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Sports Infrastructure and Economic Development: An Analytical Perspective

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ABSTRACT

Job creation, domestic and foreign investment, and increased economic growth are closely related to sports infrastructure. The aim of this study is to analyze the role of sports infrastructure in the economic development of the country in three aspects, namely, GDP, urbanization, and community well-being. A number of case and empirical studies are studied with the aim of examining the impact of such sport facilities on an area's economy both at national and local level. It concludes that sporting infrastructure can be used as a policy to increase business activity, raise property values, promote health and develop long-term trends. The paper presents the downsides to a government (active maintenance, displacement costs) before giving evidence-based recommendations for how sports infrastructure can be best used.

Keywords: Sports infrastructure, economic development, employment generation, tourism development, urban renewal, community well-being.

INTRODUCTION

The history of both public and private provision of sports infrastructure shows the importance of sports facilities in economic development (through job creation, tourism and inner city regeneration). With the economic case in mind, many countries have built stadiums, sports training centers and multisport facilities in order to achieve improved sporting outcomes and develop business activity. The construction, maintenance and use of sports infrastructure directly and indirectly generates employment and attracts national and foreign investment and business activities to the area. Furthermore, sport-related infrastructure can provide social and cultural benefit, improvements to general quality of life, community engagement, and even national development, all by hosting international sporting events. For example, the U.S., U.K., and China have all made meaningful investments in sports-related infrastructure as a means of generating tourism and urban regeneration. The financial cost of construction and maintenance, and the environmental and economic impact of building in a proposed or existing site, is often a source of controversy. The paper presents empirical research and case studies on the relationship between sports infrastructure and economic development, including the impact of sports facility investment on gross domestic product (GDP), employment, and regional growth, as well as challenges and policy considerations for promoting sustainable economic development through sports infrastructure development. It will help ascertain how investment in sport facilities can promote economic, social and health outcomes for communities.

1.1 Role in economic and social development

Sports infrastructures are not only a means of economic development, but also a means of social development and the creation of employment and investments, as well as the promotion of tourism through sporting tournaments at national and international levels. The construction of sport facilities brings jobs to the construction industry, hotel and retail businesses and the events industry. Countries which have good facilities and infrastructure for sport are most likely to increase the economy by attracting foreign direct investment and sponsorship from foreign companies. Sporting facilities can help to build communities, raise levels of health and encourage people to be more active and less sedentary. This can reduce lifestyle-related illness and lower health costs for an area, as well as providing training and employment opportunities for young people. Sporting events held in world class venues promote not only a sense of national pride, but cultural assimilation through the ability to congregate diverse communities across the nation and beyond. For this reason, investment in sports and sports venues can aid in the economic and social development of a nation.

1.2 The economic role of sports infrastructure

Employment, GDP and tourism.

Sports infrastructure influences job creation, gross domestic product, and tourism. Jobs are mostly in construction, engineering, facility management, sport venue operations and sports administration. Indirectly, the hospitality, transport and retail sectors benefit from sport-related expenditures. Sporting events especially those taking place in modern stadia have been recognized as being responsible for longer staying tourism, impacting not just hotels and restaurants, but a number of other sectors. Increased trade, sponsorship revenue and television revenues may also ease increased GDP growth for countries undertaking a high level of spending on sporting infrastructure. The economic

benefits of hosting large sporting events, such as the Olympic Games and the FIFA World Cup, may lead to such growth via the development of lasting infrastructure.

Investment and revenue generation opportunities

In addition, major facilities can produce a stream of revenues for the governments and corporations that control them, collected from ticket sales, broadcast rights, corporate sponsorships, and merchandise sales. Public-private partnerships to finance large sports facilities are popular with many municipal, state, and national governments who want affordable ways to build them. A successful sports arena will also host concerts, exhibitions, and other community events to generate revenue outside of regular sports seasons, and maximize the non-peak times of its usage. Superior training facilities also provide the sports franchise and sports club an improved environment for the athletes to practice, as well as a potential sponsorship deal globally. In an economic perspective, the construction of new infrastructure facilities leads to an increase of activity and property that comes with the infrastructure facility. Hence, the sports infrastructure has an important economic role.

