INTEGRATION OF CLIMATE ACTION AND THE SUSTAINABLE DEVELOPMENT GOALS IN WORLD HERITAGE SITES

Case – Taj Mahal and the University of Virginia and Monticello

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Abstract

The benefit and impact of World Heritage is felt at various levels, the local and global, which are homogenized when management frameworks are put into action. This homogenization of various aspects of World Heritage affects the integration of climate action because the management of the Outstanding Universal Value and achieving global indicators often get prioritised over local needs. The true measure of integrating climate action can be seen when frameworks are facilitated by the communities inhabiting in and surrounding World Heritage sites.

This paper will investigate the integration of climate action and the application of the Sustainable Development Goals (SDGs), in site management of World Heritage properties. Two sites are investigated: the Taj Mahal in India and Monticello and the University of Virginia in Charlottesville in the USA. This is a continuation of research done in 2021 by the ICOMOS Sustainable Development Goals Working Group as it investigates varied strategies and global issues being put into the context of World Heritage sites, beyond its main remit of safeguarding the Outstanding Universal Value. With the advent of the climate crisis, there is an urgent need to see heritage as a solution and an integral part of climate action plans. This study is a contribution to a growing literature to aid in anticipating the devastating consequences of heritage succumbing to the potential damage of climate change.

Keywords - World Heritage, climate action, holistic integration, externalities

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ASI – Archaeological Survey of India

ICCROM – International Centre for the Study and the Preservation and Restoration of Cultural Property

ICOM - International Committee on Monuments

IPCC – Intergovernmental Panel on Climate Change

IUCN – International Union for the Conservation of Nature

ISC – International Scientific Committee

OUV – Outstanding Universal Value

NbS- Nature-based Solutions

SDGs – Sustainable Development Goals

SDGWG – Sustainable Development Goals Working Group

SOC – State of Conservation

UN – United Nations

UNDRR – United Nations Office for Disaster Risk Reduction

UNEP – United Nations Environment Programme

UNESCO – United Nations Educational Scientific and Cultural Organisation

USA – United States of America

UVA – University of Virginia

WHC – World Heritage Convention

WHSDP – World Heritage and Sustainable Development Policy

WHCCP – World Heritage Climate Change Policy

1 Introduction

Heritage management and climate action have both existed as separate programmes that have affected the same environment, but they have not been seen as initiatives that are interrelated. The Sustainable Development Goals (SDGs), which were endorsed by the United Nations in 2015, created a need for integrating climate change solutions into comprehensive frameworks. A framework of 17 goals was created by the United Nations (UN) to serve as a road map for achieving holistic sustainable development. The Sustainable Development Goals (SDGs) represent a conceptual shift in thinking about development beyond economic growth, focusing instead on a desirable future that is egalitarian, inclusive, peaceful, and environmentally sustainable. (Silva, 2015). This audacious ambition necessitates innovative strategies that go beyond the conventional linear and sectoral ones that most nations have grown accustomed to in recent years.

The original goal of World Heritage was to preserve the most famous structures in the world that have historical and aesthetic value. A new perspective on heritage has emerged as a result of the Historic Urban Landscape's inclusion as a significant perspective within the World Heritage system. In this perspective, heritage values are no longer restricted to specific sites, but rather, management strategies must take into account the historicity or former historic extent. Additionally, there was an ideological movement from viewing tradition as a fossilised, timeless thing to one that is adaptable and alive today and takes into account changes in the landscape (Silva, 2015). Heritage was able to have its own target inside the SDG framework that countries throughout the world would need to work toward. UNESCO praised Target 11.4 as "an exceptional acknowledgement" and said it will "strengthen efforts to protect and safeguard the world's cultural and natural treasures." It was asserted that preserving and advancing culture is a goal in and of itself and also directly advances many of the SDGs, including encouraging gender equality, safe and sustainable cities, decent jobs and economic growth, reduced inequities, and inclusive and peaceful societies. The development objectives are successfully implemented, which generates indirect advantages for culture.

There is an urgent need to consider heritage as a solution and an essential component of climate action strategies given the escalating effects of the climate catastrophe. In order for heritage management plans to be ready for the

disastrous effects of probable site degradation due to climate change concerns, climate action is also required. Heritage sites that are geographically situated in sensitive areas susceptible to sea level rise, seasonal fluctuations, and extreme weather conditions are considered to be physically at risk. Physically damaged locations will have an impact on intangible and tangible heritage, leading to the loss of social, cultural, and economic elements that are essential to the sustainability of heritage sites. In order to maintain a site's social, community, and intangible viability, the built environment must also be preserved.

As part of investigating the issues of World Heritage and the climate crisis, the ICOMOS Sustainable Development Goals Working Group (SDGWG) started a research in 2021 entitled, *"Integration of Climate Action and the Sustainable Development Goals in World Heritage Sites"* which looked at identifying the readiness of World Heritage Sites in integrating climate action strategies to heritage management plans (Loopesko & Caballero, 2021). The study looked at 4 case studies: the Historic Site of Lyon in France, the Sydney Opera House in Australia, the Historic Sanctuary of the Machu Picchu in Peru and Pimachiowin Aki in Canada. The SDGWG research also supported the implementation of the ICOMOS Triennial Scientific Plan, which calls upon all Working Groups, National Committees and International Scientific Committees to integrate climate action within their respective research, policies and guidance (ICOMOS 2021a).

This research is a continuation of the SDGWG research and it further investigates the intersection of climate action and sustainable development at World Heritage Sites. It looks deeper into on the ground realities and management strategies of two sites on the World Heritage list. The first site is the Taj Mahal of India, a site with a precinct consisting of the Taj monument complex along with the Mehtab Bagh and other gardens adjacent to the Yamuna River network and Taj Ganj settlement. The second site is Monticello and the University of Virginia in Charlottesville, USA. These American sites are situated in a natural setting that blends with the functionality of the site. Both sites in India and the USA were selected due to the integration of built fabric with its natural and social settings which plays an integral role in the functioning of the site.

The impacts of tourism and visitor recreation negatively affect the Outstanding Universal Value of 32% of properties in the Asia-Pacific region and 25% of properties in Europe and North America (The 22 most reported impact categories at World Heritage sites, 1979–2013. UNESCO 2014b). In many cases, tourism further brings in additional infrastructure developments such as visitor accommodation, transportation, water, sewage and, solid waste management

infrastructure. All these new developments are done in isolation and not part of comprehensive tourism management strategies. Many World Heritage sites succumb to tourism pressures where the existing population is forced to accommodate tourism demands due to economic needs. Hence, the monumental and aesthetic values of heritage often find precedence and the ecological and social values of heritage are often neglected. Developmental pressures also contribute to increased pollution levels and carbon emissions resulting in long-term unprecedented seasonal shifts that affect the historic, cultural and economic value of the landscape. The selected sites present scenarios that depict the urgency of integrating climate action at the World Heritage level to adapt to the upcoming risks.

2 Research Purpose and Question

This research aims to identify whether there has been a conscious attempt to incorporate climate action strategies in two World Heritage sites, through the integration of SDGs in management frameworks.

This research draws a comparative analysis of two sites; the Taj Mahal precinct in Agra (India), and Monticello and the University of Virginia's Academical Village (United States of America), in understanding the contextual and framework differences in climate action methods. It questions the importance of World Heritage in affecting the quality of life of people living within World Heritage sites and its surrounding wider setting. This research further aims to build upon ICOMOS' growing body of knowledge to showcase the role of heritage as a driver and enabler of sustainable development and supports the organisation's push to promote climate justice and equity in the heritage practice.

3 Background

Images 1 First glimpse of the Taj Mahal in Agra, India as viewed from the main gateway towards the south. The entrance frames the monument with the Charbagh gardens as a majestic foreground for appreciation of the monument's beauty. Source: Author

3.1 Brief History of the Taj Mahal

The Taj Mahal is situated in a large Mughal Garden that spans roughly 17 hectares on the right bank of the Yamuna River in the Agra District of Uttar Pradesh. It was created by Ustad-Ahmad Lahori and built by the Mughal Emperor Shah Jahan in honour of his wife Mumtaz Mahal. Construction on the mosque, guest house, and main entrance, which are located on the south end of the garden, began in 1632 AD and was finished in 1648 AD. The outer courtyard and its cloisters were finished in 1653 AD. Numerous historical and Quranic inscriptions written in Arabic have made it easier to date the Taj Mahal. Masons, stone-cutters, inlayers, carvers, painters, calligraphers, dome builders, and other artisans were enlisted to help with its creation. (Anon., 2013).

In all of Indo-Islamic architecture, the Taj Mahal is regarded as the pinnacle of architectural achievement. A rhythmic blend of solids and voids, concave and convex, light and shadow make up its recognised architectural beauty; arches and domes further enhance the aesthetic quality. The monument can be seen in a variety of shades and moods thanks to the colour combination of lush foliage, a reddish road, and a blue sky. It is a unique monument because of the marble relief work and the inlay of precious and semi-precious stones. The platform's four free-standing minarets gave the Mughal architecture a previously unrealized depth. The four minarets give the structure a three-dimensional appearance in addition to serving as a form of spatial reference for the monument (Anon., 2013).

Aside from the tomb, the main gate, which dominates the southern forecourt wall, is the most spectacular feature of the Taj Mahal complex. On the north front, two arcade galleries surround the gate. On the Timurid-Persian concept of the walled in garden, the garden in front of the galleries is split into four quarters by two main walkways, and each quarter is divided further by the narrower cross-axial pathways. A pavilion is located in the middle of the east and west enclosure walls (Anon., 2013).

With a focus on bilateral symmetry along a central axis, where the principal features are positioned, the Taj Mahal is a perfectly symmetrically constructed structure. Brick in lime mortar is the primary architectural material, veneered with red sandstone, marble, and semi-precious and precious stone inlay work. In contrast to the marble tomb in the centre, the mosque and guest house at the Taj Mahal complex are constructed of red sandstone. A sizable platform extends over the front patio of each building. The mosque and the guest home have the same design. They have a large, oblong prayer hall with three vaulted bays lined

up in a row and a dominating doorway in the centre. Inscipted in 1983 as world heritage site, the Taj Mahal is protected and managed by ASI, the Archaeological Survey of India (Anon., 2013).

3.2 Brief History of Monticello

The combined sites of Monticello and the Academical Village of the University of Virginia were included to the UNESCO World Heritage List in 1987. Thomas

Images 2 Jefferson's mansion in Monticello, Charlottesville, USA clearly depicts the architectural influence of European design featuring the columns and rotunda . Source: Author

Jefferson, the third president of the United States, created these structures. Jefferson was a renowned philosopher, physicist, historian, and author of the Declaration of Independence, an important text that outlined the framework for individual freedom and self-government. Jefferson gave academics a prism through which to see the beginnings of early America through his words, correspondence, architectural explorations, and ideological activities during the course of his lifetime. The selection of sites for the World Heritage designation primarily reflects the importance of knowledge and creativity during the Jefferson era. The locations show an exchange of significance and values amongst people (Anon., n.d.).

In 1987, the University of Virginia's Academical Village and Monticello as a whole were added to the UNESCO World Heritage List. These buildings were made by Thomas Jefferson, the third president of the United States. In addition to being a distinguished philosopher, physicist, and historian, Thomas Jefferson wrote the Declaration of Independence, a significant document that established the foundation for personal liberty and self-government. Jefferson's comments, letters, architectural experiments, and ideological pursuits during his lifetime provided academics with a lens through which to view the origins of early America. The sites chosen for the World Heritage listing primarily highlight how important learning and innovation were throughout the Jeffersonian era. The sites depict a transfer of significance and values amongst individuals (Anon., n.d.).

3.2.1 Monticello plantation and slavery

A large population of slaves and free labourers lived on the initial 5000 acres of the plantation, in addition to the Jefferson family. There were streams, hills covered in trees, little mountains, and undulating pastures. Due to Jefferson's own dredging operations, the Rivanna river now serves as a route to the Richmond market and beyond as well as supplying waterpower to the mills. While the estates beyond were divided into manageable areas of land dubbed "quarter farms" with the names Tufton, Shadwell, and Lego, Monticello remained as the "house farm" in order to keep his large plots of land. Originally a tobacco plantation, Jefferson switched to cultivating wheat and cereals as a result of tobacco's detrimental impact on the soil. Up to his passing, it mainly remained a wheat plantation. Other trades such as textiles, woodwork and blacksmithing were also undertaken under the Jefferson era (Anon., n.d.).

Jefferson held about 600 slaves during his lifetime, 400 of whom were at Monticello and the rest were on his other holdings, in contrast to the liberation and freedom ideals embodied in the Declaration of Independence. 130 slaves were typically kept on the estate at any given time. Despite Jefferson's lack of a reputation for mistreating his slaves, some of his overseers were not always sympathetic. The plantation is known for its use of force, threats, severing of families, brutality, and psychological harm. Jefferson was an outright racist despite advocating modern European ideas and design. Although he believed that slavery was horrible, Jefferson still defended his conduct by stating that "freeing them was like abandoning children." (Anon., n.d.).

In addition to environmental pressure, another reason for Jefferson's switch from tobacco to wheat farming was the labour-intensive nature of the former crop. One of the few areas where Jefferson's efforts to abolish slavery are visible is here, despite the time period's prevalent working conditions. He attempted to use the legislative process to promote the abolition of slavery by forbidding the entry of African slaves into Virginia, but he insisted that the decision to emancipate would be made democratically. Jefferson wanted to lessen the reliance on slaves and, as a result, lower the population of people who were in slavery by switching from tobacco to a grain-based agriculture. But despite his attempts, slavery grew increasingly pervasive and lucrative. Slavery had become Virginia's most valued resource by the 1800s (Anon., n.d.).

