# Sustainable Reconstruction and Recovery Framework Checklist

## Efficient Resource Utilisation

### Materials

**Theme:** Efficient Resource Utilisation

A physical environment that ensures the proper utilisation of resources, continued growth and environmental resilience.

**Sub-theme:** Materials

- **Sub-theme intent:** 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.

**Strategies:**

- **Optimise material use (Life cycle Approach):**
  - Select environmentally sustainable local building materials
  - Promote upcycling / recycling / reuse
  - Implement comprehensive waste management

**Stakeholders to involve:**

- 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

**Alignment to SDGs:**

- SDG 7.1-7.3
- SDG 12.1-12.4
- SDG 13.3

### Energy

**Theme:** Efficient Resource Utilisation

A physical environment that ensures the proper utilisation of resources, continued growth and environmental resilience.

**Sub-theme:** Energy

- **Sub-theme intent:** Use reconstruction to build sustainable energy infrastructure for buildings and cities as a whole.

**Strategies:**

- **Prioritise energy conservation**
- **Utilise energy modeling and analyses**
- **Maximise energy efficiency**
- **Capitalise on renewable energy**
- **Implement monitoring and management**
- **Consider local resources and conditions**

**Stakeholders to involve:**

- 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

**Alignment to SDGs:**

- SDG 7.1-7.3
- SDG 12.1-12.4
- SDG 13.3

### Water

**Theme:** Efficient Resource Utilisation

A physical environment that ensures the proper utilisation of resources, continued growth and environmental resilience.

**Sub-theme:** Water

- **Sub-theme intent:** 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.

**Strategies:**

- **Ensure water conservation**
- **Efficiently manage water resources extraction, generation and collection**
- **Apply holistic water management**
- **Prioritise environmentally friendly wastewater treatments**

**Stakeholders to involve:**

- City Management
- Ministry of Water Resources and Irrigation
- Water Supply companies
- International development agencies and environmental/green building NGO’s
- Academia
- Informal water sector

**Alignment to SDGs:**

- SDG 6.1-6.6

### Alignment to WorldGBC Principles

- Net Zero Embodied Carbon
- H&W Framework - 6.1 Commit to Climate Change Mitigation, 6.4 Ensure Resource Efficiency
### Sustainable Mobility

<table>
<thead>
<tr>
<th>MOBILITY</th>
<th>PEDESTRIAN INFRASTRUCTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SUSTAINABLE MOBILITY</strong></td>
<td><strong>Ensure freedom of access to all members of society in an environmentally sensitive and healthy manner.</strong></td>
</tr>
<tr>
<td><strong>SUBTHEME INTENT</strong></td>
<td>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 CO₂ emissions and noise resulting from transportation. Raise awareness about the importance of environmentally friendly transportation systems.</td>
</tr>
<tr>
<td><strong>STRATEGIES</strong></td>
<td>• Promote alternative transportation (e-mobility, cycling, informal, water, air) • Prioritise public transportation • Prioritise parking spaces to support multimodal mass transit and electric vehicles</td>
</tr>
<tr>
<td><strong>STAKEHOLDERS TO INVOLVE</strong></td>
<td>• Ministry of transportation • Ministry of environment • Ministry of local government • Municipalities • Public at large</td>
</tr>
<tr>
<td><strong>ALIGNMENT TO SDG</strong></td>
<td>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 13.5 SDG 4.7 SDG 11.1 SDG 12.4 SDG 13.3 SDG 8.7.9 SDG 7.1-7.3 SDG 12.1-12.2 SDG 13.1 SDG 11.A</td>
</tr>
<tr>
<td><strong>ALIGNMENT TO WORLDGBC PRINCIPLES</strong></td>
<td>• Net Zero Operational Carbon • H&amp;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 &amp; biodiversity, 4.1 Promote activity &amp; Physical Health in design, 4.2 Encourage Good Nutrition Hydration &amp; Social Connectivity, 5.3 Improve Quality of life, 6.1 Commit to Climate change mitigation.</td>
</tr>
</tbody>
</table>
# Sustainable Reconstruction and Recovery Framework Checklist

## Integrative Social & Economic Resilience

### Theme

**Social 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.

**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.

**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.

### Sub-Theme

1. **Integrative Social & Economic Resilience**

   - **Intent**
     - 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.

