

Sustainable Reconstruction and Recovery Framework Checklist

Efficient Resource Utilisation

THEME	SUB-THEME	SUBTHEME INTENT	STRATEGIES	STAKEHOLDERS TO INVOLVE	ALIGNMENT TO SDG	ALIGNMENT TO WORLDGBC PRINCIPLES
EFFICIENT RESOURCE UTILISATION A physical environment that ensures the proper utilisation of resources, continued growth and environmental resilience.	MATERIALS	Ensure efficient utilisation of local materials and reduce the demand for virgin materials. Assess an optimised whole life cycle approach towards the handling of existing materials, especially pertaining to reconstruction, by exploring strategies that utilise debris, reduce waste and divert waste from landfills.	Optimise material use (Life cycle Approach) • Select environmentally sustainable local building materials • Promote upcycling / recycling/ reuse • Implement comprehensive waste management	<ul style="list-style-type: none"> • Municipality urban planners and architects • Experts: Environmental impact assessment (EIA) specialist, solid waste management experts, architects, structural engineers, heritage experts, social experts • Material suppliers and local manufacturers • Geographic and natural resources centers • Funding agencies • Affected population • Certification bodies for infrastructure • Contractors, procurement engineers, and officers, construction product manufacturers and suppliers • Engineers - structural and material • Transport logistics • Recycling companies • Municipalities • Contractors • Waste haulers • Citizens and building users 	SDG 7.1-7.3 SDG 12.1-12.4 SDG 13.3	<ul style="list-style-type: none"> • Net Zero Embodied Carbon • H&W Framework - 6.1 Commit to Climate Change Mitigation, 6.4 Ensure Resource Efficiency
	ENERGY	Use reconstruction to build sustainable energy infrastructure for buildings and cities as a whole. Ensure proper utilisation of available energy resources, including optimising energy demand and performance through passive and active methods. Maximise the reliance on renewable energy sources in meeting the demands while ensuring optimum performance when commissioning and monitoring energy systems to reduce overall emissions, operating costs, and reliance on fossil fuels.	<ul style="list-style-type: none"> • Prioritise energy conservation • Utilise energy modelling and analyses • Maximise energy efficiency • Capitalise on renewable energy • Implement monitoring and management • Consider local resources and conditions 	<ul style="list-style-type: none"> • Ministry of energy and/or energy regulatory commission • Energy generation and/or energy distribution companies • Municipalities • Ministry of environment • Engineers • Urban planners • Design engineers • System engineers • Project managers • Commissioning engineers • Facility managers and technicians • End users • Building occupants • Clients 	SDG 7.1-7.3 SDG 12.1-12.4 SDG 13.3	<ul style="list-style-type: none"> • Net Zero Embodied Carbon • H&W Framework - 6.1 Commit to Climate Change Mitigation, 6.4 Ensure Resource Efficiency
	WATER	Ensure proper utilisation and protection of water resources, which includes optimising the demand on freshwater, protecting natural water resources, maximising water reuse, and managing water operations to rescue the depletion of available freshwater in the long term.	<ul style="list-style-type: none"> • Ensure water conservation • Efficiently manage water resources extraction, generation and collection • Apply holistic water management • Prioritise environmentally friendly wastewater treatments 	<ul style="list-style-type: none"> • City Management • Ministry of Water Resources and Irrigation • Water Supply companies • International development agencies and environmental/green building NGO's • Academia • Informal water sector 	SDG 6.1- 6.6	<ul style="list-style-type: none"> • Net Zero Embodied Carbon • H&W Framework - 6.3 Ensure Water Efficiency, 1.2 Improve Water Quality