3.3 Brief History of Jefferson’s Academical Village in the University of Virginia

In 1819, Thomas Jefferson established the University of Virginia, which he regarded as one of his finest lifetime accomplishments. He referred to it as his "old age's hobby." The Academical Village, which is located 8 kilometres away in Charlottesville, central Virginia, is a testament to Jefferson's enthusiasm and quest for knowledge. He used many of the same elements in Monticello, which can be seen in the Academical Village. At the northern end of the university, the Rotunda, which was modelled after the Pantheon, serves as its focal point. It serves as the centre of the unusual U-shape layout. In between hotels and student housing, the Rotunda's two sides are bordered with pavilions for staff housing. To the south of the Rotunda, the gardens are arranged in rows. The terraced garden in the centre court represents "prosperity related to agricultural values and education." The centre court thus combines functionality and

Images 3 University of Virginia, Charlottesville, USA, northern view of the Rotunda at Jefferson's Academical Village further elaborates on his desire to celebrate the neoclassical style and fuse it with American culture. Source: Author

originality using historical precedents to evoke the noble, prosperous, and self-determined aspirations of ancient Rome (Anon., 2013).

Jefferson was a pioneer in the development of the Academical Village because he believed in the significance of democracy's connection to a "well educated populace." He established the curriculum, constructed the campus, organised the University, and attracted eminent teachers. He was the only one who chose the books for the library; he was a voracious reader. The Academical Village's guiding principle was that "shared learning suffused daily living."(Site information, 2022). American universities traditionally consisted of a single multipurpose structure with a chapel serving as the centre of attention. Jefferson positioned the library at the centre of the Rotunda, the university's most iconic emblem, to show how important he thought education was.

3.3.1 University of Virginia and slavery

When the university first opened, there were 40 students enrolled; during the first session, that number rose to 123. The demand for institutional labour to support maintenance tasks quickly resulted from such an expansion. Cooking, cleaning, washing, maintaining the property and quarters, and carrying water and firewood were all tasks performed by slave labourers. Students were not allowed to own slaves, but the institution mandated that hoteliers keep one slave for every ten students. Throughout the years that slavery was a component of the institution, there were several instances of violence and cruelty. Slaves were routinely subjected to physical and mental abuse from both their masters and the students. Students frequently attacked slaves, although punishments were infrequently carried out. There were also incidents of slave owners being beaten when they tried to intervene during violent treatment. Slaves could be dealt with harshly for something as simple as “impertinent language.” In most cases the behaviour was described as “severe and inhuman.” (Gardiner, Personal communication 2022).

4 Literature Review

4.1 Brief History of Heritage Policy

At an international conference held in Athens in 1931, organised by the International Museums Office in Paris, the organisation tasked by the Assembly of the League of Nations with the conservation of cultural heritage, appropriate principles for the conservation of historic monuments were established following the reconstruction of towns and monuments throughout Europe in the wake of

the First World War. The Athens Conference concluded that "the community of States, which are the keepers of civilisation, are interested in the issue of the conservation of the artistic and archaeological property of mankind."

The Assembly advised Member Governments to approve the resolution and work together to safeguard the preservation of historical sites and artistic creations. This "Athens Charter" became the first intergovernmental conservation strategy, launching the development of global standards for protecting cultural assets and, as a result, reinforcing the notion of universal heritage (Jokilehto, 1986).

With the end of World War II and the creation of the United Nations Organization in 1945, UNESCO was given responsibility for fostering international cooperation in cultural concerns. UNESCO's first focus on culture was restricted to museums. However, historic landmarks and monuments began to receive more attention in the 1950s. In order to provide Member States with preservation training and knowledge, the International Committee on Monuments (ICOM) was founded in 1951, and the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM) was established in Rome in 1959 (Jokilehto, 1986).

The Second International Congress of Architects and Technicians of Historic Monuments was held in Venice in 1964 as a result of a series of international conferences on the preservation of architectural heritage that were sponsored by UNESCO and held in Florence, The Hague, and Paris. The International Charter for the Conservation and Restoration of Monuments and Sites, sometimes known as "The Venice Charter," was created as a result of the resolutions passed by that Congress. People are "growing more and more mindful of the oneness of human values and view old monuments as a common heritage," according to the Charter. The recommendation states that "the principles guiding the preservation and restoration of ancient buildings should be agreed upon and be laid down on an international basis, with each country being responsible for applying the plan within the framework of its own culture and traditions." This statement acknowledges that "it is common responsibility to safeguard them for future generations." (ICOMOS, 1964).

"The principles guiding the preservation and restoration of old buildings should be agreed upon and written down on an international basis, with each country being responsible for applying the plan within the framework of its own culture and traditions," the recommendation reads. The phrase "it is common obligation to conserve them for future generations" is acknowledged in this statement

(Jokilehto, 1986). This gradual evolution of the idea of universalistic heritage culminated in the founding of the World Heritage Convention (WHC) in 1972.

4.2 The World Heritage Convention, 1972

Two distinct movements—one concerned with the preservation of cultural assets and the other with nature conservation—merged to become the 1972 Convention for the Protection of the World Cultural and Natural Heritage (UNESCO World Heritage Convention, n.d.). The Convention Concerning the Protection of the World Cultural and Natural Heritage was established by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) in 1972. According to their remarkable global significance and rarity, the World Heritage Convention aims to identify and designate cultural and natural heritage sites as "World Heritage" in order to protect these important locations for future generations (Silva, 2015).

The decision to build the Aswan High Dam in Egypt, which would have drowned the valley containing the Abu Simbel temples, a gem of ancient Egyptian civilisation, was the event that particularly sparked international alarm. Following a request by the governments of Egypt and Sudan, UNESCO started a worldwide campaign for conservation in 1959. In the areas that would be flooded, archaeological study was expedited. The Abu Simbel and Philae temples, in particular, were demolished, transported to dry land, and then rebuilt (UNESCO World Heritage Convention, n.d.).

About 50 countries contributed half of the campaign's estimated cost of US$80 million, demonstrating the value of international cooperation and the need for everyone to take responsibility for protecting priceless cultural landmarks. Due to its success, several preservation efforts were launched, including those to save Venice and its Lagoon in Italy, the Archaeological Ruins at Moenjodaro in Pakistan, and the Borobodur Temple Compounds (Indonesia). As a result, UNESCO started the creation of a draught convention on the protection of cultural treasures with the assistance of the International Council on Monuments and Sites (ICOMOS) (UNESCO World Heritage Convention, n.d.). The result was the 1972 Convention and the current framework for protecting World Heritage sites still used to this day.

4.3 Re-thinking World Heritage

With a European appreciation for the importance of cultural heritage, European powers primarily conceived the 1972 Convention. By the 1990s, it was becoming increasingly clear that this Eurocentric understanding of cultural heritage had produced a problematic, time-frozen form of heritage that was static, monument-centric, materiality-based, and aesthetics-oriented. On the one hand, this viewpoint undercut the dynamic and plural nature of the world's cultural legacy as well as continuing social, economic, and political processes that support the acknowledgement of heritage in varied civilizations (Silva, 2015). On the other hand, by 1997 there was a definite cultural and geographic disparity in the distribution of sites designated as World Heritage. In comparison to cultural resources from other parts of the world, a large number of historical sites and monuments from Western Europe were added to the World Heritage List on this 25th anniversary of the World Heritage Convention (Titchen, 1996).

However, by 1997, there was a clear cultural and geographic divide in the distribution of the sites that had been given the World Heritage designation. On this 25th anniversary of the World Heritage Convention, a sizable number of historical sites and monuments from Western Europe were added to the World Heritage List in contrast to cultural treasures from other areas of the world (Silva, 2015).

This recurrent depiction of cultural sites as original, unchanging, and trapped in time has been contested throughout the years in discussions both inside and outside of the World Heritage Convention. These issues called into doubt the veracity of authenticity concepts based on materiality and monument-centered heritage. For instance, Asian heritage professionals developed a discourse on how heritage management differs in the Asian context. This Asian approach is founded on several diverse ideas, such as the value of local community, spirituality, intangibility, and relative authenticity (Winter, 2012b).

Another important argument, mostly from non-Western nations, was that heritage should be seen as a "living" or "continuous" phenomena rather than as a static historical object. As a result of these discussions, UNESCO's heritage doctrine gradually underwent a number of revisions and started to reconsider its Eurocentric discourse assumptions (Silva, 2015).

4.4 Global Strategy, 1994

A Global Strategy for a Representative, Balanced, and Credible World Heritage List was endorsed by UNESCO in 1994. It encourages more nations to ratify the Convention as State Parties and to compile lists of potential nomination sites. The overall number of sites included on the List has no statutory cap (UNESCO, 2013). OUV is seen as "an outstanding response to concerns of universal character common to or addressed by all human cultures," according to one interpretation (Jokilehto, 2006a, p. 2).

The "problems of universal nature" that reflect "human interaction with the land" and "human beings in society" are divided into six topics (Labadi, 2005, p.91). These include spiritual responses, human movement (nomadism, migration, and slavery; routes and systems of transportation); exploitation of natural resources (food production; mining; quarrying; manufacturing); and technological development. Cultural associations also include human interactions, symbolic associations, and fields of knowledge (Jokilehto et.al., 2005; Jokilehto, 2006b).

In addition to the original categories of monuments and sites that favoured European architectural and urban heritage, one result of the Global Strategy is the identification of new categories for World Heritage sites, such as cultural landscapes, industrial heritage, deserts, coastal-marine, and small-island sites (UNESCO, 2014). The addition of the "cultural landscape" category to the World Heritage List in 1992, which is defined as significant interactions between people and the natural environment, was a significant step. This adoption successfully included more cultures and regions, especially indigenous communities that still have a special connection to and interaction with the natural environments (Titchen, 1996; Cameron, 2009).

The 2003 recognition of the intangible aspects of cultural heritage, which helped shift the concept of heritage away from the narrow focus on material forms of heritage, such as monuments and sites, and toward non-material aspects of heritage, such as cultural knowledge, practises, and expressions, represents another significant change in global heritage doctrine. The practises, representations, expressions, knowledge, and skills—as well as the tools, objects, artefacts, and cultural spaces related to them—that communities, groups, and, in some cases, individuals recognise as a part of their cultural heritage are referred to as intangible cultural heritage by the Convention for the Safeguard of the Intangible Cultural Heritage. It is usually expressed in these forms: oral traditions; performing arts (such as traditional music, dance, and

theatre); social practices, rituals and festive events; knowledge and practices concerning nature and the universe; and traditional craftsmanship (UNESCO, 2003).

4.5 UN 2030 Agenda for Sustainable Development and ICOMOS

At the UN Summit in New York in September 2015, Agenda 2030 was unveiled. Through 17 SDGs, 169 targets, and 231 indicators, the Agenda outlines the actions required for a paradigm change towards a sustainable path. The 5Ps, also known as the people, prosperity, planet, partnership, and peace components, form the basis of the 2030 Agenda. With the adoption of the 2030 Agenda, which expands upon the traditional perspective by adding two crucial components: partnership and peace so that genuine sustainability sits at the core of these five dimensions, the concept of sustainable development has taken on a richer meaning. Traditionally, it has been viewed through the lens of three core elements: social inclusion, economic growth, and environmental protection (United Nations, 2015)

In order for a development intervention to be sustainable, it must take into account the social, economic, and environmental implications it generates and lead to deliberate judgments in terms of the trade-offs, synergies, and spin-offs. This is because the 5Ps guide development policy decisions. Policymakers also need to make sure that any intervention is designed, owned, and carried out with the necessary partnerships and makes use of the right implementation methods. By directing us to ask the right questions at the right time, the 2030 Agenda and the SDGs collectively reflect a holistic approach to understanding and solving problems (United Nations, 2015).

ICOMOS has a special working group that examines how heritage fits within the UN 2030 Agenda. The Sustainable Development Goals Working Group (SDGWG) was created in 2014 to organise how ICOMOS would respond to and carry out the UN 2030 Agenda. The Working Group's objectives include preserving, protecting, stewarding, and engaging with all forms of heritage while fostering community development on the cultural, social, and economic levels, minimising the impact of heritage on the environment, fostering world peace, and promoting strategic alliances (ICOMOS 2021). Based on Target 11.4, "strengthen efforts to protect and safeguard the world's cultural and natural heritage to make our cities inclusive, safe, resilient, and sustainable," the Working Group coordinated a process of advocacy for the localization and monitoring of the UN 2030 Agenda and UN-New Habitat's Urban Agenda from the perspective of cultural heritage. The Working Group's focus on World

Heritage and Sustainable Development is one of its key areas of action, and as part of this, it collaborates with the UNESCO World Heritage Centre, Advisory Bodies, and other NGOs to assist State Parties in creating implementation plans for the 2015 World Heritage and Sustainable Development Policy.

4.6 World Heritage and Climate Change

A number of organisations and people who were concerned brought the topic of the effects of climate change on World Heritage to the World Heritage Committee's attention in 2005. The management of the effects of climate change on World Heritage has since been a priority for UNESCO. In 2006, UNESCO prepared a report on "Predicting and Managing the Effects of Climate Change on World Heritage" and a "Strategy to Assist States Parties to the Convention to Implement Appropriate Management Responses" under the direction of the World Heritage Committee and in collaboration with the World Heritage Committee's Advisory Bodies (ICCROM, ICOMOS, IUCN) and a large working group of experts. A collection of case studies on climate change and World Heritage was presented after this document. A Policy Document on the Impacts of Climate Change on World Heritage Properties (hereafter referred to as "Policy Document") was adopted in 2007 by the General Assembly of States Parties to the World Heritage Convention as a result of this process (UNESCO World Heritage Convention, n.d.).

The World Heritage Committee has received a significant number of reports on the condition of conservation of World Heritage assets impacted by climate change since the Policy Document was adopted in 2007. The UN 2030 Agenda for Sustainable Development and the Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC), among others, provided guidance for the actions taken as part of the national commitments to action at the same time (UNESCO World Heritage Convention, n.d.). In an updated policy document titled "Policy Document for Climate Action for World Heritage," which is currently being reviewed, it is emphasised the necessity for States Parties to take bold actions in implementing the Paris Agreement while remaining fully compliant with their duties to protect the Outstanding Universal Value (UNESCO 2021)

4.7 World Heritage and Tourism in Changing Climate

According to a 2005 study by the UNESCO World Property Centre, climate change was recognised as a hazard to natural and cultural heritage for 72% of

the properties for which comments were received from States Parties (UNESCO 2007b). Major tourist attractions like Venice, Italy; Kilimanjaro National Park, Tanzania; Sagarmatha National Park, Nepal; Cesk; and the ancient centres of Krumlov and Prague in the Czech Republic were among the World Heritage sites that UNESCO recognised as being at danger from climate change in 2007. (UNESCO 2007d).

