

Sustainable, Green and Resilient Cities: Integrating heritage and traditional knowledge into innovative and culture-based solutions to environmental concerns.

Reducing the environmental footprint of cities – through green energy or controlled urban sprawl – and improving their resilience to disasters and climate change is a vital priority. Culture can foster environmental sustainability of urban settlements. Historic areas offer examples of dense and low carbon urban areas, adapted to soft transportation. A global approach to urban territories and a thorough understanding of their cultural practices can help reinvigorate links between urban societies and their natural environment (enhanced urban agriculture, protected biodiversity, revitalized urban green areas...). Vernacular heritage, based on local materials and climate-adaptive construction methods, can also encourage innovation towards contemporary low-energy architectural models.

Contents:

Background

key trends from SoC reporting for urban heritage

Challenges and opportunities,

Ways forward

Measurable data.

Within the thematic scope of the chapter:

Policy-oriented,

Culture in terms of cultural heritage (both tangible and intangible), natural heritage, and cultural and creative industries, as applicable

Key messages, in accordance with the 2030 Agenda for Sustainable Development and relevant UNESCO policies;

- References to good practices, case studies and field examples;
- Quantitative and qualitative data, as relevant;
- Policy recommendations addressed to decision-makers at the international, national and local levels.

Bibliography

Complementary material, as appropriate:

- Photos in high definition, with full copyright information;
- Graphics and/or maps;
- Captions;
- Documents in Annex.

Length

2,500-3,000 words

1954 Convention for the Protection of Cultural Property in the Event of Armed Conflict; 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage; 2003 Convention for the Safeguarding of the Intangible Cultural Heritage; 2005 Convention on the Protection and Promotion of the Diversity of Cultural Expressions.

The starting point for the development of sustainable urban development strategies is the **conservation and safeguarding of tangible and intangible heritage**. Without an effective safeguarding action, the legacy of the past can rapidly be lost, as it is happening in many urban contexts characterised by intensive and rapid development processes, with the loss of connection between communities and the built environment in which they live. Promoting the regeneration of downtowns and the conservation and adaptive reuse of their cultural heritage assets can improve the liveability and living conditions for poor communities.

Culture-led redevelopment of urban areas and public spaces helps to preserve the social fabric, improve economic returns and increase competitiveness, giving impetus to a diversity of intangible cultural heritage practices as well as other creative expressions, thereby creating sustainable urban spaces. In addition, a **vibrant urban life** can differentiate a city from competing locations, branding it nationally and internationally, thus helping it attract investments. The **cultural and creative industries**, as well as heritage-based urban revitalization and sustainable tourism, are powerful economic sectors that can generate green employment, stimulate local development and foster creativity. **Cultural infrastructure**, such as museums and other cultural facilities, should be used as civic spaces for dialogue and social inclusion, helping to reduce violence and foster cohesion and promote a culture of peace as well as economic development for cities. Finally, the proper understanding of traditional cultural practices can be a powerful tool to enhance **resilience** of cities facing threats linked to natural phenomena and climate change.

Linking Culture with Nature

Resilience

Resilience is linked to sustainability with the integration of heritage and traditional knowledge into innovative and culture-based solutions to environmental concerns. In the outline of their book on the resilient city, Vale and Campanella (2005) describe the city as a phoenix, able to regenerate from the ashes of destruction; it is the exception to the rule that cities are lost.

Urban resilience is provided through the mixed uses of the city. Too often it is the underprivileged that are affected by incidents in the city that involve urban disasters and the lack of social sustainability. The threats on urban heritage need to be analysed so that a risk assessment can be made including prioritizing the management. States Parties are recommended to include risk preparedness as an element in their World Heritage site management plans and training strategies (Operational Guidelines, 2015 para 118) but better indicators will have to be developed preferably through mechanisms of the UNISDR and the Resilient Cities campaign.