Sustainable Reconstruction and Recovery Framework Checklist

Sustainable Mobility

THEME	SUB-THEME	SUBTHEME INTENT	STRATEGIES	STAKEHOLDERS TO INVOLVE	ALIGNMENT TO SDG	ALIGNMENT TO WORLDGBC PRINCIPLES
SUSTAINABLE MOBILITY Ensure freedom of access to all members of society in an environmentally sensitive and healthy manner.	MOBILITY	Enable and guide planners and designers towards rebuilding a sustainable mobility network. Encourage the shift towards clean and environmentally friendly transportation. Improve the efficiency and attractiveness of existing transportation modes and facilities. Reduce CO ₂ emissions and noise resulting from transportation. Raise awareness about the importance of environmentally friendly transportation systems.	<ul style="list-style-type: none"> Promote alternative transportation (e-mobility, cycling, informal, water, air) Prioritise public transportation Prioritise parking spaces to support multimodal mass transit and electric vehicles 	<ul style="list-style-type: none"> Ministry of transportation Ministry of environment Ministry of local government Municipalities Public at large 	SDG 3.9 SDG 11.6 SDG 3.4 SDG 7.1 SDG 9.1 SDG 9.4 SDG 11.7 SDG 12.8 SDG 2.1 SDG 11.A SDG 1.5 SDG 4.7 SDG 11.1 SDG 12.4 SDG 13.3 SDG 8.7-8.8 SDG 7.1-7.3 SDG 12.1-12.2 SDG 13.1 SDG 11.A	<ul style="list-style-type: none"> Net Zero Operational Carbon H&W Framework - 1.1 Improve Air Quality, 1.3 Improve Mental Health, 2.1 Ensure Thermal Comfort, 2.5 Ensure inclusive Design, 3.2 Ensure Outdoor nature Access & biodiversity, 4.1 Promote activity & Physical Health in design, 4.2 Encourage Good Nutrition Hydration & Social Connectivity, 5.3 Improve Quality of life, 6.1 Commit to Climate change mitigation.
	PEDESTRIAN INFRASTRUCTURE	Enable and guide better universal accessibility by raising awareness on the importance of environmentally friendly transportation systems. Provide transportation infrastructure and services that are safe, affordable, equitable and that provide social justice, ensuring no transportation-disadvantaged people are left behind. Encourage a shift towards clean and environmentally friendly transportation by reducing the use of vehicles, cutting residents' expenses on fuel and helping decrease CO ₂ emissions. Promote healthier and more sustainable lifestyles through walkability.	<ul style="list-style-type: none"> Promote alternative transportation (e-mobility, cycling, informal, water, air) Prioritise public transportation Prioritise parking spaces to support multimodal mass transit and electric vehicles 	<ul style="list-style-type: none"> Ministry of local government Municipalities Public at large 	SDG 3.4 SDG 3.9 SDG 7.1 SDG 9.1 SDG 9.4 SDG 12.8 SDG 11.7 SDG 2.1 SDG 11.A SDG 1.5 SDG 4.7 SDG 11.1 SDG 11.6 SDG 12.4 SDG 13.3	<ul style="list-style-type: none"> Net Zero Operational Carbon H&W Framework - 1.1 Improve Air Quality, 1.3 Improve Mental Health, 2.1 Ensure Thermal Comfort, 2.5 Ensure inclusive Design, 3.2 Ensure Outdoor nature Access & biodiversity, 4.1 Promote activity & Physical Health in design, 4.2 Encourage Good Nutrition Hydration & Social Connectivity, 5.3 Improve Quality of life, 6.1 Commit to Climate change mitigation.



