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Original Article

Specificity of investing on the sports real estate market

EWA SIEMIŃSKA
Nicolaus Copernicus University in Toruń, POLAND

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Abstract
The article presents a specific type of investment projects that relate to sports infrastructure. The evolution of the approach to sport in combination with the latest architectural achievements find their expression in spectacular modern sports projects belonging to the so-called 'fifth generation of facilities', called stadiums-cities designed as independent spaces with their urban infrastructure. The implementation of such investment projects involves high risk, a large amount of time for project preparation and implementation, and high capital intensity. The research objective of the article is to analyse and identify specific conditions for investing in the sports real estate market based on the example of building large football stadiumsreferred to as 'megaprojects'. The study used a lot of source information about stadiums built worldwide for the Olympic Games and world and European football championships, taking into account in particular the level of expenditure incurred for their construction as well as innovative design and utility solutions. The following research methods were used in the article: a method of critical analysis of the subject literature on the real estate market as well as on the sports market, descriptive and comparative methods to identify the most significant investment trends on the sports stadium market. As a result of the research conducted, the most important current directions of implementation of architectural and functional solutions of the designed objects were identified, which generally comply with the standards used in other segments of the real estate marketand concern in particular multi-functional and compact project and eco-projects, equipped with the latest IT solutions.
Keywords: sport, real estate, stadiums, investment project, megaproject

Introduction

The sports real estate market includes a wide variety of facilities, which, from an economic point of view, are often a very valuable asset of significant value, in addition to being very attractively located in a specific area (Rymarzak, Siemińska 2012, Krajewska 2017, Wojewnik-Filipkowska*et al.* 2019). This market encompasses sports facilities designated for various purposes and functionalities, ranging from multi-functional stadiums that allow practising several different disciplines, such as swimming pools, open and roofed pitches, treadmills, ski jumps, golf courses, *etc*.

Sports facilities can be defined as 'an independent, compact set of field facilities and buildings intended for sports purposes' (Small... 1987), so they are formally *de facto* understood in accordance with art. 46 of the Polish Civil Code as 'parts of the earth's surface constituting a separate object of ownership (land), as well as buildings permanently connected with land or parts of such buildings, if pursuant to special provisions they constitute a subject of ownership separate from the land' (Act… 1964).

Since the dawn of time, the largest building constructions have always aroused enthusiasm and interest, which is why today, when sport is called 'the global currency', the largest stadiums in the world enjoy great popularity and arouse a lot of emotions. Today, the development of sport as a new global culture means that the stadium plays a key role in the 21st century agglomeration in financial, geographical, cultural, and spiritual dimensions (Sheard*et al.* 2005, Uhrich, Benkenstein 2010, Uhrich, Benkenstein 2012).

Observing the evolution of architectural thought development materialized in the investment projects of emerging sports stadiums, it is worth emphasizing that their current shape is the result of many years of experience and the history of the development of the five generations of sports stadiums, ranging from those not very safe and not caring about comfort of fan stadiums from the first half of last century, to the today built stadiums of the fifth generation, in which the stadium plays a central role integrating the global community interested in the broadly understood sport culture, becoming a tool for urban revitalization and the city's global brand (Sheard*et al*. 2005; Szlendak*et al.* 2015, https://www.hok.com, Tragedies ...).

The article is a voice in the discussion on the specifics of investing in the sports real estate market with particular emphasis on identifying the directions of modern investment and the level of investment risk.

Corresponding Author: EWA SIEMIŃSKA, E-mail: ewahsiem@umk.pl

Life cycle and features of sport investment projects

Due to their individual nature, sports real estate is not such a popular type of asset as, for example, residential, commercial, or office real estate. Rather, they belong to the so-called alternative resources that require a special approach at each stage of the so-called project life cycle (Behrens, Hawranek 1991, Goddard, Marcum2012) - at the stage of the initial concept of the object (*i.e.* feasibility study), as well as later, in the appropriate investment stage including the stage of designing and erecting the facility, until the operational stage, *i.e*. the use of the project.

Depending on which object we are dealing with - whether it is standard, implemented on the basis of a typical project, or a unique unit - specially designed sports infrastructure, or with a relatively small local object such as a treadmill and school sports field, or a very complex, architecturally complicated sports facility, the degree of difficulty and risk related to the preparation and construction of the facility will be very different.