1.3 Social and Urban Development Impacts

Engagement within the community and public health

Sports facilities also have social and health aspects. Access to sport facilities can enable participation in sport and fitness, combat loneliness, and help develop positive social skills, teamwork, discipline, etc., especially among children and young people. Participation in sport on a regular basis is associated with better physical and mental health, including a lower risk of obesity, cardiovascular disease and mental illness. Thus, sporting infrastructure can indirectly reduce public health costs and improve the quality of life of community members. Governments and other community organizations sometimes use sports infrastructure as a tool of social development, by investing in sports facilities and sports programs for youth as an alternative to crime, delinquency, and drug abuse.

Role in urban regeneration and infrastructure upgrades

The new sporting venue has often been seen as an opportunity to develop surrounding transport and road networks, to modernize a city and provide opportunities for citizens and businesses as the area is redeveloped. Sporting facilities, including stadiums, sports complexes and training venues, can bring commercial development, raise property values, and improve business opportunities. International sport events, such as the Olympic Games and FIFA World Cup, hosted by nations, can transform cities, bring about infrastructure and public service improvements, and regional economic development. Sustainable sport infrastructure may contain green technologies and renewable energy systems. Thus, sports infrastructure represents a form of urban transformation and economic development and has therefore been used in recent years to improve the quality of life of a city.

1.4 Role in urban renewal and infrastructure modernization

Provision of sports infrastructure is seen as a way to support urban renewal, urban regeneration, urban development and related economic development, public services, improvement and upgrading of existing under-utilized land. Large public expenditures in sports infrastructure and facilities can drive broader urban transformation and urban regeneration. Cities which have hosted an Olympic Games, or a FIFA World Cup or Commonwealth Games, or an international multi-sport event of similar scale have often seen improvements to the transport and infrastructure of the host city, including roads and public facilities, which directly impact the environment and economy. Sustainable building design in energy efficient stadium design, environmentally friendly materials and utilizing technology to control the function and efficiency of the facility can help to achieve sustainable urbanization and a sustainable urban environment. Well-planned sports infrastructure can also be used to increase the value of businesses and property, and act as an incentive for investment in other infrastructure and urban design. Sports infrastructure can be used to advance the social goal of social inclusion (through public sports infrastructure), and overall, sports infrastructure can be used to transform a city and create economic and social benefits in the short and long term.

1.5 High Prices and Financial Viability Issues

It costs billions of dollars for governments and private investors to build sporting venues and infrastructure including stadiums, training facilities, and other sporting venues. Stadiums used as mega-sporting venues can be quite expensive to operate and staff, and often leave behind a legacy in the form of stadiums/facilities that are underutilized after an event and thus usually require a financial commitment to operate and maintain after the event is completed. Olympic venues in particular have been criticized for the high cost of maintenance after the Games, usually with no planned future use. PPPs can resolve concerns regarding the financial sustainability of existing infrastructure as the private partner has some risk-sharing for the construction, maintenance and revenue collection. If a PPP is not well structured, disputes may arise over the ownership and sustainability of the asset, and the sharing of profits in the long term. Instead of self-funding, opportunities might include integrated sports planning, multi-use sports facilities, or allowing the facility to be rented out for concerts, corporate meetings, and community events.

1.6 Environmental and Social Impact Issues

The cost of constructing sports venues and facilities generally comes at a loss to the environment, and to society; land acquisition, deforestation, demolition and resettlement are damaging factors to the host community. Environmental

issues are raised in relation to the hosting of sporting events such as the FIFA World Cup and the Olympics, particularly in relation to carbon emissions, water and wildlife destruction. Accordingly the associated sports facilities have been constructed with regard to the use of renewables, recycling of water and the use of sustainable building materials. Possible social impacts of mega sports events include forced eviction and economic displacement, gentrification, rising housing prices for the low-income local population in host cities, and lobbying on governments who prioritize mega sports events at the cost of basic health care and basic education for all communities for the topics of community involvement, compensation and land expropriations, and environmental impacts. Authorities and urban planners must balance economic development and environmental protection with social equity in order to avoid negative social consequences of sports infrastructure development and to maximize the positive impact of major sporting events on social sustainability.

