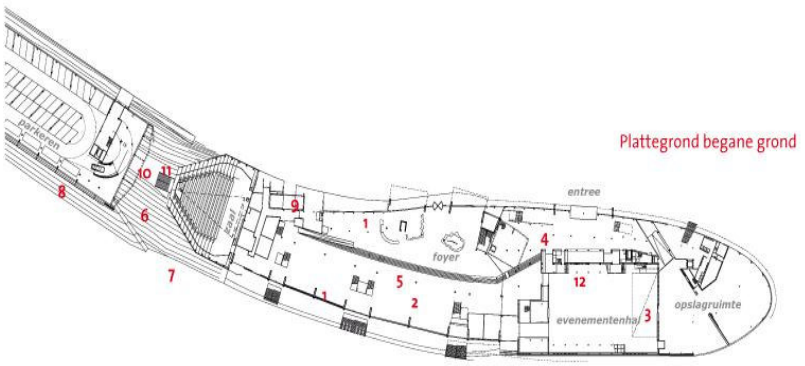
> *"Pak het niet ad-hoc op, van wat ik lees in de krant, maar ga er gericht mee aan de slag. Als je iets met energie wil gaan doen, eerst toch eens kijken wat je kunt besparen. Begin daar gewoon mee: isolatie, de apparaten die je hebt staan, het onnodige gebruik, hoe kun je dat reduceren. Het is allemaal heel simpel maar veel mensen doen het al niet."*

In this increased awareness of the environment, cradle-to-cradle techniques are used more and more in organizations from the private sector. For example, NIKE is using cradle-to-cradle techniques in the development of shoes and also in the construction of sport pitches materials are used that can be fully recycled. The private sector also indicates that sustainability in transportation could be developed further. For instance, new computer programs are developed with information about all the transport trucks and their destination so that these trucks always use their maximum capacity and costs are reduced. Also within IT technology sustainable developments are integrated. For instance, by using a different type of computer, electricity usage can be reduced by 50%. The IT sector is responsible for an estimated 2% of the worldwide Carbon Footprint. One respondent indicated that if this percentage increases, this could lead to larger carbon reductions in other sectors and thus a lower total global Carbon Footprint. This is because IT technology has lower carbon emissions than for instance using a lot of paperwork. A first step to reduce this Global Footprint is made with the development of the ISO regulation and norms. A practical example of the implementation of sustainable developments in a private company is given in the case study of CineMec Ede.

Case Study: CineMec Ede

CineMec Ede is a building, designed within a noise barrier dike next to a highway and the building serves as a cinema, a location for conferences and for public events. CineMec Ede was the first public building that receives the A status for green energy and is a frontrunner on the implementation of sustainable developments. These sustainable innovations are for instance the usage of LED technology, energy savings because of the isolation of the dike, using ground water to flush the toilets and the use of the heat-emissions of the film projectors to warm the foyer. The reason why CineMec started these sustainable innovations is: "Op lange termijn zullen onze duurzame oplossingen ook kostenverlaging brengen en met onze oplossing betekenen we iets voor de wereld en de maatschappij." According to CineMec the biggest opportunities for sustainable development are: "De grootste mogelijkheden zitten hem voor bedrijven volgens mij in de nieuwe duurzame technologieën voor bedrijven. Voorbeeld: Oude energieverspillende verlichting kan eenvoudig vervangen worden voor nieuwe LED-technologie." An overview of the sustainable solutions that are used in CineMec Ede are given below:

1 3-voudig glas voor optimale geluidsisolatie
2 Led verlichting en lichtsensoren verlagen het stroomverbruik
3 Toevoer van frisse lucht in de zalen wordt aan de hand van CO_2 metingen geregeld
4 Leistenen vloer
5 Europees hardhout dat met minimaal transport is overgekomen
6 CineMec is gebouwd in een geluidswal
7 Dubbelgrondgebruik: het dak bestaat uit een aardedeken die zorgt voor een optimale warmte- en geluidsisolatie
8 Honderden verschillende soorten kruiden en bloemen
9 Grondwater voor toiletspoeling en irrigatie
10 Druivenranken voor wijn
11 Warmte-uitstoot van de filmprojectoren wordt gebruikt om de Foyer te verwarmen
12 Warmtewiel waarmee bestaande, al verwarmde lucht wordt gebruikt om verse "koude" lucht te verwarmen



Plattegrond begane grond

Doorsnede

Op 9 februari 2010 ontving CineMec als eerste publieke gebouw het energielabel met de A-status

NGO's about the environmental issues:

The reduction of waste and recycling is already used in several events. An example is the city of Rotterdam, the host city for the start of the Tour de France in 2010. In the organization of this mega event, sustainability is implemented by: using temporary venues, using as much green energy as possible, and promoting the recycling of waste and sustainable materials. Besides that, in order to gain access to the event, the use of public transport and bikes will be strongly promoted and recommended. So the aspect of sustainability is not only paying attention to sustainable venues for multiple-use, but if you want to organize an event that is climate neutral, sustainability needs to be part of the whole concept varying from the food you serve in your restaurant towards the developments of LED technology and waste recycling:

"Het is een doorlopend verhaal van je drinkbekertje tot je veldverlichting."

Conclusion:

The environmental implications of an event such as the Olympic Games are significant. The main conclusion that can be drawn is that if sustainable developments can be made profitable, sustainability could become a key aspect of the Games. Especially the private sector is underlining this notion because their main motive is to earn money. The public sector and the NGO's are emphasizing the importance of reducing the energy waste and using cradle-to-cradle techniques to organize a climate neutral event. The private sector indicates that a sustainability checklist could help to organize an event that is as sustainable as possible. If we now translate these results to the Game Theory, the first step in the sequential game can be made by the private sector to finance further research and promote new innovations. The public sector than could subsidies these sustainable innovations and also the NGO's could minimize the ecological footprint by implementing sustainability measures.

Respondents from the three sectors mentioned the following elements that could be used to reduce the environmental impact:

Table 7: Sustainability measures

Electricity	Cut the electricity use and reduce light pollution by implementing LED or OLED (organic) technology and using solar and wind energy, biomass centers and geothermal heat pumps.

Water	Reduce the water waste by flushing the toilets with used water; implementing artificial grass fields to diminish water irrigation and use water energy.
Paper	Digitalization of paper-work.
Nutrition	Biological food and 'healthy' products
(Building) materials	Cradle-to-cradle materials for artificial grass pitches and (temporary) venues
Mobility	Use 'green' forms of transportation

Table 8: Sustainability check Planet

	Sustainable developments	**Checklist**
Public Sector	- Green energy (biomass centers and LED technology) - Cradle-to-cradle materials	+ +
Private Sector	- Sustainable Event checklist - ISO Guidelines - Compensation of carbon emissions - Cradle-to-cradle materials - Sustainable transport	+ + + + +
NGO's	- Waste reduction - Green energy - Sustainable transport - Climate neutral event	+ + + +

5.4.3 PROFIT

The economic domain in this research includes the short-term vs. long-term dilemma, the actual costs and benefits of the Games and sustainability and CSR (Corporate Social Responsibility) in the three different sectors (public, private and NGO's).

Short-term vs. Long-term

Especially during times of economic downturn, the discussion between a long-term vision and a short-term vision, between the economic domain and the ecological domain, will become important again.

The public sector about short-term or long-term strategy-making:

Sustainable development is in many cases a long-term option that generates positive effects in the future, while many people are still focusing on short-term economic advantages. The incentive to choose for long-term sustainable options with intangible outcomes is less appealing than to choose for a short-term strategy with tangible outcomes. Transforming sustainable innovations into commercial opportunities is an important process for the future of sustainable development. Also within the organization of the Olympic Games, it is important to create a legacy that will generate long-term positive outcomes. The dialectic relation between the economic and ecological domain was important in the theoretical exploration as well and therefore the respondents were asked on their opinion about this relation between Planet and Profit, between a long-term strategy and a short-term strategy and what the implications are for the aspect of sustainable development at mega events.

An example that was given by one of the respondents that underlines the conflict between Planet and Profit is the Hockey Stadium in Amsterdam:

> *"De bouw van het Wagner Hockey Stadion loopt vertraging op omdat er 300 bomen moesten verdwijnen voor verplaatsing van het stadion. En nu zijn ze bezig met een nieuwe projectgroep om te kijken hoe ze dat dan kunnen oplossen, door als er 300 bomen verdwijnen dat er ergens anders 300 bomen voor terugkomen."*

This tension between the economic domain and the ecological domain is visible in the sport sector as well. Respondents indicate that given the current situation, sustainable development is often connected with increasing costs and this underlines this tension between these two domains:

"Duurzaamheid werkt nu systematisch kostenverhogend. Het gevolg is dat je of je prijzen moet doorberekenen naar je bezoekers of daar als gemeente zelf in exploitatie extra geld in moet stoppen. Dat is een spanningsveld."

The most important aspect in the development of Olympic venues and training facilities is a long-term vision. For example, in Athens due to insufficient planning of the building of Olympic venues, there were increasing costs and a shorter time horizon. The consequences of this increased time pressure were that sustainable aspects were ignored in favour of economic short-term advantages. An insufficient planning requires extra investments, but the problem with a mega event such as the Games is that investments are made by the public sector while the economic spin-off is often returning to the society. Therefore it is important that the public sector is not afraid to invest because events have also indirect revenues that will become visible on the longer-term.

<u>The private sector about short-term or long-term strategy-making</u>:

There is still much debate about the economic spin-off of the Games and also the exact total costs and revenues are unclear. This is underlined by a respondent from the private sector:

"Waarom doe je het nou? Doe je het alleen maar om een feestje te geven? Het volk wil brood en spelen dus we geven ze brood en spelen. En mag dat tegen elke prijs? Want Londen kost inmiddels 14 miljard. En zijn brood en spelen nog leuk als je zoveel veiligheid er op toe moet passen? Of wil je er iets mee bereiken? En wat reken je er dan toe, want daar zijn de meningen natuurlijk ook over verdeeld."

The economic costs and benefits of the event are important issues for the private sector. If the board has a choice between a sustainable investment with a return-on-invested capital (ROIC) of 5 after 10 years and a non-sustainable investment with a ROIC of 5 after 5 years, the company will choose the non-sustainable investment. Therefore, the first step is to look which adjustments are profitable and do not have a negative impact on the environment. Respondents indicate that sustainable awareness within the entire company is necessary to transform the company into a sustainable company. If you can create extra value by using sustainable strategies, the domains are integrated.

Respondents indicate that using sustainable techniques to create economic prosperity is an important process. This could become a contingency factor towards organizing the Olympic Games and according to respondents, governmental regulations are needed to overcome this contingency. For instance, biological meat is still more expensive than 'normal' meat. Aside from these governmental regulations,

companies should act as a sustainable partner. Companies could for example, support sustainable clubs and associations to provide an incentive for other clubs to think sustainable as well.

