Development of Heritage Preservation Engineering Trade Practices in India: An Urgent Need

Mark Twain, American author: *"India is, the cradle of the human race, the birthplace of human speech, the mother of history, the grandmother of legend, and the great grandmother of tradition. Our most valuable and most instructive materials in the history of man are treasured up in India only."*

Introduction

Yes ! We have to preserve our history, our tradition, not only for India, but for the future generations of the entire world. We have to learn from the past and build a sustainable future by preserving the live model of our past – the built heritage assets. Preservation of built heritage is becoming crucial as innumerable historic buildings and monuments all over the world in the last few decades have been lost due to environmental degradation and natural extremes, a loss that can never be compensated. One of the most important reasons of this is the truncated application of engineering techniques and materials for maintenance and preservation of the built historic asset. The application of engineering techniques to historic buildings, its materials, and structural systems present a number of unique challenges that are currently being introduced in the engineering sector in some developed countries of the world.

Masonry Surface Degradation in Katra Masjid, Murshidabad, West Bengal (1724)

India is a country that possesses a rich built heritage asset of diverse traditions but there is still a need for specific engineering knowledge, skill and trade practice for sustainable preservation and restoration of our historic structures. The role of engineering in historic preservation is increasingly becoming popular in developed countries of the world. With the destruction and degradation of historic structures around the world, a realization has dawned for specialist structural interventions to safeguard heritage structures. The world community has already made considerable advancement on this issue. ICOMOS has convened the International Scientific Committee on the Analysis and Restoration of Structures of Architectural Heritage (ISCARSAH), which has developed a series of Principles defining the roles of engineers in heritage preservation.

Engineering Preservation: Indian Experience

a) Knowledge & Skill: The need of engineering specialization in historic preservation in India is yet to be defined precisely. Overall preservation of built heritages in India requires a more serious approach from every corner of the society, starting from the general people to the custodians of these built assets. A recent CAG report raised various inconsistencies in the heritage preservation work carried out by ASI. An in depth analysis of these problems reveals that the basic deficiencies in engineering knowledge, skill and specialized trade practices for restoration, are perhaps the main reason, rather than a management or funding problem. A serious research need is sometimes required on a case to case basis for the degraded but important heritage assets. A Heritage Preservation professional and academia historically comprises of architects on one side and social and art historians on the other. In India, the involvement of a structural engineer in any historic restoration project is a chance or sometimes from ignorance of the owner. Structural risk assessments of heritage assets are rarely done through rigorous numerical simulation and failure mode prediction of structure in extreme consequence. If the preservation of a historic asset can be carried out on the basis of demand of structural analysis, destruction of heritage

Structural Degradation in Katra Masjid, Murshidabad, West Bengal (1724)

structure in extreme consequence, as recently occurred in Nepal, can be minimized.

b) Trade Practices: Currently, some evaluation and condition assessment of the heritage structure is being undertaken in India by individual initiative of a structural engineer because of the urgency for structural intervention in a heritage property. Unfortunately, the expert recommendations made by the engineers for preservation of the heritage structure could not be executed on site due to a skill gap and inadequate development of this specific trade practices in the heritage sector. The problem of execution of restoration work for a heritage structure is a major problem in India due to unavailability of specialized trade professionals and contractors. Development of traditional construction industry in India has been very encouraging in the last few decades, but rehabilitation and restoration trade practices are practically absent. On the other hand, the economic opportunity in the built heritage sector is growing very fast through tourism globally.

Church of St. Augustine Ruins, Goa (1602 A.D.)

Economic Backwardness and Preservation of Built Heritages in India

India is full of incredible built up assets that reflect its rich and diverse traditions, traditions. On the other hand, it is an economically poor country and is perpetually struggling with its long history of poverty. More than one sixth of the world population resides in India with unemployment being one of the major problems. This gigantic population is often considered as the major cause for India's economic backwardness today. Ironically, India also has the largest young working population in the world today, which may likely become the largest young working force in the whole world in the future. Economic and Global trade opportunity for India in this particular field can be summarized as:

i) India is going to possess the largest Young Working Population in the world in the coming decades.

ii) India's rich history, culture & heritages are unique and its contribution to the world have been acknowledged by many great personalities. The Indian heritage assets are models for the whole world. The Indian workforce is experienced by this diverse creation.

iii) Manual and traditional community-based craft and construction skill reserve, required for appropriate intervention of the historic structures, is still abundantly available even in this era of rapid global industrialisation.

Economic Prospect of Heritage Preservation Trade Practices

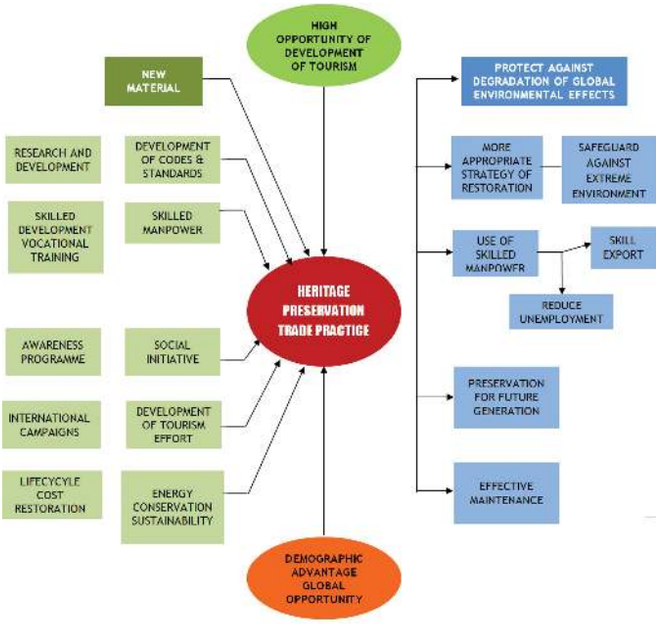
Tourism, especially international tourism in India, is developing very fast. Sustainability of innumerable heritage buildings and monuments can attract more global interest about India. Preservation and safeguarding the built heritage sites is only possible by development of heritage preservation trade practices in India, according to the World Tourism Organization.

- Over 7.757 million foreign tourist arrivals were reported in 2015.
- Foreign tourist arrivals increased at a Compound Annual Growth Rate (CAGR) of 7.1 per cent during 2005-15.
- By 2025, foreign tourist arrivals are expected to increase to 15.3 million.
- The direct contribution of travel and tourism to GDP is expected to grow 7.2 per cent per annum to US$ 88.6 billion (2.5 per cent of GDP) by 2025.

Heritage Preservation Engineering Trade Practices

The importance of preservation and engineering trade practices in the built heritage sector is an essential step towards overall sustainability of heritage assets and growth of Indian economy. The growth of this trade practice through the

development of specialized knowledge and skill has a multiple effect on different social aspects as given in the diagram below:



Conclusion

Structural preservation and restoration are highly specialized sectors, where collaboration of different engineering and other scientific disciplines is an utmost necessity. To develop this specialised trade practice in India, an all-out effort has to be made to create social awareness of the heritage preservation issue. For this, the heritage preservation sector requires an overall human resource plan for professionals to work in the built heritage trade sector. This plan should address professional recognition, professional development, and extensive skill development planning for training of new entrants. The Initiative of the construction material industry in India, for development of new innovative material compatible with historical material with other physical and mechanical property, is an integral part of preservation of heritage structures. An all-out initiative for development of community-based traditional skill to execute specialized engineering technique for historic structure is urgently needed. Finally, integrated trade practices with specialized knowledge and skill can safeguard India's tradition and preserve our historical structures.

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