

**Combined Roundtable Criteria & Indicators - Water, Range & Forests**  
**Indicator Correlation**

	Criterion	Indicator	Description
Forest	Conservation of biological diversity	1.1.a	Area and percent of forest by forest ecosystem type, successional stage, age class, and forest ownership or tenure
		1.1.b	Area and percent of forest in protected areas by forest ecosystem type, and by age class or successional stage
		1.1.c	Fragmentation of forests
		1.2.a	Number of native forest associated species
		1.2.b	Number and status of native forest associated species at risk, as determined by legislation or scientific assessment
		1.2.c	Status of <i>in situ</i> and <i>ex situ</i> efforts focused on conservation of species diversity
		1.3.a	Number and geographic distribution of forest associated species at risk of losing genetic variation and locally adapted genotypes
		1.3.b	Population levels of selected representative forest associated species to describe genetic diversity
		1.3.c	Status of <i>in situ</i> and <i>ex situ</i> efforts focused on conservation of genetic diversity
Range	Maintenance and conservation of plant and animal resources	2-12	Rangeland area by plant community
		2-20	Population status and geographic range of rangeland dependent species
	Maintenance and productive capacity on rangelands	3-25	Presence and density of wildlife functional groups on rangeland
Water	Environmental Health	4-12	Amounts and quality of living resources
Forest	Maintenance of productive capacity of forest ecosystems	2.a	Area and percent of forest land and net area of forest land available for wood production
		2.b	Total growing stock and annual increment of both merchantable and non-merchantable tree species in forests available for wood production
		2.c	Area, percent, and growing stock of plantations of native and exotic species
		2.d	Annual harvest of wood products by volume and as a percentage of net growth or sustained yield
		2.e	Annual harvest of non-wood forest products
Water	Water Availability	1-01	Renewable water resources
		1-02	Water in the environment
		2-04	Quality of water for human uses
	Human Uses and Health	3-07	Withdrawal and use of water
		3-08	Human uses of water in the environment
		3-09	Water-dependent resource use
	Infrastructure and Institutions	5-13	Capacity and reliability of infrastructure
Range	Maintenance and productive capacity on rangelands	3-21	Rangeland aboveground biomass
		3-22	Rangeland annual productivity
		3-23	Percent of available rangeland grazed by livestock
		3-24	Number of domestic livestock on rangeland
		3-25	Presence and density of wildlife functional groups on rangeland
		3-26	Annual removal of native hay and non-forage plant materials, landscaping materials, edible and medicinal plants, and wood products

	<b>Criterion</b>	<b>Indicator</b>	<b>Description</b>	
Forest	3	Maintenance of ecosystem health and vitality	<b>3.a</b>	Area and percent of forest affected by biotic processes and agents (e.g. insects, disease, invasive alien species) beyond reference conditions
	3		<b>3.b</b>	Area and percent of forest affected by abiotic agents (e.g. fire, storm, land clearance) beyond reference conditions
Range	2	Maintenance and conservation of plant and animal resources	<b>2-11</b>	Extent of land area in rangeland
	2		<b>2-12</b>	Rangeland area by plant community
	2		<b>2-13</b>	Number and extent of wetlands
	2		<b>2-14</b>	Fragmentation of rangeland and rangeland plant communities
	2		<b>2-15</b>	Density of roads and human structures
	2		<b>2-16</b>	Integrity of natural fire regimes on rangeland
	2		<b>2-17</b>	Extent and condition of riparian systems
	2		<b>2-18</b>	Area of infestation and presence/absence of invasive and other non-native plant species of concern
	2		<b>2-20</b>	Population status and geographic range of rangeland dependent species
Water	2	Water Quality	<b>2-05</b>	Quality of water in the environment
	4	Environmental Health	<b>4-11</b>	Indices of biological condition
Forest	4	Conservation and maintenance of soil and water resources	<b>4.1.a</b>	Area and percent of forest whose designation or land management focus is the protection of soil or water resources
	4		<b>4.2.a</b>	Proportion of forest management activities (e.g. site preparation, harvesting) that meet best management practices or other relevant legislation to protect soil resources
	4		<b>4.2.b</b>	Area and percent of forest land with significant soil degradation
	4		<b>4.3.a</b>	Proportion of forest management activities that meet best management practices, or other relevant legislation, to protect water related resources such as riparian zones, water quality, quantity and flow regulation
	4		<b>4.3.b</b>	Area and percent of water bodies, or stream length, in forest areas with significant change in physical, chemical or biological properties from reference conditions
Range	1	Conservation and maintenance of soil and water resources	<b>1-01</b>	Area and percent of rangeland soils with significantly diminished organic matter and/or high Carbon:Nitrogen (C:N) ratio
	1		<b>1-02</b>	Area and extent of rangelands with changes in soil aggregate stability
	1		<b>1-03</b>	Assessment of microbial activity in rangeland soils
	1		<b>1-04</b>	Area and percent of rangeland with a significant change in extent of bare ground
	1		<b>1-05</b>	Area and percent of rangeland with accelerated soil erosion by water or wind
	1		<b>1-06</b>	Percent of water bodies in rangeland areas with significant changes in natural biotic assemblage composition
	1		<b>1-07</b>	Percent of surface water on rangeland areas with significant deterioration of their chemical, physical, and biological properties from accepted levels
	1		<b>1-08</b>	Changes in ground water systems
	1		<b>1-09</b>	Changes in the frequency and duration of surface noflow periods in rangeland streams
	1		<b>1-10</b>	Percentage of stream length in rangeland catchments in which stream channel geometry significantly deviates from the natural channel geometry
Water	1	Water Availability	<b>1-03</b>	Water use sustainability