More than 130 cultural World Heritage sites, including India's Elephanta Caves, France's Mont-Saint-Michel and its Bay, and Tunisia's Archaeological Site of Carthage, were identified as being at long-term risk from sea level rise in 2014 by researchers at the University of Innsbruck and the Potsdam Institute for Climate Impact Research (Marzeion and Levermann 2014).

Climate change was identified as the greatest possible threat to natural World Heritage sites globally in the IUCN World Heritage Outlook published in 2014 by the International Union for the Conservation of Nature (Osipova et al. 2014a). The research also said that, when considering all threats, only half of all natural or mixed sites were routinely monitored, more than a third had major reservations about the state of conservation, and 13% of sites had inadequate levels of management and protection. To ensure that sites maintain their OUV classification, monitoring threats and consequences of all kinds, including climate change, is essential. IUCN discovered that many nations' monitoring management and programmes were inadequate or poor (Osipova et al. 2014a).

More than 2,600 State of Conservation (SOC) reports were filed between 1979 and 2013, with 70% of natural and mixed sites and 41% of cultural sites receiving at least one assessment. In around 77 percent of all studies, management and institutional concerns, such as a lack of management plans or difficulties implementing them, boundary problems, issues with legal frameworks and governance, and a lack of financial or human resources, were cited as threats. Buildings and development, which includes residential, commercial, and industrial constructions, as well as accommodations for tourists and related infrastructure, were the second most commonly identified category of hazard (UNESCO 2014b).
Being listed as a World Heritage Site entails protective obligations as well as chances for sustainable development to advance a community and its economy (WHC 2010). World Heritage and tourism are logical allies. The goal of the World Heritage Convention is to preserve places of exceptional universal value for future generations. Nearly all World Heritage sites are or will be tourist destinations, and some of them rank among the most iconic places on earth. States Parties are obligated to "display" World Heritage sites to the general public, and the listing of a location on the World Heritage List entails protective

obligations as well as chances for social and economic advancement through sustainable development (WHC 2010).

According to the World Heritage Centre's analysis of SOC reports submitted by States Parties between 1979 and 2013 (UNESCO 2014b), 26 percent of SOC reports identified impacts of "tourism/visitor/recreation" as a problem, 14 percent mentioned "major visitor accommodation and associated infrastructure," and 10 percent called attention to issues with interpretation and visitor facilities. The data shows that while tourist accommodations and infrastructure have a greater tendency to affect natural sites, site visitor facilities are more frequently linked to cultural values. Asia Pacific and Europe/North America reported the most "tourism, tourist, and recreation" issues (UNESCO 2014b).

ICOMOS established the International Cultural Tourism Charter (ICOMOS 1999) at its General Assembly meeting in Mexico in 1999 with the aim of strengthening the bond between host communities and the tourism sector. The charter principles address some pertinent management issues that, while not specifically created for World Heritage sites, can offer crucial direction at the site level. These issues include sensitivity to the needs of local communities, managing potential conflicts, site interpretation, and tourism promotion.

Tourism itself has grown to be a complex phenomenon with political, economic, social, cultural, educational, bio-physical, ecological, and aesthetic components, according to ICOMOS. There are various opportunities and obstacles in achieving a positive interaction between tourists' expectations and goals and those of the host or local populations (ICOMOS 1999).

5 Methodology

The methodology employed for this research involved the triangulation of information through three datasets. The first dataset was derived from a two-step process. The first involved analysing site management plans or similar derivatives (e.g., heritage management plans, comprehensive plans, master plans etc) to understand overlaps between heritage, climate action and resilience. The second step included identifying relevant activities under the three subsets (i.e. heritage, climate action and resilience).

The second dataset was a derivation from the analysis of plans which maps the pre-determined activities against the 17 Sustainable Development Goals. The

activities are either actionable outcomes already implemented, undergoing the implementation process, or under consideration for future implementation. The activities range from objectives, strategies, goals, initiatives, policies or vision statement.

The third dataset was compiled through a set of expert and local interviews. While the expert interviews were from structured questions, the local interviews were more conversational or informal so as to understand stark differences in opinions and biases amongst stakeholder groups. Another dataset was derived through personal on-site observations so as to understand on ground implementation of climate action. The interviews were analysed under 5 themes – climate action, SDGs, risk preparedness, local action and sustainable tourism.

5.1 Site specific Dataset Divisions

Dataset 1 – Defines the first 2 steps of going through the respective plans to 1. understand overlaps and 2. identify the strategies, objectives, policies, activities etc.

Taj Mahal – The researcher read and analysed three plans in order to understand existing and potential overlaps of heritage and climate change, whether directly mentioned or indicative in nature. These plans were critiqued to understand the current scenario of incorporating climate action at three levels, the local, the city and the regional. The three plans this research examined were:

- *The Taj Site Management Plan (2001):* This plan was prepared by the Taj Mahal Conservation collaborative and discusses the conservation of the site, the landscape, visitor management and facilitation, information management and administrative frameworks.

- *The Action Plan (2018):* The Action Plan aims to increase green cover and was prepared by the Agra Nagar Nigam. Agra Nagar Nigam (ANN) is a local government body committed for providing necessary community services like health care, sanitation, education, housing, roads, transport etc to the people of the Agra city. It discusses the long term and short-term strategies for incorporating green cover in the Master Plan of Agra.

- *The State Action Plan for Climate Change in Uttar Pradesh (2014):* This plan discusses the regional strategies pertaining to climate change.

Monticello – With regards to sustainability and heritage management, Monticello is still in the planning process. Hence, none of the documents have yet been made available to the public. In the absence of strategic plans, the Albemarle County Comprehensive Plan (2015) and Historic Preservation Plan (2000) were consulted in order to understand the three major forces that affect the OUV of Monticello.

- *Albemarle County Comprehensive Plan (2015)*: The Comprehensive Plan along with material from the Thomas Jefferson Foundation website, identify the issues and address them through a set of voluntary objectives and strategies. These three major issues are: unprecedented development affecting the viewshed, heritage tourism, and the threat from invasive species.

- *Albemarle County Historic Preservation Plan (2000)*: It is a component of the Comprehensive Plan that provides historic resource oversight of the county. It explains policies pertaining to recognition and protection of heritage sites while discussing preservation incentives, economics and education.

Due to limited public data available in the case of Monticello, the research relied heavily on interviews, expert opinions and observations.

UVA and Jefferson's Academical Village – The researcher read plans and analysed them in order to draw conclusions regarding relevant strategies incorporated by UVA in the overlap of heritage management, climate action and resilience. The plans were as follows:

- *The UVA Sustainability Plan (2016):* It focuses on the engagement parameters and stewardship programs to implement resilient strategies. It informed the research regarding the long- and short-term climate action goals that UVA has aligned itself with in order to uphold its pledge of sustainability.

- *The UVA Grounds Framework Plan (2008):* This plan provides the vision that lends itself to address the Sustainability Management Framework and the vision associated with green campus to combat the effects of climate change.

- *The UVA Landscape Framework Plan (2013):* This plan discusses potential and predictive growth patterns to ensure holistic development. The three plans framed by UVA have been used to understand the efforts undertaken by the campus towards envisioning climate action combined with heritage.

Dataset 2 – A combination of objectives, strategies activities were identified and mapped along the 17 Sustainable Development Goals. This mapping was done to understand which goals are getting prioritised and which are falling short of actionable outcomes. Since the aim of the research is to avoid homogenization and ensure that the intangible and cultural aspects of heritage get recognition at par with the tangible aspects, the SDG framework hence becomes a tool for holistic redressal. The framework successfully looks at the social, economic, environmental and governance parameters holistically. This process was done for each of the three sites, Taj Mahal, Monticello and University of Virginia in the form of strategies, goals, initiatives, policies or vision statement.

The SDGs are as follows

SDG 1 – No Poverty
SDG 2 – Zero Hunger
SDG 3 – Good Health and Well-being
SDG 4 – Quality Education
SDG 5 – Gender Equality
SDG 6 – Clean Water and Sanitation
SDG 7 – Affordable and Clean Energy
SDG 8 – Decent Work and Economic Growth
SDG 9 – Industry, Innovation and Infrastructure
SDG 10 – Reduced Inequalities
SDG 11 – Sustainable Cities and Communities
SDG 12 – Responsible Consumption and Production
SDG 13 – Climate Action
SDG 14 – Life Below Water
SDG 15 – Life on Land
SDG 16 – Peace, Justice and Strong Institutions
SDG 17 – Partnerships for the Goals

Dataset 3 – Five major themes were identified that form the crux of the research, namely: climate action, the Sustainable Development Goals, risk preparedness,

local action and sustainable tourism. Data was collected through formal and informal interviews and on-site observations. The questions asked were as follows to understand certain predominant aspects that govern the five themes.

Formal Interviews: The interviews were composed of specific and structured questions answered by an expert in possession of the knowledge regarding the functioning of the site and activities associated with them. Hence the questions were direct with responses that critically informed the proceedings of the research.

Theme	Question 1	Question 2	Reasoning
Climate action	1. Why is there no Climate Action Plan (or an Environmental or Risk Preparedness and Disaster Mitigation Plan) that informs the management of the site? Is there a city level climate action plan or strategy framework? Does that mention the treatment of the heritage precinct?	2. In the absence of such plans, how is climate action being effectively managed at site? What measures have been implemented directly or indirectly keeping climate action in mind?	**Questions climate action at governance level.**
SDGs	3. Has there been an effort to integrate the SDGs in the existing site management plans through micro activities or holistically?	4. Which SDGs according to you should be prioritized in the implementation framework and why?	**Questions efforts at localising global strategies. It also ensures homogenization is addressed.**
Risk preparedness	5. What is the most urgent predictive threat that the heritage precinct is	6. In light of the physical and transitional climate risks affecting the site, what is being	**Questions the urgency of action and the systemic measures taken to address it.**

	expected to face in the future should the current activities continue?	done to address disaster management and risk preparedness?	
Local action	7. How are you integrating climate action into your efforts of protecting intangible heritage ? (eg- social groups, ecological systems)	8. How much importance is given to people centred approach in the management plan? What efforts are taking to ensure that the management plan is transparent? How can local action act as the medium to ensure actions get implemented on site better?	**Questions transparency and the role of awareness creation in participatory planning.**
Sustainable tourism	9. How is tourism being curbed to ensure that pressure on resources does not occur at the local level and affect the existing quality of life of locals? What are the sustainable tourism practices that are being followed and how?	10. According to you can heritage tourism play a key role in climate action? And if so would it have positive or negative impacts?	**Questions resource pressure experienced due to uncontrolled tourism and the compromises that the locals are expected to undergo.**

Table 1 Themes, questions and reasoning for formal interviews

Informal Interviews: The informal interviews were directed towards three groups of people: locals residing in the area, tourists visiting the World Heritage site and people directly employed under the World Heritage site. With tourism sites, there are two types of employment that was identified. A population that is formally employed and engaged in the functioning of the site and its activities such as the site manager, tour guides, office of the architect etc. The other population is that which is indirectly employed, i.e dependent on the heritage site for its livelihood

but not formally employed by the organization. In the case of the Taj Precinct, the people falling under this category are craftsmen, drivers, hawkers and people engaged in other informal economies. In the case of Charlottesville, it is those working in the wineries, souvenir shops and hospitality industry who benefit from tourism and the influx of students but are not formally employed under them.

The questions targeted towards the three stakeholder groups revolve around the 5 themes of Climate Action, SDGs, Risk Preparedness, Local Action and Sustainable Tourism in order to rule out any anomalies or stark differences between the formal interviews and literature reviews. The questions therefore are more intuitive, conversational indirect and situational. The questions are also not the same but generally address the themes.

Theme	Question 1	Question 2	Reasoning
Climate action	1. The weather is rather hot today. Is it generally this hot or is it just this year?	2. How much do you think climate change is affecting this area? How has it affected your patterns?	**Questions the degree of awareness regarding climate change and need for climate action**
SDGs	3. What do you think should be done to be more sustainable?		**Questions the understanding of sustainability from a local perspective**
Risk preparedness	4. Do you want to live/work here long term or do you want to shift elsewhere?		**Questions urgency of action and the systemic measures taken to address it.**
Local action	5. Have you taken any efforts to be more sustainable?)		**Questions transparency and the role of awareness creation in participatory planning.**

Sustainable tourism	6. Do you visit here often? What is your take on sustainable tourism?	7. Do you think enough is being done to make the site experience sustainable? What did you like/dislike about the site?	**Questions resource pressure experienced due to uncontrolled tourism and the compromises that the locals are expected to undergo.**

Table 2 Themes, questions and reasoning for informal interviews

Personal On-Site Observations: Personal observations form the last layer of data collection to ensure that the preceding data sets all align. On site observation is also an important tool in cases where there are no management plans to inform the strategies incorporated on site (such as Monticello). Therefore, they act as a visual record of activities that are documented through pictures to provide credibility to missing data.

