

Heritage and Archaeological Monuments Need of Conservation and Preservation with Special Reference to India

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ABSTRACT

Cultural heritage embodies a nation's identity, pride, and cultural legacy. However, infrastructure development, urban expansion, establishment of new offices, startups, and other modern advancements have led to the destruction of numerous historical and heritage monuments in India. Recent official records from the Government of India highlight that the country's cultural heritage is in crisis. The Comptroller and Auditor General of India's (CAG) report number 18 of 2013 on the "Preservation and Conservation of Monuments and Antiquities" revealed that a majority of India's archaeological and heritage monuments suffer due to institutional shortcomings, lack of observatory measures, and inadequate maintenance.

The Economic Advisory Council to the Prime Minister also reported that 50 Centrally Protected Monuments (CPM) are marked as missing. Among these, 14 were destroyed due to urbanization, 12 have submerged under reservoir dams, and 24 remain untraceable. This underscores the urgent need for heightened protection and conservation.

India's cultural heritage comprises diverse practices, including handicrafts, architecture, language, and traditions. While some aspects remain unchanging, archaeological sites and historic buildings are vulnerable to human activities like vandalism, pollution, urbanization, and large-scale infrastructure projects. To mitigate these risks, proactive measures are imperative. These include public education campaigns, stricter enforcement of conservation policies, continuous monitoring by bodies like the Archaeological Survey of India, involvement of local communities, and the widespread dissemination of heritage values through media. Ultimately, protecting cultural heritage is the shared responsibility of every citizen of India.

Keywords: cultural heritage, conservation, monuments, urbanization, infrastructure development, Archaeological Survey of India, vandalism, preservation, public education, heritage values, cultural identity.

Introduction:

Human activity and lifestyle can be studied through the debris of human societies, which includes material remains like artefacts, manufacturing waste, structures, middens, monuments, and other materials preserved from the past. Archaeological monuments and historical materials serve as live sources of information about past societies. Cultural heritage represents a nation's identity and enriches its culture (Shoureshe Kanani 2011). Educational experts believe that exposing youth to cultural heritage instills national pride and inspires them to follow the example of their honourable past (Shoureshe Kanani 2011).

Historical monuments and artefacts symbolize past cultural events and occasions. Archaeological monuments are interconnected with landscapes, cultural geography, ethnology, folklore, and architectural motives. These monuments possess economic, aesthetic, symbolic, and informational value (Cleere H 1984). Constructed without modern calculations and principles, these monuments are unique and symbolic of the cultural past.

A 2023 report by the Economic Advisory Council to the Prime Minister of India highlighted the poor condition of archaeological monuments in India. It revealed that around 50 Centrally Protected Monuments (CPMs) are missing after

a physical verification exercise conducted post-independence. Of these, 14 were lost to urbanization, 12 submerged under reservoirs, and 24 remain untraceable. The report emphasized the need for greater protection and conservation efforts, especially for non-protected monuments (Sanjeev Sanyal 2023).

The Comptroller and Auditor General (CAG) of India's 2013 report on the "Performance Audit of Preservation and Conservation of Monuments and Antiquities" revealed several shortcomings. It highlighted issues in preservation, archaeological records, excavation reports, financial practices, structural and chemical conservation, and museum maintenance. The report noted that the Archaeological Survey of India (ASI) spent less than 1% of its budget on excavation. ASI lacked policies for selecting excavation sites, completing excavations, and publishing findings. Major excavation reports, such as those on Dholavira, Sanghol, Rakhigarhi, Sravasti, and Mathura, remain unpublished decades after their commencement (CAG Report 2023). In some cases, archaeologists leading excavations had either left ASI or passed away, leaving excavated antiquities unaccounted for. Some excavation sites have even become untraceable.

The CAG report also criticized ASI's conservation efforts as inadequate, with the organization still relying on a 1923 manual for field activities. Important publications remain delayed, and comprehensive details about Monuments of National Importance (MNI) are unavailable. The National Mission of Monuments and Antiquities failed to achieve its goals due to a lack of direction, vision, and strategy. Weaknesses in ASI's operations have led to encroachments and unauthorized constructions in monumental complexes. Coordination issues among ASI's three major wings and inadequate government funding further exacerbate the problem. Museums also face issues, including poor documentation of artifacts, absence of mechanisms to verify authenticity, and failure to adopt digital technology, making artifacts vulnerable to loss.