NGO's about short-term or long-term strategy-making:

NGO's also are noticing the short-term/long-term dilemma and the tension between the economic domain and the ecological domain. Economic pressures such as the current economic downturn have implications for the forthcoming Games in London 2012 and this threatens sustainable development at the Olympics:

> *"Het economische belang wint het vaak van het ecologische belang; zeker bij een slechte tijdsplanning of bezuinigingen."*

However, the question here is still: When are Olympic Games sustainable? NGO's points towards the example of the Beijing Olympics of 2008:

> *"Bij Beijing is het ook de vraag waren het duurzame Spelen of niet? Enerzijds niet vanwege al die bouwactiviteiten vooraf, maar er stonden nog nooit zoveel bomen als nu in Beijing na de Spelen."*

In China, investments from the public sector in events such as the Olympic Games or the World's Fair are very large. These countries are experiencing sunk costs:

> *"Zij zeggen van Olympisch zwembad en dan zeggen wij in Nederland van ja maar dan kan je ook 50 zwembaden in 50 gemeenten aanleggen. In China zeggen ze als dat nodig is dan doen we dat ook. En in Engeland en Nederland is het of – of."*

This statement indicates that it is hard to define the exact costs and revenues, because everyone is attributing different aspects to the event. For instance, large infrastructural projects should be implemented anyway, but are in many cases attributed to the Olympics. These so-called sunk costs are difficult to determine. These examples of sustainable development at the Games of Beijing and London indicate that there are several contingencies that influence sustainability at a mega event such as the Games. If we take a look at the Olympic Plan 2028 in the Netherlands, a long-term planning is chosen on purpose in order to implement a sufficient planning process with great awareness of sustainability from the start of the process. NGO's indicate that this is the main strength of the Dutch Olympic Plan. The Olympic ambitions are formulated in order to bring the Netherlands on an Olympic level and these quantitative ambitions need a long-term planning. For instance, to organize Olympic Games in the Netherlands, at least 75% of the people need to support the Games. A long-term planning is needed to reach this 75%. However, the biggest challenge is that if there are still countries such as Qatar that are

willing to pay an enormous amount of money to organize an event such as the FIFA World Cup with a strong focus on short-term economic rewards, it will be difficult to achieve sustainable Games.

CSR and sustainability in the organisation

Corporate Social responsibility (CSR) has to do with acting responsible towards the society and is not only applied in the private sector but is also an issue in the public sector and in NGO's.

CSR in the public sector:

Governments have the responsibility to purchase 100% sustainable materials. Also in the organization of current sporting events is CSR an important issue. The financial contributions from provinces to sport facilities and venues are not as obvious as they were before. The requirements for financial support are more and more focused on social aspects. For instance, the former Ordina Open Tennis Tournament had to change its name into the Unicef Open Tennis Tournament in order to still receive financial support from the public sector. Other requirements from the provinces are that the new accommodations need to be accessible for wheelchairs and the accommodation have to be suitable for community sports as well.

CSR in the private sector:

In the private sector, CSR is already implemented on a large scale. Respondents indicate that companies in the private sector are hiring more and more people with a mental or physical handicap to act responsible towards society. Also within sport clubs or sport associations, volunteer work is very common. This will be a major factor in the organization of a mega event such as the Olympic Games. Besides working with volunteers, companies are acting responsible towards society by creating a professional and reliable working environment with attention for developing countries and controlling mechanisms to prevent child labour.

CSR in NGO's:

There was no information available regarding this topic.

Conclusion:

Whereas the public sector is focused more on a long-term legacy, the private sector emphasises the importance of a long-term economic spin-off. According to the three actors, there is always a tension between short-term tangible economic advantages and long-term intangible sustainable advantages. In the organization of the Olympic Games, an insufficient planning could lead towards extra costs and short-term decision-making with less attention for sustainability. NGO's are indicating that the current economic crises could also slow down the process of sustainable development at mega events such as the Olympics. However, the current Olympic Plan 2028 has a long-term planning and this is the main strength of the Plan according to the NGO's. If we now translate these results to the Game Theory, the first step in the sequential game can be made by the private sector to implement long-term strategies towards CSR and sustainability with high economic returns. The other actors can use long-term perspectives as well with high attention towards sustainability.

Table 9: Sustainability check Profit

	Sustainable developments	**Checklist**
Public Sector	- Long-term vision - Sufficient planning - Investments - Sustainable materials - Social awareness - Accessibility	+ + + + + +
Private Sector	- Social awareness (attention for developing countries) - Create economic prosperity - Sustainable partner - Volunteer work	+ + + +
NGO's	- Low opportunity costs - Long-term planning - Awareness of sustainability from the start	+ + +

Table 10: A Sustainability Checklist of the different elements in the organization of the Olympic Games.

	Public Sector	**Private Sector**	**NGO's**	**Total:**
Olympic infrastructure	+ +	+	+	
Spatial planning	0	+ +	+ + +	
Olympic venues	+ + + + +	+ + +	+ + + +	
Cumulative mark Hardware:	7	6	8	21
Mean:	7	7	7	
People	+ + + +	+ + +	+ + +	
Planet	+ +	+ + + + +	+ + + +	
Profit	+ + + + + +	+ + + +	+ + +	
Cumulative mark Software:	12	12	10	34
Mean:	11,33	11,33	11,33	
End mark:	19	18	18	

This table gives extra information about the awareness of sustainability for each element of the organization of the Olympic Games. The table shows that the NGO's are focused more on the hardware of the Olympic Games. NGO's are mainly accountable for the actual event and all the implications that are necessary to organize the Games. Therefore it is obvious that sustainability is more an issue in developing the hardware of the Olympic Games, while the public and private sector have more attention for sustainability in the software of the Olympics.

To integrate this table in the theoretical framework of the Game Theory, the means are given to describe the relative amount of sustainability for each element (hardware and software). The plusses for each element are added and this number is divided by three. If a sector scores higher than the mean on the hardware or software, it is more sustainable and if the score is lower than the mean, the sector is less sustainable. This table will form the basis for the figures in the next paragraph about the governance role on the Olympic infrastructure.

5.4.4 POLITICS

Long-term planning processes such as the Olympic Plan 2028 are influenced by a fourth 'P': the political domain. With elections every four year and new-elected politicians and policy-makers, politics could have a major influence on the policy-making and decision-making process. Politicians could see the sport for instance in a traditional view in which the government facilitates the sport supply and does not intervene any further. In the old view, government could cut in subsidies, especially in times of economic crisis, and stop the enormous investments that are needed in order to organize the Olympic Games. However, the sport sector evolved more on the social and economic domain and cities are using mega sporting events in their city marketing strategies. Therefore, the decision-making process is important. However, the decision-making process itself could also cause some trouble. One of the respondents indicated that the decision-making process could become a contingency factor:

> *"Het poldermodel van Nederland, dat er geen keuzes worden gemaakt. Als de partijen zeg maar te veel met elkaar in conflict komen of teveel belangenverstrengelingen die niet met elkaar matchen. Of een partij die geen financiën eruit willen halen voor het Olympisch plan of, ja gewoon echt besluitvorming. Het is echt zo bureaucratisch in Nederland, ik denk dat dat nog wel de bottleneck zal zijn."*

Governance on the Olympic infrastructure

Within the decision-making process towards the Olympic Games, the governance role is important. As we have seen before in the sequential game derived from the Game Theory, the player who acts first in the process influences the result of the game and the amount of pay-off for each player.

The current situation regarding the Olympic ambitions of the Netherlands is that the Dutch Olympic Plan 2028 is defined by the Dutch Olympic alliance 'Het Olympisch Vuur'. The national government has underlined this Olympic ambition with the decision to support this plan. We are now in the experimental phase in which provinces and cities are defining their policy strategies towards these 8 Olympic ambitions. This phase should be ended in 2012 and this will be followed by a 4-year period in which the strategies are implemented. The aim for 2016 is to bring the Netherlands at an Olympic level and then will be decided if the country will be ready to organize the Games so that a bid book can be developed. In 2022 the bid book will be presented to the IOC. This long-term planning towards the year 2028 seems very clear and ambitious, but the situation at this moment is that many respondents are experiencing a lack of governance. Provinces and cities are not sure what their role is in the Olympic Plan 2028 and are struggling with the strategy-making process. Therefore, governance on the Olympic infrastructure is needed, but who should invest first in this decision-making process? Is that the public sector, the private sector or should the first step be made by NGO's? This question was based on the game Theory in which there are several 'players' in the decision-making game towards the Olympic Games. This theory gave some indications about what player should act first concerning the level of information, the capacity to act, etc. In the end, all three players in the game have to cooperate and invest in the Games, but the main question is: Who should take the first initiative? By taking the governance role, the player gives a strong signal to the rest that the Games are not only a dream, but will become reality. Should a public organisation such as the Ministry of Health, Welfare and Sports take the first actions, or should the first steps be made by NGO's such as the Dutch Olympic Committee (NOC*NSF)? Another option is that the private sector takes the initiative to start with the first investments in the Olympic Games.

<u>The public sector about the governance role on the Olympic infrastructure:</u>

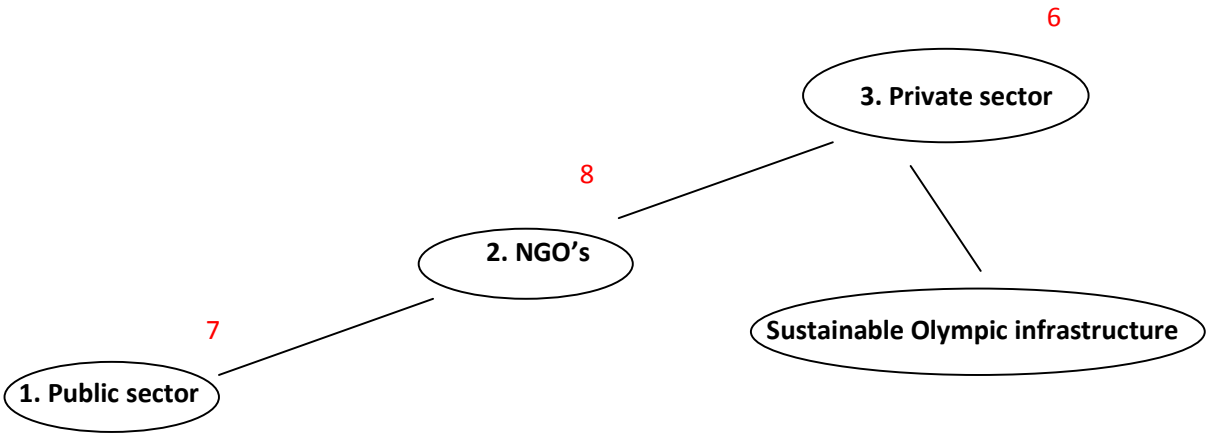
The common opinion about the current lack of governance is that it is done on purpose in order to give the space for every organization to define their strategies towards the Olympics. The fear is that if a candidate city is appointed, the others will sit back and watch. Every province is currently independently defining their core sports and is integrating the Olympic ambitions into their sport policies. However, a call for governance in the Olympic Plan emerges that clarifies what the candidate city will be (Amsterdam or Rotterdam) and how the Olympic infrastructure needs to be developed. The next step is that provinces and cities in the Netherlands then could further refine their policies. Respondents indicate that provinces need to contribute financially and make choices about the role of the province

and the cities in the Olympic Plan. An event such as the Olympic Games is not just dealing with sports, but includes many other factors such as international prestige and city marketing. The event could create enthusiasm, could unite people and could be used a tool to overcome several social problems, like the integration of minorities. This notion is unique for the sports sector:

