

# Gaps and Findings in Major Policies of Nepal Greening the Shelter Response



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## Abbreviations and Acronyms

DDMC	District Disaster Management Committee
DRR	Disaster Risk Reduction
DRRM	Disaster Risk Reduction and Management
DUDBC	Department of Urban Development and Building Construction
ECHO	European Civil Protection and Humanitarian Aid Operations
EPA	Environment Protection Act
GoN	Government of Nepal
GTR	Greening the Shelter Response
IWRM	integrated water resource management
LLR	lands and land resources
LUP	Land Use Policy
MoFSC	Ministry of Forests and Soil Conservation
MoSTE	Ministry of Science, Technology and Environment
MoUD	Ministry of Urban Development
NDRRMA	National Disaster Risk Reduction and Management Authority
NFI	non-food items
NHSRP	National Housing and Settlements Resilience Platform
PDMC	Provincial Disaster Management Committee
PDNA	Post-Disaster Needs Assessment
PDRF	Post-Disaster Risk Framework
PHP	People Housing Program
REA	Rapid Environmental Assessment
SLUZ	Specific Land Use Zone
UNHCR	United Nations High Commissioner for Refugees
WWF	World Wildlife Fund

## Executive Summary

Aligning with the agenda of the Global Shelter Cluster’s Environmentally Sustainable Shelter Response, “Greening the Shelter,” the National Housing and Settlements Resilience Platform (NHSRP) launched a research project to study the incorporation of environmentally friendly shelter solutions in the policies and laws of Nepal and to identify gaps in addressing issues of greening the shelter response. This research was conducted with support from Catholic Relief Services (CRS) and European Civil Protection and Humanitarian Aid Operations (ECHO) through the United Nations High Commissioner for Refugees (UNHCR).

The objectives of the research were as follows:

1. To identify relevant laws, regulations and other documents that justify the greening of the shelter response at the federal and provincial levels
2. To outline any gaps, findings and recommendations regarding the green shelter response.

The team studied the following national and provincial acts and policies:

- Nepal Constitution (2015)
- Disaster Risk Reduction and Management Act, 2074
- Disaster Risk Reduction National Strategic Plan of Action (2018–2030)
- Right of Housing Act
- The Environment Protection Act, 2076 (2019)
- Local Government Operation Act, 2074
- Land Use Policy (2015)
- Solid Waste Management Act, 2068 (2011)
- Province Disaster Management Act, 2075, Bagmati province
- Environment Protection Act, 2077, Bagmati province

The team mapped these policies and existing guidelines according to the following criteria covering aspects of shelter and settlement:

**Criteria 1.** Roles and responsibilities of different level government authorities and other concerned stakeholders related to environmental purposes and green shelter response

**Criteria 2.** Provisions for the sourcing of used or consumed materials (Reduce)

**Criteria 3.** Stipulations on carbon emissions

**Criteria 4.** Provisions to minimize effects on natural resources (Reuse)

**Criteria 5.** Specifications for safe waste management and sanitation (Recycle)

**Criteria 6.** Provisions for energy use and consumption

**Criteria 7.** Provisions for safe and environmentally friendly shelter construction

**Criteria 8.** Provisions for other facilities.

Policies and acts concerning shelter and environment have established the division of roles at the local, provincial and federal levels. The Land Use Policy (LUP) facilitates the identification of

zones related to extraction. The Environment Protection Act (EPA) has provisions that relate to planning and reducing negative effects on the environment. The Solid Waste Management Act has provisions that connect construction waste to safer disposal and establish the duties and implications for the private sector and individuals. The EPA has some minor provisions relating to the control of pollution and the management of hazardous waste. The Local Government Operation Act indicates a municipal role in sanitation and the collection of waste, but indications of the link between these processes and reducing, reusing and recycling are limited.

To learn from the experience of the 2015 Gorkha earthquake and apply the lessons learned to greener response, the team also reviewed the Post-Disaster Needs Assessment (PDNA), Rapid Environmental Assessment (REA) and Post-Disaster Recovery Framework (PDRF). Major findings from this review included the following recommendations:

- Conduct land use planning, including zoning, before finalizing the locations of resettlement areas. This planning will minimize risks from landslides and floods and ensure adequate land and natural resources to meet community needs while minimizing environmental impacts.
- Ensure that building design and construction is environmentally sustainable, appropriate to the region, and resistant to future disasters.
- Ensure that fuel wood collection complies with existing forest management plans and promote alternative energy and energy efficient technologies to reduce pressure on forests.
- Recycle and reuse debris as much as possible and ensure that solid waste disposal during the reconstruction phase is managed using environmentally sound practices.
- Prioritize support for rapidly restoring livelihoods to take pressure off forests and biodiversity after the disaster.
- Enforce environmental impact assessment and initial environmental examination regulations during reconstruction to avoid future disasters.
- Build capacity for green recovery and reconstruction and ensure consultation and coordination with relevant stakeholders in recovery and reconstruction.

Some of the gaps identified in the review included:

- There are no provisions for creating legislation connected to housing development and planning that clearly reference employing green building techniques.
- The housing acts and policies simply mention the support of shelters; they make no mention of environmentally friendly shelter construction.
- There are no guidelines governing the reuse of salvaged materials and the production of alternative construction materials.
- None of the documents clearly outline any guidelines or checklists for environmentally friendly recovery and reconstruction considering the different phases of the aftermath of the disaster.

The report concludes by recommending the following provisions and way forward that actors including local, provincial and federal government; development agencies; and private organizations working in housing settlements and the reconstruction sector can implement to address the gaps identified through the research.

