

RESTORATION TYPE CLASSIFICATION

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The table below builds on the Forest Landscapes Restoration (FLR) typology¹ to generalize and expand it to address the full set of ecosystem types and restoration situations that may be encountered in a LandScale assessment. Instructions for applying the table to LandScale reporting follow the table.

Restoration approach & applicable ecosystem types	Objectives & Principles	Description / examples
<p>1. Natural and/or assisted regeneration²</p> <p>Any degraded ecosystem type</p>	<p>To allow or assist the natural regeneration of a degraded natural ecosystem including composition, structure, and function, and their associated conservation values; or to support adaptation to the trending ecosystem type under changing environmental conditions including climate change.</p>	<p>The regeneration of degraded natural ecosystems with or without human assistance through, e.g.:</p> <ul style="list-style-type: none"> • Threat abatement (e.g., removal of invasive species, control of human and/or grazing pressure, reduction of enhanced fire risk) • Restoring adapted ecological disturbance regimes (natural flooding or fire regimes) • Installation of resources to promote colonization • Natural hydrologic or topographic restoration • Planting or reintroduction of native species may be required where the site has been heavily degraded or converted • Revegetating the area with species that, while not endemic to the landscape, are expected to immigrate there under climate change and are currently adapted to conditions there

¹ Information on the FLR typology and links to useful tools can be found here and in associated links: <https://www.iucn.org/theme/forests/our-work/forest-landscape-restoration>.

² Society for Ecological Restoration defines natural regeneration as: germination, birth, or other recruitment of biota including plants, animals, and microbiota (that does not involve human intervention) whether arising from colonization, dispersal, or in situ processes. Assisted regeneration as: an approach to restoration that focuses on actively triggering any natural regeneration capacity of biota remaining on site or nearby as distinct from reintroducing the biota to the site or leaving a site to regenerate. While this approach is typically applied to sites of low to intermediate degradation, even some very highly degraded sites have proven capable of assisted regeneration given appropriate treatment and sufficient time frames. Interventions include removal of pest organisms, reapplying ecological disturbance regimes and installation of resources to prompt colonization.

<p>2. Use of natural and non-natural measures</p> <p>Any degraded ecosystem type</p>	<p>Intended to restore or enhance natural ecosystem composition, structure and function where degradation severity or nature of stress requires non-natural actions, features, or non-native species optionally in combination with natural and native actions, features, and species.</p> <p>Interventions should not cause additional ecosystem harm (i.e. no further clearance or degradation of natural ecosystems; no further loss of biodiversity etc.).</p> <p>Interventions should not adversely affect the ability of ecosystems to evolve over time and under a changing climate.</p>	<p>Use of natural and non-natural interventions and native or non-native species to restore regulating and supporting ecosystem services (e.g. erosion control, watershed protection, coastal protection, climate adaptation, etc.):</p> <ul style="list-style-type: none"> • Planting (natives and/or compatible, non-invasive exotics) to arrest erosion and or restore natural structure and composition • Erosion control using natural and non-natural features (e.g. shoreline hardening to arrest erosion to protect other ecosystem functions) • Hydrologic process restoration (natural and non-natural features) e.g. reshaping hydrology and topography or installing check dams to restore hydrologic function • Ecosystem/nature-based adaptation and disaster-risk reduction (e.g., “living shoreline” installations, stormwater storage basins to alleviate effects of increasing intensity of rainfall events, restoration of riparian forest to mitigate flooding)
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<p>3. Restoration of degraded agroecosystems through sustainable management and production practices</p> <p>Existing agricultural land (cropland, pasture, plantation and agroforestry³) that has been degraded</p>	<p>Applies to existing degraded agricultural lands to improve production <i>and</i> ecosystem services capacity</p> <ul style="list-style-type: none"> • Uses native & non-invasive exotic species, non-natural features and processes to control erosion and hydrologic processes while improving production • Does not cause additional ecosystem harm 	<p>Use of natural and non-natural interventions and non-native species either alone or in combination with natural features and native species to restore regulating and supporting ecosystem services (e.g. erosion control, watershed protection, coastal protection, climate adaptation, etc.):</p> <ul style="list-style-type: none"> • Agroforestry planting in annual, perennial crop-systems and pasture (establishment and management of trees on active agricultural land through replanting or regeneration to improve crop productivity, provide dry season fodder, increase soil fertility, enhance water retention etc.) • Improved fallow (establishment and management of trees on fallow agricultural land to improve productivity with the knowledge and intention that this land will eventually revert to active agriculture) • Non-natural hydrologic & topographic features (e.g., terraces) • Managing grazing to improve the condition of degraded rangeland. Measures may include e.g., management of stocking rates, livestock types and water allocation, rotation of pastures, pasture improvement through replanting, intercropping and removal of woody plants • Resistance-based adaptation (e.g. reduce/prevent expansion of native shrubs into grazing lands because of climate change)
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³ Defined as the integration of trees, crops, and animals/livestock in time and space.

<p>4. Restoration of degraded or converted forest lands through sustainable forest management and production practices</p> <p>Former forested lands (including natural and managed forests) that have been converted or degraded</p>	<p>Improves sustainable forest production <i>and</i> ecosystem services capacity</p> <ul style="list-style-type: none"> • Should not involve a reduction in quality or extent of natural forest ecosystems • Should not result in reduction in the composition, structure, and function of the extant ecosystem and its associated conservation values 	<p>Planting of trees on formerly forested lands or the enhancement of existing forests and woodlands of diminished quality and stocking through:</p> <ul style="list-style-type: none"> • Planted forests and woodlots on formerly forested or heavily degraded forestry land (native species and/or exotics and for various purposes e.g. fuel wood timber, building, poles, fruit production etc.) • Silviculture (enhancing existing forests or woodlands e.g. through enrichment planting, liberation thinning, reducing fire and grazing) • Agroforestry (to maintain or promote the management of trees in converted forest land)
<p>5. Rehabilitation of lands formerly under other (not agriculture or forestry) intensive land uses</p> <p>Land formerly subject to industrial land use such as infrastructure or extraction (e.g. former mining sites)</p>	<p>Management actions that aim to reinstate a level of ecosystem functioning on degraded sites where the goal is renewed and ongoing provision of ecosystem services.</p>	<p>May include any of the restoration practices above intended to restore habitat value and ecosystem services; typically requiring greater use of non-natural features and non-native plantings.</p>

Instructions for assessors

The table format above should be used for detailed reporting on restoration actions in the landscape as data availability permits:

1. Column 1: use the existing types to identify all the different type of actions undertaken/in-process in the landscape
2. Column 2: document the objectives for each type of action. The following list of objectives can be used, and additional ones added as needed to indicate all of those identified for the restoration actions in a row. For actions that address other pillars (in particular, human well-being) you may want to also reference

these actions in other pillar report sections to recognize the multiple intended benefits of particular restoration actions.

- Biodiversity conservation
 - Climate adaptation
 - Ecosystem connectivity
 - Ecosystem process, composition, structure, and or function
 - Ecosystem services
 - Erosion & sediment control
 - Hazard reduction
 - Improved sustainability of production
 - Sustainable livelihoods
 - Watershed function for water quantity and quality
 - User-defined objectives
3. Column 3: list the specific restoration and management/maintenance actions taken.