A Parliamentary Standing Committee report in 2023 revealed that only 6.7% of CPMs have security guards. Of 3,693 CPMs, only 248 are secured. It also identified encroachments in 75 CPMs in Uttar Pradesh, 74 in Tamil Nadu, 48 in Karnataka, 46 in Maharashtra, and 35 in Gujarat.

Government expenditure on MNIs remains inadequate. In 2019-20, ASI spent only INR 428 crores on conservation, averaging INR 11 lakhs per MNI. Budgetary allocations are uneven, with Uttar Pradesh, which has five times the number of MNIs as Delhi, receiving half the funds allocated to Delhi in 2019-20. Revenue generated by MNIs, such as the Taj Mahal (INR 81.95 crores in 2018-19), is deposited into the Consolidated Fund of India and not utilized for monument maintenance. The following table-1 presents State-wise details of expenditure incurred for Conservation.

Table-1: State-wise details of expenditure incurred for Conservation, Preservation and Environmental development of monuments of National importance for the years 2018-19, 2019-20, and 2020-21

No	State/UT	No of Monuments	Expenditure (in Crores)		Allocation till Jan 2021 (in crores)
			2018-19	2019-20	
1	Uttara Pradesh	745	16.98	15.95	22.35
2	Maharashtra	286	17.89	20.98	17.75
3	Karnataka	506	21.14	28.55	21.1
4	Madhya Pradesh	292	8.09	12.5	15
5	Odisha	80	5.9	5.3	2.75
6	West Bengal & Sikkim	139	9.68	8.1	6.71
7	Tamil Nadu & Puducherry	420	8.09	9.6	5.75
8	Punjab & Haryana	124	2.89	1.57	1
9	Himachal Pradesh	40	1.51	2.15	1.25
10	NCT Delhi	174	30.66	30.25	18.5
11	Goa	21	1.59	2.2	2.5
12	Assam	55	3.15	3.4	3
	Manipur	1			
	Meghalaya	8	0.83	1.00	1.5
	Mizoram	1			
	Nagaland	4			
	Tripura	8			
	Arunachal Pradesh	3			
13	Rajasthan	163	7.05	10.28	10
14	Andhra Pradesh & Telangana	137	3.7	5.35	3
15	Telangana	--	5.29	5.15	4
16	Bihar	70	1.75	1.45	1
17	Jammu & Kashmir	69	2.44	1.83	1.2
18	Kerala	28	2.27	4.5	2.52
19	Gujarat & Daman and Diu	215	9.61	7	7.75
20	Uttarakhand	42	0.82	3.58	3.5
21	Chhattisgarh	47	2.09	3	2.6
22	Jharkhand	13	0.86	1.6	1
	Chemical Preservation	--	5.17	3.34	3.36
	Horticultural Activity	--	45.62	38.1	38.5
	DG Office	--	190.57	202.23	68.81
	Total		405.64	428.96	266.4

(source: CAG report 2013)

India's paleontological history and archaeological heritage are at risk due to a lack of legal frameworks and awareness regarding fossil protection. Fossil-rich areas and historical monuments are being destroyed by public activities and developmental projects. Fossils provide critical insights into biological, atmospheric, and environmental history, aiding in the reconstruction of human societies. However, in India, the absence of laws to preserve geological heritage sites, combined with ignorance, has endangered these assets. Heritage conservation is essential for social, economic, and environmental development. While politics, religion, economy, and history are interconnected globally, many archaeological sites and monuments in India face neglect and vandalism. These sites, which reflect historical, social, political, economic, and cultural aspects, are tangible evidence of the past and a source of pride for future generations.

The destruction and deterioration of historical monuments in India have various causes. Deshpande (1961) emphasized the need for continuous preservation of heritage. Environmental and climatic factors, biological growth, natural disasters (Srinivasan 1949), and human activities (Marshall 1923) are significant contributors to the decay of cultural monuments. Air pollution, acid rain, efflorescence, landslides, and saline action further exacerbate the issue (Bernard 1989). Developmental projects, such as factories, industries, roads, bridges, dams, and agricultural activities, are among the leading causes of destruction (Venkata Reddy 1990). Encroachments, treasure hunting, and a lack of awareness about historical monuments also contribute to their deterioration. Illiteracy and historical ignorance among the public worsen the situation.