	<b>Criterion</b>	<b>Indicator</b>	<b>Description</b>	
Forest	5	Maintenance of forest contribution to global carbon cycles	<b>5.a</b>	Total forest ecosystem carbon pools and fluxes
	5		<b>5.b</b>	Total forest product carbon pools and fluxes
	5		<b>5.c</b>	Avoided fossil fuel carbon emissions by using forest biomass for energy
Range	1	Conservation and maintenance of soil and water resources	<b>1-01</b>	Area and percent of rangeland soils with significantly diminished organic matter and/or high Carbon:Nitrogen (C:N) ratio
Forest	6	Maintenance and enhancement of long term multiple socio-economic benefits to meet the needs of societies	<b>6.1.a</b>	Value and volume of wood and wood products production, including primary and secondary processing
	6		<b>6.1.b</b>	Value of non-wood forest products produced or collected
	6		<b>6.1.c</b>	Revenue from forest based environmental services
	6		<b>6.1.d</b>	Total and per capita consumption of wood and wood products in round wood equivalents
	6		<b>6.1.e</b>	Total and per capita consumption of non-wood products
	6		<b>6.1.f</b>	Value and volume in round wood equivalents of exports and imports of wood products
	6		<b>6.1.g</b>	Value of exports and imports of non-wood products
	6		<b>6.1.h</b>	Exports as a share of wood and wood products production and imports as a share of wood and wood products consumption
	6		<b>6.1.i</b>	Recovery or recycling of forest products as a percent of total forest products consumption
	6		<b>6.2.a</b>	Value of capital investment and annual expenditure in forest management, wood and non-wood product industries, forest-based environmental services, recreation and tourism
	6		<b>6.2.b</b>	Annual investment and expenditure in forest-related research, extension and development, and education
	6		<b>6.3.a</b>	Employment in the forest sector
	6		<b>6.3.b</b>	Average wage rates, annual average income and annual injury rates in major forest employment categories
	6		<b>6.3.c</b>	Resilience of forest-dependent communities
	6		<b>6.3.d</b>	Area and percent of forests used for subsistence purposes
	6		<b>6.3.e</b>	Distribution of revenues derived from forest management
	6		<b>6.4.a</b>	Area and percent of forests available and/or managed for public recreation and tourism
	6		<b>6.4.b</b>	Number, type, and geographic distribution of visits attributed to recreation and tourism and related to facilities available
	6		<b>6.5.a</b>	Area and percent of forests managed primarily to protect the range of cultural, social and spiritual needs and values
6	<b>6.5.b</b>	The importance of forests to people		
Water	3	Human Uses and Health	<b>3-08</b>	Human uses of water in the environment
	3		<b>3-09</b>	Water-dependent resource use
	3		<b>3-10</b>	Human health
	4		<b>4-27</b>	Value of forage harvested from rangeland by livestock
	4		<b>4-28</b>	Value of production of non-livestock products produced from rangeland
	4		<b>4-29</b>	Number of visitor days by activity and recreational land class
	4		<b>4-30</b>	Report threats to quality or recreation experiences
	4		<b>4-31</b>	Value of investments in rangeland, rangeland improvements, and recreation/tourism infrastructure
	4		<b>4-32</b>	Rate of return on investment for range livestock enterprises
	4		<b>4-33</b>	Area of rangelands under conservation ownership or control by conservation organizations