Sustainable

Finally, the application of sustainable development requires that we see the world as a system that connects space, as well as time and people for the future of sustainability is to be sought in the integrative approach for culture and development. It must be seen that sustainability now extends the balance between location and actuality, redrawing the internal boundaries of the city to provide social inclusion. For urban heritage, the buffer zones are important over and above their providing an added layer of protection as they can offer the space and dimension in complementing those cultural resources that are functionally important as a support to sustainability. The protection and conservation of the natural and cultural heritage are a significant contribution to sustainable development. (Operational Guidelines, 2015 paragraphs 6, 119, 132)

Green

A long-term strategy and a vision is needed; this is not something created in an instant, but is the outcome and reflections on the past enabling conclusions for a measured approach and generating a programme for resilience in city management. This integrative approach presents us with the challenges of the culture of resilience and the resilience of culture. It should be emphasized that the human factor and cultural norms are critical in understanding how people deal with disasters and the relationships of people to, and the resilience of, their culture.

There have been proposals for a fourth pillar, of culture, to the current three of sustainable development. Rather than a fourth pillar, I see culture as a brace linking the three existing pillars of sustainability, thereby integrating economic, social and environmental components. For those with an engineering background it is obvious that a triangle of three pillars is a very strong structure. We believe that culture is inherent in all parts of our lives, and by being a brace strengthens the other elements.

Consequently, culture capable of achieving resilience involves a continuous process of self-adaptation and incremental change. For the record, I had a disaster at home; the sewage overflowed and was threatening to engulf us. For the immediate family, this was a major disaster – it did not make the world news! Disasters occur within our own daily lives and we all learn how to cope.

There are many systems analyses on cycles for coping, preparations and reactions during and after disasters have occurred. The adaptive cycle shows temporal changes within a panarchy rationalizing the interplay between change and persistence, between the predictable and unpredictable, (Holling et al. 2002). Through the phases of destruction and reorganization a system's structure is often reorganized by the creation of a risk management process.

Culture always seems to follow nature. The environmental impact assessment, which is accepted worldwide is now being appended with heritage impact and risk assessments. Ecological resilience relates to the different assessments in as much as it is the amount of

change needed to transform a mutually reinforcing process. Resilience needs diversity, natural redundancy, ambiguity, the dynamics of creative experimentation and improvisation.

Let us look at some of the influencing factors. If history never repeats itself why are we obsessed for learning from history? It is not the repetition of events, but the study of the whole field of human resilience through improvisation and experimentation. Redundancy hypothesis, assumes that more than one species performs a given role within an ecosystem, (Walker, 1992) - redundancy enhances ecosystem resilience. Applying this to the language of World Heritage is in meeting the conditions of integrity including "all the elements necessary to express the Outstanding Universal Value", and being of "adequate size to ensure the complete representation of features and processes which convey the property's significance". Resilience means that we provide capacities over and above the minimum needs or sizes to provide the necessary support to face disasters. It is balanced by providing the minimum necessary and the maximum possible.

We have spoken about comprehensive ideas and the importance of an integrative approach. The 2011 UNESCO Recommendation on the Historic Urban Landscape is at the edge of the debate as a platform to incorporate many of the important tools addressing resilience and sustainability in the management of the city at all levels. This Recommendation, fairly and squarely, places the notions of cultural heritage within the urban context and it can guide us in the options to making our cities "safe, inclusive, resilient and sustainable" aligning with the new UN 2030 Sustainable Development Goals.

The most direct connection is in Goal 11 making cities and human settlements inclusive, safe, resilient and sustainable. Cultural heritage together with urban conservation is to be found in the cities, where more and more people will be making their home, working and living, and is underscored in a single paragraph 11.4: 'strengthen[ing] efforts to protect and safeguard the world's cultural and natural heritage'.

