NCS pathways and definitions

NCS pathway	Definition[1]	What it means in practice
Avoided forest conversion	Avoided emissions from preventing human conversion of forest to non-forest land uses such as agricultural, urban, or industrial lands. (Note, temporary changes in forest cover from harvest should be considered in the natural forest management pathway.)	Protecting forests so that they avoid conversion, disturbance, degradation, fragmentation, and deforestation of any kind.
Climate smart forestry	Avoided emissions and/or increased sequestration in working forests.	Some potential management activities include reduced-impact logging practices, deferred harvest (an intentional reduction in forest harvesting intensity, including cessation of logging on some parcels), and enhanced forest regeneration in post-harvest stands.
Forest plantation management	Increased sequestration in forest stands through improved management practices.	One such strategy is to extend the rotation length (time between harvest cycles) in even-aged, intensively managed plantations.
Forest fire management	Avoided emissions in fire-prone forests and savannas through management practices such as prescribed burning to reduce the risk of high-intensity wildfire or shifting timing of burns to reduce GHG emissions. In wetter forests where fires are less frequent, implementing fire control practices along forest edges to avoid human-caused fires.	Implementing ecological forest management practices, such as prescribed burns and mechanical thinning to reduce emissions from wildfires.
Urban canopy cover	Increased sequestration by increasing tree canopy in urban areas, and/or maintaining carbon storage by preventing trees from being lost and replacing those that die.	Urban tree planting programs that green traditionally “grey” areas covered with impervious surfaces.
Reforestation	Increased sequestration from restoration of forest cover, that is, transitioning non-forest land uses to forest land uses in places where forests historically occurred.	Reforestation, rehabilitation, or ecological restoration of any kind of forest and natural woodland, including within riparian and urban areas. Includes activities like natural forest regrowth, reforestation to mixed species plantations, planting for ecological restoration (assisted regeneration).
Avoided coastal wetland impacts	Avoided emissions by preventing degradation and/or loss of saltwater wetlands (including mangroves, salt marshes, and seagrass beds) from drainage, dredging, eutrophication, or other anthropogenic disturbances.	Preventing manmade barriers that can reduce tidal flows that are vital for salt marsh habitats. Protecting seagrass habitats from dredging, overwater structures, etc. that can directly impact sea grass habitats.

NCS pathway	Definition[1]	What it means in practice
Avoided freshwater wetland impacts	Avoided emissions by preventing degradation and/or loss of freshwater wetlands (primarily peatlands) from peat fires, drainage, dredging, eutrophication from fertilizers, or other anthropogenic disturbances.	Preventing peatland conversion for farming through land protection.
Coastal wetland restoration	Avoided emissions by restoring degraded saltwater wetlands (including mangroves, salt marshes, and seagrass beds).	Restoring salt marshes by removing manmade infrastructure that prevents tidal flows, which can lead to rewetting or increased salinity by reestablishing hydrologic connectivity, as well as increased sequestration by restoring vegetation.
Freshwater wetland restoration	Avoided emissions from degraded hydric soils by restoring the hydrologic function of drained or converted freshwater wetlands (primarily peatlands) and increased sequestration by restoring vegetation	Rewetting peatlands by restoring ditches to raise the water table and increases soil moisture, which creates conditions for restoring native peatland vegetation.
Avoided grassland conversion	Avoided emissions by preventing conversion of native or managed grasslands and shrublands to cropland or other uses.	Preserving at-risk grasslands from development.
Grassland restoration	Increased sequestration from restoring cropland to grasslands areas with limitations on agricultural production, grassland, or shrubland in places where those systems historically occurred.	Removing weeds and undesired vegetation to prevent weeds, preparing seedbeds to promote germination, and activities that promote establishment and growth of native species.
Trees in agricultural lands	Increased carbon storage from adding or protecting trees in crop or pasture lands.	This could include silvopasture (trees in grazing lands), tree intercropping or alley cropping (trees in rows with annual crops in between), riparian buffers, windbreaks, and/or farmer-managed natural regeneration (changing management to allow trees to naturally regrow in some areas).
Improved rice management	Avoided emissions through improved practices in flooded rice cultivation.	Includes mid-season drainage, alternating wet and dry cycles, and/or removing residues.
Nutrient management	Avoided emissions by reducing the overapplication of nitrogen fertilizer.	Widescale adoption of the “4R” best practices (right source, right rate, right time, and right place).
Biochar	Increased sequestration in agricultural soils by converting crop residues to charcoal and applying these as soil amendments to agricultural fields. This pathway does not include forest residues to avoid possible perverse incentives	Applying biochar soil amendments to croplands to improve soil health, which can increase crop yields and increase sequestration in soils.

NCS pathway	Definition[1]	What it means in practice
	that may inadvertently reduce carbon stored in forests.	
Cover crops	Increased sequestration in agricultural soils from growing additional crops when the main crop is not growing.	Planting winter wheat for erosion control, which can also increase soil organic carbon stocks.
Reduced tillage	Increased sequestration in agricultural soils by adopting reduced- or no-till practices in croplands.	Implementing reduced- or no-till practices to increase soil quality and preserve soil organic carbon.
Legumes in croplands	Avoided emissions from reduced use of nitrogen fertilizers by switching cultivation from grains to legumes in alternating years.	Integrating legumes in alternating years, which can increase soil organic carbon, soil quality, and supply nitrogen through fixation to reduce inorganic fertilizer use.
Legumes in pasturelands	Increased sequestration in soils due to sowing legumes in planted pastures; restricted to areas where this would result in net sequestration. Also includes, where relevant, avoided emissions from fertilizer application to pastures.	Integrating legumes into pasturelands to increase soil carbon and nitrogen storage.
Grazing optimization	Increased soil sequestration by increasing grazing in locations that are understocked and decreasing grazing in locations that are overstocked.	Adopting grazing practices that support plant production and soil organic carbon formation, such as reducing stocking rates or adjusting stocking rates during the grazing season.
Grazing animal and feed management	Avoided emissions due to reduced enteric fermentation in ruminant animal guts through 1) breeding and animal health techniques, or 2) the use of more energy-dense feeds such as cereal grains and improved pastures	Changing feed/grazing animal diets to reduce methane emissions from ruminants such as cattle.
Manure management	Avoided emissions from improved management of manure, primarily in handling facilities of dairy and hog operations.	Changing handling processes of manure to reduce methane emissions.
Avoided kelp conversion	Avoided emissions from degrading or conversion of kelp habitats.	Protecting kelp forests from overfishing and direct harvest, or management practices that increase kelp productivity.
Improved kelp management	Avoided emissions through improved practices in kelp management.	Implementation of improved practices that increase kelp productivity without negatively affecting biodiversity or ecosystem function.
Kelp restoration	Increased sequestration from restoration of kelp habitats where kelp have historically been present.	Natural kelp restoration or invasive species control to restore kelp forests.

[1] Many of the definitions are taken from the NCS Handbook.