

INFRASTRUCTURE MANAGEMENT AND MAINTENANCE FOR URBAN ENVIRONMENT QUALITY AND SUSTAINABILITY.

OLYMPIC ASSETS

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Abstract

This is where the abstract should be placed. It should The planning and management of infrastructure assets (both if carried out according to the city development and if planned for important culture and sport events) - being them crucial to guarantee use and management modalities capable of avoiding those territorial, financial and environmental wastes which characterized the past – Has to be optimized according to functional, management and maintenance needs.

Such a need is becoming more and more urgent because of the following reasons: the progressive decrease of the Public Administration financial availability concurrently at important increases at level of properties, the major attention users pay to the quantity/ quality of erogated services, their interest in public health and safety involving a renewed attention to themes such as air and water quality, green spaces, traffic and noise decrease, progressive ageing of people resulting in a more difficult city practicability and access to services, the obsolescence of many infrastructures built during the urban growth, the increase in the social and economic costs to manage and maintain environmental resources; all these are signals that call for reflecting upon the implementation modes of urban system and services.

In order to reach building, management and control modalities – characterized by a renewed interest in the natural world, in the infrastructure asset – an intense research activity has been initiated: aiming at giving a useful contribution to a sustainability-oriented development, such a research has started from the redefinition of maintenance culture as a disciplinary study context shared by the industrial and building sectors, and it has implemented important results within the knowledge, management and maintenance systems.

The definition of maintenance-oriented planning modalities as well as of methods and tools for infrastructure management and control enables to carry out a development within technologies and processes which better answer to instances of quality and sustainability as well as to a more careful attention towards the time dimension.

Keywords: Sustainability, quality, maintenance culture, infrastructure maintenance, planning.

1 Introduction

The theme of the sustainability and quality of the results of built environment transformation actions represents an important chance to reflect and reformulate the technological research.

Technology has always represented a fundamental instrument among human societies, it is actually the reference parameter to study their evolution; in the last decades, technology has been assuming a new and crucial role: from being an element of progressive and potentially irreversible unbalance between man and nature, and between man and the results of his own activity, it has been progressively converted into a re-balancing factor, asking for a continued critical examination of technologies in all their applications in order to control the phenomena derived from their use.

If nowadays – and more and more in the future - technology represents the set of rules and practices useful to the development of man in harmony with the environment, therefore technological research and experimentation have not only to govern processes but also to promote and verify that such processes are aimed to pursue sustainability and quality objectives.

Within the field of built environment technology, an interesting contribution toward such direction can come from research lines strategically aiming to determine methods and tools capable of guaranteeing the system life span.

By investigating the “residence character”, it could be possible to get to a new approach to management and maintenance, which should both be directed not only to guarantee the system efficiency but also to prevent the initiation of any possible process of functional and economical obsolescence which could involve under-utilization, abandonment and – consequently - degradation. However, large scale management and maintenance processes haven't been developed in satisfactory terms up to now; the city care will therefore be carried out by defining new urban policies, by

identifying and valorising the management and maintenance role through program and control scientific processes, by developing adequate urban infrastructure planning and managing strategies aiming to guarantee efficiency and entirety of the life cycle.

Integrating the asset, building and maintenance management into a strategic approach seems to be the crucial premise to any optimizing policy of system life-cycle, since within an integrated urban system management and maintenance it is possible to develop tools and methods having a systemic approach, where the strong and indissoluble link between the quality and sustainability factors can be recognized and valorised.

Within such theme, the present contribution will analyze the issues related to planning and managing the infrastructure assets realized for the Olympic Games.

2 Olympic Games as chance for development

The organization of the Olympic Games requires important infrastructure changes in the host city: in order to guarantee regular games, the building of new sport infrastructures (or the substantial rehabilitation of the existing ones) is usually accompanied by the improvement of transport and broadcasting infrastructures (to better receive athletes and tourists) and by a general improvement in environment quality as well. The realization of such works asks for huge investments whose purposes go beyond the sport event itself in order to project themselves toward the future in terms of improvement of the guest city and acquisition of long terms benefits in the local and national prestige and economy.

One of the Olympic Games characteristics is that the host city is given more than a billion USA dollars by the CIO in support of the event operating costs. Such investment is guaranteed by the TV copyrights and the sponsorship contributions, and it covers about half of the Olympic Committee operating costs. Such investment works as a sort of magnet for other public and private investments which, in their turn, let the city improve facilities and infrastructures.

Being a host nation is indeed considered an important chance for economical development: it has been estimated that during the period going from the assignation until the starting of the games the GDP (Gross Domestic Product) of the host nation economy grows about 0,5% a year.

The Olympic Games highlight the host cities which, changed and re-qualified for the event, can remain touristically attractive even after the end of the Games.

Seul and Barcelona can be taken as an important example: in the years following the Seul Olympic Games there was a 11% growth in the number of visitors, while since 1993 Barcelona has become the most required city for international meetings and workshops. The perception of the benefits derived from organizing and hosting the Olympic Games is indeed given by the increased urban competition after the 1992 event.