- Actors should develop policies relating to green recovery and shelter response to address the gaps in a comprehensive manner.
- Actors should develop practical guidelines for the sourcing of sustainable building materials. Following the 2015 earthquake, the Government of Nepal (GoN) identified that promoting the use of safe and green building materials and the reuse of disaster debris is a key principle for environmentally sound reconstruction, but there are not yet practical guidelines for the sourcing of sustainable building materials.
- Provincial and local-level actors should produce guidelines and procedures related to green reconstruction and recovery, such as an environmental checklist for shelter response that will allow provincial and local governments to more effectively implement the shelter program. Provincial and local-level actors can develop these DRRM-related acts and regulations under the provision of the Local Government Operation Act.

## Introduction

### Background

Nepal is a country that is especially vulnerable to disasters. It has a long history of earthquakes, and due to its severely dissected topography and significant elevation variation, Nepal is also vulnerable to floods and landslides. Periodic droughts are common in some areas of the nation, and increasingly intense weather events and global warming increase the risk of several hazards, such as avalanches, drought, landslides and floods. Many people in Nepal are highly dependent on locally available natural resources and ecosystem services for their livelihoods and security. Natural resources include firewood, building materials, forest foods, grazing and medicines. For Nepal to become more resilient to future disasters and reconstruct in a way that will not over-exploit natural resources or damage ecosystem services, it is essential to reflect on “build back safer and greener” solutions after disasters, ensuring environmentally responsible practices.

### Greening the Shelter Response

“Greening the Shelter Response” (GTR), funded by ECHO through UNHCR, is an initiative by the Global Shelter Cluster to ensure environmentally responsible practices. The initiative promotes the adoption of environmentally sound construction practices that do not place additional pressure on the environment following a disaster. These transformative building practices mitigate effects on ecosystems and consequently safeguard livelihoods and reduce disaster risks. GTR supports the environmental elements of the “do no harm” principle, the Sphere Handbook, the Code of Conduct for Disaster Relief, the Sendai Framework, the Environment Community of Practice initiated by Global Shelter Cluster and the Sustainable Development Goals.

### Objective of This Literary Review

As part of the GTR study in Nepal, the team conducted a literary review to identify relevant elements found or missing in various documents. The reviewed documents included national, provincial and municipal laws, regulations and guidance; existing project documents; and other relevant documents, especially those related to the 2015 earthquake.

The following objectives have been accomplished by this review:

1. To identify relevant laws, regulations and other documents that justify the greening of the shelter response at federal and provincial levels
2. To outline any gaps, findings and recommendations regarding the green shelter response.

## Methodology

The methodology used for this review was the following:

- Development of a checklist of criteria to guide the review process
- Identification of 10 key documents to be examined
- Triangulation with lessons learned from the 2015 Gorkha earthquake.

The team developed the following standard criteria to identify good practices, opportunities and gaps in the documents:

Table 1: Document review criteria.

	Criteria	Components
<b>Criteria 1</b>	Roles and responsibilities of different level government authorities and other concerned stakeholders related to environmental purposes and green shelter response	Roles and responsibilities of: a) Federal government b) Provincial government c) Local government d) Organized communities.
<b>Criteria 2</b>	Provisions for the sourcing of used or consumed materials (Reduce)	a) Extraction and use of natural materials such as water, timber, stone, sand and aggregate b) Use of manufactured materials, such as steel, plastic and burnt bricks c) Use of multiple sources, reuse of salvaged materials and production of alternative materials d) Reduction of the consumption of construction materials and debris management.
<b>Criteria 3</b>	Stipulations on carbon emissions	a) Carbon emissions in the production, transport and consumption of materials b) CO <sub>2</sub> emissions.

	Criteria	Components
<b>Criteria 4</b>	Provision to minimize effects on natural resources (Reuse)	<ul style="list-style-type: none"> <li>a) Deforestation and vegetation removal</li> <li>b) Soil erosion</li> <li>c) Degradation of water quality</li> <li>d) Protection of ecologically sensitive areas</li> <li>e) Debris management and reuse of scrap materials.</li> </ul>
<b>Criteria 5</b>	Specifications for safe waste management and sanitation (Recycle)	<ul style="list-style-type: none"> <li>a) Safe management of toilet and wash facilities</li> <li>b) Collection and environmentally sound disposal of household and construction waste.</li> </ul>
<b>Criteria 6</b>	Provisions for energy use and consumption	<ul style="list-style-type: none"> <li>a) Lighting</li> <li>b) Cooking fuel</li> <li>c) Energy for winterization support.</li> </ul>
<b>Criteria 7</b>	Provisions for safe and environmentally friendly shelter construction	<ul style="list-style-type: none"> <li>a) Selection of site</li> <li>b) Size and height of shelter</li> <li>c) Window, roofing and ventilation provisions</li> <li>d) Flood, earthquake and fire-resistant provisions</li> <li>e) Insulation and energy saving.</li> </ul>
<b>Criteria 8</b>	Provisions for other facilities	<ul style="list-style-type: none"> <li>a) Rainwater harvesting</li> <li>b) Gray water reuse systems for sanitary purposes</li> <li>c) Vegetation and plants around facilities</li> <li>d) Other.</li> </ul>

## 1. Review of Acts, Policies & Regulations in Nepal

According to the predetermined criteria listed in Table 1, the team examined 10 significant policies, as shown in the below sections.

### 1.1. Nepal's Constitution of 2015

Article 31 of Nepal's constitution states that every citizen has the right to sufficient housing and that no one may be evicted from or encroached upon while residing in housing that they have

purchased, unless required by law. Additionally, Article 51 includes provisions requiring governments to develop and implement plans for disaster preparedness, rescue operations, relief efforts and rehabilitation to reduce the risk of natural disasters.

## **Green and Environment-Related Findings**

### **Criteria 1**

#### Role of the federal government

- National and international environmental management and carbon control
- Land use policies, human settlement development policies and environment adaptation.

#### Role of the provincial government

- Management of the environment within the province
- Use and management of forest and water resources
- Management of land
- Exploration and management of mines.

#### Role of the local government

- Environmental protection and biodiversity
- Disaster management
- Conservation of watersheds, wildlife, mines and minerals
- Local-level development plans and projects.