This, of course, does not mean that a typical architectural and urban design project is not exposed to risk, as unexpected circumstances or conditions may always arise and will threaten the successful implementation and operation of the facility (Siemińska 2013). It is particularly about conditions related to design and construction works carried out at a specific time and in a specific location, as well as conditions related to the given project, including requirements related to the applied safety of the following:

- structural solutions of the facility, especially in situations of increased risk resulting from the intensity of use of the facility or extreme weather conditions (downpours, hurricanes or tornadoes),
- communication routes in the sports facility and its surroundings, especially during mass events,
- building materials, construction elements, and equipment selected for the facility,

and, moreover, legal defects of sports real estate regarding, for instance, property rights or other rights to dispose of immobilia, the settlement of which often requires a long time and the need to incur costs.

The specific features inherent to each investment project include in particular:

- high time consumption of project preparation and implementation,
- risk,
- high capital intensity,
- psychological considerations related to the investor's decision making process.

The time-consuming investment projects result from the fact that their implementation often requires a very long, usually a several-year period, needed to develop a preliminary concept of a given facility, to handle all formal and legal administrative procedures required by law, prepare project and cost documentation, choose the contractor(s), implement the project and commission it.

Due to the long implementation time, the risk related to the successful implementation of a given project increases (Pfeffer 1956, Knight 2002, Marcinek 2002, ed. Jajuga 2007, ed. Czarnek 2010, Bywater 2011, Guillon 2011, The Global Risks Report 2020). The threat of the risk occurrence increases along with increases in the value and unique nature of the investment,due to (Flyvbjerg*et al*. 2003, Capka 2004, Grün 2004, Arnold 2009, Shenhar, Holzmann 2017, Sturup 2019):

- large physical dimensions of the project and the resulting need to engage lots of material (equipment, building materials, land), human and capital resources over a given period of time, *e.g.* a decline in the business cycle or global threats such as, for instance, the COVID 19 virus pandemic at the turn of 2019 and 2020,
- the uniqueness, individual character of the architectural solutions of the object and the resulting high risk of unidentified threats occurring during its construction and use,
- multidimensional complexity of the project, including various groups of its stakeholders - owners, sponsors, users, residents, authorities at various levels (from local, through national, to international), *etc*.,
- the multifaceted impact of sports infrastructure on the environment, including its positive or negative impact on the immediate and more distant environment, which translates into the level of its (*i.e.* of the environment) attractiveness and market value.

Research shows that making decisions on very large investment projects, also referred to as ‘megaprojects’ (ed. Flyvbjerg 2017, Marcinek *et al.* 2019), is particularly difficult and burdened with high risk, also due to the importance of potential impacts of such a project, as well as problems with the assessment of their effectiveness and often occurring in political situations determinants of decisions made (Black *et al.* 2000, Flyvbjerg*et al*. 2003, Allen, Carletti 2013, Salzman, Zwinkels 2013, List of stadiums by capacity 2020). One of the symbols of the so-called megaprojects is an extremely attractive stadium in terms of architectural solid - ‘Bird's Nest’ in Beijing built for the 2008 Summer Olympic Games (http://www.bryla.pl), whose design was selected from at least a dozen proposals and cost about 423 million US dollars (Photo 1).

Photo 1. The National Stadium in Beijing 'Bird's Nest'

Source: https://commons.wikimedia.org/w/index.php?curid=4820296; (11.02.2020).

Financial aspects of sport projects

The aforementioned project risk concerns very often exceeding the initially assumed budgets for a given project, as evidenced by many examples regarding the construction of sports facilities (Siemińska 2020). The examples of such investments include:

