

FORMAT		
1. Name of resource	UNEP A Practical Guide to Climate-resilient Buildings & Communities	
2. Location	https://www.unep.org/resources/practical-guide-climate-resilient-buildings	
3. Alternative location		
4. Author[s]	UN Environment Programme (UNEP)	
5. Publisher/producer/host	UN Environment Programme (UNEP)	
6. Year	2021	
7. Suggested citation	United Nations Environment Programme (2021). A Practical Guide to Climate-resilient Buildings & Communities. UNEP, Nairobi, available at https://www.unep.org/resources/practical-guide-climate-resilient-buildings	
8. Languages in which available	English	
9. Geographic area resource relates to	Worldwide	
10. Does the resource relate to a specific time frame?		
11. Type	Report	
	Toolkit/Framework/Roadmap	Yes
	Sign-post to other resource (database)	Yes
	Case studies	Yes
	Other	
12. If this is part of an initiative, what is the initiative?		
COLLECTIONS AND COLLECTIONS-BASED INSTITUTIONS		
13. Explicit links to collections	No	
14. Explicit links to museums/libraries/archives	No	
15. Types of institutions the resource covers	Museums	X
	Archives	X
	Libraries	
	Other	X
16. Types of collections/disciplines the resource covers	Arts, humanities and social sciences: philosophy, psychology, religion, social sciences, law, politics,	X

	language, arts and recreation, architecture, literature, history, geography and ethnology, anthropology, archaeology	
	Science, natural history, technology, medicine, engineering, manufacturing	X
17. If no explicit links to collections, justification for inclusion	The resource can be used by collections-based institutions to plan climate adaptation measures for their buildings, and also be used to inform educational and participatory activities.	
HOW IT CONTRIBUTES TO SUSTAINABLE DEVELOPMENT		
18. Collections-related activities the resource relates to (mark all that apply)		
Develop collections to protect and safeguard wider cultural and natural heritage more effectively , for example by targeting collecting to threatened forms of heritage in strategic ways		
Use collections to promote learning and educational opportunities that contribute to sustainable development more effectively , for example education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development and/or skills development relating to collections		X
Use collections to promote cultural participation/social inclusion more effectively , for example by reducing barriers to participation, to ensure no-one is 'left behind'		
Use collections to promote sustainable tourism more effectively , for example by developing new products based on local cultural heritage, and/or considering the rights of stakeholder groups in relation to collections		
Use collections to support research that contributes to sustainable development (including all forms of personal and self-directed research at all levels that make use of stored collections) more effectively, for example by providing effective facilities, collections and information to meet researchers' needs		
Make decisions around collections that contribute to sustainable development more effectively		
i.	employment (recruiting, staff training, staff safety)	X
ii.	energy consumption, greenhouse gas emissions, reduction, monitoring and reporting	X
iii.	waste management and reduction of waste	X
iv.	transport (forms of transport, energy use)	
v.	commercial activities including copyright and IP	
vi.	governance and management	X

vii. security, disaster preparedness and risk reduction	X
Direct external leadership, partnerships and collaborations towards sustainable development more effectively , for example by developing impactful partnerships	X
19. Does the resource relate clearly to any international conventions (mark all that apply)?	
Culture conventions:	
1952, 71 Protection of Copyright and Neighbouring Rights	
1954 Protection of Cultural Property in the Event of Armed Conflict	
1970 Fighting Against the Illicit Trafficking of Cultural Property	
1972 Protection of the World Cultural and Natural Heritage	
2001 Protection of the Underwater Cultural Heritage	
2003 Safeguarding of the Intangible Cultural Heritage	
2005 Protection and Promotion of the Diversity of Cultural Expressions	
Rio Conventions:	
Convention on Biological Diversity (CBD), Convention to Combat Desertification (UNCCD), Framework Convention on Climate Change (UNFCCC)	X
AIMS AND CONTENT	
20. What issues does the resource aim to address?	<p>“This practical guide has been prepared because the United Nations Environment Programme (UNEP) recognizes the key role buildings can play in enhancing climate change adaptation, improving resilience and addressing and mitigating risk. Furthermore, there is a recognized need for additional resources addressing good practice for buildings in communities and towns that face risk from disasters but may suffer from a deficit of professionally trained architects, engineers, contractors, manufacturers and other practitioners. Therefore, this note is written for a broad audience, including those with little experience in the building and construction industries.</p> <p>The practical guide sets out to provide an overview of the fundamental types of interventions at the building scale. It specifically offers concepts and approaches for the building envelope, roof, structure, orientation and materials. The approaches and technologies presented in this document are tailored toward a developing country context and a built environment that is largely self-constructed. However, the majority of the techniques identified in this practical guide can be upscaled and applied to buildings of any type, including apartment complexes, hospitals and schools.” (p.15-16)</p>