#### Concurrent powers of federal and provincial governments

- Preparedness for, rescue and relief during, and recovery from natural and non-natural disasters
- Environmental protection
- Water supply and sanitation.

#### Concurrent powers of federal, provincial and local governments

- Disaster management
- Forests, wildlife, birds, water, environment, ecology and biodiversity
- Mines and minerals.

### **Criteria 2**

- Provisions within the constitution allow for the formulation of policies to protect, promote and sustainably use the natural resources available in the country.
- The Constitution of Nepal has envisioned forming a National Natural Resources and Fiscal Commission to research the requirement of environmental impact assessments during the distribution of natural resources and recommend policies regarding their use to the GoN.

### Criteria 3

- The constitutional function of the federal government includes the power over carbon services. The federal government can take the required actions to reduce carbon emissions.

### Criteria 4

The Constitution of Nepal has envisioned formulating policy on:

- Use of forests, vegetation and biodiversity while mitigating possible risks to the environment from industrial and physical development
- Maintaining the forest area required for ecological balance in a territory
- Adopting appropriate measures to abolish or mitigate existing or possible adverse effects on nature, environment or biological diversity
- Conservation and multiple uses of water resources.

### Criteria 5

- The constitution ensures the right of access to clean drinking water, sanitation and a clean and healthy environment.

### Criteria 6

- Provisions within the constitution allow for the formulation of policies to ensure a reliable and convenient supply of affordable energy and to make proper use of energy for the fulfillment of the basic needs of citizens by generating and developing renewable energy. Local governments have the power to take necessary measures on alternative energy.

### Criteria 7

- The constitution ensures that every citizen has the right to appropriate housing.

### Criteria 8

- Does not apply.

## **1.2. Disaster Risk Reduction and Management Act, 2074**

The Disaster Risk Reduction and Management (DRRM) Act, 2074 (BS) provides for the formulation of different bodies at the federal, province, district and local levels to look after DRRM activities.

At the federal level, the DRRM Act establishes the intention to form:

- A National Council for DRRM to effectively discharge disaster-related functions
- An Executive Committee to implement policies and plans laid down by the Council
- A National DRRM Authority under the Ministry to effectively carry out and manage disaster management activities.

At the provincial level, the DRRM Act establishes the intention to form:

- A Provincial Disaster Management Council chaired by the Chief Minister for the purpose of laying down policy and plans on disaster management, providing policy guidance, and directing to the Provincial Disaster Management Committee in each province as and when necessary
- A Disaster Management Executive Committee chaired by the Interior Minister responsible for DRRM in the province.

At the district level, the DRRM Act establishes the intention to form:

- A District Disaster Management Committee (DDMC) to implement disaster management activities at the district level.

At the local level, the DRRM Act establishes the intention to form:

- A Local Disaster Management Committee to implement disaster management activities at the local level.

## **Green and Environment-Related Findings**

### **Criteria 1**

Role of federal government:

- Mobilize local communities and volunteers for the construction of temporary rehabilitation shelters for the citizens of disaster-affected areas.

Role of provincial government:

- Lay down provincial-level medium-term and short-term policies, plans and programs
- Provide temporary shelters and other temporary structures for disaster-affected people during emergency.

Role of local government:

- Formulate and implement local policies and plans
- Manage shelters for disaster-affected people who are in disaster-threatening areas.

### **Criteria 2**

- Does not apply.

### **Criteria 3**

- Does not apply.

### **Criteria 4**

- One of the roles of the Provincial Disaster Management Committee (PDMC) and DDMC is to manage essential supplies such as drinking water, food, clothing and medical care in disaster-affected areas.

### **Criteria 5**

- One of the duties of the Public Enterprise and Business Establishment is to apply measures to reduce the negative effects on the environment and human lives through the proper management of waste and pollution.

#### **Criteria 6**

- Does not apply.

#### **Criteria 7**

- Does not apply.

#### **Criteria 8**

- Does not apply.

The act places a heavy emphasis on disaster management and response but seems to be deficient in terms of eco-friendly reconstruction and rehabilitation. However, the act has provided the provincial and local-level authorities with the ability to develop DRR-related acts and regulations. As a result of this provision, documents connected to green reconstruction and recovery can be produced.

### **1.3. Disaster Risk Reduction National Strategic Plan of Action (2018–2030)**

The strategic action plan for DRR is a national document of GoN. This document outlines GoN's commitment to DRRM to support accomplishing Sustainable Development Goals by building disaster-resilient communities. The strategic plan was developed in line with the Sendai Framework and lists four prioritized pillars within 18 sectoral tasks, along with 271 specific activities showing the 32 indicators. The plan clearly mentions one dedicated sectoral provision of recovery, rehabilitation and reconstruction, along with the 18 prescribed activities that must be done by concerned ministries and agencies.

#### **Green and Environment-Related Findings**

##### **Criteria 1**

Priority Area 2, “Strengthening Disaster Risk Governance at Federal, Provincial and Local Levels,” states the following strategic activities:

- Promote local-resource-based Green Infrastructure at the provincial and local levels
- Pursue the principle of green development and “Build Back Better” in reconstruction.

##### **Criteria 2**

- The strategic plan encourages developing a culture of supplying standard construction materials and rendering disaster-resistant construction to realize the possibility of “Build Back Better” in reconstruction and rehabilitation after disasters.
- The strategic activity promotes the research and development of construction technology, materials, infrastructure design and management for “Build Back Better” in DRR and reconstruction.

### **Criteria 3**

- Does not apply.

### **Criteria 4**

- The strategic activities encourage the incorporation of DRR into various programs and action plans relating to natural resource management.
- The strategic activities include the assessment of soil erosion and mapping of significant watersheds.