- stadiums in Brasilia, Curitiba, Rio de Janeiro and Belo Horizonte built for the FIFA World Cup in Brazil in 2014, whose construction costs, according to the Sinaenco estimates, were exceeded by more than 63% compared to the planned ones, and the costs of building the stadium in Porto Alegre, originally planned for an amount of 130 million Brazilian reals, finally amounted to 330 million (Brazil: cost ... 2014),
- The Saint Petersburg Stadium built for the 21st FIFA *World Cup* in 2018 cost seven times more than originally expected - instead of 6.7 billion roubles, 43 billion roubles were spent on it (Flyvbjerg*et al.* 2016, http://stadiony.net, part II),
- twelve stadiums built for the 21st FIFA *World Cup*, which took place in Russia in 2018, the construction cost of which, as estimated, exceeded 300% of the originally assumed amount, since in 2010 it was planned to spend 84 billion roubles for this purpose, while in fact, nearly 250 billion roubles were spent (http://stadiony.net, part I),
- The Montreal Olympic Stadium built for the 1976 Summer Olympics was originally to cost Canadian USD 134 million, and in practice it cost Canadian USD 1.1 billion (Flyvbjerg*et al.* 2016, https://pl.qwe.wiki/wiki/Olympic).

In an interesting study entitled 'Olympic Proportions: Cost and Cost Overrun at the Olympics 1960-2016', the authors (Flyvbjerg*et al.* 2016) found out that the costs of sporting Olympics organized in 1960-2016 exceeded the average originally planned levels by 156% (in comparable prices and by 324% in nominal prices), and, moreover, that no other type of megaprojects (construction or infrastructure projects) were not as vulnerable to exceeding originally planned financial budgets as Olympic projects were (Table 1). The above-mentioned authors conclude that the decision on the willingness of a given city and country to join the Olympic Games exposes these communities to high financial risk related to the preparation and construction of facilities and infrastructure, whose final cost will far exceed the initial expenditure (Flyvbjerg*et al.* 2016).

Table 1. Sports-related cost overruns, Olympics 1960-2016; original currencies, real terms

Games	Country	Type	% Cost Overrun
Rio 2016*	Brazil	Summer	51
Sochi 2014	Russia	Winter	289
London 2012	UK	Summer	76
Vancouver 2010	Canada	Winter	13
Beijing 2008	China	Summer	2
Torino 2006	Italy	Winter	80
Athens 2004	Greece	Summer	49
Salt Lake City 2002	USA	Winter	24
Sydney 2000	Australia	Summer	90
Nagano 1998	Japan	Winter	56
Atlanta 1996	USA	Summer	151

Lillehammer 1994	Norway	Winter	277
Barcelona 1992	Spain	Summer	266
Albertville 1992	France	Winter	137
Calgary 1988	Canada	Winter	65
Sarajevo 1984	Yugoslavia	Winter	118
Lake Placid 1980	USA	Winter	324
Montreal 1976	Canada	Summer	720
Grenoble 1968	France	Winter	181

* Projected final Rio 2016 costs have been used; sources are listed in the references
Source: B. Flyvbjerg, A. Stewart, A. Budzier (2016), The Oxford Olympics Study 2016: Cost and Cost Overrun at the Games. Saïd Business School, University of Oxford, p. 12.

An important support in the scope of the risk of exceeding investment outlays for the investor is, among others, an internationally recognized concept of Building Information Modelling (BIM), which consists in modelling information about the building and allows obtaining current information about the project, progress of works at the construction site and the level of costs incurred at every stage of the project's life. Thus, the implementation of the Building Information Modelling system can support the work and decisions made by designers, engineers, architects, contractors, manufacturers, operators and managers, and thus various specialists associated with a given object at various stages of its life cycle (Kawecka-Zygadło 2019, What is BIM? 2020).

In the face of the aforementioned very high financial burden of the host of large sporting events, there are also decisions taken about the resignation of some countries from the previously declared willingness to organize them, as was in Sweden, Poland and Ukraine in connection with the organization of the 24th edition of the Winter Olympic Games in 2022, which are ultimately to be held in Beijing.

Another visible trend related to the high capital intensity of investment projects is the allocation of international sports events organization not to one host, but to several countries. The point is to spread the burden of incurring expenses related to the organization of such events and construction of sports facilities into several national budgets, and then the need to maintain them. After the 2004 UEFA European Championship hosted in Portugal and the *2014 FIFA World* Cup *Brazil*, many stadiums were deserted and the problem of wasted huge expenditure on their construction appeared. In order to avoid the so-called 'white elephant syndrome' (or 'host curse') both UEFA and FIFA decided that:

- the 2008 UEFA European Championship are to have two hosts - Switzerland and Austria, while in 2012 - Poland and Ukraine, and in 2020 - as many as twelve host countries,
- the 2026 FIFA World Cup will be held for the first time in three countries, *i.e.* Canada, Mexico and the United States.