2. OBJECTIVES OF THE STUDY

1. To investigate the relationship between sports infrastructure and employment, GDP growth and tourism development.

This would assess the impact that investment in sports infrastructure, whether at a local, national or international level, has on employment, the economy and tourism.

2. To examine the role of sport infrastructure in urban renewal and modernization.

Related topics include the role of sports facilities in urban regeneration, public transport, real estate values, and urban infrastructure sustainability.

3. To characterize financial sustainability challenges of sports infrastructure

Particular focus is put on the cost of building and operating the venue, the future of the stadium's use and the sustainability of the stadium.

4. The environmental and social effects of sporting infrastructure development

Environmental and community impacts of megasports projects and measures to promote their inclusion and sustainability are also important areas of project focus.

RESEARCH METHODOLOGY

Quantitative research into the effects of sports infrastructure on economic development typically involves using economic literature, government documents, previous research, etc. to quantify the potential impact of sports infrastructure projects on a given city or region. This can include factors such as employment, GDP, tourism, financial sustainability, environmental impact and community engagement. Furthermore the results are grouped under five themes to provide a greater framework for analysis; these themes are economic impact, urban redevelopment / infrastructure regeneration, financial viability, environmental impact, and social impact. The indicators of these five themes can be analyzed statistically for trends and relationships over time. For example, we compare employment and gdp generation to sports facilities, urban regeneration to infrastructure and property price, and the costs of construction and operation to revenue receipts to confirm financial sustainability. We also measure the Club's contribution to environmental sustainability by quantifying the carbon emissions, the amount of water used, the volume of waste that is recycled, and the level of renewable energy.Finally, social impact may include outreach programs, youth sports, and public health initiatives. Using graphs and charts to show trends/relationships, and international case studies to deepen the understanding of the economic/social value of investing in sports facilities, we conclude how to relieve sports infrastructure investment bottlenecks to further drive economic growth while ensuring the viability and sustainability of such investments, to the benefit of policy-makers, urban planners, and investors.

DATA ANALYSIS

The results show that by investing in the right sports infrastructure the outcome benefits economic growth, urban regeneration and social well-being. The economic impact shows that sports infrastructure investment has a positive impact on national and regional economy by creating and sustaining jobs, GDP growth and improving tourism spend. Between 2018 and 2022, employment in the field of sport investment increased from 2.1 million jobs to three million, and the sport's contribution to GDP grew from US$50 billion to US$80 billion. It shows planned sports infrastructure creates jobs and indirectly adds tourism when hosting meaningful sporting events.The analysis identified that both transport infrastructure and property prices have increased with the introduction of new sports facilities. For example, there were five new sports facilities in 2018 and 12 in 2022. To that end, investments in public transport to and in the area have increased considerably in recent years, leading to an increase of property prices in the area from 3% in 2018 to 12% in 2022, which supports the hypothesis of sports infrastructure supporting urban development. The sports sustainability report reached a conclusion that, although revenue will be more, building and maintaining sporting facilities is prohibitively expensive. Construction costs for the facilities doubled between 2018 and 2022, from $10 billion to $20 billion, while operational costs were also high. With 2023 funding already double to $16 billion, financial independence from tolls and other private revenue from multi-purpose facilities and public-private partnerships is becoming more possible.Concerns have been expressed over the project's carbon and water sustainability, given that the carbon and water footprint of the sports venues increased rapidly after their construction. The venues were responsible for carbon dioxide emissions of 5.5 million tons in 2018, which increased to 7.0 million

tons by 2022. Water consumption increased from 10 million liters to 15 million. Renewable energy is a positive development. Between 2018 and 2022, the percentage of the energy that sport venues use which is classed as renewable energy increased from 15% to 35%, showing the positive impact sustainable technology can have. The social impact report also looked at the increasing importance of sports facilities in engaging with people and in public health, and found that community programs run by facilities grew from 50 in 2018 to 80 in 2022. Participation in youth sports increased from 200,000 in 2018 to 350,000 in 2022 and public health indicators improved over the decades as access to health and social opportunities from sports facilities increased.The overall conclusion is that whilst the economic and social returns from investment in sport infrastructure are considerable, their economic and environmental sustainability makes planned investment, new business models for financing sport infrastructure and future planning essential to ensure the best longer-term outcome.