### **Criteria 5**

- The priority activities under Priority Area 4 are search, rescue, relief, emergency health services, temporary shelter, safe drinking water and sanitation, and food arrangement. This section of the strategic plan is focused on improving disaster preparedness for effective response and “building back better” in recovery, rehabilitation and reconstruction.

### **Criteria 6**

- The strategic plan promotes alternative energy at the federal, provincial and local levels to reduce environmental degradation and disaster risk in strategic activities.

### **Criteria 7**

- A strategic initiative considers establishing adequate shelters for humans and livestock at the local level.
- The strategic activities mention pursuing construction methods that are resistant to earthquake, flood, landslide and other natural catastrophes in reconstruction.

### **Criteria 8**

- Does not apply.

In priority areas, the action plan explicitly states that reconstruction should “Build Back Better” and adhere to the green development principle. However, producing documentation that supports the premise is not mentioned in the action plan. The action plan makes no mention of such a document.

## **1.4. Right of Housing Act**

In accordance with Nepal’s constitution, the Right of Housing Act was created to offer homeless people suitable and secure housing options. According to the act, the GoN may offer housing assistance to citizens who meet these criteria: (1) Do not own a home or land in the State of Nepal or are unable to secure housing through their own or their family’s income generation, resource, or effort; and (2) Have been displaced permanently due to a natural disaster and meet the criteria in clause (1).

## **Green and Environment-Related Findings**

### **Criteria 1**

- To implement the suitable housing program, the act stipulates that the federal government, the provincial government and the local government should work together.

#### **Criteria 7**

- The GoN, provincial government and local-level authorities must abide by standards prescribed by the federal law regarding settlement development, use of land, building codes and building construction.

Only Criteria 1 and 7 are covered under the act. Other criteria-related provisions are not mentioned in the act.

### **1.5. The Environment Protection Act, 2019 (2076)**

The EPA was formulated to protect the fundamental right of each citizen to live in a clean and healthy environment, to provide the victim with compensation by the polluter for any damage resulting from environmental pollution or degradation, to maintain a proper balance between environment and development, to mitigate adverse environmental impacts on the environment and biodiversity, and to face the challenges posed by climate change.

#### **Green and Environment-Related Findings**

##### **Criteria 1**

- The GoN or provincial government may, on its own, map out any area or place and make an environmental study of that area to determine the appropriateness of construction or other projects in that area.
- To avoid adverse effects and risks of climate change, the ministry, provincial ministry and local levels may make and implement an adaptation plan at the national, provincial and local levels, respectively.

##### **Criteria 2**

- Does not apply.

##### **Criteria 3**

- The GoN may identify areas emitting greenhouse gases and determine their national reference level.
- The Ministry of Forest and Environment of the GoN may measure greenhouse gas emissions.

##### **Criteria 4**

- The GoN, in consultation with the provincial government and concerned local level, and by a notification in the Nepal Gazette, maintains as an environment protection area any place containing a natural heritage, any aesthetic place that is considered extremely significant from the point of view of environmental protection, or any place of historical or cultural importance.
- In making any road, building, river management or other physical infrastructures, the GoN may, in coordination with the concerned body and by a notification in the Nepal Gazette,

specify any specific area as an open or green area with a view to protecting the environment of that area.

- In cases where it appears that adverse effects on public health or the environment of any specific area or place have been caused or are likely to be caused as a result of excessive environmental pollution, soil erosion, excessive exploitation of natural heritages or occurrence of a natural calamity, the GoN may, in consultation with the concerned local-level actors, designate that area or place as an environmentally sensitive area and issue any appropriate order for the balance, management or restoration of the environment.

#### **Criteria 5**

- The EPA has provisioned to formulate a national environmental protection and climate change management council, chaired by the Prime Minister, to act on environmental protection and climate change at the national level. The council can set policy for the development of a national system for the control of pollution, management of wastes and protection of national heritage.
- The GoN may specify any place in which any injurious or hazardous substances or wastes are stored or disposed of, or where there is excessive pollution for other reasons, as a polluted area and prevent public movement there.

#### **Criteria 6**

- Does not apply.

#### **Criteria 7**

- Does not apply.

#### **Criteria 8**

- Does not apply.

The EPA has provisions for many environmental issues; however, its implementation and management in the field are inadequate, as the document is not properly detailed. After the 2015 earthquake disaster, the act's management of environmental issues was notably deficient.

### **1.6. Local Government Operation Act, 2074**

The Local Government Operation Act has been formulated to implement the provisions related to the powers of the local level as per the Constitution of Nepal; to promote cooperativeness, co-existence and coordination between the federal, provincial and local levels; and to deliver efficient and quality services by ensuring people's participation, accountability and transparency.

#### **Green and Environment-Related Findings**

##### **Criteria 1**

- The act discusses the importance of rural and urban municipalities in protecting the environment and biological variety at the local level in terms of their functions, obligations and rights. The municipality has the right to develop local environmental protection and

biodiversity-related policies, regulations, standards and plans, as well as to oversee their implementation, monitoring and regulation.

## **Criteria 2**

The act mentions the following roles and responsibilities of the rural and urban municipalities:

- Implementation and regulation of local policies, laws, standards and plans related to watershed, wildlife, mines and minerals preservation
- Information and data collection related to mines and minerals
- Registration, permit, renewal, dismissal and management of the survey, extraction and use of mined goods like boulders, pebbles, sand, salt, soil, slate and graphite.

## **Criteria 3**

- Adoption of low-carbon and environmentally friendly development within the tasks and responsibilities of the municipality.

## **Criteria 4**

- The municipality can form local policy, legislation, standards and plans related to forests, wildlife, birds, water use, environment, ecology and biodiversity, implementation, and regulation.

The local governments have a role in:

- Managing groups of forest users and preserving, promoting, using and regulating communal, rural, urban and lease forests
- Afforestation, maintenance, use and management in public barren land at the local level and greenery promotion at the local level
- Determining and managing environment protection areas at the local level; local dams, rivers and landslide control; and the management and regulation of rivers.