"*Sport is één van de makkelijkste globale carriers.*"

Respondents from the public sector indicate that the National Government should act first in the current decision-making process towards the planning of the Olympic infrastructure. NOC*NSF is the main initiator of the project, but the government should be involved in the process and should govern the decision-making process. By translating this to the Game theory and the sequential game that is used in this decision-making process, the first step is made by the Public sector and the second step is made by the NGO's. This is graphically represented in the following figures (the first figure gives an overview of a sequential game with the amount of payoff for a strategy towards the Hardware of the Olympic infrastructure, while the second figure focuses on the Software of the Games):

Figure 7. The Hardware of the Olympic infrastructure



When the public sector acts first and chooses a strategy, the amount of payoff is 7. The mean of the Olympic hardware (Olympic venues, infrastructure and spatial planning) was 7 (these numbers are derived from table 9). The NGO's were second to act and the payoff for their strategy is 8. This number is higher than the mean and therefore this strategy is more sustainable than the strategy of the other

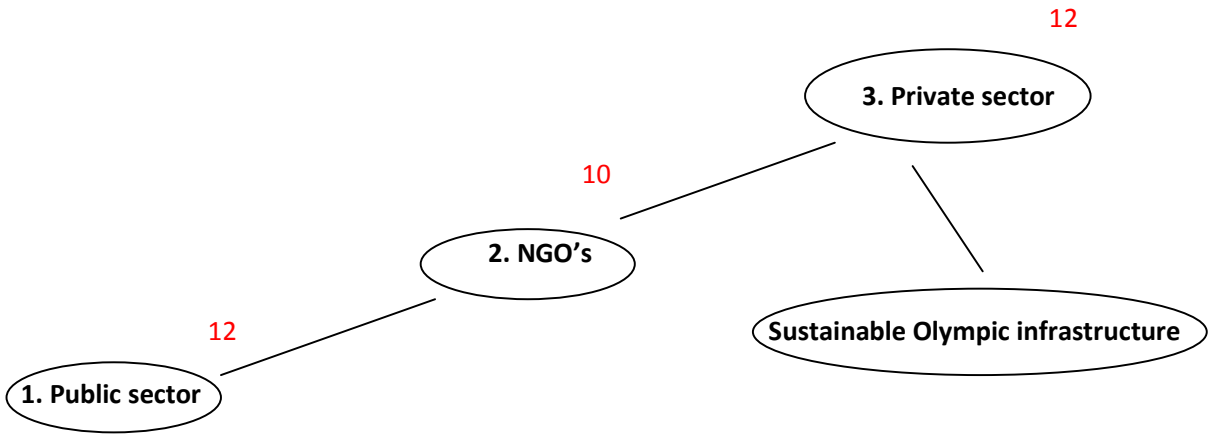
actors in the game. In the third place, the private sector will choose a strategy and the amount of payoff is 6. This is lower than the mean and this strategy is less sustainable than the strategy of the others.

- Concerning the governance role on the hardware of the Olympic Games it would be better for the awareness of sustainability in the process if the NGO's are taking the governance role because they are more focused on sustainable development.

The sequential game concerning the software of the Olympic infrastructure (People, Planet and Profit) is presented below. In this situation the public sector takes the first actions and now their amount of payoff is 12. This is higher than the mean of 11,33 and thus the strategy is more sustainable. The second to act are again the NGO's and their amount of payoff is 10. This is lower than the mean and their strategy is less sustainable. Finally, the private sector receives a payoff of 12 and this is also more sustainable.

- Concerning the governance role on the software of the Olympic Games it would be better for the awareness of sustainability in the process, if the public- or the private sector is taking the governance role because they are more focused on sustainable development.

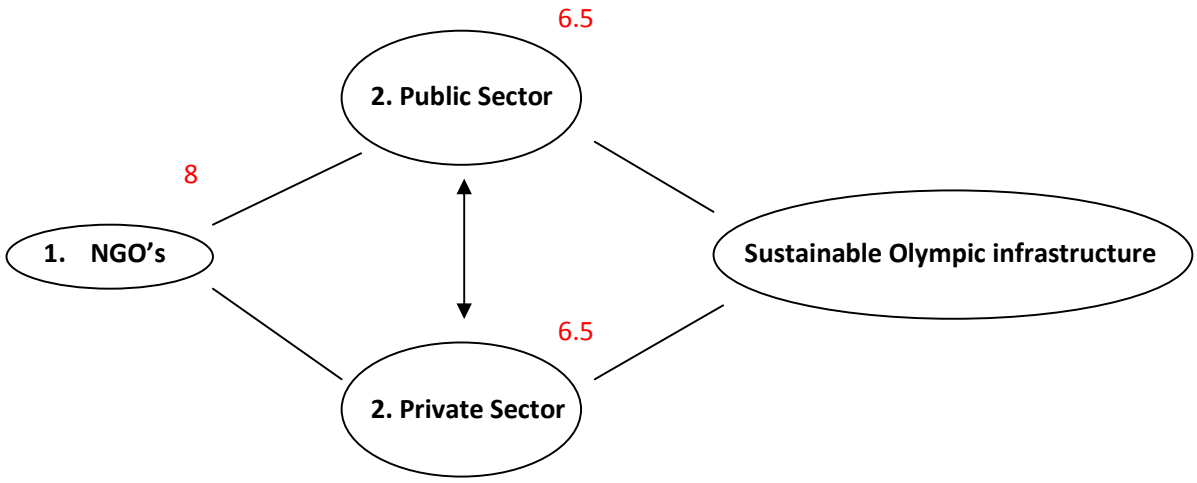
Figure 8. The Software of the Olympic infrastructure



The private sector about the governance role on the Olympic infrastructure:

The private sector indicates that the public sector should co-operate with the private sector. The respondents indicate that the NGO's should take the governance role, followed by a co-operation between the public sector and the private sector. The Olympic Plan with sufficient budget could not succeed without the private sector and the main goal is to create enthusiasm among all the stakeholders that are involved. This is graphically represented in the following figures (the first figure gives an overview of a sequential game with the amount of payoff for a sustainable strategy towards the Hardware of the Olympic infrastructure, while the second figure focuses on the Software of the Games):

Figure 9. The Hardware of the Olympic infrastructure



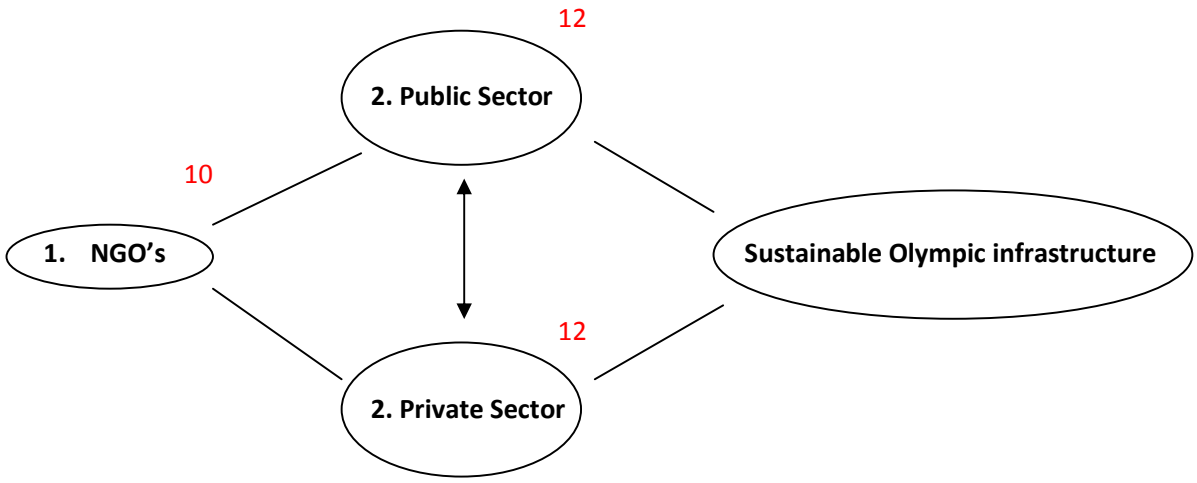
When the NGO's act first and choose a strategy, the amount of payoff is 8. The mean of the Olympic hardware (Olympic venues, infrastructure and spatial planning) was 7, so the NGO's are more sustainable than the other actors in the game. The NGO's were followed by a public-private collaboration and by adding up the individual payoffs of 7 and 6 (see table 9), and divide this number by two, the payoff of this collaboration is 6.5. This number is lower than the mean and therefore this strategy is less sustainable than the strategy of the NGO's.

- Concerning the governance role on the hardware of the Olympic Games the NGO's take the initiative which improves the awareness of sustainability. However, collaboration between the public- and private sector produces a payoff that is less sustainable.

The sequential game concerning the software of the Olympic infrastructure (People, Planet and Profit) is presented below. In this situation the NGO's take the first actions and the amount of payoff is 10. This is lower than the mean of 11,33 and thus the strategy is less sustainable. A public-private collaboration results in a payoff of 12 (12+12/2=12), which is more sustainable than the strategy of the NGO's.

- Concerning the governance role on the software of the Olympic Games it would be better for the awareness of sustainability in the process, if a public- private collaboration is taking the governance role because they are more focused on sustainable development, followed by the NGO's.

Figure 10. The Software of the Olympic infrastructure



<u>NGO's about the governance role on the Olympic infrastructure:</u>

Just like the public sector, the NGO's are indicating that the lack of governance is done on purpose to allow all the actors that are involved define their own strategies towards the Olympic Plan and its ambitions. Regarding the debate about who should act first in the decision-making process towards the Olympic infrastructure, there are different opinions about this issue:

> *"Als je als VWS wel een budget beschikbaar hebt dan laat je zien dat je er echt ook in investeert, en dan is dat een soort van aanjager aan andere partijen om te zeggen van oja, ons VWS steekt er ook zoveel geld in, dan trekken wij ook onze portemonnee. "*

The decision-making process towards the Olympic Games is a complex political process. If the current process with the Olympic Plan will lead towards an actual bid for the Games in 2028 is still unsecure. And if the bid is accepted by the IOC and the Netherlands are an official candidate to organize the Olympic Games, it is still uncertain if the Netherlands will be selected to organize the Games. In order to increase this chance a unique element is needed to convince the IOC. This unique element could be sustainability. Organizing Olympic Games without white elephants, with low costs and without exceeding the budget could increase the possibility of being chosen to organize the Games. NGO's are also mentioning the multicultural society as a possible subject of the Games to be presented to the rest of the world. The element of water which is a well-known characteristic of the Netherlands could also be used in the process towards the Games as an important marketing tool. The NOC*NSF started the idea to organize the Olympic Games in 2028 and translated this into the Olympic Plan. The common opinion of the NGO's about the governance role in the current situation is that the National Government should take the initiative, followed by the NGO's and the private sector. This is the same situation as given above in the paragraph about the governance role according to the public sector.