Sustainable Reconstruction and Recovery Framework Checklist

Integrative Social & Economic Resilience

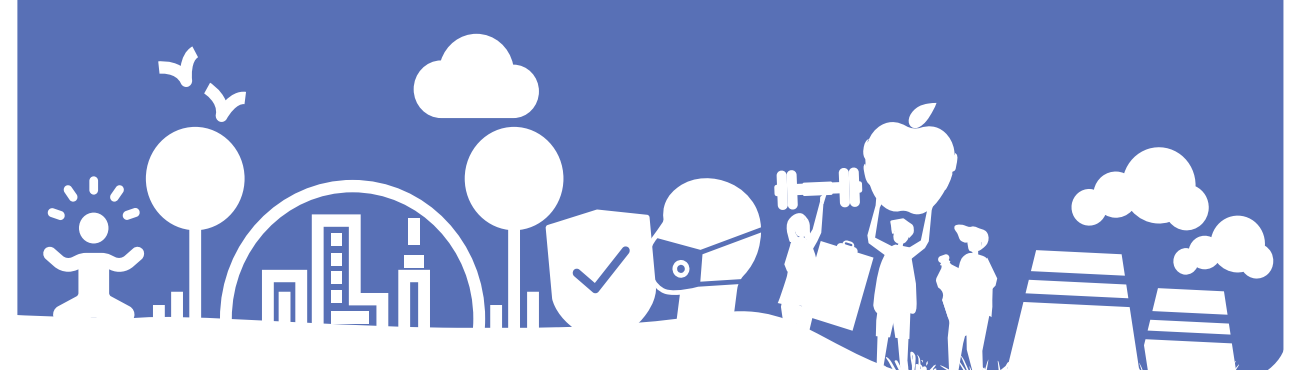
THEME	SUB-THEME	SUBTHEME INTENT	STRATEGIES	STAKEHOLDERS TO INVOLVE	ALIGNMENT TO SDG	ALIGNMENT TO WORLDGBC PRINCIPLES
INTEGRATIVE SOCIAL & ECONOMIC RESILIENCE Ensure social networks are given equal importance to physical networks, and are rebuilt and supported in the physical environment in ways that facilitate opportunities for economic growth and community resilience.	SOCIAL RESILIENCE	Assess and improve the social resilience of post-conflict and post-disaster cities, and suggest ways to benefit from the social resilience of the city during the reconstruction process. Map community stakeholders and their priorities concerning the city's development and housing, and assess their ability to support the urban reconstruction process. Enable cities and communities to take advantage of strong social resilience, leverage their newly developed social capital towards accomplishing further sustainable urban priorities.	<ul style="list-style-type: none"> • Map social resilience • Strengthen social resilience • Utilise social resilience 	<ul style="list-style-type: none"> • Office/Department of statistics and other public agencies • Key persons representing main segments of the population • Key persons representing the main conflicting parties and alliance • Community members and community-based organisation • Community based organisations • Community members and civic groups • Planners • City and community representatives • Local and international NGOs • Investors and funding institutions • Socio-economic expert(s) 	SDG 4.7 SDG 16.3 SDG 1.5 SDG 12.4 SDG 13.3 SDG 9.4 SDG 13.1	<ul style="list-style-type: none"> • 5.1 Protect Human Rights 5.3 Improve Quality of Life, 6.1 Commit to Climate Change mitigation, 6.2 Design for Resilience and adaptation action
	ECONOMIC RESILIENCE	Provide guidelines for an economically efficient and successful implementation of sustainable urban reconstruction practices in post-crisis cities. This is to be done by considering phasing according to the community's priorities and emphasising transparency	<ul style="list-style-type: none"> • Define economic resilience alternatives • Estimate cost of restoration and reconstruction • Study benefit estimation and economic analysis • Define cash flow and financial analysis • Secure funding 	<ul style="list-style-type: none"> • Representatives of the public sector and economic experts • Representatives of local communities, architects, and construction experts. • Key representatives of the business community, land owners, owners of residential housing blocks and others who may have the capacity to take immediate action and to reestablish housing and infrastructure • Planners • Public and private investors • Construction companies • Citizens and their representatives 	SDG 4.7 SDG 11.1 SDG 1.5 SDG 12.4 SDG 13.3 SDG 9.4 SDG 13.1	<ul style="list-style-type: none"> • Net Zero embodied and operational carbon • H&W Framework - 5.3 Improve Quality of Life, 6.1 Commit to Climate Change mitigation, 6.2 Design for Resilience and adaptation action
	EDUCATION	Propose strategic training and education initiatives post-crisis with the aim towards sustainable urban reconstruction. The initiatives may comprise both school education for children and adults, and public awareness campaigns.	<ul style="list-style-type: none"> • Assess accumulated training needs • Strategize training for an industry upgrade • Plan the training for new demands 	<ul style="list-style-type: none"> • The city school department • Teachers of primary, secondary and vocational school; professors and universities, who are aware of the training capacities within the schools and universities • Business representatives • Owners of appropriate premises for training 	SDG 4.7 SDG 16.3 SDG 1.5 SDG 12.4 SDG 13.3 SDG 9.4 SDG 13.1 SDG 8.7- 8.8	<ul style="list-style-type: none"> • Net Zero embodied and operational carbon • H&W Framework - 5.1 Protect Human Rights, 5.2 Commit to construction workers, 5.3 Improve Quality of Life, 6.1 Commit to Climate Change mitigation, 6.2 Design for Resilience and adaptation action