Air pollution poses a severe threat to monuments. Harmful substances in the air, such as sulphur gas, lead to acid rain, which corrodes construction materials like stones and metals. Acid rain fades the colors of monuments and decomposes stones (Shoureshe Kanani, Hasan Zandi 2011). The stability and strength of monuments are also affected by humidity and air temperature. High moisture levels cause damage to buildings, including erosion, plaster deterioration, and fungal growth. In cold regions, temperature changes combined with moisture lead to the crumbling of plasterwork. Moisture accumulation due to rotten leaves around monuments also weakens foundations, eventually causing collapse (Shoureshe Kanani, Hasan Zandi 2011). Urban and industrial areas with high air pollution levels further accelerate the decay of historical monuments. Sulphur in the air dissolves in rainwater, forming sulphuric acid, which is highly destructive (Shoureshe Kanani, Hasan Zandi 2011).

Biological activity also significantly damages archaeological monuments. Animals such as bats, monkeys, cows, and birds like pigeons cause physical damage. Pigeon excrement, in particular, contains fungal spores that harm marble surfaces. Experiments on soiled marble pieces have shown that microorganisms and fungi in pigeon excrement secrete acidic products, contributing to chemical erosion (Bassi and Chaintane 1976). Microorganisms, especially fungi, play a prominent role in stone deterioration (Burford, Fomina, and Gadd 2003). Fungi thrive in environments with high relative humidity (75-80 percent), leading to biodeterioration of ancient buildings (Kalliokoski et al. 1996). Biological growth on monuments depends on factors such as surface inclination, shade patterns from surrounding trees, pollution, and sunlight exposure (Dubey and Jain 2014). Horizontal surfaces that pool rainwater foster microbial activity, while environmental factors like climate, pH, and nutrient availability further influence microbial colonization (Warscheid and Braams 2000). Additionally, vascular plants growing on historical buildings contribute to structural damage.





Pictures representing the status of historical monuments in Lucknow (source: Gaurav K Mishra and D C Saini)

Monuments in Lucknow city are deteriorating due to plants growing on buildings, as shown in a study by Gaurav K Mishra and D C Saini (2016). Plant roots penetrate roofs, causing cracks, and after the plant dies, the roots become substrates for microbial activity, which reduces the binding capacity of cement. Decayed roots create spaces that house insects, further damaging building materials (Mishra A K Jain, Kamal K, Garg K L 1995).

Climatic factors such as rain, sun, frost, dust, snow, ice, and wind are major contributors to monument deterioration. Weathering, including chemical, physical, and biological processes, is particularly harmful to stone structures. Studies by Anestoria Shalkowski, Yoshinori Kodama, and Shigenori Nakano (2008) on marble from the Katashiba quarry in Japan revealed that temperature fluctuations cause expansion and contraction, leading to physical disintegration. Freeze-thaw cycles, ice crystal growth, and salt weathering alter mineral chemistry, weakening rocks. Hydration shattering and wet-dry cycles also damage monuments. Environmental pollution accelerates these destructive processes (Shoureshe Kanani, Hasan Zandi 2011).

Efflorescence, the migration of salts to porous surfaces, and etching caused by acidic liquids further harm materials like marble and limestone. Landslides, driven by gravity and slope failure, also contribute to destruction. Human activities, including vandalism, urbanization, negligence, and unsustainable tourism, are significant threats. Backward rural societies in India have also contributed to the destruction of archaeological sites.

Natural disasters such as earthquakes, floods, avalanches, and tsunamis are particularly destructive, often erasing cultural history entirely. Additionally, recovered artefacts like copper and bronze idols from smugglers are often neglected and poorly preserved, further endangering India's cultural heritage. Despite efforts by authorities, many historical materials remain uncared for, highlighting the need for better preservation practices.