## **Criteria 5**

The local government has a role in:

- Collection, recycling, processing and disposal of health-related wastes, and determination and regulation of these services
- Management of waste produced by the sanitation and health sectors through coordination, collaboration and partnerships with business and non-governmental sectors
- Sanitation and waste management at the local level.

## **Criteria 6**

The local government has a role in:

- The formulation, implementation and regulation of local level policies, laws, standards and plans related to alternative energy
- Technology development and handover, and capacity development and promotion related to alternative energy at the local level.

### **Criteria 7**

The municipality has a role in:

- Approving construction and regulations as per the national building code and standards, and prohibiting construction of buildings without design approval from the rural municipality or municipality
- Designating building construction standards by specifying the height, set-back, roof, façade, construction materials, color or artisan of any historical, touristic or archaeologically important settlement or building to be constructed in the area, without contradicting with the prevalent law and the standards set by the GoN.

### **Criteria 8**

- Does not apply.

This act gives local governments the authority to formulate policies and manage resources following a disaster. The local level can create its own DRRM act and include DRR elements, including green sections.

## **1.7. Land Use Policy, 2015**

Land Use Policy (LUP) is a policy document relating to limits and protection of lands and land resources (LLRs), including optimum use and effective management. This policy covers legal and institutional management for LLRs and protection, use and management thereon. This policy shall bring about benefits of using LLRs by distributing lands in a just manner.

### **Green and Environment-Related Findings**

#### **Criteria 1**

- The development of land use plans can assure a sanitary, lovely, well-facilitated and safe human settlement, as well as a sustainable and planned urbanization of the country.

#### **Criteria 2**

- This policy has adopted the identification of Land Use Zones, including the Excavation Zone for Building Materials (stone, sand and concrete).

#### **Criteria 3**

- Does not apply.

#### **Criteria 4**

- Different Land Use Zones have been used to categorize the land.
- The policy has adopted the identification of sensitive zones to keep a balance between development and the environment for the mitigation of natural and human-created hazards.

#### **Criteria 5**

- Does not apply.

### **Criteria 6**

- Does not apply.

### **Criteria 7**

- Geologically, geographically and ecologically safe human settlements shall be encouraged by identifying secure and appropriate fewer sloping places in every provincial or regional and local levels within a Specific Land Use Zone (SLUZ).
- Controlling the trend of unmanaged settlement, the policy encourages a hygienic, beautiful, well-facilitated and safe human settlement through planned infrastructure and a planned and sustainable urbanization of the country, in line with the prescribed Building Guides and Codes and Standards.

### **Criteria 8**

- Does not apply.

The policy very clearly outlines the usage and management of property under normal circumstances. The strategy does not address the usage of land following a disaster, since it puts a huge amount of pressure on natural resources.

## **1.8. Solid Waste Management Act, 2068 (2011)**

The Solid Waste Management Act has been formulated to manage solid waste in a systematic and effective way by reducing at its source, reusing and processing or discharging. The act helps maintain a clean and healthy environment and reduce adverse effects to public and environmental health by amending and consolidating laws relating to the management of solid waste, like most essential services laws.

### **Green and Environment-Related Findings**

#### **Criteria 1**

- The local government is responsible for the management, segregation, discharge, collection and transportation of solid waste, as well as reducing, reusing and recycling solid waste.

#### **Criteria 5**

- Local bodies may take necessary steps to encourage the reduction, reuse and recycling of solid waste by issuing necessary directives for its effective implementation.
- Local bodies may coordinate with concerned industries in efforts to encourage the reduction of solid waste by reusing industrial product packaging materials.

Only Criteria 1 and 5 are covered under the act. Other criteria-related provisions are not mentioned in the act. The act defines how solid waste should be managed under typical conditions, but makes no mention of waste management following a disaster. In recent disasters, managing solid waste has been a major challenge.

## **1.9. Province Disaster Management Act, 2075, Bagmati Province**

By effectively coordinating and managing all activities on DRRM, the Province Disaster Management Act has been created to protect human lives and properties owned by the public, private and individual citizens; to preserve natural and cultural heritage; and to keep physical infrastructures safe from natural and non-natural disasters in the province.

### **Green and Environment-Related Findings**

The lead ministry for disaster preparedness and management initiatives at the provincial level is the Ministry of Internal Affairs and Law. This statute has given the Provincial Disaster Management Executive Committee the authority to regulate the provision of non-food items (NFI) and shelter following a disaster. The act is not specific regarding GTR checklists.

## **1.10. Environment Protection Act, 2077, Bagmati province**

This act has been formulated to protect the fundamental right of each citizen to live in a clean and healthy environment, to provide people who have suffered any damage resulting from environmental pollution or degradation with compensation from the polluter, to maintain a proper balance between environment and development, to mitigate adverse effects on the environment and biodiversity, and to face the challenges posed by climate change at a provincial level.

### **Green and Environment-Related Findings**

#### **Criteria 2**

- For the extraction of stone, sand, aggregate and soil, the act stipulates that a brief environmental study report must be prepared.
- The provincial government may compensate businesses for recycling plastic garbage.

#### **Criteria 4**

- In cases where it appears that adverse effects on public health or the environment of any specific area or place have been caused or are likely to be caused as a result of excessive environmental pollution, soil erosion, excessive exploitation of natural heritages or the occurrence of a natural calamity in that area or place, the GoN may, in consultation with the concerned local level, designate that place as an environmentally sensitive area and issue any appropriate order for the balance, management or restoration of the environment.

#### **Criteria 5**

- The act states that the local government is fully responsible for safe waste management and sanitation.

Only Criteria 2, 4 and 5 are covered under this act. Other criteria-related provisions are not mentioned.

There are provisions for many environmental issues. After the 2015 earthquake, the act's management of environmental issues was notably deficient. The act does not address adequate management of the environment following a disaster.