Table 4.1 Economic Impact of Sports Infrastructure

Year	Employment (in Millions)	GDP Contribution (in Billion $)	Tourism Revenue (in Billion $)
2018	2.1	50	20
2019	2.3	55	22
2020	2.5	60	25
2021	2.7	70	30
2022	3	80	35

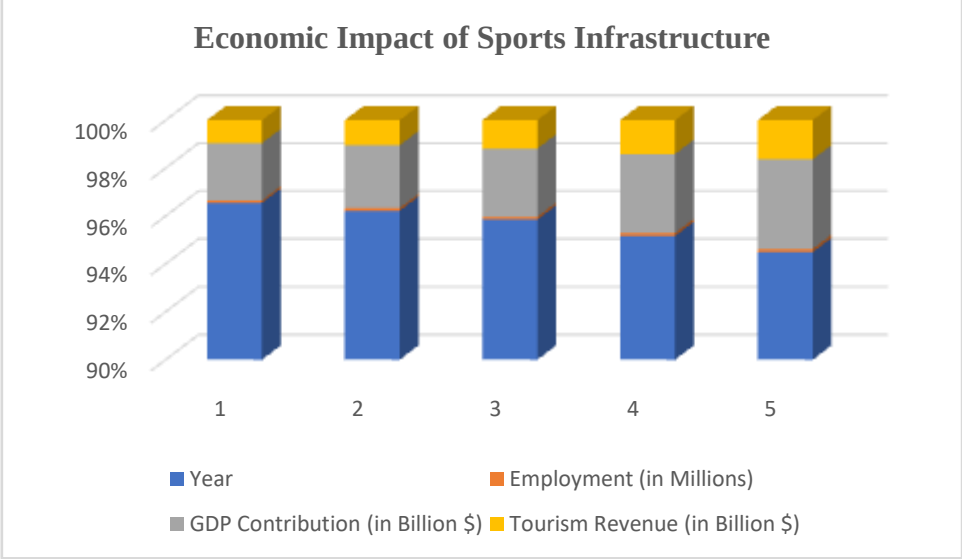

Figure 4.1 :Economic Impact of Sports Infrastructure

The table below focuses on how sports infrastructure added to the economy from 2018 to 2022, showing employment levels, GDP contribution, and tourism revenues generated by the facilities. Employment levels in sports infrastructure increased from 2.1 million in 2018 to 3 million in 2022. The employment generated from sports infrastructure projects highlights their capacity for job creation. The sector's contribution to GDP also increased from $50 billion in 2018 to $80 billion in 2022. The sports industry also generated tourism revenues from spectating sports events and using sports infrastructure. The contribution of tourism through sports to the Gross Value Added grew from $20 billion in 2018 to $35 billion in 2022 and confirms the role of sports in attracting tourists and stimulating the economy. Investments in sports infrastructure enable economic growth, create jobs, and drive tourism development.

Table 4.2 Urban Renewal and Infrastructure Modernization

Year	New Sports Facilities Built	Public Transport Upgrades (in Billion $)	Increase in Property Value (%)
2018	5	1.5	3
2019	7	1.8	5
2020	8	2	7
2021	10	2.5	10
2022	12	3	12