Sustainable Reconstruction and Recovery Framework Checklist

Health & Wellbeing

THEME	SUB-THEME	SUBTHEME INTENT	STRATEGIES	STAKEHOLDERS TO INVOLVE	ALIGNMENT TO SDG	ALIGNMENT TO WORLDGBC PRINCIPLES
HEALTH & WELLBEING Address both the objective and subjective aspects of a community's wellbeing, especially post crisis.	SOCIAL & MENTAL WELLBEING	Offer spaces, services, and activities where the promotion and development of human vitality and wellbeing is materialised. As social and mental wellbeing are outcomes of good urban planning and design, there are several general and context-specific principles that can be considered and applied towards urban reconstruction efforts in post-crisis cities and neighbourhoods for this purpose.	<ul style="list-style-type: none"> • Biophilic design principles • Happiness mapping and place making • Make spaces great • Equalize wellbeing • Decentralise services • No honking zones • Nature For mental and social wellbeing • Wellbeing for children • Wellbeing for the elderly • Social capital through activity • Promotion of the arts 	<ul style="list-style-type: none"> • Local government agencies • Municipalities • Civil society representatives • Subject matter experts 	SDG 3.4 SDG 9.4 SDG 12.8 SDG 11.7 SDG 12.8 SDG 2.1 SDG 11.A SDG 4.7 SDG 16.3 SDG 1.5 SDG 11.1 SDG 12.4 SDG 13.3 SDG 13.1	<ul style="list-style-type: none"> • H&W Framework - 1.3 Improve Mental Health, 2.5 Ensure Inclusive Design, 3.1 Ensure Biophilic Design, 3.2 Ensure Outdoor Nature access & Biodiversity, 4.1 Promote Activity & physical Health in design, 4.2 Encourage Good nutrition hydration & social connectivity, 5.1 protect human rights, 5.3 improve quality of life, 6.1 Commit to Climate Change mitigation, 6.2 Design for Resilience and adaptation action.
	SAFETY	Provide integrated safety and disaster risk mitigation/prevention planning and management measures over the life cycle of the reconstruction process of cities whilst maintaining the wellbeing of all stakeholders. Explore effective measures which priorities safety for all stakeholders at all development levels, in the context of a health pandemic.	<ul style="list-style-type: none"> • Handle Unexploded Ordnance (UXO) clearance • Prioritise safe public spaces and accessibility • Plan for disaster risk reduction • Promote public health and safety • Check for construction / structural soundness • Plan for construction process safety 	<ul style="list-style-type: none"> • Municipalities and local governments • Public works regulatory bodies, specifications and standardization regulatory bodies, H&S specialists, EIA specialists, material engineers, and contractors • Structural engineers • Citizens and built environment users 	SDG 9.4 SDG 4.7 SDG 16.3 SDG 1.5 SDG 11.1 SDG 3.3 SDG 13.1 SDG 8.7-8.8	<ul style="list-style-type: none"> • H&W Framework - 2.5 Ensure Inclusive Design, 5.1 protect human rights, 5.3 improve quality of life, 1.4 Reduce infection Disease Transmission, 2.5 Ensure Inclusive Design, 5.1 protect human rights, 5.3 improve quality of life, 6.2 Design for Resilience and adaptation action.
	COMFORT	Encourage occupant wellbeing by ensuring thermal, visual, auditory, and olfactory comfort. Encourage beneficial lifestyle practices which include good nutrition, hydration, and social connectivity.	<ul style="list-style-type: none"> • Conduct a comfort review data gathering (quantitative and qualitative) • Perform comfort analysis • Utilise comfort related outcomes and recommendations • Plan for thermal comfort • Plan for proper lighting and visual comfort • Plan for acoustic comfort • Integrate urban biophilia • Empower community perception and ownership • Consider other outdoor environment quality 	<ul style="list-style-type: none"> • Local government agencies • Municipalities • Civil society representatives • Subject matter experts 	SDG 3 & 11 SDG 7.1 SDG 9.1 SDG 9.4 SDG 12.4 SDG 13.3 SDG 1.5 SDG 13.1 SDG 4.7 SDG 11.1 SDG 8.7-8.8 SDG 11.7 SDG 2.1 SDG 11.A SDG 12.8	<ul style="list-style-type: none"> • Net Zero operational carbon • All of the Health & Wellbeing Framework Approach pollution mitigation and prevention through a comprehensive, integrative, and multi-disciplinary design approach, and elaborate on the preservation of air, water and soil quality to minimise health risks.
	POLLUTION	For optimum protection against harm which also encapsulates human wellbeing, the theme provides mitigation strategies for other sources of pollution such as noise and light.	<ul style="list-style-type: none"> • Limit and mitigate air pollution • Limit and mitigate water pollution • Limit and mitigate soil pollution • Limit and mitigate noise pollution 	<ul style="list-style-type: none"> • Each design discipline • Scientists and researchers • Client • Community • Cost/Financial controller • Local heritage advisor • Operation and facility manager • Contractor and construction manager • Government and local authorities 	SDG 3.9 SDG 11.6 SDG 1.5 SDG 4.7 SDG 11.1 SDG 12.4 SDG 13.3 SDG 9.4 SDG 13.1 SDG 6.1 - 6.6 SDG 15.1 - 15.9 SDG 7.1 SDG 9.1	<ul style="list-style-type: none"> • H&W Framework - 1.1 improve air quality, 1.2 improve water quality, 5.3 improve quality of life, 6.1 Commit to Climate Change mitigation, 6.2 Design for Resilience and adaptation action, 2.2 Maintain Exemplary Lighting, 2.3 Maintain Acoustic comfort, 5.3 improve quality of life.