## 2. Summary of the Review Based on Eight Criteria

Table 2: A summary of the review for each of the eight criteria.

No.	Criteria Description	Summary
Criteria 1	Roles and responsibilities of different level government authorities and other concerned stakeholders related to environmental purposes and green shelter response	<p>The constitution establishes the division of roles.</p> <p>The EPA reinforces the decentralized roles of different levels of government to ensure application and avoid adverse effects.</p> <p>The Local Government Operation Act identifies the roles of municipalities in taking care of the environment and bio-protection.</p> <p>The LUP provides guidance on decentralized roles and responsibilities.</p> <p>The Solid Waste Management Act assigns decentralized responsibility to local governments.</p>
Criteria 2	Provisions for the sourcing of used or consumed materials (Reduce)	<p>The constitution has provisions to formulate policy; however, it has limitations to practical application due to its own general nature.</p> <p>The Disaster Risk Reduction National Strategic Plan has certain limitations in the practical application for better sourcing.</p> <p>The EPA does not address safer, greener sourcing in the provisions.</p> <p>The Local Government Operation Act assigns responsibilities for local governments to manage watershed, wildlife, mines and minerals. However, it seems limited in a general application sense.</p> <p>The LUP facilitates the identification of zones related to extraction but does not cover the remains or debris.</p>
Criteria 3	Stipulations on carbon emissions	<p>The EPA has provisions for the national government to take actions, but it is very limited in practical application and decentralization of responsibilities.</p> <p>The Local Government Operation Act assigns responsibilities to the municipality; however, there are limitations on the regular training and updates required.</p> <p>The Solid Waste Management Act does not link waste production to carbon emissions, but the treatment of waste very often uses significant energy.</p>
Criteria 4	Provisions to minimize effects on natural resources (Reuse)	<p>The Constitution has provisions to formulate policy; however, it has limitations to practical application due to its own general nature.</p> <p>The Disaster Risk Reduction National Strategic Plan seems to focus on soil erosion and watershed evaluation.</p> <p>The EPA has many provisions that relate to planning and reducing negative effects on the environment.</p> <p>The Local Government Operation Act suggests a municipal role to determine protected areas and form preservation groups.</p> <p>The Solid Waste Management Act has provisions that connect construction waste to safer disposal and establish the duties and implications for the private sector and individuals.</p>
Criteria 5	Specifications for safe	<p>The EPA has some minor provisions for safe waste management,</p>

No.	Criteria Description	Summary
	waste management and sanitation (Recycle)	<p>but these relate to the control of pollution or management of hazardous waste rather than recycling.</p> <p>The Local Government Operation Act indicates a municipal role in sanitation and the collection of waste, but indications of the link between these processes and recycling are limited.</p> <p>The LUP does not facilitate the identification of areas for reducing, reusing and recycling. It could provide considerations for these and strategies on how decentralized governments could approach this.</p> <p>The Solid Waste Management Act has limitations, as it assigns responsibilities to local governments but does not have provisions for higher-level recycling support.</p>
Criteria 6	Provisions for energy use and consumption	<p>The Constitution delegates decision-making to local governments.</p> <p>The Disaster Risk Reduction National Strategic Plan mentions alternative energy and delegates responsibility to provincial and local levels.</p> <p>The Local Government Operation Act suggests a role in the formulation of policies and plans standards related to alternative energy, but has limitations on how these would be updated regularly for the municipalities so that the staff is properly trained.</p>
Criteria 7	Provisions for safe and environmentally friendly shelter construction	<p>The Disaster Risk Reduction National Strategic Plan seeks to influence safer construction methods; however, it has limitations in its practical application.</p> <p>The Local Government Operation Act indicates a clear municipal role on construction standards and planning compliance. It stresses the need for better local planning and the need to be greener.</p> <p>The LUP enables provincial and local authorities to ensure safer environments, aligning with the building guidance and code.</p>
Criteria 8	Provisions for other facilities	Only the Right of Housing Act has provisions for additional facilities to complement housing.

Table 3. Analysis table.

No.	Nepal Constitution (2015)	Disaster Risk Reduction and Management Act, 2074	Disaster Risk Reduction National Strategic Plan of Action 2018 – 2030	Right of Housing Act	The Environment Protection Act, 2076 (2019)	Local Government Operation Act, 2074	Land Use Policy (2015)	Solid Waste Management Act, 2068 (2011)	Province Disaster Management Act, 2075, Bagmati province	Environment Protection Act, 2077, Bagmati province
Criteria 1	Green	Green	Yellow	Yellow	Green	Green	Green	Green	Yellow	Yellow
Criteria 2	Yellow	Grey	Yellow	Grey	Red	Yellow	Yellow	Grey	Grey	Yellow
Criteria 3	Green	Grey	Grey	Grey	Yellow	Yellow	Red	Red	Grey	Red
Criteria 4	Yellow	Green	Yellow	Grey	Green	Green	Green	Red	Yellow	Green
Criteria 5	Yellow	Green	Red	Grey	Red	Yellow	Red	Yellow	Grey	Yellow
Criteria 6	Yellow	Grey	Yellow	Grey	Grey	Yellow	Grey	Grey	Grey	Grey
Criteria 7	Yellow	Grey	Yellow	Grey	Grey	Green	Green	Yellow	Yellow	Grey
Criteria 8	Grey	Grey	Grey	Green	Grey	Grey	Grey	Grey	Grey	Grey

Table 4. Color coding for content depth and applicability.

Color Code	Content Depth and Applicability
●	Very detailed description of the topic, covered from the perspective of multiple stakeholders (at least 3 of the following: households, community, private sector, local government and national government). Includes guidance, references and examples. Links intentionally with other guidance and documents. Very applicable, with guidance for the use of multiple stakeholders.
●	Basic description of the topic. Allows an initial understanding. Covers the topic from the perspective of 1–2 stakeholders. Limited linkage to other guidance and documents. Basic applicability for the use of 1–2 stakeholders.
●	Very limited description. Requires other documentation to gain knowledge. Very limited practical application.
●	Does not apply.