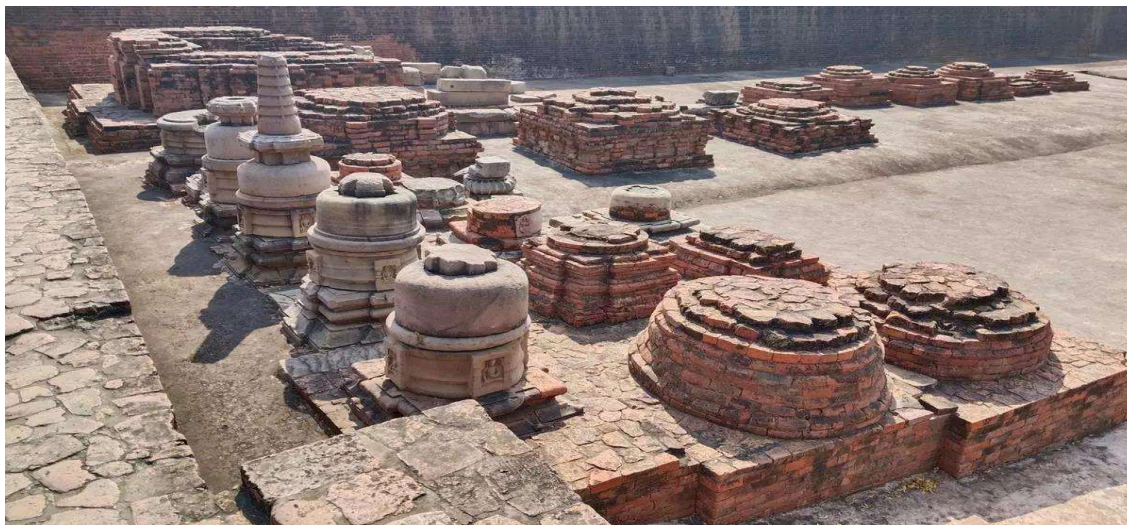


Idols and antiquities seized by the Tamil Nadu Police lying in the premises of the office of the State Police's Economic Offences Wing in Guindy, Chennai, in October 2018. | Photo Credit: M. Karunakaran

Case studies of Vandalism:

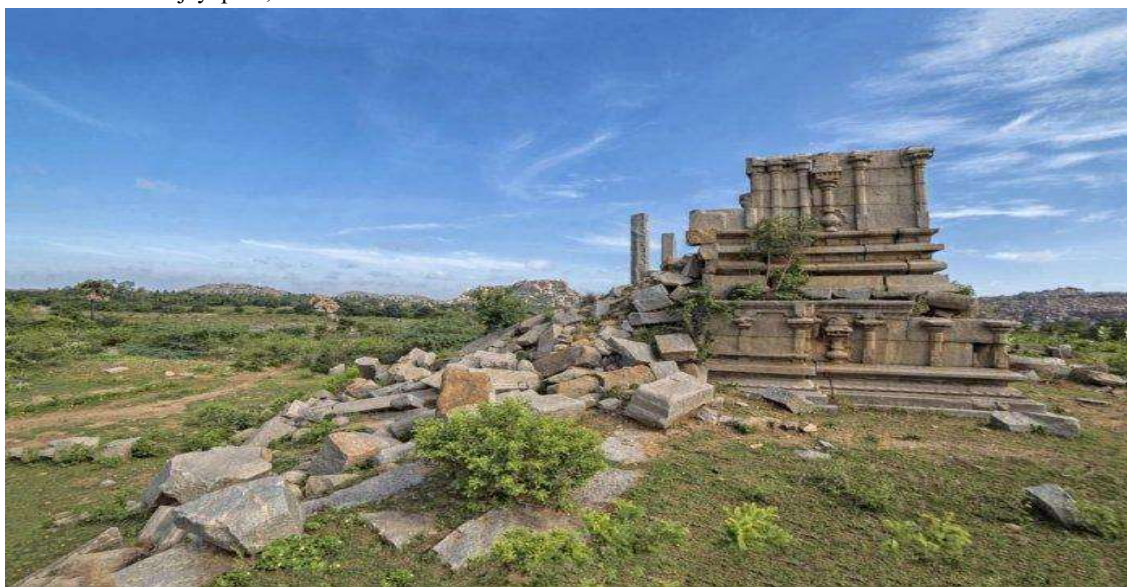
India has witnessed significant vandalism and loss of historical monuments. In April 2023, a 15th-century monument in Delhi was demolished by a government official (Business Today, April 28, 2023). The Ministry of Culture reported in