6 Results

6.1 Dataset 1 and 2

6.1.1 Mapping activities against SDGs

Mapping Taj Mahal's Activities			
The setting up of hydro cracker unit and various other devices by the Mathura Refinery	SDG 7	SDG 8	SDG 9
The setting up of 50 bed hospital and two mobile dispensaries by the Mathura Refinery to provide medical aid to the people living in TTZ	SDG 3	SDG 16	
Construction of Agra bypass to divert all the traffic which passes through the city of Agra.	SSG 9	SDG 13	SDG 11
Additional amount of Rs. 99.54 crores sanctioned by the Planning Commission to be utilized by the State Government for the construction of	SDG 7, SDG 8	SDG 9, SDG 10	SDG 11, SDG 12

electricity supply projects to ensure 100 per cent uninterrupted electricity to the TTZ.			
The construction of Gokul Barrage, water supply work of Gokul Barrage, roads around Gokul Barrage, Agra Barrage and water supply of Agra barrage, have also been undertaken on a time schedule basis to supply drinking water to the residents of Agra and to bring life into river Yamuna which is next to the Taj	SDG 9, SDG 10	SDG 11, SDG 12	SDG 14
Green belt as recommended by NEERI will be set up around Taj.	SDG 11	SDG 13	SDG 15
The Court suggested to the Planning Commission by order dated September 4, 1996 to consider sanctioning separate allocation for the city of Agra and the creation of separate cell under the control of Central Government to safeguard and preserve the Taj, the city of Agra and other national heritage monuments in the TT.	SDG 16	SDG 17	
All emporia and shops functioning within the Taj premises have been directed to be closed.	SDG 12		
Directions were issued to the Government of India to decide the issue, pertaining to declaration of Agra as heritage city, within two months.	SDG 11		

Table 3 Mapping Taj Mahal's activities against the 17 SDGs

Mapping Monticello's Activities			
Protect Monticello's viewshed through awareness creation via public document Monticello Viewshed Map that represents all properties potentially visible from the Monticello mountaintop.	SDG 4 SDG 8	SDG 9 SDG 11	SDG 13 SDG 16

Monticello Farm Table serves local, sustainable, farm-to-table cuisine, including dishes made seasonal fruits and vegetables grown in our gardens.	SDG 2 SDG 3	SDG 8 SDG 9	SDG 11 SDG 15 SDG 12
The Thomas Jefferson Centre for Historic Plants, established at Monticello in 1986, collects, preserves, and distributes historic and native plant varieties and strives to promote greater appreciation for the origins and evolution of garden plants.	SSG 11	SDG 15	SDG 4 SDG 9
For a week in June, the gardens and grounds of Monticello and the University of Virginia serve as the setting for a unique educational experience in the theory and practice of historic landscape preservation.	SDG 4	SDG 8	SDG 9
The Getting Word Oral History Project exhibit in Monticello's South Wing shares the history of slavery at Monticello, and the American struggle for equality and freedom through the stories of its survivors and their families.	SDG 5	SDG 10	SDG 16 SDG 17

Table 4 Mapping Monticello's activities against the 17 SDGs

Mapping University of Virginia's Activities			
Being carbon neutral by 2030 and fossil fuel free by 2050	SDG 7	SDG 9	SDG 11 SD 13
Reducing water use by 30% by 2030	SDG 6 SDG 14	SDG 9 SDG 15	SDG 11 SDG 12
Reducing waste to 30% of 2010 levels by 2030	SSG 3 SDG 11	SDG 6 SDG 12	SDG 7 SDG 9
Reducing the University's nitrogen footprint by 30% by 2030	SDG 7	SDG 9	SDG 11 SD 13
Increasing the use of sustainably grown food to 30% by 2030	SDG 2 SDG 3	SDG 9 SDG 11	SDG 12
Partnering with the community to advance equitable places	SDG 1 SDG 4	SDG 5 SDG 8	SDG 10 SDG 16
Building accountability in leadership.	SDG 16	ADG 17	

Enhancing sustainability teaching	SDG 4	SDG 8	SDG 10 SDG 11
Enhancing sustainability research	SDG 4 SDG 8	SDG 9 SDG 11	SDG 13
Supporting Grounds-engaged learning.	SDG 4	SDG 16	SDG 17

Table 5 Mapping University of Virginia's activities against the 17 SDGs

A comparison of the three datasets clearly indicates the differences in approach in management frameworks. The activities of the Taj Precinct and Monticello site are qualitative in nature while the University of Virginia has quantifiable goals. This difference highlights the importance of monitoring targets through measurement and hence making them more achievable. The approaches again are a reflection of the functions each of these sites serve. The Taj Mahal and Monticello are World Heritage sites that serve as major tourism destinations, while UVA functions as a university. Therefore, the scope of the management frameworks in the former are focussed more towards the tourism management while UVA's primary goal is education and science. Due to its functional disposition, UVA's frameworks are more detailed, and research is backed by incorporating sustainability as part of the curriculum. In the case of Monticello and the Taj Precinct, the frameworks are not approached with the academic rigour that UVA has managed to accomplish. Hence, they remain more qualitative. In the case of the Taj precinct, they are majorly affected by regulatory policies, while in the case of Monticello the initiatives are voluntary and foundation dependent due to the absence of mandated national, regional or local policies.

6.1.2 Corelating SDGs with the 5P approach

The SDGs were further mapped against the themes of People, Planet, Prosperity, Peace and Partnership to understand trends and prioritisation of the five parameters. SDG 11, Sustainable cities and communities and SDG 9, Industry, Innovation and infrastructure were the strongest addressed SDGs in case of all three sites. The Prosperity and Partnership parameters did take precedence over the remaining three. The People centric SDGs were almost addressed in the Taj precinct site, partially addressed in the Monticello site and well-addressed in the UVA site. Planet centric SDGs were however better addressed by the Taj precinct, whereas Monticello activities hardly covered its ecological impact. Overall, UVA was the only site that had holistically managed to address all the 5 themes.

PEOPLE - Fostering inclusion	PLANET: Engaging in climate action	PROSPERITY: Supporting growth, jobs, and poverty reduction
SDG 1 – No Poverty SDG 2 – Zero Hunger SDG 3 – Good Health and Well-being SDG 4 – Quality Education SDG 5 – Gender Equality	SDG 6 – Clean Water and Sanitation SDG 12 – Responsible Consumption and Production SDG 13 – Climate Action SDG 14 – Life Below Water SDG 15 – Life on Land	SDG 7 – Affordable and Clean Energy SDG 8 – Decent Work and Economic Growth SDG 9 – Industry, Innovation and Infrastructure SDG 10 – Reduced Inequalities SDG 11 – Sustainable Cities and Communities
PEACE: Strengthening institutions and governance / tackling corruption	PARTNERSHIP: Financing the SDGs	
SDG 16 – Peace, Justice and Strong Institutions	SDG 17 – Partnerships for the Goals	

Table 6 Correlating the 5P approach to 17 SDGs

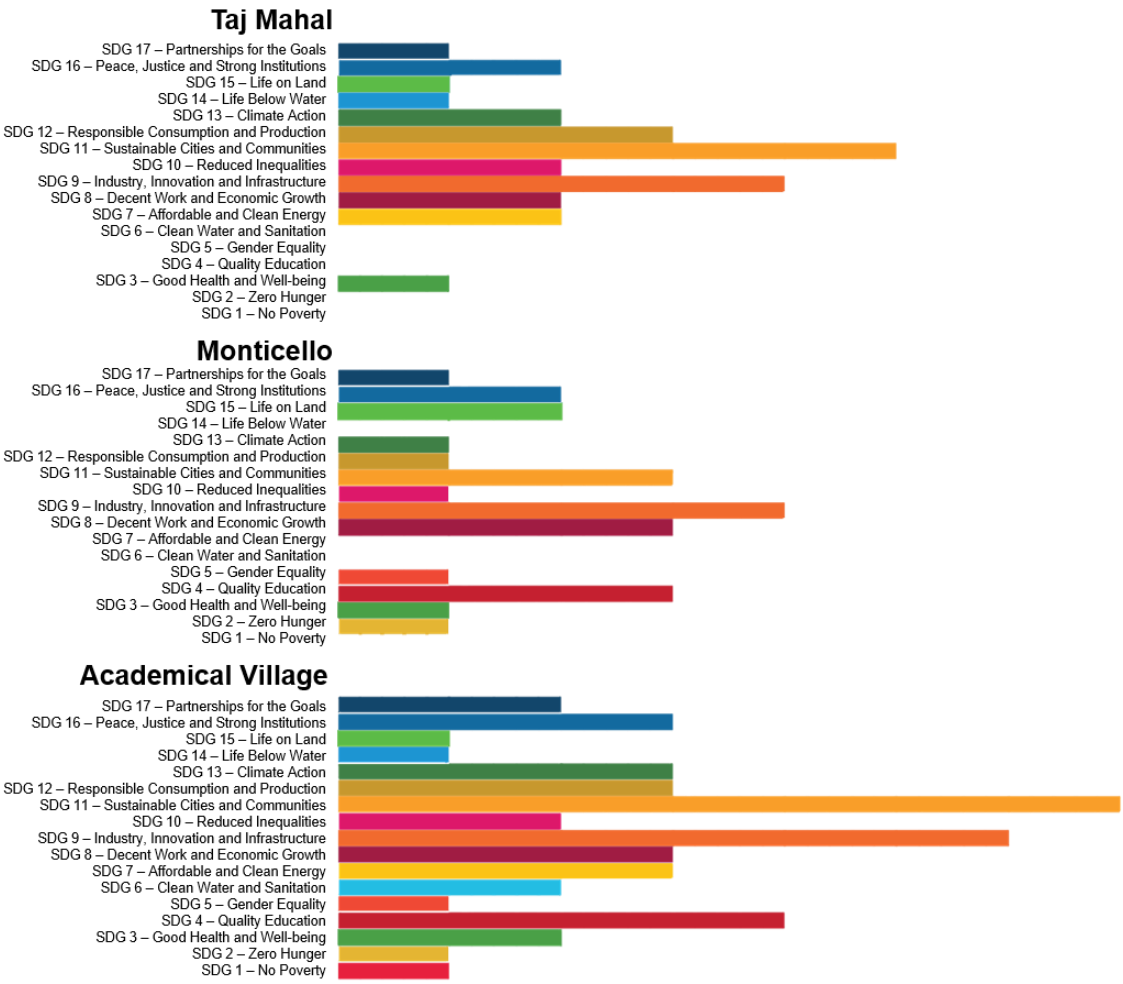
SDGs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Taj Precinct	0	0	1	0	0	0	2	2	4	2	5	3	2	1	1	2	1
Monticello	0	1	1	3	1	0	0	3	4	1	3	1	1	0	2	2	1
UVA	1	1	2	4	1	2	3	3	6	2	7	3	3	1	1	3	2

Table 7 Ranking each Heritage site performance with the corresponding SDGs

As previously discussed through Dataset 1 and 2, UVA is noticeably ahead in SDG implementation due to 2 major reasons,

i. Quantification of goals thus making them easier to monitor and hence more achievable.
ii. Education and awareness as the primary goal, thus ensuring strategies are backed by research rigour.

While the first parameter, i.e quantification is universal, and the importance of quantification can be felt across all three sites, the second parameter, i.e. capacity gap, becomes very specific to the UVA site for multiple reasons such as – regulatory body, functional disposition and contextual setting. Since UVA is a university, the site inherently invests in education, but this is something that the other two sites do not have. In order to understand further the emerging themes, datasets 1 and 2 were further sub-divided to better understand the shortcomings of site management of the remaining parameters through expert interviews.



Images 4 Comparative analysis of each precinct against 17 SDGs. Source: Author

6.2 Dataset 3 – Interviews

	Red - Governance centric steps and initiatives **Blue – Absence of data and lack of quantification** **Orange – Acknowledging differences in priorities** **Mauve - Economic impact**				**Purple - Coordination and communication gaps** **Brown – Importance of Capacity building and capacity gaps** **Green – Not addressing ecological indicators**				**Pink – Not addressing social Indicators** **Yellow – Addressing catalytic indicators** **Grey – Addressing intangible heritage** **Teal - Voluntary initiatives**	
	Climate action		**SDG Implementation**		**Risk Preparedness**		**Local Action**		**Sustainable Tourism**	
	Question 1	Question 2	Question 1	Question 2	Question 1	Question 2	Question 1	Question 2	Question 1	Question 2
	Climate action + Heritage addressed?	In its absence, management measures incorporated?	Effort to integrate SDGs?	SDG prioritisation?	Most urgent threat?	What is being done/should be done?	Integration of climate action + intangible heritage?	Importance of people-centric approach?	Sustainable tourism practices followed?	Role of tourism and impacts?
Interview 1	**-Governmental inaction** **-Lack of coordination between departments**	**-Need for scalar approach** **-Lack of climate change chapter integration**	**-Lack of measurement**	**-Simultaneous prioritization for impact**	**-Prioritising tourism due to economic benefits over socio cultural benefits**	**-Remedial measures should be monitored through quantification** **-Periodic redressal necessary**	**-Should be established through measurement that is missing.**	**-Political answer** **-Transactional attitude**	**-Impact of tourism on climate change is not equated** **-Lack of information and awareness**	**-Benefits through cohesive strategisation**
Interview 2	**-Prioritising conservation but not climate change**	**-Multiple actions come under the purview of**	**-Not explicitly, but addressing in parts**	**-Prioritise more urgent issues over distant ones**	**-Increased footfall** **-Ecological damage**	**-Understanding various impacts, social,**	**-Reviving traditional knowledge**	**-Need for scalar experiential approach**	**- Need for regulatory mechanisms**	**-Making tourism a key aspect of**

	-No nodal agency	multiple bodies			-Pollution control	ecological and climatic	-Historically linked livelihood		across scales	climate action
Interview 3	-In preparatory phase	-Demonstrated traditional environmental stewardship	- Indirect commitments through actions	-Not enough SDG awareness	-Seasonal shifts and environmental hazards	-Question for the Director of security	-In preparatory phase	-Importance of bottom-up approach -Lack of climate budget	-Need for collaborative approach	-In preparatory phase -Aiming for public awareness
Interview 4	-In preparatory phase -Focus on GHG emission inventory	-Energy efficiency, emission reduction, mass transportation systems -Growing own food	-Not enough SDG awareness	- Prioritising Climate Action	-Increased frequency of natural disasters	- Insufficient data	-Ecological systems are prioritised -Social systems addressed but not from climate action perspective	-Absence of public domain - Demonstrated collaborative culture	-In preparatory phase	-Negative environmental impact -Aiming for public awareness
Interview 5	-Not in parlance with heritage but applicable to climate action	- Focus on energy efficiency -Cost effective measures -Internal mandate only	- Demonstrated environmental stewardship	-Research manifestation	- Identification of main climate hazards	-Engagement programs	- Engage, steward, discover centric sustainability approach	-Mandating public participation in the planning process	-Aiming for awareness and education is the main mission	-Importance of proper management mechanisms

Table 8 Summary of responses to formal interviews

As established from the previous datasets, there are differences in the regulatory body, functional disposition and contextual setting that affect the site management and the strategic incorporation of SDGs. The Taj precinct is placed in Agra, Uttar Pradesh, India with the Archeological Survey of India (ASI) responsible for its protection and management. Monticello and the University of Virginia are both placed in Charlottesville, Virginia, USA. Yet Monticello is protected and managed by the Jefferson Foundation while UVA is managed by the State of Virginia.