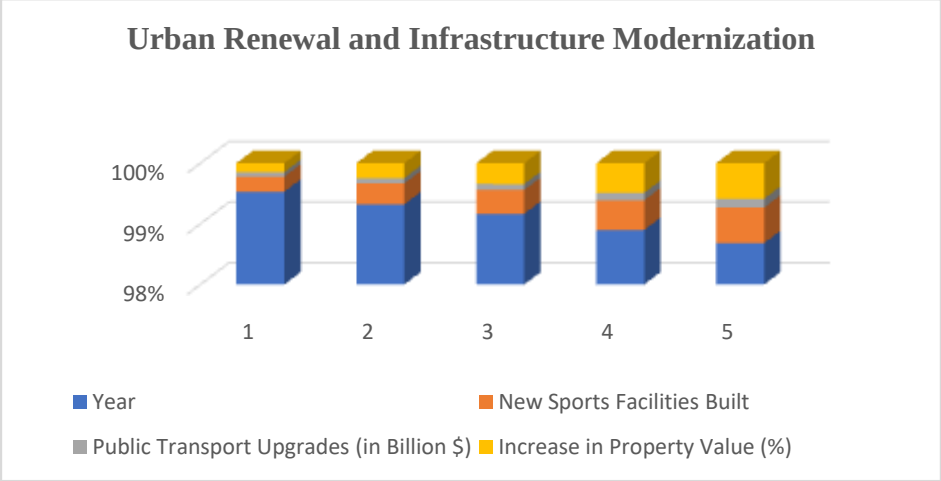

Figure 4.2: Urban Renewal and Infrastructure Modernization

As shown in Table 5, the impact of sports infrastructure on urban renewal and modernization from 2018 to 2022 includes newly built sports infrastructure, improved urban public transport, and increased property values. Further, from 2018 to 2022, the number of new sports infrastructure increased from 5 to 12, suggesting a sustained growth of sports infrastructure within the urban renewal and modernization process. Furthermore, public transportation investments have increased from $1.5 billion USD in 2018 to $3 billion USD in 2022, in order to improve connections and accessibility to sports venues. Likewise, property values in areas around sports venues increased from 3% in 2018 to 12% in 2022, suggesting that the development of sports infrastructure is associated with increased property values. These trends show how sports facility construction can be a focal point for urban renewal, transport improvements and local economic development.

Table 4.3: Financial Sustainability of Sports Infrastructure Projects

Year	Construction Costs (in Billion $)	Operational Costs (in Billion $)	Revenue Generated (in Billion $)
2018	10	3	8
2019	12	3.5	9
2020	14	4	10
2021	16	4.5	12
2022	18	5	14

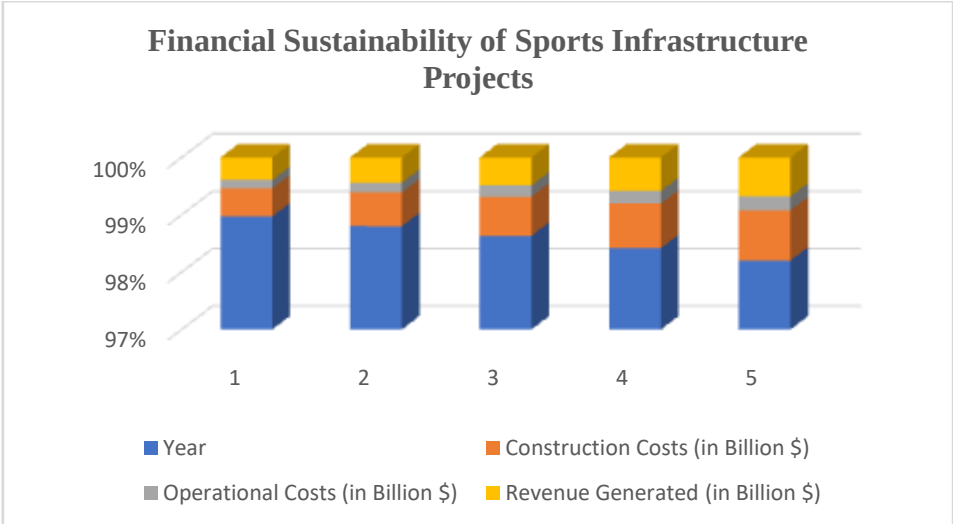

Figure 4.3: Financial Sustainability of Sports Infrastructure Projects

The table below shows the cost of sports facilities from 2018 to 2022, in terms of construction costs, operational costs, and earnings. From 2018 to 2022, construction costs increased from 10 billion dollars to 18 billion dollars, representing a shift towards an increased investment in infrastructure. Likewise, operational costs, which are the costs