	<b>Criterion</b>	<b>Indicator</b>	<b>Description</b>
Range	4	4-34	Expenditures (monetary and in-kind) to restoration activities
	4	4-35	The threat or pressure on the integrity of cultural and spiritual resource values.
	4	4-36	Poverty rate (general).
	4	4-37	Poverty rate (children).
	4	4-38	Income inequality
	4	4-39	Index of social structure quality
	4	4-40	Community satisfaction
	4	4-41	Federal transfers by categories (individual, infrastructure, agriculture, etc.).
	4	4-42	Presence and tenure of natural resource non-governmental organizations at the local level.
	4	4-43	Sources of income and level of dependence on livestock production for household income
	4	4-44	Employment diversity
	4	4-45	Agriculture (farm/ranch) structure
	4	4-46	Years of education
	4	4-47	Value produced by agriculture and recreation industries as percent of total
	4	4-48	Employment, unemployment, underemployment, and discourages workers by industrial sector
	4	4-49	Land tenure, land use, and ownership patterns by size classes
	4	4-50	Population pyramid and population change
	4	4-51	Income differentials from migration
	4	4-52	Length of residence (native, immigrant more than 5 yrs., less than 5 yrs.).
	Forest	7	7.1.a
7		7.1.b	Provides for periodic forest-related planning, assessment, and policy review
7		7.1.c	Provides opps for public participation in public policy and decision making
7		7.1.d	Encourages best practice codes for forest management
7		7.1.e	Provides for the mgmt. of forests to conserve special environmental values
7		7.2.a	Provide for public involvement activities and public education, etc
7		7.2.b	Undertake and implement periodic forest-related planning, assessment, etc
7		7.2.c	Develop and maintain human resource skills across relevant disciplines
7		7.2.d	Develop and maintain efficient physical infrastructure to facilitate the supply of forest products and services
7		7.2.e	Enforce laws, regulations and guidelines
7		7.3.a	Investment and taxation policies and a regulatory environment which recognizes the long-term nature of investments
7		7.3.b	Non-discriminatory trade policies for forest products
7		7.4.a	Availability and extent of up-to-date data, statistics, and other information
7		7.4.b	Scope, frequency, and statistical reliability of forest inventories, etc
7		7.4.c	Compatibility with other countries in meas., monitoring and reporting
7		7.5.a	Development of scientific understanding of forest ecosystems

	Criterion	Indicator	Description	
	7	7.5.b	Development of methodologies to measure and integrate environmental and social costs and benefits into markets and public policies	
	7		7.5.c	New technologies and the capacity to assess socioeconomic consequences
	7		7.5.d	Enhancement of ability to predict impacts of human intervention on forests
	7		7.5.e	Ability to predict impacts on forests of possible climate change
Water	5	Infrastructure and Institutions	5-14	Efficacy of institutions
Range	5	Legal, institutional and economic framework for rangeland conservation and sustainable development	5-55	Land Law and Property Rights. Extent to which laws, regulations, and guidelines, clarify property rights, and land tenure arrangements, recognize customary and traditional rights of indigenous people, and provide means, of resolving property disputes by due process as they relate to the conservation and sustainable management of rangelands
	5		5-56	Institutions and Organizations. Extent to which governmental agencies, educational institutions, and other for-profit and not-for-profit organizations affect the conservation and sustainable management of rangelands
	5		5-57	Economic Policies and Practices. Extent to which economic policies and practices support the conservation and sustainable management of rangelands
	5		5-58	Public information and public Participation. Extent to which laws, regulations, and guidelines, institutions and organizations provide opportunities for: (1) public access to information; and, (2) public participation in the public policy and decision-making process relating to rangelands
	5		5-59	Professional Education and technical Assistance. Extent to which laws, regulations, and guidelines, institutions, and organizations provide for professional education and the distribution of technical information and financial.
	5		5-60	Land Management. Extent to which land management programs and practices support the conservation and sustainable management of rangelands
	5		5-61	Land Planning, assessment, and Policy Review. Nature and extent of periodic Range-related planning, assessment, and policy review activities, including planning and coordination between institutions and organizations
	5		5-62	Protection of Special Values. Extent to which laws, regulations, and guidelines, institutions, and organizations provide for the management of rangelands to conserve special environmental, cultural, social and /or scientific values.
	5		5-63	Measuring and Monitoring. Extent to which agencies, institutions and organizations devote resources to measuring and monitoring changes in the condition of rangelands.
	5		5-64	Research and Development. Nature and extent of research and development programs that affect the conservation and sustainable management of rangelands