In the context of the very high capital intensity of the sports facilities presented and the aforementioned specific features of the investment project, it is worth pointing to a very bold, but also extremely risky investment decision taken by the Japanese hosts of the 2020 Summer Olympic Games to abandon the previously selected project in favour of a much more modest and cheaper one. This drastic decision was dictated by financial reasons, since the originally selected, very impressive stadium design prepared in the ZahaHadid Architects studio was valued at 300 billion yen, so in mid-2015 it was decided to launch a new tender for a more modest project. Despite very high time pressure, the facility was built in less than 36 months and was put into use a month before the planned completion date of construction works. Its cost amounted to 157 billion yen, so almost half less when compared to the first version of the project (New National Stadium ...., New stadium...).

Flyvbjerg proposed to add three additional factors to the high capital intensity and risk of megaprojects (ed. Flyvbjerg 2017):

- the 'political sublime',
- the 'economic sublime',
- the 'aesthetic sublime'.

„The 'political sublime' which here is understood as the rapture politicians obtain frombuilding monumenta to themselves and their causes. Megaprojects are manifest: they garner attention and lend an air of proactiveness to their promoters. Moreover, they are media magnets, which appeals to politicians who seem to enjoy few things better than the visibility they get from starting megaprojects.Next there is the 'economic sublime', which is the delight financiers, business people, and trade union get from making lots of money and jobs from megaprojects, there are ample funds to go around for all, including contractors, engineers, architects, consultants, construction and transportation workers, bankers, investors, landowners, lawyers, and developers. Finally, the 'aesthetic sublime' is the pleasure designers and people who appreciate good design get from building, using and looking at something very large that is also iconically beautiful (...)" (ed. Flyvbjerg 2017).

The promoters of megaprojects systematically misinform parliaments, the public and the media in order to get projects approved and built. The mechanism of approving sports megaprojects often consists in practice of underestimating costs, overestimating revenues, underestimating environmental impact and overestimating the effects of economic development. This makes projects extremely risky, but the risk is hidden from taxpayers,

investors and society (Marrewijka*et al*. 2008, ed. Flyvbjerg 2017, Marcinek *et al.* 2019, Wojewnik-Filipkowska*et al.,* 2019).

Another problem occurs here that is referred to as 'intergenerational responsibility' and it relates to the consequences of making investment decisions regarding large projects that directly and indirectly affect the environment, whose construction and maintenance costs are also borne by future generations (Fainstein 2014, Fahri*et al.* 2015, Foltyn-Zarychta 2018, Sobiech-Grabka 2019,). The ideas of such investments are being increasingly criticized, since - as it is emphasized - public authorities have no right to burden future generations with debts and long-term obligations resulting from decisions made today (Parker 2012). Moreover, as emphasized by *Nobel Laureate Ostrom*, for the well-being of future generations a global balance is needed, which is dependent on the level of local and national balance (Ostrom 2012).

An example of the positive impact of sports facilities on the environment and the desired synergy effects is the infrastructure prepared for the Winter Olympic Games in Albertville, France in 1992. Many of these facilities are still used today, such as la Halle Olympique, which has an ice skating rink, tennis courts and concert venues. The speed skating ring has been converted into a multipurpose stadium used for athletics and football events and the Olympic Village in Bride – les-Bains has been adapted to become a summer thermal resort and winter sports resort. Thanks to the investments made in sport and recreation infrastructure and their revitalization projects, after the Olympic games in 1992, the popularity of other ski resorts in France increased significantly, *e.g.* Les Arcs, Courchevel, Meribel, La Plagne, Tignes and Val d'Isère. There are currently 110 mountain resorts and 15 related ski resorts in the Savoie-Mont Blanc region, which receive millions of tourists annually, which is conducive to the development of the local community (Infrastructure 2014).