Conclusion:

The current discussion about the governance role towards the Olympic infrastructure in the Netherlands in order to organize the Olympic Games of 2028 is one with different opinions. The Dutch Olympic Committee (NOC*NSF) started the idea to strive towards a country with such high sporting standards and a sporting culture that the Olympic Games could be organized. Therefore, the Olympic Plan was developed by the NOC*NSF and this was later embraced by the National Government. With the several Olympic ambitions and the long-term planning towards 2028, the discussion is now about how the process should continue and how the Olympic infrastructure should be planned. The public sector and the NGO's indicated that the public sector should take the initiative and develop an Olympic infrastructure. After this first initiative, the NGO's will follow and refine their strategy towards this Olympic infrastructure. The third sector (private sector) will then participate as well. The Private sector has a different opinion about this governance role and indicates that the NGO's should take the initiative. The next step should be a strong collaboration between the public sector and the private sector so that a regime could emerge and the Olympic infrastructure could be further developed. These sequential games have different outcomes and consequences for the awareness of sustainable development in the decision-making process. The sequential game could influence the ultimate goal of organizing sustainable Olympic Games.

6. CONCLUSION

6.1 INTRODUCTION

This research started with a short introduction about the Olympic Games and the Dutch Olympic ambitions towards organizing the Olympics in 2028. This introduction was followed by an exploration on the field of sustainable development. The definition that was derived from the WCED (1987, p.2) to describe sustainable development was the following:

> *'Sustainable development is development that meets the needs of the current generation without compromising the ability of future generations to meet their own needs'.*

The subject of sustainable development was implemented in a broad sense in which the People, Planet and Profit triangle was integrated. By taking this broad definition of sustainable development in the research, this connects with sustainable development in the Dutch Olympic Plan 2028. The eight ambitions in the Olympic Plan are covering a wide variety of dimensions such as the economy, health and welfare, spatial planning, the environment and the society. By integrating the aspect of sustainable development into these several dimensions, extra attention is given to the element of sustainability in the organization of mega events such as the Olympic Games. However, because the Olympic ambition of the Netherlands is still in the planning phase, the political domain that covers the decision-making process and the governance role towards the Games is also taken into account. The third chapter of the research is therefore a theoretical exploration of decision-making theories and by using the Game Theory, the Decision-Making Theory and the Regime Theory as the theoretical background of the research to try to understand the decision-making process and the role of sustainability in this process, scientific value is created. This theoretical background led to the conceptual model and the expectations of this research. In this fourth chapter, further information is given about the research methods that were used. The fifth chapter analyzes the gathered data and describes the results of the qualitative research. The conclusion chapter will present the conclusions of the research per expectation, answers the research question and give recommendations for stakeholders and for further research.

6.2 CONCLUSION

This paragraph will give an overview of the answers to the research question and the expectations of the research and will end with a short summary.

The research question that was used was:

Is it possible to organize sustainable Olympic Games, and what are the opportunities and limitations of sustainable Olympic Games in terms of the hardware (Olympic venue and infrastructure) and the software (the people, the planet, the profit and the decision-making process) of the Olympic Games?

This research question includes the broad definition of sustainable development with attention for the People, Planet, Profit and the Political domain. This is also referred to as the software of the Olympic infrastructure. The hardware of the Olympic infrastructure includes the Olympic venues, the infrastructural projects and the spatial panning of the Games. Within these domains, examples are given of opportunities and limitations of sustainable development at mega sporting events. These examples are based on the qualitative data that was gathered from 21 face-to-face interviews and informal conversations with other stakeholders such as the former minister of Housing, Spatial Planning and the Environment. This data is used to answer the following expectations:

1. **What are the infrastructural contingencies of organizing an event such as the Olympic Games?**

The expectation was that there are several infrastructural adjustments needed to improve the transportation flows and the accessibility of the Netherlands and in particular of the Randstad area. It is likely that these infrastructural projects will have some contingencies.

According to the research results, this expectation can be confirmed. The respondents indicate that there are indeed some contingencies in the organization and improvement of the infrastructure in the Netherlands. If the Netherlands get permission to organize the Olympic Games of 2028, the infrastructural projects that are already on the table will get a huge boost. There is a deadline involved which can cause time pressure and increasing costs. This is the main contingency in the infrastructural projects and could be overcome by implementing a good and clear planning process. Especially the accessibility of the Randstad area, which will function as the main Olympic area, needs further attention.

Due to the enormous number of visitors during the event, the public transport and the highways and roads need to be adjusted in order to overcome congestion and pollution problems. Therefore sustainability measures such as improving the accessibility by bike, providing free bikes, promote public transport and 'flying green' could be a first step towards sustainable development in infrastructural projects. The respondents indicate in the interviews that this Randstad area could also be enlarged to a broader area to develop the Olympic infrastructure. The IOC demands a maximum travel-time of 45 minutes for the athletes to the Olympic venues. However, the NGO's conclude that if the three biggest Olympic sports (track-and-field athletics, swimming and gymnastics) will be organized within this travel range, the other Olympic sports could be designated outside of this area and therefore the whole country could be involved.

2. What does the spatial planning of the Games look like?

A mega event such as the Games needs a good and well-thought spatial planning of for instance the Olympic Village and the Olympic Stadium. The expectation was that the spatial planning of the Games is complicated and that there are already concrete ideas about the visualisation of the Olympics.

This expectation can be partly confirmed, because the spatial planning is indeed subject of some debate and there are still some problems to overcome. The exact location of the different Olympic sports is still unsecure, although it became obvious that most sports will be situated in the Randstad. The Randstad area could be divided into a northern half (Amsterdam/ Utrecht) and a southern half (Rotterdam/The Hague). The Olympic core consists of an Olympic Stadium, an Olympic Village, a media centre and the Aquatic Centre. Where this Olympic core will be situated depends on what the candidate city will be. The destination of some Olympic sports is quite obvious. The beach sports and the sailing will be held at the coastal area of Scheveningen in The Hague, the Olympic cycling matches will be designated in the south of the province of Limburg and the equestrian events will be held in the province of Noord-Brabant or the region in the east of the Netherlands which is called 'de Achterhoek'. Respondents indicate that the most important venues that are still missing in order to organize the Games are: an Olympic Stadium (with track-and-field athletics), an indoor arena that could host 18.000 people and an Olympic rowing area. However there is some debate over the choice for a centralized event with lower security costs such as the Stratford Area in London or an event that includes the entire country. Both

options have their own opportunities and limitations. A centralized event with for instance one stadium with removable floors where all the Olympic sports could be organized could be a sustainable option because you only need to build one stadium. However, by enlarging the event to a broader area and spreading the different Olympic sports over the country, more people feel committed to the event and this could lead to a long-lasting Olympic legacy.

3. **What is the role of sustainable development in the planning of new Olympic and Paralympic venues?**

The expectation was that the importance of sustainable development in future venues will increase and that sustainability will become a major issue in future Olympic Games.

This expectation can be confirmed according to results from the interviews. Sustainability becomes more and more important in the development of accommodations. However, there are still many venues build for the international prestige of a nation or city in which the focus is only on the event itself. Examples such as the Bird's Nest in Beijing, several football stadiums in South Africa, the Stade de France in Paris or the Olympic venues in Athens underline this notion. Therefore, a long-term vision in which there is attention for the multiple-use of venues by creating side-events needs to be leading. Another option is the building of temporary venues that could be disassembled after the event. This option is more sustainable than building permanent accommodations, but is still not fully sustainable. Towards the organization of the Olympic Games in 2028 sustainability will become an issue that cannot be ignored. New venues that are developed will function more and more as multiple leisure centres, and ongoing technological innovations such as the LED technology and the popularity of working with cradle-to-cradle materials could result in sustainable buildings. Also innovative architectonical ideas such as an Olympic Stadium build on water with a removable floor that is shipped into the stadium so that several sports can be played in one stadium, could become realistic in the future. For the Paralympics there are already venues such as the Ronald McDonald center in Amsterdam which could play an important role in future Paralympics. Furthermore, respondents from the public sector indicate that there are two important future trends in venue-building which are the implementation of temporary venues and an increasing awareness of sustainable development and long-term side effects. The NGO's partially agree on these trends and are also mentioning beside the temporary venues, the importance of economic

exploitation costs of these new venues. In the future these venues will transform towards sustainable multi-leisure centers.

4. **What are the social costs and benefits of the Games?**

The expectation was that the Games will have many positive social side effects on the People domain, in order to overcome several social problems.

This expectation is confirmed by the respondents, although it is not a 100% sure what the exact effects on the People domain will be when the Games are organized. However, the ambitions in the Olympic Plan 2028 looks promising as sports is used in a way to decrease obesity, increase personal health, integrate ethnic minorities into society and improve social relations in society. Respondents point towards the importance of involving the youth in the Olympics, educate children about the importance of sports and provide healthy nutrition to combat the obesity problem. The legacy of the Olympic Games is an important issue that is recognized by almost all the respondents. A sustainable legacy of the Games involves a long-lasting aftermath that consists of positive effects from the event such as a positive international image, long-term tourist flows and an increased participation in sports. A successful event could increase the participation in sports which forms the basis for professional sports in the future. Sport is an important tool that could be used to overcome the social problems in a society. Sport brings people together and the organization of such a mega event creates a fantastic atmosphere that unites a country.

5. **What are the environmental costs and benefits of the Games?**

The expectation was that the Games have a negative impact on the various environmental issues because the economic effects in the end will be more important than environmental issues.

This expectation is partly recognized by the respondents. This expectation was also subject of the pitch that was held in front of the former Minister of Housing, Spatial Planning and the Environment. It is difficult to predict if the environmental domain and the economic domain could go in harmony together or that the economic perspective becomes dominant over the ecological one. If we take a look at past

Olympic Games, recent history shows that when the event is characterized by an insufficient planning in a short time-span, the choice for economic short-term advantages is dominant over the choice for a long-term sustainable strategy that minimize the impact on the environment. However, the current trend in the organization of mega events is an increased attention for sustainable development and the environment. By using cradle-to-cradle materials-, and focusing on green energy-, and the recycling of waste and water use, the ecological footprint of the event could be reduced and by reducing the carbon emission a greener and cleaner event could be organized which in the long-term could be perhaps completely climate neutral. A sustainability checklist for events could help to organize an event that is climate neutral. The main goal is therefore to transform sustainable developments into profitable projects so that sustainability will be embraced by public sector, private sector and the NGO's.

Respondents from the three sectors mentioned the following elements that could be used to reduce the environmental impact:

Table 11: Sustainability measures

Electricity	Cut the electricity use and reduce light pollution by implementing LED or OLED (organic) technology and using solar and wind energy, biomass centres and geothermal heat pumps.
Water	Reduce the water waste by flushing the toilets with used water; implementing artificial grass fields to diminish water irrigation and use water energy.
Paper	Digitalization of paper-work.
Nutrition	Biological food and 'healthy' products
(Building) materials	Cradle-to-cradle materials for artificial grass pitches and (temporary) venues
Mobility	Use 'green' forms of transportation

6. **What are the economic costs and benefits of the Games?**

The expectation was that the Olympic Games will have a positive influence on the economy of the country.