December 2022 that 50 of 3,693 centrally protected monuments are missing (Frontline, May 18, 2023). Missing sites include the Panchayatana temples in Varanasi and Sarnath, Telia Nala Buddhist monuments, Sher Shah's 16th-century guns, and a 12th-century temple in Rajasthan (Sanjeev Sanyal, 2023). These include religious, archaeological, and secular structures across India.



The Panchayatana temple in Sarnath, Varanasi. The Telia Nala Buddhist ruins are among the 50 protected monuments that have gone “missing” in India. (Photo Credit: Md Shoeb Ansari/Getty Images/iStockphoto)

In India, most archaeological sites are protected by the Archaeological Survey of India (ASI). Uttar Pradesh has the most protected sites, followed by Karnataka. A 2020 survey by *Deccan Herald* revealed around 10% of Karnataka's protected monuments are encroached. Nationwide, Uttar Pradesh has 75 encroached monuments, Tamil Nadu 74, Karnataka 48, and others (Deccanherald.com, December 6, 2020). Encroachments include housing at Gulbarga Fort, Adil Shahi monuments in Vijayapura, and Aihole structures turned into storerooms and cattle sheds.



A protected monument in Hampi, in ruins; lie damaged and abandoned. (Source Shivashankar Banagar) (Deccanherald.com 6th December 2020)

In Karnataka, 35 Megalithic monuments at Jadigenahalli were removed for road widening. Of 175 inscriptions in Bangalore, 115 are missing due to unplanned development. The Siddeshwara temple in Davanagere and a protected monument at Doddagaddavalli were destroyed by development. Seven protected monuments in Hampi were encroached. The Ministry of Culture reported 356 encroachments among India's 3695 Monuments of National Importance (MNI) as of December 22, 2022 (CAG Report 2013). Over 60% of MNIs are in Uttar Pradesh (743), Karnataka (506), Tamil Nadu (412), Madhya Pradesh (291), and Maharashtra (286), while states like Bihar (70) and Kerala (29) have fewer.



State wide list of monuments of National importance (CAG Report,2013)

Delhi has 173 Monuments of National Importance (MNI), while Telangana, despite its rich heritage, has only eight. The ASI, under the NMMA, documented 407 unprotected heritage sites in Telangana, some potentially of national importance (Sanjeev Sanyal 2023). Destruction of unprotected monuments is common, with their neglect and lack of documentation hindering their preservation and historical significance.



17th Century forge-welded iron cannon in Thanjavur, Tamil Nadu (source: CAG report 2013)

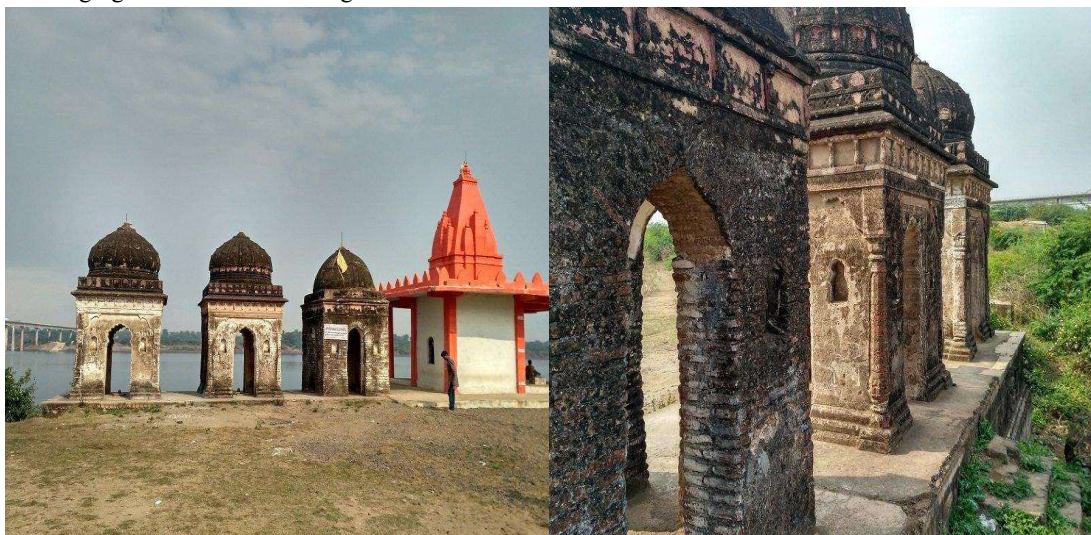
A 24-foot-long cannon, among the largest in the world, is kept in the open, making conservation challenging. Storing such monuments in museums is essential for preservation. S.B. Ota highlighted that the Sardar Sarovar Dam on the Narmada River is destroying Paleolithic microlithic sites. An ASI survey revealed rich cultural artefacts, including tools, coins, and monuments, in the dam's proposed area. The survey emphasized relocating temples and sculptures to museums and conducting salvage archaeology. Despite excavations since 1982, findings from the Narmada area were not properly documented, leaving significant research potential unexplored (IAR 1982-83).