Design and utility determinants of sports properties

The answer to the changing approach towards sports, treated until recently as a narrow field of activity reserved for a closed group of users, is the modern trend of moving away from designing buildings adapted only to one specific sports discipline, in favour of universal facilities with a flexible utility character. Depending on the needs, they can be used to practise various sports, as well as organize events other than sports, and therefore facilities must meet the various requirements of different groups of users. This trend is primarily due to the aforementioned change in the approach towards sport and treating it as an area with great socio-economic potential (Fraser 1993, Culley, Pascoe 2015, Gil 2015). Building a whole cultural, business and entertainment environment based on sport for a wide community of users creates a synergy effect, further strengthening the integration of the environment. The objects designed in such a way are much more appreciated among potential investors, since they ensure greater attractiveness of capital located on the real estate market, and thus the rate of return (Priemus*et al.* 2008, Poleg2020). When designing modern mixed-use facilities that can combine various utility functions, encompassing sports, artistic, entertainment, office and business, or recreational ones, it is necessary to take into account and precisely plan various related zones of such an object, including in particular:

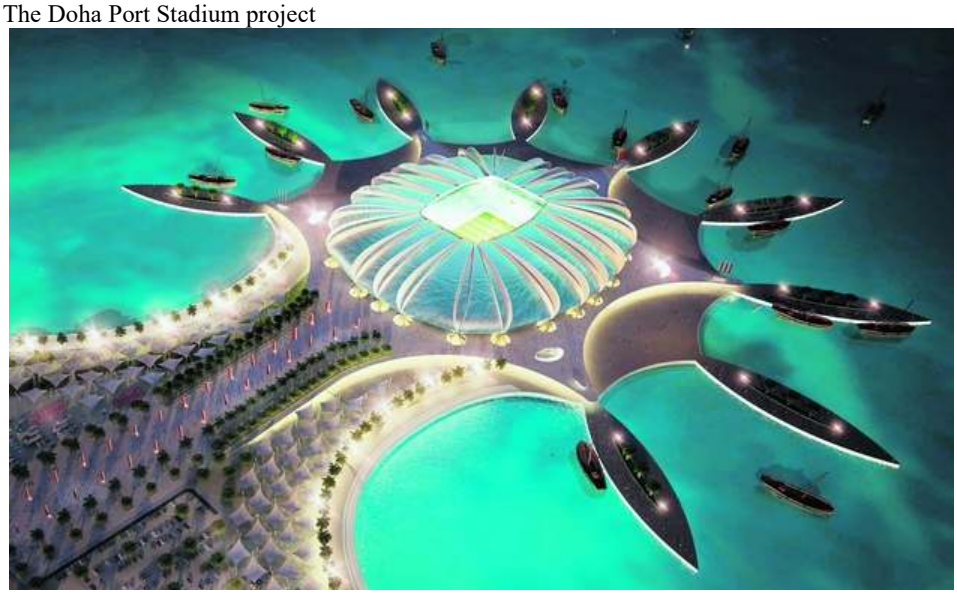
- the area on which sports competitions (*e.g*., playground) and/or artistic performances take place,
- seats for spectators (audiences, stands), including separate zones for lux class users,
- ancillary infrastructure intended for users of the facility, especially the sanitary and technical part related to the ongoing service of the building, *e.g.* cloakrooms, showers, small catering outlets,
- communication routes that allow many users to move efficiently and safely at one time,
- parking lots,
- zones for additional rooms for non-sports purposes (*e.g.* offices, hotels or conference rooms), often designed in a separate part of the complex,
- the current service area of the facility inaccessible to users (server rooms, security systems, cleaning services, *etc*.),
- other.

Furthermore, at the design stage it is worth planning a possible expansion, or *vice versa*, to reduce the sports facility, because these types of modifications are usually much easier and less costly when designers included this option. It turns out that as early as in 1968 during the Winter Olympic Games in Grenoble, the opening ceremony took place at the facility built exclusively for this occasion, which was demolished after its completion (Rapport official 1969). A similar solution was used in 1980 in Lake Placid (Lake Placid Olympic Center) and in 1992 in Albertville (Winter Olympics 1992, Infrastructure…2014). In 2012, at the 30th Olympic Games in London, the stadium was designed to dismantle part of the facility after the Olympics and reduce its capacity from 80,000 viewers to 25,000 and thus reduce its maintenance costs (London Olympic Games 2012). The designers' priority was unprecedented durability, lightness and appropriate geometry of the design of this compact stadium, which today is becoming a good practice when designing further sports facilities. In South Korea's Pyongyang - the host of the 2018 Winter Olympic Games - a temporary, built from prefabricated elements facility was erected for the needs of this global event, the construction cost of which was about USD 109 million, and therefore incomparably less than the previously quoted expenditure for the construction of Olympic investments (Horwitz 2018). A similar solution was used by the organizers of the European Swimming Championships (which were held in Berlin in 2014) for a swimming pool temporarily built at the cost of 2 million euros. In turn, the Dutch organizers of the Beach Volleyball World Championships in 2015 for the