Sustainable Reconstruction and Recovery Framework Checklist

Heritage

THEME	SUB-THEME	SUBTHEME INTENT	STRATEGIES	STAKEHOLDERS TO INVOLVE	ALIGNMENT TO SDG	ALIGNMENT TO WORLDGBC PRINCIPLES
<p>HERITAGE</p> <p>Maintain a strong link to the heritage of an area, representing the historic and cultural richness of the region, which is crucial in ensuring belonging and wellbeing.</p> 	ARCHAEOLOGY	<p>Balance the conservation of archaeological heritage with the community's needs for reconstruction.</p> <p>Prioritise archaeological sites as a resilient asset for reconciliation and rebuilding of the community's identity and economic rejuvenation.</p>	<ul style="list-style-type: none"> Maximise the unique opportunity of accessing archaeology prior to reconstruction, and carrying out archaeological investigations and excavations without jeopardising the reconstruction process Integrate existing archaeology, as well as potential archaeological findings, in any reconstruction scenario or master plan by applying UNESCO principles which protect existing archaeology from disorganised urban development Prevent reconstruction works from damaging archaeological findings Integrate archaeology in the lives of the communities to support identity building and community integration 	<ul style="list-style-type: none"> International bodies Local authorities Qualified archaeologists, historians and architectural historians Municipalities Civic defense agencies/army NGOs, local community representatives and volunteers 	<p>SDG 4.7</p> <p>SDG 16.3</p> <p>SDG 8.7-8.8</p> <p>SDG 1.5</p> <p>SDG 11.1</p> <p>SDG 12.4</p> <p>SDG 9.4</p> <p>SDG 13.1-13.3</p>	<ul style="list-style-type: none"> H&W Framework - Principle 5 Create positive social value with buildings & communities 6.1 Commit to climate change Mitigation 6.2 Design for resilience & adaptation action
	HERITAGE	<p>Restore the community's heritage as a mean to reinstate its collective identity, social cohesion, and diversity through and post the reconstruction activities.</p>	<ul style="list-style-type: none"> Provide a comprehensive set of qualitative and quantitative data which informs the recommendations and processes for the protection, integration, and celebration of built heritage and its cultural significance in reconstruction plans. Design a development framework that balances built heritage conservation, community reconstruction needs, and socioeconomic growth. 	<ul style="list-style-type: none"> Community Land Property owners, Workers, visitors Vulnerable groups: women, children and people with disabilities 	<p>SDG 4.7</p> <p>SDG 16.3</p> <p>SDG 8.7-8.8</p> <p>SDG 1.5</p> <p>SDG 11.1</p> <p>SDG 12.4</p> <p>SDG 9.4</p> <p>SDG 13.1-13.3</p>	<ul style="list-style-type: none"> H&W Framework - Principle 5 Create positive social value with buildings & communities 6.1 Commit to climate change Mitigation 6.2 Design for resilience & adaptation action