Temples submerged under Narmada backwaters (Photo: NBA)

In 1994, an ASI team led by S.B. Ota identified 50 prehistoric mounds across 84 villages, recommending 15 sites for excavation. Investigations revealed 10 temple sites, 23 sculptures, and 4 iron melting sites. Eminent archaeologists like S.B. Ota, H.D. Sankalia, and G.L. Badam emphasized the archaeological importance of the region. However, excavations were halted due to funding issues and later handed to the state government without proper procedure. Significant temples, including Koteswar in Madhya Pradesh, Shoolpaneshwar in Maharashtra, and Hafeshwar in Gujarat, were deemed archaeologically important by the National Water Disputes Tribunal. Despite this, many religious sites of Adivasis, Hindus, Jains, and Muslims were permanently submerged by dam waters.

The Koteswar temple complex, a major pilgrimage site, remains largely unrelocated, with only one temple moved 17 kilometers away. Many temples, dharmashalas, and ghats were left submerged. Of 46 temples in Nisarpur, only 12 were selected for relocation, while 15 of 37 temples in Chikada were relocated, leaving many ignored. Locals identified 375 religious sites, but few were allotted resettlement land (IAR 1987-88). Research by ASI revealed that numerous prehistoric sites from the Paleolithic and Chalcolithic periods have been lost to the Sardar Sarovar Dam, with floods further submerging undocumented heritage.



15th-century chhatris and temples are yet to be excavated in village Kasrawad, Barwani (youthkiawaaz.com Jan 23, 2018)

The Archaeological Monuments and Archaeological Sites and Remains (AMASR) Act of 1958 was enacted to protect India's rich cultural heritage. It has been amended multiple times to address emerging challenges. Under the AMASR (Amendment and Validation) Act, 2010, the National Monuments Authority (NMA) was established to regulate construction activities around monuments. The act defines a 100-metre prohibited area around monuments where no construction is allowed and a 200-metre regulated area where construction requires NMA approval. However, the AMASR Amendment Bill of 2017 introduced controversial clauses allowing infrastructure projects within the 100-metre prohibited area, including airports, highways, and private buildings. Critics argue this undermines the original act's intent to protect

heritage. The bill was dropped in 2019 due to lack of consensus but was reintroduced in 2023, raising concerns about granting undue power to the state over cultural heritage.

India can draw inspiration from the USA's National Park System, which preserves 378 units of cultural and historical significance. Similarly, Indian archaeological sites could be developed into cultural centres while maintaining their core character. Heritage monuments not only symbolize cultural pride but also contribute to economic development. They attract tourists, generating significant income and creating employment in tourism-related sectors such as hospitality, transport, and handicrafts (Dayalan D, 2009). Proper maintenance and exposure of archaeological sites can enhance their potential as sources of income and employment.