The introductory chapter to the SDGs outlines the concepts of the strategy and refers to culture in its broader context. Article 4 indicates that "[p]eople are at the centre of sustainable development and, in this regard, Rio+20 promised to strive for a world that is just, equitable and inclusive,... without distinction of any kind such as culture...". Article 9 focuses on Planet Earth and its ecosystems and references the resolutions of Rio+20 affirming that "that in order to achieve a just balance among the economic, social and environmental needs of present and future generations, it is necessary to promote harmony with nature". It acknowledges the natural and cultural diversity of the world, and recognizes that all cultures and civilizations can contribute to sustainable development.

Successively in the texts, four of the goals have more specific references. UNESCO had branded "culture as an enabler for sustainable development" in 2011 within its mid-term strategies.

Promoting local culture and products is a significant part of the economic policies for sustainable tourism as indicated in para 8.9 of Goal 8 for sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. Further reference might be made here to Goal 12 – ensur[ing] sustainable consumption and

production patterns where 12b.indicates the develop[ment] and implement[ation of] tools to monitor sustainable development impacts for sustainable tourism which creates jobs, promotes local culture and products.

Demonstrating Five Components of Resilience –

Economics	World Bank
Social and Human Dimensions	National College of Arts of Lahore, Pakistan
Nature	IUCN
Culture	OWHC
Management	
– Melbourne	ICOMOS/ICORP
– Hangzhou	Hangzhou West Lake

Integrating Cultural Heritage Conservation in Urban Regeneration

- Integration can deliver social and economic benefits to local communities
- Expand economic opportunities
- Enhance quality of life
- Generate local identity
- Strengthen regional competitiveness
- Local branding

Cultural Resilience:

- The maintenance of these spatial patterns and linkages of private and community space
- Continuity of use and footprint – maintaining the spatial patterns that position people and places within a mutually understood context
- Social Capital made tangible

Integrating the value of nature in urban planning, decision making and development

OWHC

- Arequipa Recommendation (2015)
 - Good Practice case-studies
- Philadelphia (Economic)
 - Bamberg (Social)
 - Valparaiso (Natural)

Management

Melbourne - Case Study

- Cultural heritage belongs to the community not just the private owner – it defines the identity of cities and must be protected.
- The often competing demands of urban existence must be *balanced* and can only be properly managed with sound planning strategies.
- Good planning manages risks.
- Capacity building increases resilience which enables better management which is fundamental to the sustainability of the city.

HANGZHOU West Lake

Strategy of conservation:

In order to control the impact of the urbanization processes on the east of the West Lake, was extended the buffer zone and spatial layout between the city and the lake.

Issues for reflection

- Culture to assist in the resilience of communities to maintain sustainable development;
- Integrating private and public and green spaces as a network in the city;
- Strengthen the social relationships in the public space;

- Develop micro and macro levels of resilience;
- Recognize the interaction between formal and informal heritage;
- Encourage diversity and multi-tasking and opportunities;
- Maintain the cultural, social, economic and environmental resources of the city.

Conclusions –

Strengthening Resilience through:

- **Diversity**
- **Continuity**
- **Flexibility**
- **Networking**
- **Human Factor**
- **Integration of nature in urban areas**
- **Enhancing/ Protecting/ Preserving Commons**
- **Good practice case-studies**
 - Where official conservation practices took place:
Hangzhou, Philadelphia, Valparaiso, Bamberg, Gibsons, Torbay, Melbourne
 - Where community itself maintain traditional cultural practices:
Pakistan (Gujrat, Lahore, Rawalpindi)

Our conclusion must be that resilience requires multiple solutions. In our considerations to 'Build Back Better' we need to rethink our definitions of the word "better". Better is not necessarily the physical engineering, but the well-being and spirit of the place. There are three challenges which are now on the agenda for culture and sustainable development, 1, social inclusion and the importance of youth, linking to 2, the digital age, including smart cities, social media and crowd-sourcing and 3, providing resilience through management and sustainability.