The emerging themes from Datasets 1 and 2 were identified as climate action, SDG implementation, risk preparedness, local action and sustainable tourism that were further questioned by experts. Climate action questions the degree of awareness and contextual response that the site at hand is currently implementing. SDG-based questions are an attempt to understand and localize global perspectives. Disaster management and risk preparedness aims to understand and question urgency since climate change is currently a global crisis. Local actions and initiatives hinge on questioning data transparency, awareness, engagement, and most importantly stewardship. Since World Heritage always attracts tourism, the importance of ensuring sustainability to avoid resource competition is a necessary element. The interview responses revealed patterns that could be further segregated into broader themes explaining the differences in site management and ideologies associated with them.

	Governance centric steps and initiatives	Absence of data and lack of quantification	Acknowledging differences in priorities	Economic impact	Coordination and communication gaps	Importance of Capacity building and capacity gaps	Not addressing Ecological indicators	Not addressing Social Indicators	Addressing catalytic indicators	Addressing intangible heritage	Voluntary initiatives
Taj Mahal	**4**	**3**	**3**	**2**	**7**	**3**	**1**	**4**	**1**	**1**	**0**
Monticello	**0**	**7**	**2**	**0**	**3**	**5**	**4**	**2**	**1**	**2**	**1**
UVA	**1**	**0**	**1**	**1**	**0**	**2**	**1**	**1**	**1**	**2**	**1**
Total	**5**	**10**	**6**	**3**	**10**	**10**	**6**	**7**	**3**	**5**	**2**

Table 9 Summary of issues generated from formal interviews

The responses reveal that the top inhibiting factors in case of the Taj precinct were lack of governance-centric steps and communication gaps. This parameter is hardly applicable to the Monticello and UVA sites since overarching national, regional and local policies do not exist. In contrast, voluntary initiatives are an important element of the second and third sites which are completely absent in the Taj precinct. Overall, lack of quantification, capacity gaps and coordination and communications gaps affect all three

sites. Although datasets 1 and 2 showed UVA's efforts at addressing capacity building and quantification of data, the interviews revealed that it has not resulted in enough public awareness to drive participatory planning and local engagement. Capacity building is still available largely to the formal university crowd. Differences in priorities are noticeable in the sites based on their functions. While the Taj precinct and Monticello have prioritised heritage management, the overlap with climate action is not visible yet. On the other hand, UVA has addressed climate action through multiple, well-researched frameworks, but they are generally applicable to the entire campus and not heritage-specific actions.

Prioritising economic impact is clearly visible in the strategies and policies incorporated in the Taj precinct. Due to the Taj acting as a major tourist attraction, the importance of financial returns is felt significantly compared to UVA. Although Monticello also functions as a tourism destination, it is not comparable to the annual footfall received by the Taj. Also, due to the population density, the amount of people dependent on the Taj for livelihood is far greater in comparison to Monticello. Coordination and communication gaps are particularly visible in the Taj site due to the multitude of government bodies associated with its protection and management, but they are segregated in their outlook. Each of the bodies specifically target a single aspect without holistic consideration of the other affecting factors. Although there are multiple policies in place to ensure protection of heritage and aiming for climate action, there is an absence of a nodal agency that manages the overall precinct.

The differential impact on ecological, social and catalytic climate change indicators have been observed across all three sites. The Taj site addresses more ecological factors than social, while the situation is reversed in the case of Monticello and UVA, where social indicators are prioritised more. Catalytic indicators such as pollution, waste, biological agents etc have not been targeted sufficiently by either of the sites. Intangible heritage is another point where the Taj precinct falls short, but which UVA and Monticello strongly address. The array of sub themes is a clear result of whether voluntary initiatives or a policy centric approach take precedence. They bring out the differences between top-down and bottom-up initiatives implemented by the sites.

7 Analysis

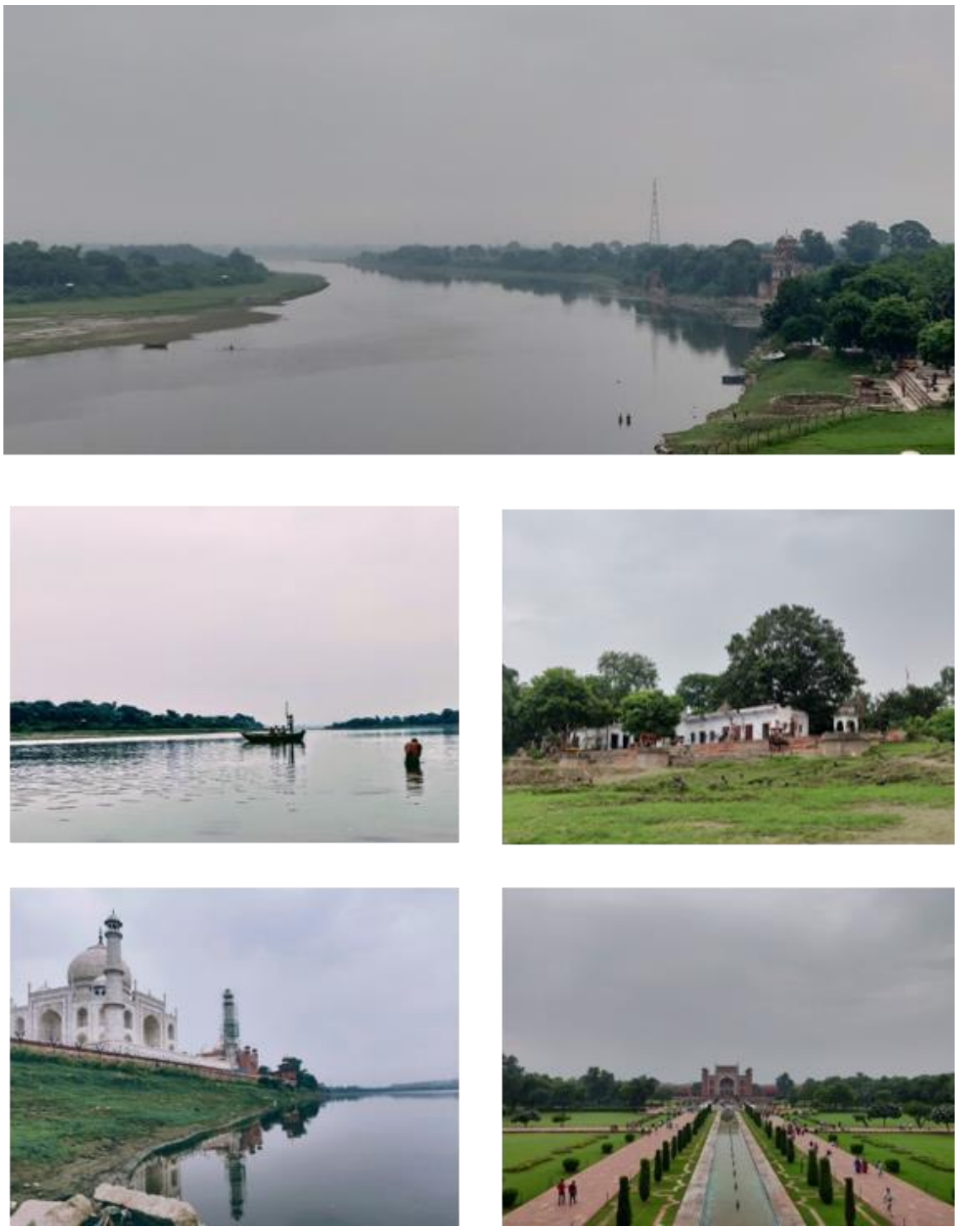
Each of the sites can be segregated into sub-elements that bear strong resemblance towards site management framework planning.

7.1 Taj Mahal and its relationship to broader sustainable development issues

The Taj site has a strong monumentality aspect that is associated with livelihood. Inviting over 7-8 million visitors annually, the 17 hectares of the Taj Mahal site influences the life and livelihood patterns of those surrounding it. The Taj Ganj settlement is home to numerous tourism dependent activities such as guides, ticketing, information centres that would cease to exist if the monument were to fall prey to climate change scenarios. It is important to understand that the 17 hectares do not take into consideration the ecological setting such as the Yamuna River system with the Mehtab Bagh gardens, or the Taj Ganj settlement as part of the heritage network. However, this river system is prone to impacts of climate change. These areas also form part of the buffer zone and their degradation can impact the World Heritage site in the future. This clear segregation is indicative of the management framework's prioritization of tangible heritage over intangible heritage and environmental sustainability.

Images 5 Monumentality and livelihood associated with the Taj. Top row - Influx of tourists in the Taj in the early hours of the day. Mid row left- Tourists at the west gate of the Taj precinct. Mid row right- Informal economies along the entranc gate of Katra Resham. Bottom row left – Taj mahal main gateway for viewing the monument. Bottom row right – Taj mahal and as viewed by tourists from the main gateway. Source: Author

The relationship of the Taj with its ecological setting is prevalent in every aspect of the monument's inception. This ecological relationship is reflected through the association of cultural activities with the ghat system (river banks) such as trade,



Images 6 Relationship of the Taj to ecological setting. Top row- Blue-green network associated with the Taj in the form of the Yamuna, ghats and gardens. Mid row left- Local offering prayers in the Yamuna at sunrise while a boat crosses the river. Mid row right- Temples at the banks of the Yamuna located east of the Taj precinct. Bottom row left- View of the Taj from the Yamuna bank. Bottom row right- The Charbagh garden inside the Taj precinct contributes to the formal blue-green network. Source: Author

religious rituals and symbolic rites. The monument's foundations were designed in the well format to accommodate the flooding of the Yamuna banks without affecting the its stability. The Charbagh gardens inside the precinct were also designed to indicate the importance of ecological relationship with the monuments.

Apart from its association with the blue-green network, the inter-monument relationship between the Taj Mahal, Agra Fort and Fatehpur Sikri is recognised by the management plan as the Taj Trapezium complex. The three monuments form a circuit with the potential to boost tourism significantly, hence resulting in the proposal of an experiential walkway which also adds to Agra's greening policy. The settlement abutting the Taj Mahal, i.e. Taj Ganj, is part of the Taj's socio-cultural identity due to its association with historically-linked livelihood. The Katra (neighbourhood) system that divides the settlement in 4 parts were derived from the major economies that the original settlers of the area were part of. The katras are part of the buffer zone but not yet recognised as the core heritage precinct. The management plan's lack of recognition towards the environmental and social systems that form an integral part of the Taj Mahal precinct is visible in how the People and Planet SDGs receive less prioritization than the other SDGs.

There is a need for an integrated approach within the Taj precinct. The segregation of resources and topics with surgical interventions has prioritised parts of the historical landscape only associated with tourism, visitor experience activities and visitor management. Surgical interventions are ones that act as infills of immediate remedy instead of acting as a piece in a larger framework. For example, site management could install a differential ticketing system to ensure fewer tourists access the mausoleum and hence the marble receives less footfall. However, the larger issue of restricting tourists to prevent competing for resources is not taken into account. The approach is not holistic enough to encompass the ecological and socially significant territories of the Taj. Keeping in mind that the major issues faced by the site are pollution, tourism influx, pressure on local resources and loss of historically linked livelihood, the management frameworks have no clearly articulated vision to achieve goals aiming towards social and environmental sustainability. While the management plan does discuss the phased development - where phase 1 would focus on the core zone (Taj Mahal) and phase 2 on the buffer zone (Taj Ganj and Mehtab Bagh), - it does not address regional concerns linking basic urban infrastructure issues such as the availability of drinking water or electricity, which directly affect the management and maintenance of the Taj Mahal site itself. There is an urgent

need to achieve a balance between the developmental pressures felt by the historical built and un-built fabric with the looming threat of climate change.

Images 7 Socio-cultural identity associated with the monument that is enhanced through rites, rituals, food and occupational habits. Top row- The Taj as a backdrop to the urban fabric of Taj Ganj. Mid row left- Local food outlets in the Taj Ganj area. Mid row right- Craftsmen in Katra Resham working on a silk cloth with beads. Bottom row left- Worshiping at Hathi Ghat Yamuna. Bottom row right- A woman selling flowers and incense sticks at Hathi Ghat for worshippers. Source: Author

7.2 Broadening the role of Monticello in ecological sustainability beyond scenic resources

Images 8 Monumentality and tourism associated with Monticello. Top row- Tourists making their way from the plantation to the entrance porch of Jefferson's mansion for a guided tour. Bottom row left- The dining room at Jefferson's mansion was painted in a bright yellow which was a scarcely available colour during his time. Bottom row right- Tourists admiring Jefferson's collection of artifacts in the formal living area. Source: Author

Monticello's mission is preservation and education, which extends to the interpretation of Jefferson's landscape. Although heritage-linked tourism is the focal point of Monticello, the integrity of the landscape is a major contributing factor too. The elements of Monticello hence can be sub-divided into the Jefferson house and associated tourism, and the plantation estate with its association with slavery. The entrance corridors, from the base of the mountain to the top of Monticello required special supervision by the Thomas Jefferson Foundation to ensure that the rural character is retained. The concept was to provide visitors with the opportunity to view that landscape from Jefferson's perspective, a glimpse of his era. The predominant issues faced by Monticello are therefore: viewshed management, compromise of historic and scenic resources due to developmental pressures, and loss of integrity off the Jefferson era landscape.

The Albermarle County Comprehensive Plan (2015) and Albemarle County Historic Preservation Plan (2006) spell out the importance of heritage management through three major objectives and corresponding strategies. Objective 4 talks about promoting regional cooperation in preservation and conservation efforts, including the promotion of heritage tourism. Objective 5 discusses Monticello's viewshed management, and Objective 6 mentions the importance of protecting and enhancing scenic resources for residents and tourists. The foundation's initiatives towards climate action are still in preparatory phase. Steps that have been incorporated consciously towards sustainability were voluntary, action oriented but non-quantifiable.