   - **Strategies**
     - Map social resilience
     - Strengthen social resilience
     - Utilise social resilience

   - **Stakeholders to Involve**
     - Office/Department of statistics and other public agencies
     - Key persons representing main segments of the population
     - Key persons representing the main conflicting parties and all
     - Community members and community-based organisations
     - 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)

   - **Alignment to SDG**
     - SDG 4.7
     - SDG 14.3
     - SDG 15
     - SDG 12.4
     - SDG 13.3
     - SDG 9.4
     - SDG 13.1

   - **Alignment to WorldGBC Principles**
     - 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

   - **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

2. **SDG 4.7**

   - 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

3. **SDG 16.3**

   - 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

4. **SDG 15**

   - 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

5. **SDG 12.4**

   - H&W Framework - 5.3 Improve Quality of Life
   - 6.1 Commit to Climate Change mitigation
   - 6.2 Design for Resilience and adaptation action

6. **SDG 13.3**

   - H&W Framework - 5.3 Improve Quality of Life
   - 6.1 Commit to Climate Change mitigation
   - 6.2 Design for Resilience and adaptation action

7. **SDG 9.4**

   - 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

8. **SDG 12.4**

   - H&W Framework - 5.3 Improve Quality of Life
   - 6.1 Commit to Climate Change mitigation
   - 6.2 Design for Resilience and adaptation action

9. **SDG 13.1**

   - 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

10. **SDG 8.7- 8.8**

    - 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

<table>
<thead>
<tr>
<th>THEME</th>
<th>SUB THEME</th>
<th>SUB THEME INTENT</th>
<th>STRATEGIES</th>
<th>STAKEHOLDERS TO INVOLVE</th>
<th>ALIGNMENT TO SDG</th>
<th>ALIGNMENT TO WORLDGBC PRINCIPLES</th>
</tr>
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</table>
|       | 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. | - Biophilic design principles  
- Happiness mapping and place making  
- Make spaces great  
- Equalize wellbeing  
- Decentralise services  
- No harking zones  
- Nature For mental and social wellbeing  
- Wellbeing for children  
- Wellbeing for the elderly  
- Social capital through activity  
- Promotion of the arts | - 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 11.8  
SDG 4.7  
SDG 16.3  
SGD1.5  
SDG 11.1  
SDG 12.4  
SDG 13.3  
SDG 13.1 | • H&W Framework - 1.3 Improve Mental Health, 2.5 Ensure Inclusive Design, 3.1 Ensure Biophilic Design, 3.2 Ensure Outdoor Nature access & Bio-diversity, 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 prioritise safety for all stakeholders at all development levels, in the context of a health pandemic. | - 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 | - Municipalities and local governments  
- Public works regulatory bodies, specifications and standardization regulatory bodies, H&S specialists, EIAs specialists, material engineers, and contractors  
- Structural engineers  
- Citizens and built environment users | SDG 3.4  
SDG 4.7  
SDG 16.3  
SDG 16.5  
SDG 11.1  
SDG 3.3  
SDG 10.1  
SDG 8.7-8.8 | • 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, 6.1 Commit to Climate Change mitigation, 6.2 Design for Resilience and adaptation action. |
|       | HEALTH & WELLBEING | Address both the objective and subjective aspects of a community’s wellbeing, especially post crisis. | - 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 | - 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 13.9  
SDG 13.1  
SDG 4.7  
SDG 11.1  
SDG 8.7-8.8  
SDG 11.7  
SDG 2.1  
SDG 11.8  
SDG 12.8 | • 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. |
|       | COMFORT | Encourage occupant wellbeing by ensuring thermal, visual, auditory, and olfactory comfort. Encourage beneficial lifestyle practices which include good nutrition, hydration, and social connectivity. | - Limit and mitigate air pollution  
- Limit and mitigate water pollution  
- Limit and mitigate soil pollution  
- Limit and mitigate noise pollution  
- Limit and mitigate pollution from other sources of pollution such as noise and light. | - 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 12.4  
SDG 13.9  
SDG 9.4  
SDG 16.1  
SDG 6.1 - 6.6  
SDG 16.1 - 15.9  
SDG 7.1  
SDG 9.1 | • 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, 2.4 Maintain Exemplary Lighting, 2.3 Maintain Acoustic comfort, 5.3 improve quality of life. |
## Sustainable Reconstruction and Recovery Framework Checklist