This expectation is not confirmed. Besides the tension between economy and ecology, the economic domain is focusing on two other aspects as well: CSR and the accounting controversy of the Olympic Games. There are costs that are difficult to determine because everyone is attributing different aspects to the event. For instance, large infrastructural projects should be implemented anyway, but are in many cases attributed to the Olympics. Also the benefits of the game are in most cases intangible which makes it almost impossible to determine the exact costs and benefits of the event. If we take a look at past Olympic Games, the profits or losses are varying per event as well. For instance, the Games of Barcelona 1992 were seen as very successful while the people of Montreal are after 30 years still paying taxes to cover the loss of the Montreal games in 1976. In the research, NGO's are indicating that the current economic crises could also slow down the process of sustainable development at mega events such as the Olympics. However, the current Olympic Plan 2028 has a long-term planning and this is the main strength of the Plan according to the NGO's. Although the exact costs and benefits are hard to determine, the event will generate employment and with the enormous amount of people attracted by the event, the local retailers will benefit as well. The challenge is to generate a sustainable economic growth. An option that becomes more and more popular to create sustainable economic growth is Corporate Social Responsibility (CSR). CSR has to do with acting responsible towards society and is applied in the private and public sector. This could vary from hiring minority workers to create safe work conditions. This could help to create a sustainable event with extra economic value.

7. **What is the role of sustainable development in the sport policies at the governmental level?**

The expectation was that the role of sustainable development in the current policies is important and that sustainable development is recognized by the actors in the decision-making process.

This expectation is confirmed based on the interviews with the respondents. There is a lot of attention for sustainability in the Olympic Plan 2028, but a clear translation of the concept towards concrete objectives and goals on sustainable development is lacking. The Holland/Belgium bid for the FIFA World Cup 2018 has recognized the element of sustainability and both countries are emphasizing the green aspects of the event. Also the Ministry of Housing, Spatial Planning and the Environment has implemented sustainable development in their policy-making. So in these cases the role of sustainable development is very important. The decision-making process towards the Olympics is a long-term one and this brings also insecurity. The political life-cycle of 4 years is short-term and politicians could see the sport for instance in a traditional way in which the government facilitates the sport supply and does not intervene any further. However, the sport sector evolved more on the social and economic domain and cities are using mega sporting events in their city marketing strategies.

8. **Who should take the first actions towards the Olympic infrastructure for the Olympic Games of 2028?**

The expectation was that the national government should govern the decision-making process towards the formation of an Olympic infrastructure for the Olympic Games of 2028.

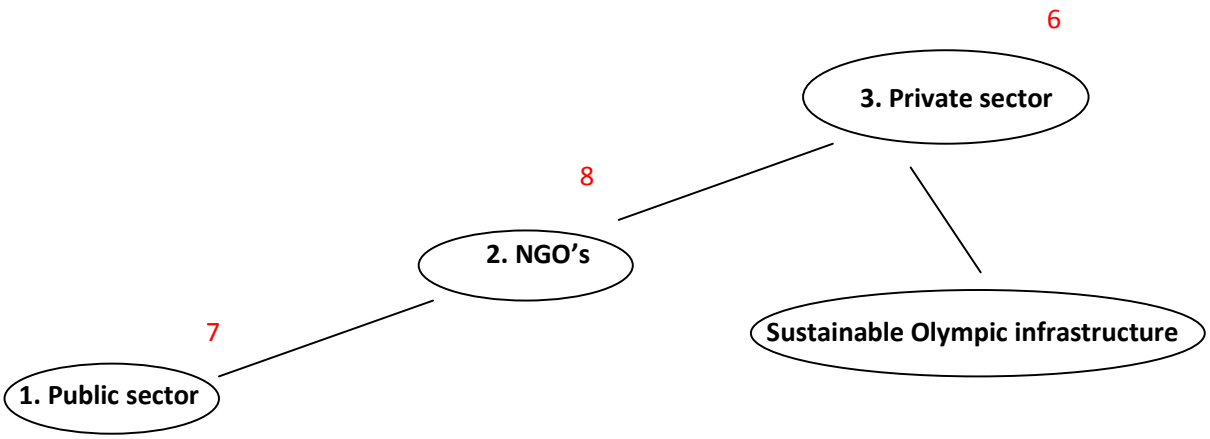
This expectation is not completely confirmed by the respondents. The opinions are divided about who should govern the decision-making process. This dilemma could be transformed into a game with several actors, different strategies and a different amount of payoff. In the theoretical exploration, the Game Theory and the Social Decision-Making Theory were further explained. The Game theory indicated that in this situation a non zero-sum sequential game is used with three actors in the game. The actors in the game are the Public sector, the Private sector and the NGO's (NOC*NSF and others). The public sector and the NGO's indicated that the public sector should take the initiative and develop an Olympic infrastructure. After this first initiative, the NGO's will follow and refine their strategy towards this Olympic infrastructure. The third sector (private sector) will then participate as well. The Private sector has a different opinion about this governance role and indicates that the NGO's should take the initiative. The next step should be a strong collaboration between the public sector and the private sector. The sequential games and the table for the awareness of sustainability that were developed from these different opinions are given below.

Table 12. A Sustainability Checklist of the different elements in the organization of the Olympic Games.

	Public Sector	**Private Sector**	**NGO's**	**Total:**
Olympic infrastructure	+ +	+	+	
Spatial planning	0	+ +	+ + +	
Olympic venues	+ + + + +	+ + +	+ + + +	
Cumulative mark Hardware:	7	6	8	21
Mean:	7	7	7	
People	+ + + +	+ + +	+ + +	
Planet	+ +	+ + + + +	+ + + +	
Profit	+ + + + + +	+ + + +	+ + +	
Cumulative mark Software:	12	12	10	34
Mean:	11,33	11,33	11,33	
End mark:	19	18	18	

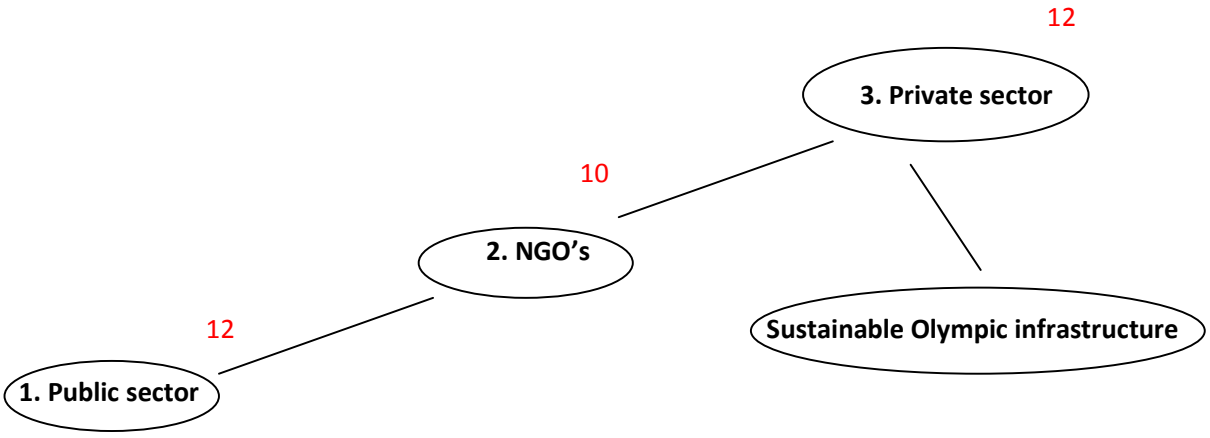
The private sector and the NGO's about the governance role on the Olympic infrastructure:

Figure 11. The Hardware of the Olympic infrastructure



- Concerning the governance role on the hardware of the Olympic Games it would be better for the awareness of sustainability in the process if the NGO's are taking the governance role because they are more focused on sustainable development.

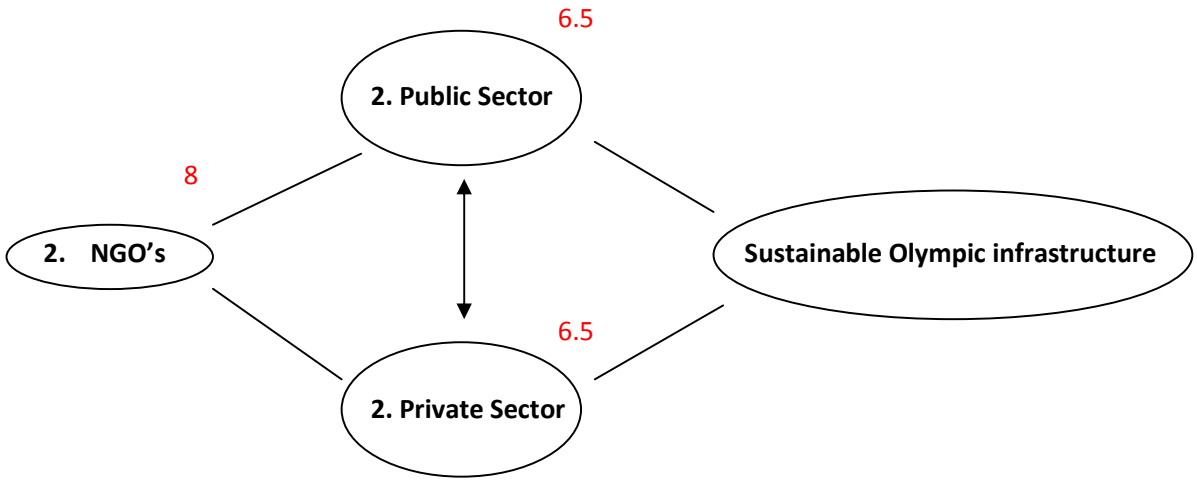
Figure 12. The Software of the Olympic infrastructure



- Concerning the governance role on the software of the Olympic Games it would be better for the awareness of sustainability in the process, if the public- or the private sector is taking the governance role because they are more focused on sustainable development.