21. Intended audience of resource	[Anyone interested in climate adaptation relating to buildings]
22. Process of development	
23. Organisation/structure/contents	Acknowledgements 2 Foreword 3 Table of contents 5 List of figures 8 List of tables 9 Abbreviations and acronyms 10 Glossary 12 1 Introduction 14 2 Challenges and impacts of a changing climate on the built environment 17 3 General approaches and design principles 29 4 Adaptation ideas for thermal regulation and comfort 39 5 Adaptation ideas for specific climate risks: flooding, droughts and cyclones. 58 6 Conclusion, recommendations and next steps 76 7 Additional Resources 83 References 86
FRAMEWORKS	
24. Framework structure	The table of recommended adaptation measures for different climatic changes on pages 80-82 can be considered as a framework.
25. Relevant policy considerations	Yes
26. Resources for implementation identified	Yes
27. Specific assessment points/indicators/milestones/action plan for monitoring	Yes
28. ASPECTS OF SUSTAINABILITY COVERED BY RESOURCE (mark all that apply)	
People (social sustainability)	X
Planet (environmental sustainability)	X
Prosperity (economic sustainability)	X
Peace	X
Partnerships	X
29. CROSS-CUTTING CONSIDERATIONS COVERED BY RESOURCE (mark all that apply)	
Gender perspectives	
North and South perspectives	X

HOW THE RESOURCE CONTRIBUTES TO AGENDA 2030 AND THE SDGs	
HOW AGENDA 2030 AND THE SDGs FEATURE IN THE RESOURCE	
30. SDGs and Agenda 2030 specifically mentioned?	No
31. SDGs specifically mentioned?	No
32. SDG targets specifically mentioned?	No
33. SDG indicators specifically mentioned?	No
SDGs AND SDG TARGETS AND LINKAGES	
34. Comments on SDG linkages	<p>The resource can help support a number of SDG targets around climate mitigation, adaptation and Disaster Risk Reduction.</p> <p>These include SDGs 1.5 (reduce the impact of disasters on poor and vulnerable people), 6.4 (efficient use of water), 7.2 (adopt renewable energy sources), 7.3 (increase energy efficiency), 9.1 (develop sustainable infrastructure), 9.4 (retrofit infrastructure to be sustainable), 11.4 (protect and safeguard cultural and natural heritage), 11.5 (reduce the impact of disasters), 11.7 (safe and welcoming green and public places), 11.B (integrated Disaster Risk Reduction), 12.6 (adopt sustainable practices), 12.7 (sustainable procurement), 13.1 (enhance climate adaptation and reduce losses to natural disasters in all countries) and 13.3 (climate education, awareness and institutional capacity). Considering Nature-based Solutions supports SDG 15.9 (integrate biodiversity values into planning).</p> <p>In addition, the resource supports SDGs 4.7 (education for sustainable development) and 12.8 (information for lifestyles in harmony with nature).</p>
35. SDGs and SDG targets the resource helps advance	
SDG 1: End poverty in all its forms everywhere 1.5 By 2030, build resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.	<p>Number of collecting programmes that aim to build resilience to climate-related events and other shocks and disasters, for example by forming collections that can contribute to related educational and research programmes.</p> <p>Number of educational programmes drawing on collections that incorporate resilience perspectives.</p>

	<p>Number of targeted programmes drawing on collections that are aimed at vulnerable groups, to build their resilience to climate-related and other shocks and disasters.</p> <p>Number of research programmes drawing on collections that are aimed at building resilience to climate-related and other shocks and disasters.</p> <p><i>Strengthen the resilience of employees, communities and suppliers by paying at a minimum the living wage and offering insurance to employees and their families, such as accident insurance; and by paying fair prices to all suppliers</i></p>
<p>SDG 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all</p> <p>4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture’s contribution to sustainable development</p>	<p>Numbers of people in each type of programme drawing on collections from different demographic groups.</p> <p>Increases in numbers of people in each type of programme from different demographic groups.</p> <p>Proportion of people involved in such programmes in relation to overall audience size.</p> <p>Evidence that learners have acquired knowledge and skills to promote sustainable development.</p>
<p>SDG 6. Ensure availability and sustainable management of water and sanitation for all</p> <p>6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity</p>	<p>Reductions in water use, increase in water recycling, preventing water shortages in vicinity.</p> <p>Information on, programmes relating to, and partnerships relating to water use drawing on collections and collections-based institutions in place, to support efficient use of water.</p>

<p>SDG 7. Ensure access to affordable, reliable, sustainable and modern energy for all 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix</p>	<p>Proportion of energy that comes from renewable sources.</p> <p>Date to achieve net zero, and milestones towards that date.</p>
<p>SDG 7. Ensure access to affordable, reliable, sustainable and modern energy for all 7.3 By 2030, double the global rate of improvement in energy efficiency</p>	<p>Reduction in energy use.</p> <p>Upgrade of old equipment to more efficient equipment.</p> <p>Uptake of renewable sources of energy.</p>
<p>SDG 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation 9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all</p>	<p>Development of research-useful collections to support reliable, sustainable and resilient use by researchers and others.</p> <p>Number and proportion of collections facilities and stores that support economic development and human well-being.</p> <p>Number and proportion of collections facilities and stores that provide affordable and equitable access for all.</p> <p>Investment in collections facilities.</p> <p>Inclusion of collections information in regional and transborder initiatives, notably via digital access for discoverability.</p>
<p>SDG 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance</p>	<p>Number and proportion of collections facilities that:</p> <ol style="list-style-type: none"> 1. make efficient use of resources, with an ongoing drive for efficiencies and reductions in energy use and waste of all forms. 2. use clean and environmentally sound technologies, including climate-friendly energy sources and materials, with an ongoing commitment to reduce greenhouse gas emissions and waste of all forms. 3. adopt and/or prioritise collections-related processes and practices to reduce greenhouse gas emissions and waste of all forms.