The analysis table has been further developed based on the review to explain the coverage of criteria along the analyzed 10 policies using a traffic light system. The yellow and red colors have higher values and indicate the topics or criteria that are less covered and require more work. The green color has a lesser value and indicates that the topic has been covered moderately and therefore requires less work. Likewise, the grey color identifies a topic that has been underrepresented and needs more guidance.

The analysis table shows that the document criteria that have significant limitations include specifications for safe waste management and sanitation, stipulations on carbon emissions, and provisions for sourcing used or consumed materials. The topics that require more guidance are provisions for other facilities complementary to shelter and provisions for energy use and consumption.

Further numerical values have been assigned to the colors: Green: 0, Yellow: 2, Red: 4 and Grey: N/A for relevant calculations, assigning the highest numerical values with low coverage in the policies based on the criteria and vice versa. This analysis table has been attached in the Annex.

## **3. Green Recovery and Reconstruction After the 2015 Gorkha Earthquake**

### **3.1. Post-Disaster Needs Assessment**

After the Nepal earthquake in 2015, a large team came together, led by the Ministry of Forests and Soil Conservation (MoFSC), to produce the Environment and Forestry chapter in the PDNA. Major efforts were undertaken to rapidly obtain as much data as possible. This included data on damage and loss due to forests destroyed in landslides, impacts on ecosystem services, damage to GoN forestry and protected area installations and operations, impacts on community forest management, risk of encroachment and illegal extraction, risks from solid and hazardous wastes, and impacts on alternative energy and brick factories.

### **3.2. Rapid Environmental Assessment**

Since the PDNA was an extremely rapid process that mainly focused on quantifying loss and damage and estimating the cost of recovery in the run-up to a donor conference a couple of months after the earthquake, the Ministry of Science, Technology and Environment (MoSTE) led a separate assessment based on the REA methodology, in partnership with the World Wildlife Fund (WWF) and Hariyo Ban Program. Through a multidisciplinary team, the environmental assessment reviewed direct damage to the environment, looked at how people were using the environment differently because of the earthquake, and assessed the potential impacts of recovery and reconstruction. This REA and its Action Plan (MoSTE 2015) provided a strong base for subsequent green recovery and reconstruction efforts.

### **3.3. The Post-Disaster Recovery Framework**

Based on the PDNA, the PDRF was prepared almost a year after the earthquake. It aimed to provide a structured and prioritized framework for implementing recovery and reconstruction by sector, for government, national and international partners, affected populations and other recovery stakeholders. MoFSC led the preparation of the environment and forestry chapter, and major efforts were made to work with other sectors to mainstream environmental aspects. Strategic Recovery Objective 3 of the PDRF aims to restore and improve access to services and improve environmental resilience. This includes “promoting environmentally sensitive measures across all sectors involved in recovery and reconstruction to build back better, safer and greener. It will also focus on restoring ecosystem functionality, improving the resilience and sustainability of ecosystems and the sound management of environmental hazards and risks” (NRA 2016).

### **3.4. Adopted Principles for Green and Resilient Recovery and Reconstruction**

The PDNA Environment and Forestry team and the REA team jointly developed the following principles, which were applied across all sectors and clusters involved in the Nepal 2015 earthquake recovery and reconstruction.

- Conduct land use planning, including zoning, before finalizing the locations of resettlement areas. This planning will minimize risks from landslides and floods and ensure adequate

land and natural resources to meet community needs while minimizing environmental impacts.

- Ensure that building design and construction is environmentally sustainable, appropriate to the region, and will withstand future disasters.
- Ensure that fuel wood collection complies with existing forest management plans and promote alternative energy and energy efficient technologies to reduce pressure on forests.
- Recycle and reuse debris as much as possible and ensure that solid waste disposal during the reconstruction phase is managed using environmentally sound practices, including the introduction of new systems.
- Design water and sanitation interventions to reflect post-earthquake changes in water resources and future climate change scenarios and promote integrated water resource management (IWRM).
- Ensure that reconstruction of roads and hydropower take the opportunity to build back safer and greener and take account of increasing climate variability.
- Prioritize support for rapidly restoring livelihoods to take pressure off forests and biodiversity after the earthquake; in the longer term, ensure that livelihood restoration projects reflect principles of resilient development.
- Consider the specific rights, needs and vulnerabilities of women and marginalized people in relation to natural resources during recovery, promote equitable access to recovery support, and strengthen community institutions and participation.
- Enforce environmental impact assessment and initial environmental examination regulations during reconstruction to avoid future disasters.
- Build capacity for green recovery and reconstruction and ensure consultation and coordination with relevant stakeholders in recovery and reconstruction.

### **3.5. Current Housing Programs of Nepal Government**

#### **Safe Citizens Housing Program**

This program is executed in line with the Safe Citizen Housing Implementation Procedure to ensure arrangement of appropriate, safe and environment-friendly housing for people living below the poverty line and whose houses have thatched roofs. This requires the government to identify and select beneficiaries based on the recommendation letter of the concerned local-level authority and DDMC. Only families living in a hut or house with a thatched roof, which is vulnerable to fire, rain and storms, will benefit from this scheme. As per the Ministry of Urban Development (MoUD), the grant is used to replace the thatched roof or other vulnerable roofs with galvanized zinc sheets. Priority shall be attached to families with senior citizens, orphans, single women and people with disabilities.

#### **People Housing Program**

The “People Housing Program” (PHP), also known as *Janta Awas Karyakram*, was launched in 2009 by the Department of Urban Development and Building Construction (DUDBC) Ministry of Physical Planning and Works of Nepal Government. Article 33 of the Interim Constitution of Nepal, 2063 (2007) guarantees the establishment of the right to housing to all citizens. The PHP states that the state is responsible for guaranteeing the provision of social and economic security,

including land for those groups who are socially and economically vulnerable. To fulfill this objective, the GoN implemented PHP starting in 2009 in three districts to construct low-cost modern housing for marginalized families. Government actors build cost-free modern housing for marginalized families in the country under this scheme.