International methods for heritage preservation offer valuable lessons. For instance, Iran uses advanced techniques like Electro-Osmose to strengthen weak foundations of historical buildings by depositing calcium silicate beneath columns. Such techniques could be applied in India to preserve deteriorating monuments. Additionally, methods for controlling temperature, moisture, and ventilation can protect perishable objects like manuscripts, books, and textiles in museums.

Japan provides an exemplary model of disaster-resilient heritage preservation. Since 2007, local governments in Japan have been encouraged to prepare comprehensive lists of cultural heritage in their territories. India could adopt a similar approach by involving local Panchayats to document archaeological sites, including details like location and condition. Youth participation in explorations could be encouraged through motivational awards. Japan's Institute of Disaster Mitigation for Urban Cultural Heritage (R-DMUCH) focuses on building human resource capacity for heritage protection, a model India could replicate.

India faces a shortage of trained professionals in heritage preservation, as highlighted by the CAG report of 2013. Establishing an Indian Institute of Archaeology (IIA) could address this gap. The government should also encourage young archaeologists to attend UNESCO training programs, such as those at the Centre de Rome, which guide museum owners and conservation experts. Additionally, a National Heritage Fund Act, similar to Mauritius, could be introduced to identify, protect, and promote heritage while fostering a sense of belongingness.

Modern technology can play a crucial role in heritage conservation. Geographic Information System (GIS) mapping could be used to register and monitor monuments, with databases updated regularly. Digital Heritage campaigns under the Digital India initiative could promote awareness, while mobile apps could provide information on heritage sites and museums, enhancing tourism sustainability. Regular CAG audits, conducted every three years, would ensure accountability in heritage management.

The Parliamentary Standing Committee on "Issues relating to Untraceable Monuments and Protection of Monuments (CPM) in India" proposed appointing 7,000 security guards to safeguard monuments and implementing strict rules and punishments against vandalism. The committee also suggested seeking assistance from ISRO for monitoring heritage sites. These recommendations should be strictly followed to protect India's cultural wealth.

Public-Private Partnerships (PPP) have proven effective in heritage conservation. For instance, the renovation of Abdul Rahim Khan-I-Khanan's tomb in India was successfully undertaken by the Aga Khan Trust for Culture, the Inter Global Foundation, and the Archaeological Survey of India (Dar V, 2019). Such partnerships can be extended to other heritage sites to improve infrastructure and preservation.

India's rich fossil fields also require attention. Establishing a National Repository for fossils would ensure their preservation and contribute to scientific research. Additionally, addressing climate change and implementing sustainable policies are crucial for protecting heritage from environmental threats (Gruber S, 2008).

Cultural victimization poses a significant threat to India's archaeological monuments, which are symbols of national pride. While some European nations distance themselves from their cultural history, India must embrace and protect its vast heritage. Archaeologists, historians, geologists, and the public must work together to safeguard the nation's ancient civilizations and cultural prestige. By learning from global best practices and leveraging modern technology, India can ensure its cultural heritage is preserved for future generations.

The ASI must educate the public on the scientific, ethnic, and aesthetic values of cultural resources to promote preservation. Collaborative efforts of policies, organizations, forums, and businesses are vital for conserving and transmitting heritage to future generations. Social institutions should utilize media, lectures, and museum displays to spread awareness and emphasize the value of cultural resources. Heritage conservation requires citizens' active participation and respect for cultural assets. Development should minimize its impact on cultural assets as India has untapped tourism potential.

Documentation is essential to preserve historical monuments and archaeological sites, ensuring future generations can understand and study India's cultural history. Preventive measures are critical for conservation, such as cleaning archaeological surfaces to prevent dirt and fungi buildup, maintaining dryness to combat dampness, and addressing wind

erosion through specific seasonal studies. Regular cleaning of monumental joints, sealing crevices with inert materials, and keeping terraces clean can maintain monument longevity (Srinivasan K.R., 1949).

Tourist facilitation centers with basic amenities like toilets, lockers, water, and first aid, along with departmental sales counters, can attract visitors and create income-generating opportunities. Local participation in heritage preservation is crucial, and locals must handle visitors with care, avoiding exploitative practices (Arushi Gupta, Prathama R.K.). A comprehensive framework, continuous monitoring, and strict laws are necessary to safeguard India's cultural treasures.

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