The culture of resilience and the resilience of culture provides a 2022 vision for World Heritage Cities that it can be applied globally. This resilience must be seen as an integrated process with social, environmental, and economic components meeting the challenges of social inclusion, the digital revolution and sustainable development. Putting resilience as an everyday occurrence in the city will harness the intangible heritage of all colours of the community while encompassing many relevant UNESCO conventions and programmes. To achieve these objectives we will need more cross-cutting inter-disciplinary actions and tools. We should start by linking the World Heritage Five C's, including credibility, conservation, capacity building, communication and communities to the Ten Essentials of the UNISDR Resilient Cities Campaign. The Organization of World Heritage Cities holds its 2015 conference on this very topic and the Hangzhou meeting on Culture for Sustainable Development will highlight these issues for the UNHabitat III debate.

The 14 primary threats → disasters

The standard list of threats/factors affecting the Outstanding Universal Value of World Heritage properties consists of a series of 14 primary factors, under five headings and each encompassing a number of secondary factors.

1 Development and infrastructure:

Buildings and Development
 Transportation Infrastructure
 Services Infrastructures
 Pollution
 Physical resource extraction

2 Other human activities:

- Biological resource use/modification
- Social/cultural uses of heritage
- Trans-located and genetically modified species

3 Natural events and disasters:

- Local conditions affecting physical fabric
- Climate change and severe weather events
- Sudden ecological or geological events
- Invasive/alien species or hyper-abundant species

4 Management and legal issues:

- Management and institutional factors

5 Other issues (such as risk of or collapse or deterioration due to age of building, problem of stability of the structures, etc...)

It should also be noted that in the majority of cases, more than one factor affects the Outstanding Universal Value of a property. In the 141 properties considered in this study, 475 different occurrences of the 82 identified factors have been noticed.

This represents an average of 3.4 factors per property (with an average of almost 5 factors per property for those inscribed on the List of World Heritage in Danger, and 2.85 for all the other).

Factors affecting the OUV % of properties affected

<i>Management and institutional factors</i>	70.8
Buildings and development	43.1
Other human activities	37.5
Social/ cultural uses of heritage	27.8
Transportation infrastructure	23.6
Biological resource use/ modification	23.6
Physical resource extraction	18.8
Utilities or service infrastructure	13.2
Sudden ecological or geological events	11.8
Pollution	9.7
Climate and severe weather events	9.7
Local conditions affecting physical fabric	9.0
Invasive/ alien species or hyper-abundant species	8.3

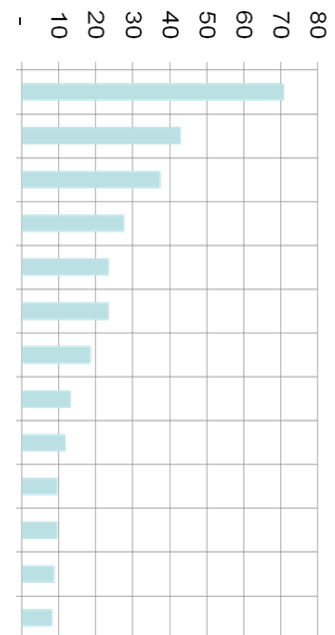


Table 3: Percentage of properties affected by each factor (in 2012)

Ecological resilience is a measure of the amount of change or disruption that is required to transform a system from being maintained by one set of mutually reinforcing processes and structures to a different set of processes and structures. (Peterson, Allen, & Holling, 1998, pp. 6-18)

Diversity

Natural redundancy

Ambiguity

Dynamic activities of creativity, experimentation and improvisation

Smart city – green city

Redundancy hypothesis

The concept of ecological redundancy assumes that more than one species performs a given role within an ecosystem. More specifically, it is characterized by a particular species increasing its efficiency at providing a service when conditions are stressed in order to maintain aggregate stability in the ecosystem.

However, such increased dependence on a compensating species places additional stress on the ecosystem and often enhances its susceptibility to subsequent disturbance.

The redundancy hypothesis can be summarized as "species redundancy enhances ecosystem resilience".

Walker, B.H. 1992. "Biodiversity and ecological redundancy." *Conservation Biology* 6: 18-23.