The preservation of viewshed took precedence not only for the sake of heritage but also due to economic concerns. As the generator of nearly $47 million and 440,000 annual visitors, Monticello is one of the primary generators of the local economy. The preservation of viewshed therefore is necessary to ensure that the landscape remains the spectacle it is for future tourism prospects that the Albemarle County plan particularly focusses on. The use of voluntary guidelines to ensure that development does not happen within view lines, however, does not have any overlaps with ecological sensitivity. Their redressal again is more aesthetic and transactional in nature. Managing environmental changes brought about by climate change will need to be factored in the management plan of the site.

Images 9 Jefferson estate and associated slavery. Top row- View of the plantation from the slave quarters at Monticello. Bottom row left- View of mulberry grove where the tobacco plantations and slave quarters were situated. Bottom row right- Interiors of a slave quarter in mulberry grove in stark contrast to the interior of Jefferson's mansion. Source: Author

7.3 Establishing Sustainability Plan at the University of Virginia

Images 10 Education and democracy in association with UVA's principles. Top row- A lecture in the Rotunda room of Jefferson's Academical Village. Bottom row left- Ensuring universal access in the academical village through ramp installations. Bottom row right- Memorial to enslaved labourers at The University of Virginia . Source: Author

The University of Virginia was built on the ideals of democracy associated with well-educated citizenry. The elements hence incorporate the importance of

spaces built for shared knowledge and exchange, but with a history of slavery and racial discrimination. In the past decade, the University of Virginia has experienced a sharp growth of interest amongst students, faculty and alumni towards the need to invest in sustainable management and climate action. It has been viewed as the predominant challenge of the 21st century, stirring the need to advocate for opportunities to learn, create and translate knowledge hinging on sustainability whilst engaging in positive environmental and social changes. In 2016, UVA launched its first comprehensive Sustainability Plan - engaging over one hundred stakeholders to build upon existing stewardship goals, adding robust waste, procurement, food and water goals and actions, and committing to integrated goals related to community engagement, curriculum, and research. (University of Virginia, 2016)

The broader headlines under which the Sustainability Plan has been outlined are: Engage, Steward and Discover. “Engage” seeks to involve and integrate the community towards collective action and fosters communication with stakeholders and the environment they co-habit. It increases engagement through awareness creation through promotion of equity and wellness.

“Steward” works towards taking accountability and responsibility of the environment. It aims at the more quantifiable and measurable aspects of targets such as carbon neutrality, emission reduction, conscious water consumption, waste management, food production, responsible development, land use efficiency and meaningful expansion and collaboration.

“Discover” is a quest to delve deeper into future trends and research mitigation strategies. It also focusses on retrofitting a curriculum that would be sustainability focussed to bridge the gap between operational and academic units. (University of Virginia, 2016)

The Sustainability Plan further outlines 23 goals and 101 actions, including the development Action Plans to provide the UVA community and its partners transparent road- maps of specific strategies for how the University seeks to meet its environmental stewardship goals.

7.4 A case wise introduction to sustainability

It is interesting to note that out of the three sites, the Taj precinct was the first site to consciously aim for sustainability and climate action in 1997 after the M.C Mehta v/s Union of India case resulting in Pollution Control Plan. Monticello came next with the Albemarle County Comprehensive Plan for Viewshed Management in 2015. And UVA came last with the advent of Sustainability Management Plan in 2016. However, currently UVA is a leading sustainability player amongst the three sites. Even with a decade long head start the Taj precinct has not been able to achieve rigorous sustainability goals. Physical and transitional risks play an important factor in understanding why certain sites are more vulnerable than

the others. The Taj precinct firstly must deal with higher population density compared to UVA and Monticello. The social layer is associated with environmental degradation, sanitation, associated developmental infrastructure and increased demand for resources along with an additional floating population of tourists. The contextual differences also give rise to climate change indicators that have still not gained enough attention.

7.5 Understanding climate change indicators

Climate Change causes a number of detrimental effects on World Heritage (see Appendix A1). Climate change indicators that are commonly recognised come under the bracket of atmospheric moisture change, temperature change, sea level rise, wind and desertification. Prolonged seasonal shifts, heatwaves, flooding, droughts, increased frequency of natural disasters such as hurricanes etc are all common elements associated with climate change. Yet the association of climate change with catalytic effects have not yet gained momentum as recognizable factors. Two such catalysts that significantly propel climate change are biological agents and pollution. The importance of these catalysts are noticeable in all three research sites.

7.5.1 Pollution, solid waste and river pollution in the Taj precinct

Pollution is an unavoidable aspect of the Taj precinct, in the form of emissions, solid waste and river pollution. These not only have causal effects on the aesthetic beauty of the Taj, such as yellowing the marble, and bringing waste-borne pests that turn the marble greenish, but they also result in environmental and temperature changes due to the deposition of pollutants. The Action Plan (2018) promotes the increase in green cover to create carbon sinks to counter emissions. The Taj Site Management Plan (2001) discusses the creation of an experiential green walkway as a tourism circuit, which can also be used as a tool to address emissions and pollution. Yet these plans exist as solitary strategies and not as a holistic framework. In parlance, the State Action Plan for climate change treats heritage only as a chapter and not as an integral aspect of climate change. The loss of traditional knowledge, culture and generational livelihood mechanisms find little or no mention in the climate change scenario.

7.5.2 Invasive species and pollution issues at Monticello and UVA

Monticello and UVA also face increased proliferation of invasive species leading to decline of original plant growth. Since a key aspect of Monticello's OUV is maintaining the integrity of the Jefferson era estate, a decline in the integrity of the plantation would significantly affect its tourism alongside the associated local

economies. The Albermarle County Plans mention the importance of retaining historic and scenic resources but again from a tourism aspect and not from the sustainability lens. The importance of retaining the integrity of the plantation and protecting it from invasive species that are fast mutating due to climate change need to be prioritised. Another important aspect is the increase in emissions due to car dependency in Monticello. Due to its isolated location, Monticello has not yet been connected by public transport. The absence of mass transport system, in collaboration with Monticello's plans to boost tourism would result in increased emissions due to increased vehicular use, thus, making pollution a major concern for the upcoming decade.

UVA is the only site that has taken the catalytic effects of climate change into consideration. The Landscape Framework Plan (2013) and Grounds Framework Plan (2008) takes into account the importance of ensuring the green cover is maintained through a 100-year plantation mechanism. The plantation scheme works towards the phased upgrade of species to make them disease-resistant from incoming mutagenic pests. Of course, the argument here again is that UVA, as a university, is in possession of resources both in the form of funding, research potential and academic staff. However, voluntary initiatives can create far more effect by bridging the road from policy to action.

7.6 A comparative analysis of UVA and Monticello

The scope of this research began with 2 sites, namely the Taj Mahal and the combined site of Monticello and the University of Virginia. However, Monticello and UVA differ significantly with respect to the factors contributing to their climate action and sustainable management, therefore enabling them to function as two independent sites in themselves. The University is owned by the State of Virginia and Monticello by the Jefferson Foundation, creating differences in its governing bodies and hence the type of governance applicable to the precinct. Although in both cases, sustainable management, site management and climate action are voluntary in nature and not mandated by any over-arching governing body, the actions implemented on them are the result of the body responsible for its maintenance and hence differ greatly in their outlook. UVA has addressed climate action and the integration of heritage in greater detail and forethought than Monticello, which is evident in the state's agency towards making climate action an integral part of heritage management. The Jefferson Foundation is undergoing the process of incorporating the same and their Management Plans are still in the preparatory phase and therefore not available for discussion in this research.

Another point that sets the 2 sites apart are the functional disposition and the climate concerns associated with them. Monticello functions as a major tourist attraction due to its historic values and association with Jefferson. On the other hand, the Academical Village functions as a university. While the footfall in Monticello is temporary and regulated, the residents of UVA are more permanent, hence requiring more control over the built and un-built site parameters due to a permanent set of non-negotiable activities associated with university life. Monticello's major transitional risk remains the viewshed management and heritage tourism associated with it. With respect to physical risks, a 2500-acre site requires managerial rigour to deal with invasive species, pest control, moisture sediments and damage caused due to unpredictable storms. Seasonal shifts can also significantly affect the tourist footfall of Monticello, which is the property's major source of income. Waste management practices remain another major challenge due to the influx of tourism along with the lack of public transport connectivity that causes increased emission levels in the surroundings.

7.7 Voluntary Action at UVA and Monticello versus policy implementation at the Taj Mahal

The Taj Mahal precinct functions as a major tourist attraction compared to the UVA and Monticello sites. There are multiple policies in place to control the factors affecting the Taj and its environs. From a differential ticketing system to ensure that the marble is not harmed, to the controlled urban elevation and the functions associated with them way beyond the buffer zone. What is however noticeable is that due to the impact of current policies, very specific SDG targets are met while the others are neglected completely. If the targets are divided with respect to the 5P approach, i.e. People, Prosperity, Planet, Peace and Partnerships, the People-centric SDGs are not well addressed through policies. This matter is of grave concern for a site where the people-monument relationship has existed ever since the inception of the Taj. On the other hand, in the sites on Monticello and UVA, although action is purely voluntary, nearly all the SDGs are addressed even though the people-monument relationship is not as strong as the Taj precinct. While Monticello has yet to address certain SDGs like 1, 6, 7 etc, UVA has been the most rigorous in ensuring that the social layer is given equal importance as the ecological and innovation-driven layers. The gap between voluntary action and policy implementation is hence noticeable through the site management approaches.

7.8 SDG Implementation

UVA has successfully implemented all the SDGs through actionable outcomes. Monticello takes second place with respect to the same while the Taj precinct lags behind. Certain SDGs are implemented more than the others for two reasons. Firstly, addressing them is easier and more manageable. Secondly, certain SDGs are more holistic in their outlook and hence addressing them through regulatory systems can affect all the other SDGs. SDG 11, Sustainable Cities and Communities is one such SDG that all three sites have addressed with equal emphasis. It brings out the importance of focussing on holistic frameworks instead of single outcomes. SDG 9, Industry, Innovation and Infrastructure is another SDG that all three sites have focussed on and highlights the need to rely on innovative outcomes for integrated approaches such as nature-based solutions (NbS).

8 Conclusion

8.1 Conclusion

The importance of governance, be it local, regional or national, has been frequently highlighted throughout the course of the research. An existing dichotomy between the top down and bottom-up approach was strongly prevalent and in stark contrast since the three sites differed strongly with respect to their characters. On the one hand, the Taj Mahal site exhibited a strong anthropocentric anchor that mobilized the people-monument-ecology relationship. The reliance and influence of the monument on the communities surrounding it and vice versa, played an important role in how climate action could truly become an instrument based on local agency. Ironically, this site was heavily dependent on a policy-centric approach that did not prioritize public engagement significantly. The idea of a “monument of purpose” was questioned throughout this enquiry.

On the other hand, the sites of Monticello and UVA had very different characteristics. While not being as advanced with respect to policy level action, the power of voluntary action did much to ensure that sustainable practices were incorporated at some level. The key inhibiting factor in these sites were the lack of prioritization. This lack resulted in a set of individual strategies contributing to a larger sustainable image but with insufficient overlap. In an attempt to follow global frameworks, not enough importance was given to local issues. Monticello

functions as a tourist destination and not as a network. Its efforts at sustainability is therefore limited within the sustainability scope. The strategies hence are implemented as spot interventions instead of a holistic system. The Taj site on the other hand deals with strategic systems at a regional level but without enough localization. It is rather ironic to notice a site such as the Taj Mahal is heavily dependent on its communities focussing on a top-down approach while a site that does not have enough social dependencies like Monticello prefers a more bottom-up approach.

UVA as a case was completely different. When examined from the “monument of purpose” perspective, we see the Taj Mahal and Monticello sites clearly functioning as tourism centres, with the predominant difference being that Monticello functions more as a destination and the Taj as an anchor for social and ecological dependency. But Jefferson’s Academical village was built to signify “well-educated citizenry as a backbone for democracy.” Climate action at UVA has taken the capacity building route. Capacity building and awareness building are the major backbone of UVA’s sustainability approach. UVA has managed to be more advanced with regard to climate action because it quantifies its outcomes. The lack of measurement is a missing link in the previous two sites that gives the Academical Village an edge. The other advantage, of course, is that UVA itself is a container for learning and hence practices can be imbibed and implemented as part of the curriculum. The three sites have relatively different approaches toward their climate goals, and the complexities associated with context, be it geographical, political, socio-cultural and institutional make them challenging to handle despite the looming climate risks. However, an understanding that each SDG affects the functioning of the other and the importance of linking them through systems should take precedence over thematic prioritisation.

The management frameworks referred to in the scope of this study, are not holistic in their approach. They do not address plural realities but hinge on unidirectional resolution of issues. Most plans address the social, spatial, monumental and ecological parameters in isolation and not in relation to one another. The treatment of heritage is still for aesthetic and tourism reasons instead of celebrating culture and context. The importance of local stewardship hardly ever finds a voice amongst policies. Climate action frameworks should be identified as an enabler of holistic redressal of the tangible and intangible elements. Climate change does not have singular effects. Its effects are felt across all cross-sections of society, environs and governance structures. It affects the physical setting, the built environment, the people associated with the setting, their livelihood and the historicity linked with the parameters.

In comparison to the research of Loopesko and Caballero (2021) where the significance of leadership in climate action was emphasised across the majority of expert and site manager interviews, the current research brought out the importance of local agency alongside regulatory instruments to define climate action. As the most significant enabling factor for taking real action, governance plays a crucial role in achieving the Sustainable Development Goals and combating climate change. By demonstrating the value of sustainability and climate action, well-run World Heritage Sites can provide an example for other cities, sites, protected areas, and their communities. The effectiveness of climate action can be increased by participating in a global World Heritage community and encouraging others to make sustainable changes.

8.2 Scope and Limitations

This research is part of a bigger study by the SDGWG on the intersection of climate action, and the sustainable development goals in World Heritage sites. Four world heritage sites have been tested in the study in 2021 and this research in 2022 reviewed 2 more case studies from India and the USA. Although the Taj Mahal, Monticello, and the University of Virginia are good case studies to evaluate the application of the Sustainable Development Goals, these case studies are not ideal for studying the integration of climate action. The three sites studied are sites that are at relatively low risk from climate change at this point. Their main threats are in conjunction with biological agents and pollution as a catalyst, but they have not been impacted by major climate effects. Their management frameworks are more focused on improving sustainable development strategies.