Sustainable Reconstruction and Recovery Framework Checklist

Environmental & Climate Resilience

THEME	SUB-THEME	SUBTHEME INTENT	STRATEGIES	STAKEHOLDERS TO INVOLVE	ALIGNMENT TO SDG	ALIGNMENT TO WORLDGBC PRINCIPLES
ENVIRONMENTAL & CLIMATE RESILIENCE Promote long-term integrative planning to decrease the communities' vulnerability and increase its adaptability to the harmful effects of climate change.	LAND	Create ecological resilience, engineering resilience, and promote community health and wellbeing by providing spaces that meet the needs of residents and accommodate their daily activities while minimising the negative environmental impact of reconstruction.	<ul style="list-style-type: none"> Plan for comprehensive Environmental Site Assessment (EIA) Implement a Construction Environmental Management Plan (CEMP) Prepare site improvement plan and prioritise degraded sites and brownfields Design For green infrastructure Optimize biomass, soil protection, and vegetation Support local food production 	<ul style="list-style-type: none"> Government Real estate and investors Urban planners, architects, landscape designers, and contractors Residents and public Landowners 	SDG 1.5 SDG 9.4 SDG 13.1 SDG 3.9 SDG 11.6 SDG 6.1- 6.6 SDG 8.7-8.8 SDG 7.1 - 7.3 SDG 12.1-12.2 SDG 11.7 SDG 12.8 SDG 2.1 SDG 11.A	<ul style="list-style-type: none"> Net Zero Embodied Carbon H&W Framework - 1.1 improve Air Quality, 1.2 improve Water Quality, 3.2 Ensure outdoor nature access & Biodiversity, 5.2 Commit to Construction workers Health & Wellbeing, 6.2 Design for Resilience and Adaptation action, 6.4 Ensure resource efficiency
	ECOLOGY	Conduct an accurate and detailed assessment of the ecological health of the area and set an agenda of remedial work needed and baseline conditions for planning and design.	<ul style="list-style-type: none"> Identify and map existing ecosystems Identify current and potential negative impact on ecosystems Manage ecosystems 	<ul style="list-style-type: none"> National ministries responsible for environment and agriculture Planning authorities International donors Local municipalities Soil expert, water expert, horticulturist, native plant specialist, ecologist, landscape ecologist and conservation biologist Planners, designers, engineers, architects, and landscape architects Landowners Communities Non-Governmental organizations (NGO) and Civil Society concerned with ecological processes Conservation ecologists, and biologists Any other expert needed to address specific conditions or situations 	SDG 11.7 SDG 12.8 SDG 1.5 SDG 9.4 SDG 13.1	<ul style="list-style-type: none"> H&W Framework - 3.2 Ensure outdoor nature access & Biodiversity, 6.2 Design for resilience & Adaptation action
	CLIMATE CHANGE MITIGATION	Integrate climate change mitigation strategies into sustainable reconstruction processes, taking into consideration the life cycle of the project. Provide multi-level monitoring and assessment tools for reduction of GHGs and ozone depletion. Avoid reconstruction activities that may potentially contribute to climate change and to simultaneously identify the best reconstruction practices.	<ul style="list-style-type: none"> Moderate energy consumption and prioritise energy mix optimisation. Material consumption and green material acquisition 	<ul style="list-style-type: none"> Ministry of environment Department of standards Manufacturing facilities Engineers 	SDG 7.1-7.3 SDG 12.1-12.4 SDG 13.3	<ul style="list-style-type: none"> Net Zero Operational Carbon H&W Framework - 6.1 Commit to Climate Change Mitigation 6.4 Ensure Resource Efficiency
	CLIMATE CHANGE ADAPTATION	Prevent or reduce the impact of climate change on the natural and built environment and human systems by planning and implementing legal, physical, socio-economic (including mental health and wellbeing) interventions.	<ul style="list-style-type: none"> Integrate climate change planning and governance across sectors Create physical adaptation actions Consider socioeconomic adaptation 	<ul style="list-style-type: none"> Local government Concerned ministries UN agencies UNFCCC, NGOs and/or Green Building Councils International development NGOs Academia Engineers Media 	SDG 1.5 SDG 9.4 SDG 13.1	<ul style="list-style-type: none"> Net Zero Operational Carbon H&W Framework - 6.2 Design for Resilience and Adaptation action