The Games strongly influence the host city, and in fact people don't remember the "American", "Australian" or

"Italian" Olympic Games, but the Atlanta, Sidney or Rome Games: thanks to the Games, the host cities become greatly famous, but they will have to manage such fame over the years. Anyway, these events don't always represent a tool for a real economical growth, provided that their organization is part of a more comprehensive development plan of the host city.

The Games has been developing into a tool for local renewal and important urban changes. Such role results in the huge urban changes linked with de-industrialization and globalization which have been imposing planners to overcome development policies based on industrial production. Through place marketing and mega-events, new strategies have been introduced in order to encourage activities based on consumption, such as services and tourism industry (geographically moveable).

A clear political vision for the future of a city should be shared before any attempt to host an Olympic event. The Games need to be conceived within a complex urban and regional vision of economical, social and environmental development. An important aspect of any international event is indeed the possibility to build a formidable instrument to pursue city marketing strategies in terms of national and international enhancement or relaunch. For example, the recent Winter Olympic Games held in Turin in 2006 have contributed to make the city – only known as the city of the FIAT - the capital of tourism and culture. However, it is Barcelona that better represents the case of a city which has been able to use the Games as a means to renew and improve itself, as well as to acquire an international image: the city has indeed placed the event into the Barcelona Strategic Plan 2000, trying to reach the "southern Europe Gate" status and using the Games in order to raise its infrastructures and environment to an international standard. Nowadays, even though it has preserved the traditional economical and harbour activities, Barcelona has become one of the capitals of culture, qualified tourism and free time.

An analysis of the effects and implications of the Olympic Games should anyway account for many issues, in particular for what "remains" after the Games, the so called "Olympic inheritance": it is immaterial, based on a set of experiences, on socializing and value spreading processes, on the building and re-building of a local identity; but it is a material heritage as well, consisting of infrastructures, services, great works. In order to make the Olympic Event a real chance of development, it is necessary that the planning and management of such inheritance is subjected to careful program.

3 Infrastructure Sustainability

The space-time concentration of actions aiming at territory change and exploitation, the high use of resources to realize infrastructures from which only few generations will benefit and the uncaredful assessment of management economies, seem indeed to widely contradict the sustainable development parameters promoting the space-time distribution and sharing of environmental, social and economical impacts. Anyway,

it is evident that host cities, organizers and IOC have been increasingly concerned with assuring a long-time positive inheritance to the host countries and their citizens.

The environmental issue and the most widespread preoccupation for sustainable development have been attaining a new status since the 1994 Lillehammer Winter Olympic Games, the first “ecological games”: since then, sustainable development has become to have an increasingly relevance within the Games organization strategies.

The Olympic Movement's Agenda 21, approved in 1999, has established a program which gives the Olympic Committee members an active role in promoting sustainable development (in order to minimize or eliminate any potential harmful effect caused by the Games organization). Concrete specifications have been given not only to reduce non-renewable resources exploitation, to adopt energy-saving solutions and to use environmentally low impact products, but also to guarantee high quality and durability of materials, which have to be resistant to wear and natural degradation.

Renamed “Green Games”, the Sidney Games have been the most environment friendly since used as an innovative platform to show the most recent developments in green technologies. Being the Games an ideal stage to show examples of sustainable development, if correctly oriented they could give governments the chance to activate and promote sustainable development policies. Since such policies involve the economical, social and environmental dimension, thanks to their multi-dimensional character the Olympic Games can represent an interesting investigation field by means of which to throw a new light on the debate on urban and territorial sustainable environment.

In 2006 the TOROC (Turin Olympic Committee), in order to guarantee an adequate level of environment care and respect, by applying the 285/2000 Act, has for the first time adopted the SEA (Strategic Environment Assessment), according to which all the effects on territory are evaluated in order to assess the intervention environmental sustainability. The activation of the Olympic Program has therefore become an “assessment object” through the implementation of strategic guidelines and planning tools, monitoring activities and environmental protection programmes.

In order to pursue a sustainable development within a complex event such as the Olympic Games, it is necessary to consider the aspects related to facilities allocation, choice of technologies and building materials, management and maintenance efficiency.

In order to minimize environmental pressure and to avoid unfair distributions of benefits and disadvantages among communities, in facility planning it should be favoured distribution over space-time investment and impact concentration. The Games project should be a crucial part of an integrated and realistic approach projected over the next 15-20 years. Olympic sites and infrastructures have to be planned within the strategic

planning of the host cities and regions, and they have to be considered as a catalyst and a chance for developing long-time activities as well as for improving the citizens' life quality. It is indeed necessary to satisfy both the temporary and the structural needs of cities and regions.

The inadequacy of spatial distribution and concentration in the Olympic sites should receive a deeper attention in order to guarantee the satisfaction of the citizens' future need. The new sport facilities have to sustain the development of the host neighbourhoods and to be an integral part of a long term vision for the urban development.