### **Post-Disaster Housing Reconstruction**

The National Disaster Risk Reduction and Management Authority (NDRRMA), under its response plan for disasters occurring in the country, such as earthquakes, floods and landslide, has been working for disaster-affected private housing reconstruction in all provinces. Under this plan, each province has their own preparedness and response plan and a contingency plan incorporating the promotion of the “Build Back Better” approach in recovery, rehabilitation and reconstruction.

### **3.6. Gaps**

- The government prioritized “Build Back Better” and the green development approach throughout reconstruction, as stated in the Disaster Risk Reduction National Strategic Plan of Action (2018–2030). No provisions are currently in place for creating legislation connected to housing development and planning that clearly reference employing green building techniques.
- The housing acts and policies simply mention the support of shelters; they make no mention of environmentally friendly shelter construction.
- There are no guidelines governing the reuse of salvaged materials and the production of alternative construction materials.
- Considering the different phases of the aftermath of the disaster, none of the documents has clearly outlined any guidelines and checklists for environmentally friendly recovery and reconstruction.
- The three housing programs of the government have not highlighted any environmentally friendly measures for reconstruction incorporating eight of the criteria.

## **4. Recommendations and Ways Forward**

- To address the difficulties in a comprehensive manner, policy relating to green recovery and shelter response must be developed.
- After the 2015 Nepal earthquake, the PDNA, REA and PDRF carried out by the GoN identified promoting the use of safe and green building materials and reuse of disaster debris as a key principle for environmentally sound reconstruction. Since there are now no practical guidelines for the sourcing of sustainable building materials, authorities can develop them based on that principle.
- The Local Government Operation Act has provided provincial and local-level authorities with the ability to develop DRRM-related acts and regulations. As a result of this provision, local and provincial authorities can produce documents connected to green reconstruction and recovery, as there are currently no such guidelines and procedures.
- Local and provincial authorities can produce an environmental checklist and a tool such as a sustainability scorecard to prioritize different issues for projects focusing on shelter response for better and more effective implementation of the shelter program.

- Further reconstruction and housing programs of the government can incorporate the environmental checklist developed in the response and contingency plans.

## Annex I: Literary Review—Relevance Calculator

No.	Description	Nepal Constitution (2015)	Disaster Risk Reduction and Management Act, 2074	Disaster risk reduction national strategic Plan of action 2018 – 2030	Right of Housing Act	The Environment Protection Act, 2076 (2019)	Local Government Operation Act, 2074	Land use policy (2015)	Solid Waste Management Act, 2068 (2011)	Province Disaster Management Act, 2075, Bagmati province	Environment Protection Act, 2077, Bagmati province	Relevance Calc	NA Calc	
Criteria 1	Roles and responsibilities of different level government authorities and other concerned stakeholders related to environmental purposes and green shelter response	0	0	2	2	0	0	0	0	2	2	8	0	
Criteria 2	Provisions for the sourcing of used or consumed materials (Reduce)	2	NA	2	NA	4	2	2	NA	NA	2	14	4	<<<
Criteria 3	Stipulations on carbon emissions	0	NA	NA	NA	2	2	4	4	NA	4	16	4	<<<
Criteria 4	Provisions to minimize effects on natural resources (Reuse)	2	0	2	NA	0	0	0	4	2	0	10	1	
Criteria 5	Specifications for safe waste management and sanitation (Recycle)	2	0	4	NA	4	2	4	2	NA	2	20	2	<<<

Criteria 6	Provisions for energy use and consumption	2	NA	2	NA	NA	2	NA	NA	NA	NA	6	7	<<<
Criteria 7	Provisions for safe and environmentally friendly shelter construction	2	NA	2	NA	NA	0	0	2	2	NA	8	4	
Criteria 8	Provisions for other facilities	NA	NA	NA	0	NA	NA	NA	NA	NA	NA	0	9	<<<

## Annex II: List of Policies and Acts Reviewed

Policy/Acts	Document Link
Nepal Constitution (2015)	<a href="#">Nepal's Constitution of 2015</a>
Disaster Risk Reduction and Management Act, 2074	<a href="#">Disaster Risk Reduction and Management Act, 2074 And Disaster Risk Reduction and Management Rules, 2076 (2019)</a>
Disaster Risk Reduction National Strategic Plan of Action (2018–2030)	<a href="#">Disaster Risk Reduction National Strategic Plan of Action (2018–2030)</a>
Right of Housing Act	<a href="#">The Right to Housing Act, 2075 (2018)</a>
The Environment Protection Act, 2076 (2019)	<a href="#">The Environment Protection Act, 2019 (2076)</a>
Local Government Operation Act, 2074	<a href="#">स्थानीय सरकार सञ्चालन ऐन, २०७४ k</a>
Land use policy (2015)	<a href="#">Land Use Policy, 2015</a>
Solid Waste Management Act, 2068 (2011)	<a href="#">Solid Waste Management Act, 2068 (2011)</a>
Province Disaster Management Act, 2075, Bagmati province	<a href="#">Province Disaster Management Act, 2075, Bagmati Province</a>
Environment Protection Act, 2077, Bagmati province	<a href="#">Environment Protection Act, 2077, Bagmati Province</a>
Post-Disaster Needs Assessment	<a href="#">Post-Disaster Needs Assessment</a> : VOL A <a href="#">Post-Disaster Needs Assessment</a> : VOL B
Rapid Environmental Assessment	<a href="#">Nepal Earthquake 2015 Rapid Environmental Assessment</a>
Post-Disaster Recovery Framework	<a href="#">Post-Disaster Recovery Framework</a>