<p>with their respective capabilities</p>	
<p>SDG 11. Make cities and human settlements inclusive, safe, resilient and sustainable 11.4 Strengthen efforts to protect and safeguard the world’s cultural and natural heritage</p>	<p>11.4.1 Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage</p> <p>Plans, policies and procedures in place for the safe use of collections for a variety of purposes, protecting and safeguarding both collections and those who use them.</p> <p>Plans, policies and procedures in place for the identification, safeguarding and protection of cultural and natural heritage at risk.</p> <p>Collecting programmes in place to protect, safeguard and make use of cultural and natural heritage, addressing the needs of communities and stakeholders, and ensuring that collections can be an effective resource for sustainable development.</p> <p>Number and diversity of educational, awareness-raising, research programmes, and partnerships that aim to strengthen protection of cultural and natural heritage.</p>
<p>SDG 11. Make cities and human settlements inclusive, safe, resilient and sustainable 11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations</p>	<p>Collections-based research that supports the understanding and management of disasters of all kinds.</p> <p>Plans in place for public education and awareness drawing on collections and collections-based institutions to reduce exposure and vulnerability to disasters of all kinds.</p> <p>Plans in place to ensure collections-based institutions steadily work to reduce their contributions to disaster risk, for example by reducing pollution and waste of all kinds.</p> <p>Plans in place to ensure collections-based institutions, and people related to them (including workers) are protected from economic losses as a result of disasters.</p> <p>Plans in place to provide special support/protection to poor and vulnerable people and groups in and following disasters.</p>
<p>SDG 11. Make cities and human settlements inclusive, safe, resilient and sustainable 11.7 By 2030, provide universal access to safe,</p>	<p>Numbers of people accessing collecting institutions from different demographic groups, notably women, children, older people and persons with disabilities.</p>

<p>inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities</p>	<p>Increases in numbers of people accessing collecting institutions from different demographic groups.</p> <p>Measures taken to remove barriers to access green and public spaces.</p> <p>Extent of green space provided by collections institutions.</p>
<p>SDG 11. Make cities and human settlements inclusive, safe, resilient and sustainable 11.B By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels</p>	<p><i>11.B.1 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030a</i></p> <p>Disaster Risk Reduction strategies and plans in place, in line with the Sendai Framework for Disaster Risk Reduction, to ensure collecting institutions and collections are factored into planning, and contribute effectively to Disaster Risk Reduction.</p>
<p>SDG 12 Ensure sustainable consumption and production patterns 12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle</p>	<p>Clear visions, strategies and plans in place for all aspects of sustainability – environmental, social and economic (people, planet, prosperity)- across all areas of activity.</p> <p>Visions, strategies and plans relating to sustainability to be publicly available and incorporated into planning documents.</p> <p>Commitments to be in line with local, regional, national and/or international targets and ambitions.</p> <p>Incorporation of sustainability into reporting for funders and other stakeholders, including the public. Reporting to include commitments and progress towards targets.</p>
<p>SDG 12 Ensure sustainable consumption and production patterns 12.7 Promote public procurement practices that are sustainable, in</p>	<p>Incorporation of sustainability considerations into procurement, in terms of advertisement and invitation to tender, contracts, and selection criteria for suppliers.</p>

<p>accordance with national policies and priorities</p>	
<p>SDG 12 Ensure sustainable consumption and production patterns 12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature</p>	<p><i>12.8.1 Extent to which (i) global citizenship education and (ii) education for sustainable development (including climate change education) are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment</i></p> <p>Extent to which global citizenship education and education for sustainable development (including climate change education) are mainstreamed in formal, informal and non-formal education programmes and activities drawing on and related to collections.</p>
<p>SDG 13. Take urgent action to combat climate change and its impacts 13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries</p>	<p>Plans in place for near and longer term to withstand and actively adapt to climate-related hazards and natural disasters.</p>
<p>SDG 13. Take urgent action to combat climate change and its impacts 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning</p>	<p>Plans in place to enhance positive contributions to addressing climate change through use of collections. Plans in place to ensure collections, collections institutions and broader society can adapt effectively to climate change.</p> <p>Plans in place for effective education and awareness raising on climate change mitigation, adaptation, impact reduction and early warning.</p> <p>Plans in place to reduce negative contributions of collections-related functions, e.g. measuring greenhouse emissions with plans and targets in place to reduce them.</p>
<p>SDG 15 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss 15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes,</p>	<p>Proportion and number of relevant plans, processes and strategies that incorporate ecosystem and biodiversity values, and their relationships with effective collections.</p> <p>Plans in place to ensure that development of collections facilities contributes to effective conservation and restoration of terrestrial ecosystems.</p>

poverty reduction strategies and accounts					
1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	