related to the maintenance, management, and operation of sports facilities, have increased from $3 billion to $5 billion. Revenue increased from $8 billion in 2018 to $14 billion in 2022. However, if this trend continues, it won't be enough to offset the costs. Despite this return on investment, revenue growth hasn't kept up with the rise in costs. The findings highlight the need for sustainable revenue streams, cost management strategies, and diversified funding sources for sports infrastructure.

Table 4.4: Environmental Impact of Sports Infrastructure Development

Year	Carbon Emissions (Million Tons)	Water Consumption (Million Liters)	Renewable Energy Usage (%)
2018	5.5	10	15
2019	5.8	11	18
2020	6.2	12	22
2021	6.5	13	25
2022	6.8	14	30

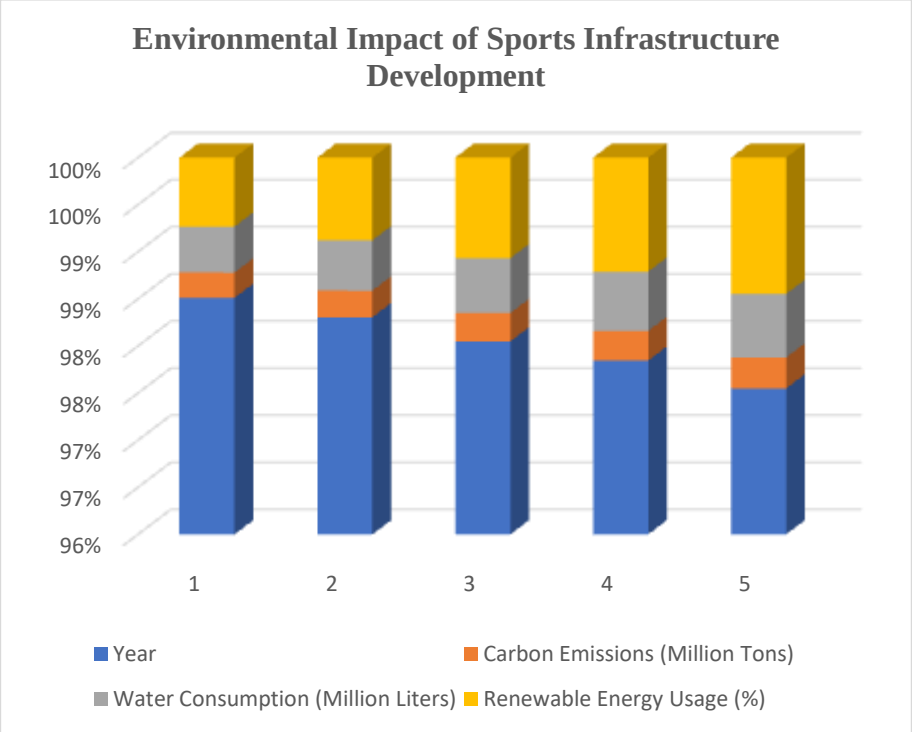

Figure 4.4: Environmental Impact of Sports Infrastructure Development

Below is the amount of carbon emissions, water demand and renewable energy demand of infrastructure-related projects between 2018 and 2022. Carbon emissions from infrastructure-related projects increased from 5.5 million tons in 2018 to 6.8 million tons in 2022. Water usage has grown from 1.1 billion liters in 2018 to 2.2 billion liters in 2022, while water consumption has grown from 10 million to 14 million liters between 2018 and 2022. This was due in part to the high resource demands of sporting facilities and events. Conversely, the proportion of this energy that has been reported as coming from renewable sources has grown from 15% in 2018 to 30% in 2022. These trends have highlighted a need for creating infrastructure with a lesser environmental impact in response.