A possible choice can be to localize Olympic sites and infrastructures in particularly degraded neighbourhoods in order to make them means of economical, social and urban regeneration.

Anyway, the Olympic Games are an event which lasts about two weeks, and consequently temporary plants should be privileged both when adequating their building to the standards required by the Committee and when planning the many performances they will have to guarantee. A combination between new and temporary plants would enhance their overdimensioning in terms of future needs. Cost reduction, environmentally low impact, higher flexibility in the planning phase, simplicity in building programs, reduced disruption to local people (thanks to shorter building times): these are all the positive aspects guaranteed by such combination. However, the most important benefit for a host city is represented by the chance to adequate the Olympic needs to the city long term necessities.

In case of permanent facilities, their punctual re-use should be defined by adopting an assessed management model. The capability for efficient management and the guarantee of a long term infrastructure asset - aiming at avoiding economic and environmental wastes – ask for an adequate reflection on any possible strategic approach to management and maintenance.

4 Infrastructure maintenance and management strategies

A crucial theme in post'Olympic Games is the optimization mode of the facilities and “great works” built in occasion of the event.

Guaranteeing efficiency and proper use of the assets represents a target to reach thanks to several guide-lines to be adopted according to the ex-ante planning phase as well as in the post event managing phase.

The so-called Olympic inheritance, if unbalanced in comparison with the post-event demand, can become a heavy burden in case of a useless territory exploitation as well as of a passivity in the management of facilities whose use and amortization in post-Games period are not guaranteed. It is then important not to run the risk of realizing white elephants (i.e. those buildings exclusively thought as windows on local economy and engineering abilities) instead of actuating long time planning policies capable of answering – in terms of cultural and leisure facilities – to the needs both of local people and of tourism fluxes.

In the past, interventions have sometimes remained “external bodies”, improperly localized and often erroneously dimensioned within any post-Olympic use.

An emblematic example is given by the city of Rome, which in 1960 hosted the XVII Olympic Games: the City Council had planned several new facilities, but none of them was realized.

As already said, infrastructure building has to follow a careful assessment of the citizens’ needs in the medium and long run; with reference to sport facilities, if they’re not conceived as temporary structures, during the planning phase it will be absolutely necessary to program their re-use mode.

The lack of adequate planning of valorisation and re-use policies will unavoidably result in abandon and under-use, with a consequent rapid physical degradation as well as an accelerated technological obsolescence.

The maintenance of an Olympic infrastructure asset in efficiency and in constant use asks for a much simpler mode of opposing the action of time and above all asks for a commitment to a constant upgrade in order to maintain technological and functional levels of competitiveness.

During the project phase, besides predicting adequate scenarios of facilities reuse, it is important to implement maintainability as a crucial issue for the economic sustainability of the facilities themselves. The implementation of maintainability represents indeed the essential condition to life-cycle cost reduction. moreover, the maintainability requirement can also give its contribute in case of dismantling of facilities or reusing components at the end of their useful life-cycle, increasing in this way the sustainability levels of the project.

From a maintenance point of view, a project can be considered intelligent when it offers: a complete and exhaustive inspectionability of technological equipment; an easy accessibility; a replaceability requiring unspecific equipment and not highly specialized personnel; an optimization in component unification. In a word, every project should facilitate repair, cleaning and dismantability.

Some observations can be made about the managing phase: by considering the Olympic event as a means of promoting long term development, and the assets and facilities as advanced services to promote culture, sport and free time both on a national and on an international level, it becomes necessary to find adequate marketing policies following the Olympic event. Even during such phase, it will be of crucial importance to actuate an efficient communication program. In order to guarantee a full use and profitability of facilities, it will then be necessary to create a managing structure aiming at guaranteeing continuity in tourist promotion and event organization. Such managing structure – to which other operating structures could be eventually subordinated – should promote the important goal of maintaining high standards of performance useful to guarantee fully efficient and competitive structures..

Complex and articulated managing activities are related to the Olympic assets management: the organization of

events requires economic and organizational assessments on any alternative use of infrastructures, their realization asks for implementing safety and security systems, the maintenance is concerned with data collecting and organizing (asset data, projecting, programming, organizing, performing, checking and monitoring).

Such overall managing activities can be hardly implemented without the indispensable support of information technologies, which represent the strategic tools through which – by means of specific data banks, procedures and functions – it is possible to collect, storage, elaborate, use and upgrade all information required as decisional and operating support to set, operate and integrate processes, models and services for asset management.

5 Conclusions

The survival of Olympic inheritance can be guaranteed by a strategic planning approach which gives unity to the event organization and to the city future.

Within a clear development model to relaunch urban economy, it will be necessary to define the roles, structures and programs which will follow the event. In such scenario, the facilities and infrastructures management can obtain efficiency and efficacy results only if planned as a strategic structure through which to plan activities aiming at structure operating and maintenance activity optimizing.

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