### Heritage

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<td>Heritage</td>
<td>Archaeology</td>
<td>Balance the conservation of archaeological heritage with the community’s needs for reconstruction. Prioritise archaeological sites as a resilient asset for reconciliation and rebuilding of the community’s identity and economic rejuvenation.</td>
<td>• 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.</td>
<td>• International bodies • Local authorities • Qualified archaeologists, historians and architectural historians • Municipalities • Civic defense agencies/army • NGOs, local community representatives and volunteers</td>
<td>SDG 4.7 SDG 16.3 SDG 8.7-8.8 SDG 11.1 SDG 12.4 SDG 9.4 SDG 13.1-13.3</td>
<td>• H&amp;W Framework - Principle 5 Create positive social value with buildings &amp; communities 6.1 Commit to climate change Mitigation 6.2 Design for resilience &amp; adaptation action</td>
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<tr>
<td>Heritage</td>
<td>Archaeology</td>
<td>Restore the community’s heritage as a means to reinstate its collective identity, social cohesion, and diversity through and post the reconstruction activities.</td>
<td>• 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.</td>
<td>• Community Land Property owners, • Workers, visitors • Vulnerable groups: women, children and people with disabilities</td>
<td>SDG 4.7 SDG 16.3 SDG 8.7-8.8 SDG 11.1 SDG 12.4 SDG 9.4 SDG 13.1-13.3</td>
<td>• H&amp;W Framework - Principle 5 Create positive social value with buildings &amp; communities 6.1 Commit to climate change Mitigation 6.2 Design for resilience &amp; adaptation action</td>
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### Alignment to SDGs

- SDG 4.7
- SDG 16.3
- SDG 8.7-8.8
- SDG 11.1
- SDG 12.4
- SDG 9.4
- SDG 13.1-13.3

### Alignment to WorldGBC Principles

- 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

#### LAND

**Create ecological resilience, engineering resilience, and promote community health and well-being by providing spaces that meet the needs of residents and accommodate their daily activities while minimising the negative environmental impact of reconstruction.**

- Plan for comprehensive Environmental Site Assessment (ESA)
- 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

**STAKEHOLDERS TO INVOLVE**

- Government
- Real estate and investors
- Urban planners, architects, landscape designers, and contractors
- Residents and public
- Landowners

**ALIGNMENT TO SDGs**

- SDG 1.5
- SDG 9.4
- 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

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#### 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.**

- Identify and map existing ecosystems
- Identify current and potential negative impact on ecosystems
- Manage ecosystems

**STAKEHOLDERS TO INVOLVE**

- 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

**ALIGNMENT TO SDGs**

- SDG 11.7
- SDG 12.8
- SDG 9.4
- SDG 13.1

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#### CLIMATE CHANGE MITIGATION

**Integrate climate change mitigation strategies into sustainable reconstruction processes, taking into consideration the life-cycle of the project.**

- Moderate energy consumption and prioritise energy mix optimization
- Material consumption and green material acquisition

**STAKEHOLDERS TO INVOLVE**

- Ministry of environment
- Department of standards
- Manufacturing facilities
- Engineers

**ALIGNMENT TO SDGs**

- SDG 7.1-7.3
- SDG 12.1-12.4
- SDG 13.3

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#### 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 well-being) interventions.**

- Integrate climate change planning and governance across sectors
- Create physical adaptation actions
- Consider socioeconomic adaptation

**STAKEHOLDERS TO INVOLVE**

- Local government
- Concerned ministries
- UN agencies
- UNFCCC, NGOs and/or Green Building Councils
- International development NGOs
- Academia
- Engineers
- Media

**ALIGNMENT TO SDGs**

- SDG 1.5
- SDG 9.4
- SDG 13.1

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**Environmental & Climate Resilience**

- Promote long-term integrative planning to decrease the communities’ vulnerability and increase its adaptability to the harmful effects of climate change.

**STAKEHOLDERS TO INVOLVE**

- National ministries responsible for environment and agriculture
- Department of standards
- Manufacturing facilities
- Engineers

**ALIGNMENT TO SDGs**

- SDG 7.1-7.3
- SDG 12.1-12.4
- SDG 13.3

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**Net Zero Embodied Carbon**

- H&W Framework - 1.1
- H&W Framework - 3.2
- H&W Framework - 6.4

**Net Zero Operational Carbon**

- H&W Framework - 1.1
- H&W Framework - 3.2

**Biodiversity**

- H&W Framework - 6.2

**Ensure outdoor nature access & Biodiversity**

- H&W Framework - 6.2
- Design for resilience & Adaptation action

**Ensure resource efficiency**

- H&W Framework - 6.4