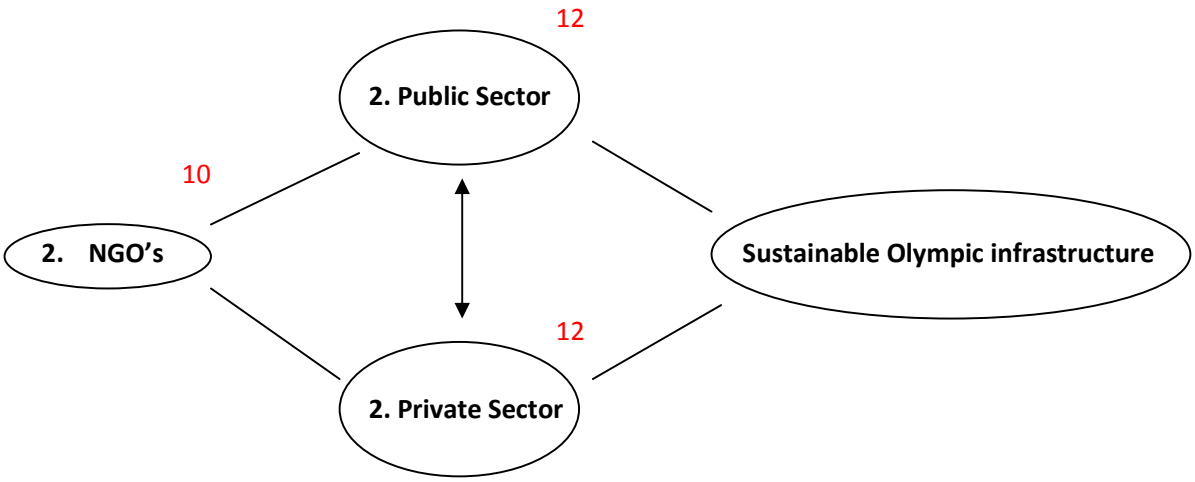
The private sector about the governance role on the Olympic infrastructure:

Figure 13. The Hardware of the Olympic infrastructure



- Concerning the governance role on the hardware of the Olympic Games the NGO's take the initiative which improves the awareness of sustainability. However, collaboration between the public- and private sector produces a payoff that is less sustainable.

Figure 14. The Software of the Olympic infrastructure



- Concerning the governance role on the software of the Olympic Games it would be better for the awareness of sustainability in the process, if a public- private collaboration is taking the governance role because they are more focused on sustainable development, followed by the NGO's.

6.3 DISCUSSION

Answering the research question: Is it possible to organize sustainable Olympic Games and what are the opportunities and limitations of sustainable Olympic Games in terms of the hardware of the Olympic Games (Olympic venues) and the software (the people, the planet, the profit and the decision-making process)?

After these conclusions based on the expectations, this paragraph will try to answer the research question by summarizing the most important opportunities and limitations of sustainable development in the organisation of mega sporting events such as the Olympic Games in the Netherlands in 2028, followed by the chances of organizing sustainable Games. The theory indicated that the main opportunities of a sustainable event were: technological innovations, a festival atmosphere, venues with

multiple functions, a better infrastructure, an increased participation in sports, global media attention and international prestige, and sustainable tourism. The main limitations were aspects such as: overcrowding, increased costs and taxes, disruption due to Olympic-related building, unexpected external crises, high security costs and an insufficient planning.

Table 13: Overview of the differences between the three sectors towards the opportunities and limitations of sustainable Olympic Games.

Public Sector	**Opportunities**	**Limitations**
	Climate Neutral Event (green energy and temporary venues)	Infrastructure
	International prestige	Olympic venues
	Olympic legacy (positive side effects of the planning process towards the Games).	International lobbying
		Budget exceeding
Private Sector	Sustainable tourism	Short-term planning
	Cradle-to-cradle	Economic crisis (austerity)
	Climate neutral event (multiple-use venues)	
	Olympic legacy (positive side effects of the planning process towards the Games).	
NGO's	Olympic legacy (positive side effects of the planning process towards the Games).	International lobbying
	Climate neutral event (temporary venues transported to the next event)	Infrastructure
	International prestige	Decision-making process

6.3.1 OPPORTUNITIES

Climate neutral event

The biggest opportunity is to organize an event that has a minimal ecological footprint and is therefore climate neutral. Not only by reducing the carbon emissions from airplanes in order to 'fly green' but also smaller implementations such as the Online Accreditation System of ATOS Origin, LED technology and the usage of cradle-to-cradle materials could help to reduce the Ecological Footprint of an event such as the Olympic Games.

> "Het is een doorlopend verhaal van je drinkbekertje tot je veldverlichting."

An innovation that could contribute to the climate neutrality of an event is cradle-to-cradle. This concept could be developed further so that materials will be used in a way that instead of producing waste, the materials can contribute something to the environment.

International prestige

By focusing on the aspect of sustainable development and by implementing state-of-the-art venues that have minimum impact on the environment, the Dutch Olympic ambition could be presented in the bid book as 'Sustainable Games'. These venues could be temporary ones that can be transported to the next event or could be venues with multiple functions. If you are able to organize a mega event like the Games in a sustainable way, the IOC will recognize this and this will generate a lot of international prestige. The Dutch are front-runners in sustainable innovations and in research towards sustainable developments and this strength could be used as a strategy to present your country to the rest of the world. Another important marketing aspect that could be used to gain international prestige is to present the water element as a central theme of the Olympics. 'The Dutch and water' is a strong combination that is recognized all over the world. If we are able to integrate the water element in the Olympics, for instance to build a stadium for multiple sports on the water, the Games of 2028 could be presented for instance as 'The Dutch WaterGames 2028'.

Olympic Legacy

Another opportunity of sustainable Olympic Games is the creation of a long-lasting legacy. When the aspect of sustainability becomes normal in the daily lives of people, so when people start to think sustainable and when all people completely support the Games, only then the organization of climate neutral Games is possible. If the people are supporting the Games and if the Dutch athletes are performing well, the participation in sports could further increase. The Olympic legacy could also integrate minority groups into the larger society, fight the obesity problems and just create a wonderful atmosphere for the people.

Sustainable Tourism

Sustainable Olympic Games can also lead to sustainable tourism. Olympic Games with innovative architectonical venues could increase the number of tourists after the event. These state-of-the-art venues could serve as landmarks of the Olympic Games. This was also the case for the Bird's Nest in Beijing which was the landmark of the Beijing Games in 2008 and is now serving as a tourist attraction. Also prestigious buildings build for a particular event such as for instance the Eiffel tower in Paris or the Atomium in Brussels are nowadays important tourist attractions. If the Olympic venues can be transformed into multiple leisure centres, more people are attracted to these venues and this could generate a sustainable tourist flow.

6.3.2 LIMITATIONS

Infrastructure

The biggest challenge in the organization of the Games is the infrastructure around the stadiums and the available hotel capacity. Regional Airports such as Eindhoven, Enschede and Groningen need to increase their maximum capacity in order to deal with the visitor peaks during the event. Also the current hotel capacity is not sufficient to host all these people. Especially more exclusive hotels are needed if you want to organize the Games. A possible solution to this contingency factor could be to attract enormous cruise ships to the harbours of Rotterdam or Scheveningen to serve as temporary sleeping accommodations. However, increasing the hotel capacity for events such as the FIFA World Cup or the

Olympic Games is not a primary task for the government and therefore co-operation is needed with the private sector. The biggest problem is to assure that the private sector will also invest in these mega events. Therefore, the investments have to be profitable so a good business case is needed to further investigate these issues. The Public sector strives towards a better traffic flow, less traffic jams and better transport connections in and towards the Randstad area. To achieve this, several infrastructural adjustments have to be made and especially in the metropolitan area of the Randstad, the available free space is minimal. To finish these infrastructural projects in time and to find budgets to implement these projects are important contingency factors.

Olympic venues

Also on the level of Olympic venues, there are some contingencies. The venues for sports such as fencing, and archery are relatively easy to build or organize, the marathon is already held every year in Rotterdam and also the largest investments such as the Olympic Stadium and the Olympic Village are not the biggest problems. The main challenge is to develop intermediary venues for sports such as basketball, baseball and swimming. These venues are more difficult to re-use because an Olympic capacity is needed, varying from 6.000 till 18.000 and these venues are currently missing. The multifunctional centre 'Ahoy' in Rotterdam can increase its capacity to 14.000 but you need more venues with a similar capacity. The aquatic sports could be held in the National Aquatic Centre in Eindhoven but then the venue needs to increase its capacity from the current 3.000 seats towards a venue that holds at least 15.000 people. Also the swimming should be organized close to the Olympic stadium so in the current situation, a new aquatic centre needs to be build in the candidate city. Another option is to implement a water cube into a permanent (football) stadium. This is already done in Barcelona, Shanghai and Rome and this option could be cheaper than building a permanent Aquatic Centre. Because of these problems with the capacity of these venues, the decision-making process towards the Olympic Games must take these issues into account.

Decision-making process

The decision-making process itself (or 'Poldermodel') could also cause some trouble. One of the respondents indicated that the decision-making process could become a contingency factor:

> "Het poldermodel van Nederland, dat er geen keuzes worden gemaakt. Als de partijen zeg maar te veel met elkaar in conflict komen of teveel belangenverstrengelingen die niet met elkaar matchen. Of een partij die geen financiën eruit willen halen voor het Olympisch plan of, ja gewoon echt besluitvorming. Het is echt zo bureaucratisch in Nederland, ik denk dat dat nog wel de bottleneck zal zijn."

Other countries sometimes have a strong leader who accelerates the decision-making process but in the situation of the Netherlands, the policy-making occurs on different governmental levels. This could lead to problems regarding bureaucracy because there are several different policies and laws that needs to be taken into account. On the other hand, this complex decision-making process could also prevent short-term planning or budget exceeding.

International lobbying

Respondents indicated that the Netherlands have an impressive track-record in the organization of mega events, for example the EURO 2000 event. However, the Dutch are not famous for their international lobbying capacities. Because only a small group (the IOC) decides which country will get the opportunity to organize the Olympic Games, good lobbying is necessary. With only three Dutch IOC members (Anton Geesink, Hein Verbruggen and Willem-Alexander), the influence in the IOC is minimal. Also, if Willem-Alexander will become the king of the Netherlands, he needs to withdraw himself from the IOC. However, if Willem-Alexander is the king, he could still use his network to promote the Netherlands as a candidate to host the Olympic Games in 2028.

Economic crisis (austerities)

Besides all the important opportunities that could lead to sustainable Olympic Games, sustainable development could be influenced by external factors such as the current economic crisis. No matter how strong the awareness of sustainability in the planning process, if a country faces an economic downturn

in which austerities are needed, the incentive to invest in sustainable development will be less. These external factors could become a contingency factor in the organization of sustainable Olympic Games.

Short-term planning

The final limitation that could lead to non-sustainable Olympic Games is a short-term insufficient planning. Examples of an insufficient planning are the Olympic Games of Athens in 2004, but also the Dutch bid for the Olympic Games in 1992. In Athens, the venue-building was delayed and this led to increasing costs. Also the follow-up of the event was not taken into account and many venues have not found a new function. The planning phase towards the bid for the Olympic Games in 1992 in Amsterdam was also a short-term process which resulted in high costs to promote the bid and eventually Barcelona was elected to organize the 1992 Games. Due to a lack of time in the organization of the event, budgets are exceeded and short-term economic decisions are preferred above long-term strategies that are aiming at sustainability.