Frost, T.M., S.R. Carpenter, A.R. Ives, and T.K. Kratz. 1995. "Species compensation and complementarity in ecosystem function."

in: C. Jones and J. Lawton, editors. *Linking species and ecosystems*. Chapman & Hall, London. 387pp.

Naeem S. 1998. "Species redundancy and ecosystem reliability" *Conservation Biology* 12: 39–45.

Project v Process – decision-making through uncertainty

Feedback and feedforward processes

Possible fields for adaptation:

Natural hazards

Planning / Urban Form

Transportation

Socio-economic structures

Infrastructure

Water & Waste Management

Energy

Governance

Possible fields for mitigation – crime, climate change:

Density

Destination accessibility

Distance

Diversity

Design

greater flexibility of uses and activities especially in the public domain.

The potential of the *smart city* with the application of ICT in the **management** of the city has yet to be tapped.

Sustainable Development

In 1980 that the International Union for Conservation of Nature (IUCN) World Conservation Strategy identified the need for long-term solutions and the integration of environmental and development objectives. It is this strategy that first coined the terminology 'development that is sustainable', stating:

'this is the kind of development that provides real improvements in the quality of human life and at the same time conserves the vitality and diversity of the Earth. The goal is

development that will be sustainable. Today it may seem visionary but it is attainable. To more and more people it also appears our only rational option’.

Sustainable development as a cultural construct implies that sustainability and development are not necessarily in conflict but might be integrated at least linguistically. The term would thus provide a vehicle for a much-needed discourse.

The resulting oxymoron or creative ambiguity was probably the best thing that happened to sustainable development, since the vagueness of the definition provided its power, in pursuing the discourse and its developing exegesis.

(from Turner, "World Heritage and Sustainable Development," 2012)

- The diverse definitions of sustainable development have been succinctly coined by de Vries and Petersen as “a quest for developing and sustaining qualities of life” thus encompassing the subjective and objective dimensions of human well-being, and inviting a truly trans-disciplinary approach (Petersen and de Vries, Conceptualizing sustainable development – an assessment methodology connecting values, knowledge, worldviews and scenarios, 2009).
- Marcuse, an avid urban protagonist wrote: “Sustainability as a goal for planning just doesn’t work. In the first place, sustainability is not a goal; it is a constraint on the achievement of other goals. No one who is interested in change wants to sustain things as they are now”. Sustainability is essentially a means and not an end – it is an attitude and a state of mind through holistic thinking. (Marcuse, Sustainability is not enough. Environment and Urbanization, 1998)
- Reid questions whether it is meaningful to talk of sustainable development when we have no certainty of the needs of future generations, their ecological, social and economic conditions as representing a “sustainable state” and how close we may be to such conditions. He implies that we need to consider whether this is an imprecise idealism unchecked by reality (Reid, Sustainable Development: An Introductory Guide, 2013).

87. All properties nominated for inscription on the World Heritage List shall satisfy the conditions of integrity.

88. Integrity is a measure of the wholeness and intactness of the natural and/or cultural heritage and its attributes. Examining the conditions of integrity, therefore requires assessing the extent to which the property:

- a. **includes all elements necessary to express its Outstanding Universal Value;**
- b. **is of adequate size to ensure the complete representation of the features and processes which convey the property’s significance;**
- c. **suffers from adverse effects of development and/or neglect.**

(Operational Guidelines for the Implementation of the World Heritage Convention)

Visions for the future

The culture of resilience and the resilience of culture provides a vision for World Heritage Cities that can be applied globally. Resilience must be seen as an **integrative process** with the social, environmental and economic components meeting the challenges of **social inclusion, the digital revolution and sustainable development.**

Putting the resilience as an **every-day occurrence in the city by harnessing the intangible heritage of all colours of the community** while encompassing many relevant UNESCO conventions and actions.

International cooperation and shared responsibility of **the 5 C’s** through the **World Heritage Convention** ensures effective conservation of our common cultural and natural heritage.