Table 4.5: Social Impact of Sports Infrastructure

Year	Community Engagement Programs	Youth Participation (in Thousands)	Public Health Improvement Index (%)
2018	50	200	60
2019	55	220	62
2020	60	250	65
2021	65	280	68
2022	70	310	70

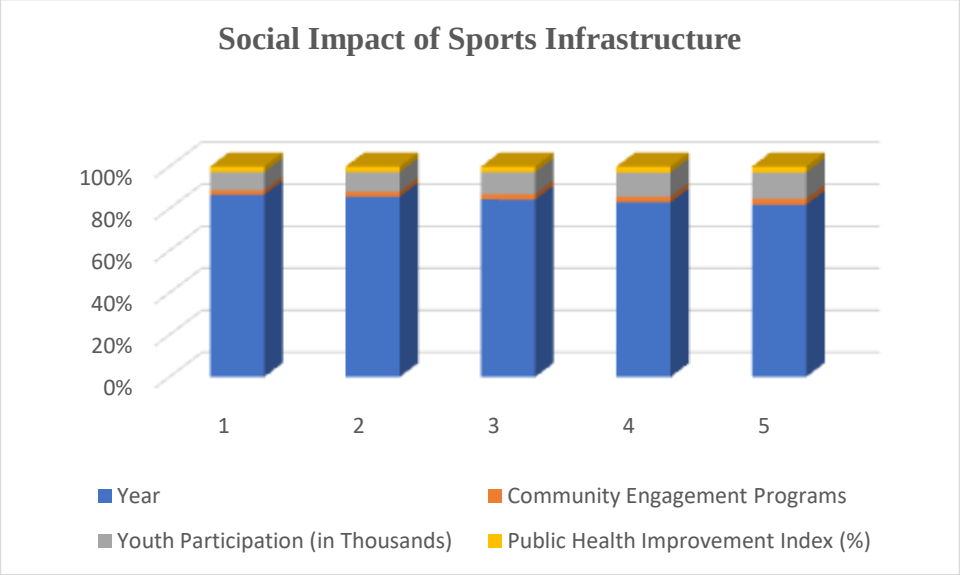

Figure 4.5 :Social Impact of Sports Infrastructure

Special attention will be paid to social impacts in terms of community involvement, youth development, and public health for the sports infrastructure investment made during the years 2018-2022. The increase in number of community engagement programs supported by investment in sports infrastructure from 50 in 2018 to 70 in 2022 indicates that investment in social programs has increased. This is further supported by the increase in the number of young people participating in sport from 200000 in 2018 to 310000 in 2022 and improvement in public health index from 60% in 2018 to 70% in 2022. Both of which can be considered a direct impact of increased participation in sport. These two indicators suggest that sports infrastructure can have an impact on social inclusion, youth engagement and public health.

CONCLUSION

Sport facilities and/or events have also proven a successful driver of national and regional development, in creating employment, GDP and tourism through the use of facilities and/or events. Increased employment and increased GDP have proven that sport is a key driver of innovation and a key driver of sustainable development. As well as new public transport systems and smartened-up urban planning, building new sports facilities is a key pillar of promoting urban regeneration, infrastructure improvements and economic growth.Whether football stadiums are financially viable has been debated. The high initial costs of construction and maintenance of football stadiums may be offset by revenue from naming sponsorships, sports and other events, catering and ticket sales that could justify the extra expense of a football stadium by public private partnership. Environmental concerns in the construction of sports facilities can be reduced through the use of renewable energy sources and sustainable building practices such as water conservation and green architecture.

Socially, sports infrastructure affects youth participation in sport and public health. The effects of sports infrastructure can be seen in community sport programs, and improved public health indicators in communities where access to sports infrastructure is increased. That said, inclusiveness and longer term communal benefits should be a major concern in such cases.Sports infrastructure can have positive social and economic effects on a country or city. Economic viability and potential environmental consequences of the sports infrastructure must also be taken into account. Policymakers, investors and urban planners must seek to maximize its economic profitability and minimize its undesired side effects so that sports infrastructure can be a means for achieving economic development, urban development, and ultimately social development.

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