6.3.3 IS IT POSSIBLE TO ORGANIZE SUSTAINABLE OLYMPIC GAMES?

This overview of the opportunities and limitations of organizing sustainable Olympic Games given by the respondents, indicate that there are several opinions about this subject. Almost all the respondents were convinced that the Netherlands are able to organize Olympic Games in which sustainability plays a significant role. However, to organize Olympic Games with a minimal ecological footprint, where venues have multiple functions and which lead too many positive side effects on the domains of People, Planet and Profit is still a challenge. Respondents indicate that it is possible to organize sustainable Olympic Games, but then several contingencies need to be challenged. External developments such as an economic crisis could influence the attention for sustainable development and also a short-term insufficient planning process could lead to non-sustainable strategies. However, the biggest challenge is to improve the infrastructure in the Netherlands so that this infrastructure is able to transport thousands of people at the same time across the country. So there is still a large step to be made in the ambition towards Olympics Games that are climate neutral. However after the many conversations with important stakeholders in the Olympic Plan 2028, the conclusion can be drawn that there is an

increasing awareness towards sustainability in the organization of events. However, to organize a mega event such as the Olympics that is fully climate neutral is almost impossible, because there will be always some impact if you organize an event on this scale. So fully climate neutral seems impossible but the footprint could be minimized. The ongoing technological innovations and the development of new techniques could have an enormous impact on future events. Also by defining the eight Olympic ambitions in the Olympic Plan and by using a broad scope, a long-term strategy is chosen that could help to create social support for the event. This gives also the opportunity for provinces and cities to refine their policies and integrate the Olympic ambitions into the policy-making. The 'Dutch approach' that is characterized by its difficult decision-making process could become a contingency but is also a strength. If these possible contingencies are managed properly, and if the awareness towards sustainable development is taken into account right from the beginning of the decision-making process, the Netherlands are able to organize sustainable Olympic Games with a minimal ecological footprint.

6.4 RECOMMENDATIONS

At last some recommendations that are based on this research will be given. These recommendations are based on the personal interpretations of the results of this research by the author. These recommendations could be useful for all stakeholders in the Dutch Olympic Plan 2028 and for organizing committees of other events who want to know more about the possibilities and limitations of sustainable events.

Reflection on the research:

In this research, qualitative research methods were chosen. This turned out to be a good choice because by using semi-structured questionnaires in the interviews, the experts could contribute more to the research by adding their experience and knowledge. This resulted in a massive amount of data because an advantage of the qualitative research is that respondents recommended others that might be useful for this research. The different organizations were divided into three sectors which resulted in a clear overview of the opinions and the awareness of sustainability within the three sectors. During the research process and in all the interviews many respondents indicated that this subject is very important in the future. The integration of (sporting) events and sustainability is a combination that will become an

important trend. I already exceeded the desired amount of interviews and many respondents brought forward new names and organizations that could be useful for this research. However due to a lack of time, I was not able to contact all these organizations. Also the advice was given to organize a conference about this subject because many people are interested in this subject. After analyzing the data and compare the data with the used-theories, it showed that the Regime Theory was not a useful theory for this research. This is because the Regime Theory deals with informal networks, while in this situation a formal network (Olympisch Vuur) is implemented. Because there were so little theories available concerning this specific topic, it was difficult to integrate and compare the data in and with existing theories and this made the research more exploratory. Also, there were different opinions towards all the different subjects and therefore, the results and conclusions should be handled with care. Besides this, further research is needed about the potential costs and benefits of the Olympic Games, about the Olympic infrastructure and the aspect of sustainability.

After this reflection on the research, recommendations could be given to stakeholders. The research could be useful in future policy-making of sustainable (sporting) events or for people that are involved in the organization of the Olympic Games.

Recommendation 1:

The current public discussion about the costs and benefits of the nomination to organize the FIFA World Cup in 2018 shows that public support in society is really important. This can be underlined by using the words of one respondent: *'don't mention the Games'*! It is important to first create enough societal support and establish a sport infrastructure in the Netherlands that is on an Olympic level and then the actual bid for the Games can be made. The Olympic Games are more a tool to accelerate this process than an ultimate goal.

Recommendation 2:

Sustainability should be part of the planning process from the beginning of the decision- and planning process. Sustainability should become the major USP of the Olympic Games. In order to organize sustainable Olympic Games, sustainability awareness and behavior should not only be present in the organizing committee and other stakeholders but should also become a basic element in the daily lives of people and a role model for the Dutch population and athletes.

Recommendation 3:

A sustainable event monitor needs to be developed to create a common standard of a sustainable event which should cover besides the three P's, also the complex political decision-making process. A sustainable checklist can be developed in order to create awareness for sustainable developments.

Recommendation 4:

Regarding the games that were derived from the Game Theory, the NGO's should take the initiative towards the hardware of the Olympic Games (Olympic venues, infrastructure and spatial planning), followed by the public sector and the private sector. Concerning the software of the Olympic Games, public-private collaboration should be leading, followed by the NGO's. In the current situation, the responsibility for the Games could be divided in a way that the NGO's are focusing more on the hardware, and the public sector in cooperation with the private sector focuses more on the software. This situation will lead to the highest payoffs towards sustainable strategies.

Recommendation 5:

In the venue building towards the Olympic Games, temporary accommodations need to be considered. Another option could be a centralized (theme) park, where state-of-the-art venues can be developed so that all the sports are located in one place which results in minimal security costs and a centralized impact of the event. In this sense, new developments such as the stadium, build on water with removable floors or other architectonical features could be implemented.

Recommendation 6:

New techniques such as working with cradle-to-cradle materials, using (O)LED technology, biomass centers or 'green' forms of transportation should be developed more. In this way, carbon emissions are reduced and the ecological footprint will be lower. If these developments could be made economically attractive, these notions will be implemented on a larger scale.

Recommendation 7:

In the organization of events, a long-term vision should be embraced in order to create a long-lasting legacy with many positive side-effects. This long-term vision should also take into account the follow-up

of the event by focusing for instance on venues with multiple functions, multiple leisure centers, or the organization of side-events.

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Appendix 1: Checklist for Sustainable Events

Tourism Australia's Green Check-list for Business Events

Tourism Australia has produced the following check-list to assist business events operators to plan and deliver cleaner and greener events.

It is based on the following core principles: reduce waste, reuse and recycle – then offset the carbon emissions.

Planning and policies

- ☐ Prepare a written environmental policy for your event which can be shared with suppliers, delegates and speakers
- ☐ Estimate the total carbon footprint and plan to offset the carbon emissions produced at the event. Detail this in your costing so it is clear to the client
- ☐ Look at past event energy use and wastage and find ways of reducing this. Track your results after the event
- ☐ Plan your event precisely (looking at numbers, duration, size of venue and number of rooms required) then select the right venue to fit, so you use minimum energy and resources
- ☐ Ensure your tender clearly states your commitment to the environment and request all respondents to outline their policies
- ☐ Establish a policy that encourages all suppliers to submit proposals and quotes electronically
- ☐ In all communications with exhibitors and contractors request that waste and packaging be reduced

Travel selection

- ☐ Consider using airlines with offset programs
- ☐ Travel with companies that are implementing green policies
- ☐ Fly visitors by the shortest route possible, not just the most affordable
- ☐ Choose a venue that is easily accessible by public transport or by foot
- ☐ Accurately monitor the number of delegates needing transport at each stage of the event and match this to the transport vehicle size
- ☐ Offer day or weekly traveller tickets to promote public transport use
- ☐ Use delegate shuttles and where possible use hybrid vehicles
- ☐ Consider bike use by providing bike racks and a bike concierge
- ☐ Reduce site inspections and use local scouts to gather information
- ☐ Offset carbon emissions for transport

Venue selection

- ☐ Give preference to venues with a sound environmental policy
- ☐ Work with the venue to ensure lights and air conditioning are switched off when not in use
- ☐ Consider venues that use 100 percent accredited GreenPower and that can be accessed by public transport
- ☐ Choose venues that have environmental accreditation eg, Green Star ratings or Green Globe accreditation
- ☐ Consider venues that use as much natural light and natural ventilation as possible
- ☐ Find out if the venue is taking steps to improve or establish its accreditation
- ☐ Ensure the venue has good waste reduction procedures and uses biodegradable supplies
- ☐ Ensure the venue supplies separate bins for delegates to be active recyclers

Accommodation

- ☐ Use or recommend hotels within walking distance of the venue and with proactive waste, water and energy management practices

Power and water supply

- ☐ Ensure toilet suppliers are using grey water and correctly dispose of black water
- ☐ Ensure all equipment, in particular in exhibitions, is turned off at night
- ☐ Consider limiting air conditioning at venues during the set-up and pack-down phase
- ☐ Investigate alternatives to air conditioning during the event
- ☐ Hold the event during the day to utilise natural light and reduce power consumption
- ☐ Ensure suppliers use modern, energy efficient technology

Green check-list (continued)

Food and beverages

- [ ] Ask to see the green policy of the hotel or caterer
- [ ] Aim to reduce food miles by using local rather than imported food and beverage supplies
- [ ] Plan menus using in-season, fresh, local, organic food
- [ ] Request fair trade food suppliers
- [ ] Include a larger number of vegetarian options and advise delegates of these options
- [ ] Select fish from sustainable fish supplies
- [ ] Avoid unnecessary packaging and plastic bags
- [ ] Ask caterers to provide reusable table cloths, crockery and cutlery
- [ ] Where appropriate limit use of imported and bottled water
- [ ] Use water glasses plus jugs with tap water
- [ ] Where possible use bulk dispensers for sugar, salt, condiments and sauces. Avoid individually wrapped sweets
- [ ] Ask delegates to sign up for the meals in advance to avoid food wastage
- [ ] Allow attendees to pre-select a meal size, offering smaller meals options

Printed material and information

- [ ] Use new media and electronic technology to reduce paper use
- [ ] Collect and reuse name badges
- [ ] Offer electronic registration and market electronically via website and email
- [ ] Use recycled paper (post consumer waste) and print on both sides using vegetable inks
- [ ] Offer all relevant information, presentations, papers and web links via electronic media
- [ ] Consider requesting delegates bring their own pens and note pads
- [ ] Consider using SMS to give seating and registration details

Waste reduction and recycling

- [ ] Reduce waste by keeping track of attendance and tailoring supplies and food according to final numbers
- [ ] Make informed purchasing decisions and support use of recycled and biodegradable materials
- [ ] Encourage delegates to separate waste
- [ ] Reduce use of gift bags or satchels
- [ ] Ensure excess food is donated to charity or composted
- [ ] Ensure non-toxic cleaning materials are used at the venue
- [ ] Create incentives for suppliers to return excess or unused products
- [ ] Educate delegates about how they can assist to reduce waste

Activities

- [ ] Plan to include sessions on relevant environmental issues
- [ ] Offer off-site activities that are nature-based with minimal environmental impact
- [ ] Suggest a community activity for delegates which helps restore the environment
- [ ] Give an eco-friendly award to the greenest exhibitor

Sources

This checklist was collated from the following sources:

BlueGreen Meetings website, has a wide range of tips on reducing the environmental impact of business events: www.BlueGreenMeetings.org

Green Event Ideas, Ecowise November 2007. Ecowise is a publication produced by the Sydney Convention and Exhibition Centre's environmental program. The centre is Green Globe benchmarked.

Start a Green Event Policy: The checklist to running an environmentally sustainable event on a sustainable budget from a presentation @ RSVP, Sydney, July 2007, by Clare Donovan of the Australian Conservation Foundation; Jeremy Garling of Great Southern E-vents and Larissa Moore of the NSW Department of Environment and Climate Change.