purposes of matches in the Hague in the semi-finals and finals built a floating pitch with stands for 5.5 thousand spectators in the middle of the pond located in the city centre next to the headquarters of the Dutch government and parliament. Another interesting solution that is increasingly applied in the world of sport is to use existing infrastructure for current needs related to sporting events. For example, the 2015 World Swimming Championships in Kazan, Russia, were organized in two 50-meter pools built on the pitch of an existing football stadium. The 2015 Rugby World Cup matches in England were held at several facilities, most of which are typical football stadiums located in various cities in England.

However, the 22nd edition of the FIFA World Cup in Qatar planned for 2022 will be held mostly on the so-called modular stadiums, which means that the pitch and part of the stands will be permanently installed, and some (170,000 seats) will be temporarily installed during matches. The Doha Port Stadium, designed by Albert Speer&Partner, is to be erected on a specially built island and be cooled by continuous watering, and completely demolished after the championships (Photo 2).

Photo 2. The Doha Port Stadium project



Source: https://polskatimes.pl/ms-2022-oczekuj-niezwyklego-katarczycy-juz-mysla-jak-zadziwic-caly-swiat/ar/350023, Qatar 2022 Bid Committee (11.02.2020).

On the margins of the aforementioned concept of modular stadiums, it is worth noting quite futuristic - as it seems today - but at the same time a very ingenious project to build floating stadiums to be rent to different users for various sporting events for much less money than the construction and maintenance of stationary facilities. An interesting architectural proposal in this area was presented, for example, by JSK Architects who prepared the design of the mobile floating Doha Stadium with a capacity of 43,000 seats for the Supreme Committee for Delivery & Legacy in Qatar for the 22nd edition of the FIFA World Cup in 2022 (http://www.jskarchitekci.pl). As the authors of the project emphasize, financial reasons speak in its favour, as the cost of renting such an object, estimated at tens of millions of zlotys, would be significantly lower than the expenditure needed to build a similar object, and, moreover, would not generate the costs needed to maintain a sports property, which very often overburden the budgets of owners of these properties. The only limitation of the floating stadium is the need to have a wharf so that one can bring the floating stadium to the designated place.

A characteristic direction of development of modern sports infrastructure is investing in the so-called 'green facilities' in line with the idea of sustainable development, with an emphasis on recycling initiatives, closed circulation, the use of solar panels or systems supporting cost-effective facility management (Communication from the Commission Europe 2020). Green construction facilities first appeared on the commercial real estate market, mainly office ones, to gradually penetrate other market segments, including sports facilities. This is connected with the extremely important certification of buildings according to international standards, mainly LEED (Leadership in Energy and Environmental Design) and BREEAM (Building Research Establishment Environmental Assessment Method) ones. The Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the possibility of resource efficiency in the construction sector of 1 July 2014 emphasizes the importance of reducing the costs of the entire life cycle of buildings, indicating that buildings that were designed and built to reduce environmental impact throughout the entire life cycle bring direct economic benefits such as lower operating and maintenance costs, slower impairment and higher asset value.

Moreover, this also brings positive social effects such as better health and greater efficiency (Communication from the Commission 2014).

Conclusion

The evolution of the approach to sport, followed by the use of sports real estate as a valuable resource of high value, means that increasing attention is being paid to investing in sports facilities. The study presents examples of the so-called megaprojects of sports stadiums, for which huge expenditures were incurred. Since investing in such projects is subject to the greatest risk, the trend that can be seen now is implementing such architectural and functional solutions that mitigate this risk. The article also describes the latest trends in the design of modern hybrid projects with the potential to organize mass events, and not only of a sports dimension, designs of detachable compact stadiums, the size of which can be adjusted to the current needs of users, or sport eco-projects. The dynamics of the development of the sports real estate market means that the recognition and researching its resources, which often have great value and economic potential, ought to be conducted in a systematic manner, and the best practices and solutions recommended for use in many projects.

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