The research was restricted within a time frame that was not sufficient to conduct more rigorous field work. Hence, the field data gathered has been mostly used to strike out any stark differences in data. The sample set of interviews are limited to draw more detailed quantifiable outcomes due to the time constraints. A more multidisciplinary approach would have been preferable towards the proceedings.

8.3 Recommendations for future research

The research lacked a policy centric approach which could have added more analytical depth. Considering the differences in current management frameworks in this and previous research, future research could use governance through policies as an effective comparison. The disproportionate

mobilization of climate finance is also an aspect that affects the realisation and on-ground implementation of policy thus making it another key parameter. The importance of loss and damage has been highlighted through COP27 and with that the concept of just transitions. Therefore, future research could also examine a gap analysis from both a framework perspective and challenges faced in governance.

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Appendices

A1. World Heritage and Tourism in Climate Change

A1.1 A table of principal climate change risks and impacts on cultural heritage taken from Climate Change and World Heritage Report on predicting and managing the impacts of climate change on World Heritage and Strategy to assist States Parties to implement appropriate management responses, UNESCO

Climate indicator	Climate change risk	Physical, social and cultural impacts on cultural heritage
Atmospheric moisture change	- Flooding (sea, river) - Intense rainfall - Changes in water-table levels - Changes in soil chemistry - Ground water changes - Changes in humidity cycles - Increase in time of wetness - Sea-salt chlorides	- pH changes to buried archaeological evidence - Loss of stratigraphic integrity due to cracking and heaving from changes in sediment moisture - Data loss preserved in waterlogged / anaerobic / anoxic conditions - Eutrophication accelerating microbial decomposition of organics - Physical changes to porous building materials and finishes due to rising damp - Damage due to faulty or inadequate water disposal systems; historic rainwater goods not capable of handling heavy rain and often difficult to access, maintain, and adjust - Crystallisation and dissolution of salts caused by wetting and drying affecting standing structures, archaeology, wall paintings, frescos and other decorated surfaces - Erosion of inorganic and organic materials due to flood waters - Biological attack of organic materials by insects, moulds, fungi, invasive species such as termites - Subsoil instability, ground heave and subsidence - Relative humidity cycles/shock causing splitting, cracking, flaking and dusting of materials and surfaces - Corrosion of metals

		- Other combined effects e.g. increase in moisture combined with fertilisers and pesticides
Temperature change	- Diurnal, seasonal, extreme events (heat waves, snow loading) - Changes in freeze-thaw and ice storms, and increase in wet frost	- Deterioration of facades due to thermal stress - Freeze-thaw/frost damage - Damage inside brick, stone, ceramics that has got wet and frozen within material before drying - Biochemical deterioration - Changes in 'fitness for purpose' of some structures. For example overheating of the interior of buildings can lead to inappropriate alterations to the historic fabric due to the introduction of engineered solutions - Inappropriate adaptation to allow structures to remain in use
Sea-level rises	- Coastal flooding - Sea-water incursion	Coastal erosion/loss - Intermittent introduction of large masses of 'strange' water to the site, which may disturb the metastable equilibrium between artefacts and soil - Permanent submersion of low-lying areas - Population migration - Disruption of communities - Loss of rituals and breakdown of social interactions
Wind	- Wind-driven rain - Wind-transported salt - Wind-driven sand - Winds, gusts and changes in direction	- Penetrative moisture into porous cultural heritage materials - Static and dynamic loading of historic or archaeological structures - Structural damage and collapse - Deterioration of surfaces due to erosion
Desertification	- Drought - Heat waves - Fall in water table	- Erosion - Salt weathering - Impact on health of population - Abandonment and collapse - Loss of cultural memory
Climate and pollution acting together	- pH precipitation - Changes in deposition of pollutants	- Stone recession by dissolution of carbonates - Blackening of materials - Corrosion of metals - Influence of bio-colonialisation
Climate and biological effects	- Proliferation of invasive species - Spread of existing and new	- Collapse of structural timber and timber finishes - Reduction in availability of native species for repair and maintenance of buildings

	species of insects (eg. termites) - Increase in mould growth - Changes to lichen colonies on buildings - Decline of original plant materials	- Changes in the natural heritage values of cultural heritage sites - Changes in appearance of landscapes - Transformation of communities - Changes the livelihood of traditional settlements - Changes in family structures as sources of livelihoods become more dispersed and distant

Table 10 Principal climate change risks and impacts on cultural heritage Source - Climate Change and World Heritage Report on predicting and managing the impacts of climate change on World Heritage and Strategy to assist States Parties to implement appropriate management responses, UNESCO

A1.2 The 22 most reported impact categories at World Heritage sites, 1979–2013 taken from UNESCO 2014b

0%	1–5%	6–10%	11–20%	21–30%	31–40%	41–60%	61–75%	76–100%

Specific factor negatively affecting the outstanding universal value of the property	**Africa**	**Arab World**	**Asia-Pacific**	**Europe and North America**	**Latin America and Caribbean**
Management system/management plan	81	84	77	58	75
Housing	28	57	32	38	43
Legal framework	22	29	22	18	41
Illegal activities	47	27	26	9	22
Impacts of tourism/visitor recreation	16	24	32	25	29
Ground transport infrastructure	16	27	27	20	28
Financial resources	47	14	20	8	26
Human resources	39	24	15	7	21
Management activities	14	29	23	15	21
Land conversion	28	20	10	3	21
Identity, social cohesion, changes in local population and community	27	20	11	2	21

Major visitor accommodation and associated infrastructure	11	16	12	13	21
Water (rain/water table)	14	16	10	7	12
Deliberate destruction of heritage	9	20	10	8	9
Livestock farming/grazing of domesticated animals	28	10	1	1	15
Mining	27	2	12	8	6
Effects arising from use of transportation infrastructure	3	14	10	8	18
Water infrastructure	14	8	10	6	12
Interpretative and visitation facilities	9	10	14	10	6
Solid waste	11	16	4	6	4
Erosion and siltation/deposition	13	14	3	4	6
War	22	14	0	1	0

Table 11 The 22 most reported impact categories at World Heritage sites, 1979–2013. Source - UNESCO 2014b

A2. Interviews

A2.1 Summary of interview responses by KT Ravindran

Interview 1 – KT Ravindran
Chairman of the Architectural Heritage Advisory Committee of INTACH | Trustee of the Indian Heritage Cities Network Foundation | Member of the Advisory Board for the United Nations Capital Master Plan, New York, | founding president of Institute of Urban Designers India

Theme	Question 1	Response 1	Question 2	Response 2
Climate Action - Questions Climate action at Governance level.	1. Why is there no Climate Action Plan (or an	**It can be traced to governmental inaction and**	2. In the absence of such plans, how is climate action being	**City level action plans are not present in most states in**

	Environmental or Risk Preparedness and Disaster Mitigation Plan) that informs the management of the site? Is there a city level climate action plan or strategy framework? Does that mention the treatment of the heritage precinct?	**especially on the part of the tourism department of up.**	effectively managed at site? What measures have been implemented directly or indirectly keeping climate action in mind?	**India. Because official plans either have to be part of a master plan or a state level plan. Therefore, there aren't any states that have properly addressed climate action and doesn't address heritage at all. Most master plans have a heritage chapter but a climate related action is not one of the strategies. We must look at them from 3 different levels.**
SDG Implementation - Questions on localising global strategies. Also ensures homogenization is addressed.	3. Has there been an effort to integrate SDG's in the existing site management plans through micro activities or holistically?	**No, there isn't. SDGs are talked about in international forums and facts and figures are produced to support. but generally, on ground there is very little action. And**	4. Which SDG's according to you should be prioritized in the implementation framework and why?	**If you look at the 17 SDGs they are balanced and interconnected. They are not isolated things where one can be prioritised and one neglected. I think they all need to be**

		on ground generally there are many actions that are visible that work against climate resilience. (Lack of measuremen t)		**simultaneousl y prioritised and certain kinds of actions will impact certain kinds of SDGs in a more impactful way.**
Risk Preparedness - Questions urgency of action and the systemic measures taken to address it.	5. What is the most urgent predictive threat that the heritage precinct is expected to face in the future should the current activities continue?	**Current thinking about the monuments and how they interface with the society is largely connected to looking as tourism as an economic sphere. Its far more than economics. The economic benefits that one gets from tourism is actually just one dimension of its manifestatio n**	6. In light of the physical and transitional climate risks affecting the site, what is being done to address disaster management and risk preparedness ?	**If it's a World Heritage monument there should be some responsibility on the part of the World Heritage body to ensure that there is sustained study of monuments. Because even what you call climate change is not happening overnight. Its happening faster now that what was happening earlier but however that cannot discount the idea that it requires**

				sustained long term monitoring and then studying of patterns and remedial measures which are also open to review periodically.
Local Action - Questions transparency and the role of awareness creation in participatory planning.	7. How are you integrating Climate Action into your efforts of protecting intangible heritage? (eg- social groups, ecological systems)	**Depending on the type of damage that you're looking at which you establish through measurement, you have to take a call on what sort of action should be taken and how you define what is called surrounding. The image that we immediately conjure up is that of physical proximity, but that's not the real issue.**	8. How much importance is given to people centric approach in the management plan? What efforts are taking to ensure that the management plan is transparent? How can local action act as the medium to ensure actions get implemented on site better?	**Why is people centric approach not done and why is it not transparent, there is only a political answer. It is not people centric because it is tourism transaction centric. Stakeholder groups are consulted but there are many ways to do consultation.**
Sustainable Tourism - Questions	9. How is tourism being curbed	**There are differential impacts**	10. According to you can heritage	**Different settlements can be offered**

resource pressure experienced due to uncontrolled tourism and the compromises that the locals are expected to undergo.	to ensure that pressure on resources do not occur at the local level and affect the existing quality of life of locals? What are the sustainable tourism practices that are being followed and how?	**again. An over correlation of tourism impact on climate can't be just equated. They need to be approached in a more informed way.**	tourism play a key role in Climate Action? And if so would it have positive or negative impacts?	**different economic activities related to tourism so that there is a distribution which can emerge from a participatory mode from the district planning committee. There are modes of building up economies, social benefits, climate benefits, all that can be woven in if there is a clear strategy.**

Table 12 Interview summary - KT Ravindran

A2.2 Summary of interview responses by Navin Piplani

Interview 2 – Navin Piplani
Director, Creative Cluster, Sushant University | Former Principal Director, INTACH Heritage Academy | Former Director of Studies, Centre for Conservation, York University, UK

Theme	Question 1	Response 1	Question 2	Response 2
Climate Action - Questions Climate action at Governance level.	1. Why is there no Climate Action Plan (or an	**And that time the priority was conservation ... A lot of**	2. In the absence of such plans, how is climate	**Multiple actions come under the purview of multiple**

	Environmental or Risk Preparedness and Disaster Mitigation Plan) that informs the management of the site? Is there a city level climate action plan or strategy framework? Does that mention the treatment of the heritage precinct?	**emphasis was on conservation and also on the documentation, which was not as extensively done previously. I don't think was there and nor, was it the priority at that time. Climate change as a crisis is a decade old, at least in India, which means about 2010 onwards. It is important that there is one nodal agency. There is one office. There is group of people who are sitting together. They may be dealing with all the 14 different SDGs. But**	action being effectively managed at site? What measures have been implemented directly or indirectly keeping climate action in mind?	**bodies. So, what Archaeological Survey of India is doing is looking at the impact of climate change on the monument and working towards solutions, which are more conservation based. They are not necessarily driven by climate action because the water drying up has nothing to do with the ASI. So, it has to happen at the central government level, although the problems caused of conservation are due to that problem. It's quite a**

		there is one place where all these guys are sitting together and working under one roof. However, in India, we have fragmented ministry and departments.		**difficult, complex situation where you don't have control over your context or surroundings, but you are only looking at the monument.**
SDG Implementation - Questions on localising global strategies. Also ensures homogenization is addressed.	3. Has there been an effort to integrate SDGs in the existing site management plans through micro activities or holistically?	**I would say, not explicitly, but implicitly, yes, water conservation, social alleviation, life underwater and education and World Heritage, which is the 11th goal, and the associated poverty. Because we are also looking at the condition of people around the Taj Mahal. In**	4. Which SDG's according to you should be prioritized in the implementation framework and why?	**I think, yes, they must be doing it now that we are not involved in the project anymore. So, I don't know the status, but I do know that they were also preparing a management plan. Archaeological survey of India was preparing another management plan for Taj Mahal site at the request of the World**

		the Taj Ganj area, accessibility, universal accessibility, right to enjoy all. So, I would again say implicitly yes, but again, the whole idea of sustainable development goals, picked up 2006-07 onwards		**Heritage Centre.**
Risk Preparedness - Questions urgency of action and the systemic measures taken to address it.	5. What is the most urgent predictive threat that the heritage precinct is expected to face in the future should the current activities continue?	**The most challenging threat to Taj in terms of human intervention is number of visitors. The second issue of course, is about Yamuna drifting apart and the water levels going down because water had a very intrinsic relationship with the foundations of the Taj. The**	6. In light of the physical and transitional climate risks affecting the site, what is being done to address disaster management and risk preparedness?	**We were working on several initiatives for visitor facilitation for water harvesting for making sure that in case it floods, how does water go out. Making sure how you disperse the node of visitors onto the Mausoleum. So the structural**

		third would be increase in pollution levels. So, there are human issues, there are structural issues, there are aesthetic issues with the site.		**impact is less. The climate impact is less. The flooding impact is less. The visitor influx is regulated. All those risks and factors were being taken care of.**
Local Action - Questions transparency and the role of awareness creation in participatory planning.	7. How are you integrating Climate Action into your efforts of protecting intangible heritage? (eg- social groups, ecological systems)	**I think, the current management plan will be able to do more. At that time, the intangible heritage, what we were considering was mostly in terms of craftsmanship and the entire project of Taj Mahal was focused on traditional craftsmanship.**	8. How much importance is given to people centric approach in the management plan? What efforts are taking to ensure that the management plan is transparent? How can local action act as the medium to ensure actions get implemented on site better?	**The alternative to experience that the Taj was very people centric, not monument centric. The whole idea was to experience the gardens, go on the terrace, look at the park from the other side, on the other side, look at the Agra fort, go to the museum. An entire plan for the**

				restoration of the Char Bagh from an ecological point of view was prepared. idea was to restore the original Mughal species in the garden, because that would be more ecological.
Sustainable Tourism - Questions resource pressure experienced due to uncontrolled tourism and the compromises that the locals are expected to undergo.	9. How is tourism being curbed to ensure that pressure on resources do not occur at the local level and affect the existing quality of life of locals? What are the sustainable tourism practices that are being followed and how? And otherwise, the	**Tourism was, I would say, has been regulated now, as I understand that they have a differential ticketing system, you have a different price tag to go into the mausoleum and to be in the Taj separately. And otherwise, the pressure on tourism has to be**	10. According to you can heritage tourism play a key role in Climate Action? And if so would it have positive or negative impacts?	**So, tourism is a key factor for climate action, and there could be many ways to look at tourism. An expert on tourism can tell you better, but from heritage conservation point of view, we need to regulate at the same time, we need to provide the experience**

	pressure on tourism has to be regulated at the city level also because if it's the major magnet and people are coming from all over the country.	**regulated at the city level also because if it's the major magnet and people are coming from all over the country.**		**to the tourist. They also boost conservation work, the monument experience, the cultural expression, et cetera. And we have to just find ways where, the modes and measures of tourism do not adversely affect the climate.**