For further information contact:
Tourism Australia
Phone: +61 2 9360 111
Email: bea@tourism.australia.com
businessevents.australia.com

Appendix 2: Sustainability scorecards for the Olympic WinterGames 0f 2010 in Vancouver.

SCORECARD
Economic Benefits

KEY PERFORMANCE MEASURE	2006-07 RESULTS	2007-08 RESULTS	2008-09 RESULTS
Number and percentage of suppliers that met Canadian human rights standards	51 of our 51 suppliers (100%)	89 of 89 suppliers (100%)	257 of 257 suppliers (100%)
Number of audits of licensees and corrective action plans for continuous improvement	80 audits were conducted; 74 corrective action plans for continual improvement were initiated; 6 factories were banned from producing merchandise until critical assessments were addressed	198 audits were conducted; 148 corrective action plans for continual improvement were initiated; 1 factory was banned from producing merchandise until critical assessments were addressed; 5 factories were banned after the initial audit and were re-admitted after correcting the infractions	**85 licensee audits were conducted and reported directly to VANOC; 74 corrective action plans for continual improvement were initiated; 12 factories became compliant after completing corrective actions[11]**
Number and value of Buy Smart program contracts (sustainability and Aboriginal participation procurement program) and percentage of total value of VANOC contracts	64 Buy Smart contracts at a total value of $33.8 million; 99% of total VANOC contracts	86 Buy Smart contracts at a total value of $51.6 million; 99.73% of total VANOC contracts	271 Buy Smart contracts at a total value of $133 million; 85% of the total VANOC contracts
Percentage of spending on locally-based suppliers* *defined as Metro Vancouver, Sea to Sky Corridor	62% of spending was with locally-based suppliers; a further 32% of spending was BC and/or Canada-based; 6% was outside Canada	50% of spending with locally-based suppliers; a further 43% of spending was BC- and/or Canada-based; 7% was outside Canada	44% of spending with locally-based suppliers; a further 42% of spending was BC- and/or Canada-based; 14% was outside Canada
Number of sustainability innovations identified (venues, villages and operations)	4 innovations were identified (new to the Games or new to region)	31 innovations were identified (new to the Games or new to region)	**VANOC recognized 32 sustainability innovations at venues, villages and operations through the Sustainability Star program[12]**

[11] In 2008-09, additional audits were conducted by or reported directly to the Hudson's Bay Company, a Games sponsor. Totals for previous reporting years include Hudson's Bay Company factory audits, corrective actions and compliance.

[12] The Sustainability Star program was officially launched in 2008-09 and became the basis for recognizing sustainable innovations.

The 2010 Olympic [Winter Games] was the first Games to pilot a meaningful role for social enterprises through [its] Buy Smart program. Because of VANOC's trailblazing, the Glasgow 2014 Commonwealth Games is similarly committed to sourcing from social enterprises, which create jobs and support disadvantaged sectors of our communities. VANOC has shown us how social inclusion can be advanced through leveraging procurement opportunities from large sporting events.

—Gerry Higgins
Chief Executive, CEIS

SCORECARD

Environmental Stewardship and Impact Reduction

KEY PERFORMANCE MEASURE	2006-07 RESULTS	2007-08 RESULTS	2008-09 RESULTS
Location and size of land used within or near protected areas or areas of high biodiversity value	5.9 km² across six sport venues and one athletes' village	5.9 km² across six sport venues and one village, with no significant impacts to biodiversity anticipated as a result of our activities at these sites	5.9 km², across six sport venues, one village, and one facility, used within or near protected areas or areas of high biodiversity value[1]
Number of infractions and/or value of monetary fines for non-compliance with environmental laws and regulations	0 infractions of environmental laws and regulations	0 infractions of environmental laws and regulations	0 infractions of environmental laws and regulations, $0 monetary fines paid for non-compliance
Number and volume of significant spills	0	0	0
Total energy consumed	59,194 gigajoules	66,322 gigajoules[2]	111,099 gigajoules
Total GHG emissions	3,366 tonnes CO_2 equivalent	2,467 tonnes CO_2 equivalent[2]	3,597 tonnes CO_2 equivalent
Composition of vehicle fleet: total number; percentage with lower-emission features	96 vehicles total; 50% low emission (19 hybrids; 29 Active Fuel Management)	127 vehicles total; 50% low emissions (28 hybrids; 35 Active Fuel Management)	237 vehicles in fleet; 35% of vehicles in fleet with lower emission features (51 hybrids; 32 vehicles with Active Fuel Management technology)[3]
Number of newly constructed venues and/or villages applying for independent certification under the Leadership in Energy and Environmental Design green building rating system	8 of 9; UBC Winter Sports Centre is complying with UBC's own green building criteria	8 of 9; UBC Thunderbird Arena (official venue name, summer 2008) is complying with UBC's own green building criteria	No change
Weight of solid waste diverted from landfill and relative percentage of total solid waste generated	526 metric tonnes; we reused, composted, recycled or recovered the energy from 98% of total waste (not including land-clearing debris)* *The 2006-07 diversion rate includes waste from which energy was recovered in a waste-to-energy facility and waste sent to gas-to-energy landfill; when we do not include these categories, the diversion rate for 2006-07 was 83%	We reused, recycled or composted 908.1 metric tonnes (71%) of our total solid waste; when we include waste from which energy was recovered in a waste-to-energy facility, the diversion from landfill rate increases to 76%	We reused, recycled or composted 734.2 metric tonnes (67%) of our total solid waste; when we include waste from which energy was recovered in a waste-to-energy facility, the diversion from landfill rate increases to 72%[4]

[1] Includes pristine and/or environmentally sensitive areas of regional significance such as coastal areas, riparian areas and subalpine/alpine areas.

[2] Data has been revised. See Chapter 2 *Vancouver 2010 Sustainability Report 2008-09* for more detail.

[3] Lower emission features reduce fuel consumption and, accordingly, fuel-related emissions. For VANOC, this means hybrid vehicles and vehicles that are equipped with active fuel management technology.

[4] See Chapter 2 *Vancouver 2010 Sustainability Report 2008-09* for more detail.

Appendix 3. Item List

Topic List Duurzame Olympische Spelen

Duurzame Olympische Spelen (waar liggen de mogelijkheden, wat zijn de belemmeringen?)

Algemene gegevens
- Wat is uw functie binnen uw organisatie?

- Kunt u iets vertellen over de taken van uw organisatie?

- Kunt u iets vertellen over de missie en doelen van uw organisatie?

- Welk belang hecht uw organisatie aan behoud van het milieu?

- Waarom?

- Hoe komt dit terug in het beleid van uw organisatie?

- Welk belang hecht u aan duurzaamheid?

- Waarom?

- Hoe komt dit terug in het beleid van uw organisatie?

Olympische Spelen en topsportbeleid
- Is Nederland in staat om Olympische Spelen te organiseren?
    > media aandacht
    > steun bedrijfsleven
    > politieke wil
    > maatschappelijk draagvlak
    > financieel
    > organisatorisch
    > infrastructureel
    > logistiek en planning
    > besluitvorming
    > samenwerking tussen organisaties

- In hoeverre werken jullie mee aan het Olympisch Plan 2028?

- Is er volgens u in het huidige Olympisch Plan 2028 voldoende aandacht voor duurzame ontwikkeling?

- Beschikt Nederland over een voldoende topsportklimaat?

- Hoe wordt het topsportbeleid gestimuleerd?

- Is dit beleid voornamelijk gericht op de lange of meer op de korte termijn?

(Duurzame ontwikkeling wordt vaak afgemeten aan de drie pijlers People, Planet en Profit.)

- In hoeverre houden jullie bij de ontwikkeling van topsportbeleid en de stimulering hiervan rekening met duurzame ontwikkeling?

- En zo ja, houden jullie rekening met de drie pijlers van duurzame ontwikkeling (People, Planet en Profit)?

- Kunt u een aspect van duurzame ontwikkeling noemen dat nu al toegepast wordt in de sportsector?

- Komt elke pijler evenveel aan bod?

- Met welke partners werken jullie samen om het topsportbeleid te stimuleren?

- In hoeverre speelt duurzame ontwikkeling bij jullie partners als het gaat over het topsportbeleid?

Kansen en belemmeringen van duurzame Olympische Spelen

- Welke ontwikkelingen zijn er zoal gaande op het gebied van duurzame ontwikkeling bij sportevenementen?

- Kunt u een voorbeeld noemen van Olympische Spelen waarbij geen rekening gehouden werd met duurzaamheid en een korte termijn visie werd gehanteerd?

- En kunt u ook Olympische Spelen noemen waarbij duurzame ontwikkeling wel hoog in het vaandel stond?

- Waar liggen de belangrijkste mogelijkheden voor duurzame Spelen?

- Wat zouden eventuele beperkingen kunnen zijn bij het realiseren van duurzame Olympische Spelen?

- Gelden deze kansen en belemmeringen ook voor andere grootschalige sportevenementen?

- Waar moet Nederland zich voornamelijk op richten bij de organisatie van de Spelen, op People, Planet of Profit?

- Wie moet volgens u het initiatief nemen bij duurzame ontwikkeling tijdens de Olympische Spelen?

- Is duurzame ontwikkeling een collectief belang of laat men het initiatief aan de ander over?

Appendix 4. Overview Respondents

Public Sector:	
1.	Programma Manager Olympisch Plan 2028; Ministerie van Volksgezondheid, Welzijn en Sport (VWS)
2.	Pitch en debat over het thema met oud-minister Cramer van Volkshuisvesting, Ruimtelijke Ordening en Milieu (VROM)
3.	Beleidsmedewerker Sport; Provincie Noord-Brabant
4.	Beleidsadviseur Sector Jeugd, Zorg & Welzijn; Provincie Noord-Holland
5.	Programma adviseur sport; Provincie Gelderland
6.	Beleidsontwikkelaar Sport; Gemeente Eindhoven
7.	Hoofd Sportontwikkeling; Gemeente Tilburg
8.	Topsport Coördinator Den Haag Marketing
9.	Directeur; Vrijetijdshuis Brabant
Private Sector:	
10.	Programma Manager Marketing & Communications; ATOS Origin
11.	Marktgroepmanager Sport; BMC Group
12.	Zelfstandig ondernemer en oprichter van Sooloo
13.	Eventorganisator en oprichter van Context Media
14.	Commercieel medewerker; CineMec Ede
NGO's:	
15.	Coördinator Olympische Kennis; NOC*NSF (Olympisch Vuur)
16.	Manager communicatie/ manager topsportaccommodaties; Topsport Amsterdam
17.	Adjunct directeur/ projectmanager; Rotterdam Topsport
18.	Manager Olympisch Netwerk Noord-Brabant

19.	Programmacoördinator; Olympisch Netwerk Noord-Holland
20.	Coördinator Verenigingenadvies; Olympisch Netwerk Midden-Nederland
21.	Directeur; Kennispraktijk Nijmegen/ Zwolle

Appendix 5: Model for sustainable development (based on the interview with Jaap Spee from Sooloo):