Table 13 Interview summary - Navin Piplani

A2.3 Summary of interview responses by Liz Russel

Interview 3 – Liz Russel
Director of Planning, Sustainability, & Project Management | Thomas Jefferson Foundation, Inc. | Monticello

Theme	Question 1	Response 1	Question 2	Response 2
Climate Action - Questions Climate action at Governance level.	1. Why is there no Climate Action Plan (or an Environmental or Risk Preparedness and Disaster	**There is a framework of a Sustainability Plan, and I'm working to backfill it with consensus from**	2. In the absence of such plans, how is climate action being effectively managed at site?	**The Thomas Jefferson Foundation has demonstrated a tradition of environmental stewardship. Visitor Center was the first visitor center at a World**

	Mitigation Plan) that informs the management of the site? Is there a city level climate action plan or strategy framework? Does that mention the treatment of the heritage precinct?	**leadership and other stakeholders, and add budget numbers to the items. I'll attached that final document (Sustainability Plan DRAFT) for your reference. Please know that it is just a draft and we have not committed to any specific target or action. Yes, both Charlottesville and Albemarle County are or have developed climate action plans.**	What measures have been implemented directly or indirectly keeping climate action in mind?	**Heritage site in the United States and one of only five visitor centers in the country to earn LEED Gold certification. In 2019 Monticello received a Virginia Energy Efficiency Council (VAEEC) Leadership Award for the construction of a new geothermal-electric plant and efficient HVAC and dehumidification systems installed in the Monticello mansion.**
SDG Implementation - Questions on localising global strategies. Also ensures homogenization is addressed.	3. Has there been an effort to integrate SDG's in the existing site management plans through micro	**Certainly, more holistically – though I understand that Sustainable Development Goals do factor in equity and quality of life, this is**	4. Which SDG's according to you should be prioritized in the implementation framework and why?	**At this point, I am not looking at our climate action planning through the lens of SDGs. It's just not something I know enough about.**

	activities or holistically?	**not the direct focus of my work. The Foundation has made a commitment to diversity, equity, accessibility, and inclusion, however, most directly reflected in the hiring of a Vice President of DEAI.**		
Risk Preparedness - Questions urgency of action and the systemic measures taken to address it.	5. What is the most urgent predictive threat that the heritage precinct is expected to face in the future should the current activities continue?	**Extreme weather events such as heat waves and large storms are likely to become more frequent or more intense with human-induced climate change. This could result in increased property risk, drought, air quality, and fire risk to Monticello. Though not related to sustainability, negative impacts to the viewshed are actually the biggest risk to our**	6. In light of the physical and transitional climate risks affecting the site, what is being done to address disaster management and risk preparedness?	**This would be a question for our Director of Security.**

		statement of Outstanding Universal Value per UNESCO.		
Local Action - Questions transparency and the role of awareness creation in participatory planning.	7. How are you integrating Climate Action into your efforts of protecting intangible heritage? (e.g.- social groups, ecological systems)	**Not there yet**.	8. How much importance is given to people centric approach in the management plan? What efforts are taking to ensure that the management plan is transparent? How can local action act as the medium to ensure actions get implemented on site better?	**I feel very strongly that this process should not be top down. That is why I think the work of the Task Force is important in developing consensus and achieving buy-in. No one is asking, but I'm always happy to share. We also report twice yearly to our Board of Trustees on our work. Well, I'm not sure if this is exactly the answer that you are looking for, but one of my major challenges is that I have no budget to hire consultants. I need help.**
Sustainable Tourism - Questions resource pressure experienced due to uncontrolled tourism and the compromises that the locals	9. How is tourism being curbed to ensure that pressure on resources do not occur at the local level and affect the existing quality of life	**It's not. I am proposing we join the** Virginia Green Travel organization**, to be better plugged into this area.**	10. According to you can heritage tourism play a key role in Climate Action? And if so would it have positive or negative impacts?	**We are not there yet, but it is my goal that our Sustainability actions, when in place, will be made visible to tourists. We will actively demonstrate**

are expected to undergo.	of locals? What are the sustainable tourism practices that are being followed and how?			**and educate the public. Certainly I hope these are positive impacts.**

Table 14 Interview Summary - Liz Russel

A2.4 Summary of interview responses by Gardiner Hallock

Interview 4 – Gardiner Hallock

Vice President of Architecture | Lands, and Facilities at the Thomas Jefferson Foundation | Monticello

Theme	Question 1	Response 1	Question 2	Response 2
Climate Action - Questions Climate action at Governance level.	1. Why is there no Climate Action Plan (or an Environmental or Risk Preparedness and Disaster Mitigation Plan) that informs the management of the site? Is there a city level climate action plan or strategy framework? Does that mention the treatment of	**Liz is working on what we call a Sustainability Plan. It's not called the Climate Action Plan but it will have an impact on it. And GHG emissions is one of the drivers that were working to reduce and finding a way.**	2. In the absence of such plans, how is climate action being effectively managed at site? What measures have been implemented directly or indirectly keeping climate action in mind?	**We've been working to increase energy efficiency. Wherever we have a big expenditure of energy, we've got a geo-thermal system. Sustainability is one of those goals that the foundation has so we try to work it into all our project**

	the heritage precinct?			**planning. Growing our own food has an impact on GHG emissions, less travel time. We are trying to hook up to local buses and mass transportation systems.**
SDG Implementation - Questions on localising global strategies. Also ensures homogenization is addressed.	3. Has there been an effort to integrate SDG's in the existing site management plans through micro activities or holistically?	**No. I don't think 99% of us have any idea what the Sustainable development goals are. But it's something that we can in the future. But it's not part of our existing thought process.**	4. Which SDG's according to you should be prioritized in the implementation framework and why?	**It's hard to pick one. Climate action seems like the existential threat at this point. So that seems pretty important to me. Personally. But everybody is going to have their own response.**
Risk Preparedness - Questions urgency of action and the systemic measures taken to address it.	5. What is the most urgent predictive threat that the heritage precinct is expected to face in the	**We have an incoming weather plan that's very similar. Before climate change**	6. In light of the physical and transitional climate risks affecting the site, what is being done to	**So, we haven't had anything recently that has had a dramatic impact on the house.**

	future should the current activities continue?	**became so prominent, we've had a hurricane, major snow storms, tornadoes, all of these are problems that we faced. And climate change, we suspect is going to make them worse.**	address disaster management and risk preparedness ?	**We did try to prep for these events. We've been lucky so far that we haven't had anything major. We've had one window pane break and that was it.**
Local Action - Questions transparency and the role of awareness creation in participatory planning.	7. How are you integrating Climate Action into your efforts of protecting intangible heritage? (e.g.- social groups, ecological systems)	**So ecological systems, it's not really based on the climate action plan, it's more just general conservation through our easements. All of our land has development rights. Social groups are not something that we focus on as**	8. How much importance is given to people centric approach in the management plan? What efforts are taking to ensure that the management plan is transparent? How can local action act as the medium to ensure actions get implemented on site better?	**Monticello's culture is very collaborative. So, we try to involve as many departments as we think is possible. So, security, restorations, buildings, editorial. Everybody was involved in making the hurricane plan. And then we'll go back after a major event and sit down**

		much. We try to encourage, especially the Descendants community, the African American people of Monticello. We strive to be a hub for them and their families. But nothing related to climate action.		**a see what worked, how it worked, what didn't work and how we can change the plan to make it better in the future with the same stakeholder group or a smaller focused group. I wouldn't call it public domain but we try to have a website that is a clearing house for these policies so that people can look them up and see what can be done in such situations.**
Sustainable Tourism - Questions resource pressure experienced	9. How is tourism being curbed to ensure that pressure on resources do	**500,000 is our theoretical mx. That's as much as we would**	10. According to you can heritage tourism play a key role in Climate	**It's got a negative impact when you consider the cost of getting to the**

due to uncontrolled tourism and the compromises that the locals are expected to undergo.	not occur at the local level and affect the existing quality of life of locals? What are the sustainable tourism practices that are being followed and how?	**probably quote to allow. For the safety of the house. We are trying to make our operation as green as possible. We'd love to shift to electric buses and electric shuttles and then we try to make our café as sustainable as possible with aluminium cans, with composting , with growing the food and outsourcing it locally whenever possible. Connecting to the local mass transit systems and the trail system**	Action? And if so would it have positive or negative impacts?	**site in cars that run on gas. That's not great. But you know, maybe at Monticello we like to educate people on growing their own food, on how things were done in the pre industrial society. That could have a less resource intensive way of living that is occasionally showcased in Monticello.**

		would be wonderful as well so that people can get here through alternative methods.		

Table 15 Interview Summary - Gardiner Hallock

A2.5 Summary of interview responses by Julia Monteith and Andrea Trimble

Interview 5a – Julia Monteith
Associate University Planner| AICP, LEED AP BD+C | Office of the Architect for the University of Virginia

Interview 5b – Andrea Trimble
Office for Sustainability Director | University of Virginia

Theme	Question 1	Response 1	Question 2	Response 2
Climate Action - Questions Climate action at Governance level.	1. Why is there no Climate Action Plan (or an Environmental or Risk Preparedness and Disaster Mitigation Plan) that informs the management of the site? Is there a city level climate action plan or strategy framework?	**Not specifically in terms of historic preservation opportunities. But yes, in the sense of everything that we're trying to do will apply to the academical village.**	2. In the absence of such plans, how is climate action being effectively managed at site? What measures have been implemented directly or indirectly keeping climate action in mind?	**We'll be focused on really the highest energy intensity uses first, but what the climate action plan is proposing is that the energy efficiency program that we have internally become mandatory. So right now**

	Does that mention the treatment of the heritage precinct?			**it's voluntary, and most buildings opt into it, because it makes a lot of financial sense**
SDG Implementation - Questions on localising global strategies. Also ensures homogenization is addressed.	3. Has there been an effort to integrate SDG's in the existing site management plans through micro activities or holistically?	**Definitely in terms of the like, if you look at affordable and clean energy, a lot of our stewardship sort of goals aligned with these like, there's a climate action goal and definitely climate action plan, affordable and clean energy in terms of what we've been doing. So I think what's important to look at these with the SDG goals is that it sort**	4. Which SDG's according to you should be prioritized in the implementation framework and why?	**A lot of the Sustainable Development Goals sort of get manifested in terms of where the university is doing research, and what kind of research.**

		of matches the approach that we have for our sustainability plan, which is engaged or discovered		
Risk Preparedness - Questions urgency of action and the systemic measures taken to address it.	5. What is the most urgent predictive threat that the heritage precinct is expected to face in the future should the current activities continue?	**as part of their resilience planning process, they identified the areas where adaptation will be needed. So the three main climate hazards and then the areas of vulnerability. So the three main climate hazards that the city identified, which will apply to us too.**	6. In light of the physical and transitional climate risks affecting the site, what is being done to address disaster management and risk preparedness ?	**So we have a lot of different engagement programs for students around sustainability that our office runs. There's also like a green dining program for students and other ways for students to get involved in climate action. So when I, this might not be what you're looking for, but in terms of intangible things, I think like how we're engaging with students on the all**

				these different programs
Local Action - Questions transparency and the role of awareness creation in participatory planning.	7. How are you integrating Climate Action into your efforts of protecting intangible heritage? (e.g.- social groups, ecological systems)	**So the sustainability plan, it's the framework is engaged steward and discover and that engaged portion is really focused on actually the I just start with the slogan for you based sustainability. It's from the grounds up and grounds is what we call our campus.**	8. How much importance is given to people centric approach in the management plan? What efforts are taking to ensure that the management plan is transparent? How can local action act as the medium to ensure actions get implemented on site better?	**The city and the county are mandated to do comprehensive plans on a regular schedule. And so what they tend to do is they have a lot of what we call engagement. So, public participation with that planning process. And along with that, a lot of this climate action planning gets wrapped into that also. So they have, continual engagement processes, where they're trying to get the community involved, and they apply similar**

				principles to the Climate Action Plan. And since we're involved with that, the entire community has the opportunity to be involved in that conversation.
Sustainable Tourism - Questions resource pressure experienced due to uncontrolled tourism and the compromises that the locals are expected to undergo.	9. How is tourism being curbed to ensure that pressure on resources do not occur at the local level and affect the existing quality of life of locals? What are the sustainable tourism practices that are being followed and how?	**But I don't really think that we have a particular plan around tourism managemen t, because that's not really our mission. And so our mission is education. That being said, certainly part of educating people as people are learning the back of the academical village and**	10. According to you can heritage tourism play a key role in Climate Action? And if so would it have positive or negative impacts?	**From my perspective, it's all about management. So, it's great if we have increased tourism, as long as we're prepared for it, and we know how to manage it, because the purpose of having tourism here would be that we're educating people.**

		the role, right. But I don't know that we have a particular plan that addresses that.		

Table 16 Julia Monteith and Andrea Trimble