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Environmental  
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### **Expert Consultation**

#### **Working group 2: Ecosystem condition**

#### **Review copy of:**

#### ***Supplement to Discussion paper 2.2: Review of ecosystem condition accounting case studies: Lessons learned and options for developing condition accounts***

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**Disclaimer:**

This paper has been prepared by the authors listed below as part of the work on the SEEA EEA Revision coordinated by the United Nations Statistics Division. The views expressed in this paper do not necessarily represent the views of the United Nations.

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## **Research area #2: Ecosystem condition**

### **Supplement to Discussion paper 2.2: Review of ecosystem condition accounting case studies: Lessons learned and options for developing condition accounts**

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## Type A case studies: Ecosystem accounts that include ecosystem condition tables

**Table A2. List of case studies**

Number	Country	Reference
<b>Type A case studies (Strict condition accounts)</b>		
1	Australia	Eigenraam, M., McCormick, F., Contreras, Z. (2016) .Marine and Coastal Ecosystem Accounting: Port Phillip Bay. Report to the Commissioner for Environmental Sustainability. ISBN 978-1-76047-395-2
2	Australia-	Information Paper: An Experimental Ecosystem Account for the Great Barrier Reef Region (2015). Available <a href="#">here</a>
3	Australia	Eigenraam, M., Chua, J., Hasker, J. (2013). Environmental-Economic Accounting: Victorian Experimental Ecosystem Accounts, Version 1.0. Department of Sustainability and Environment, State of Victoria.
4	Australia	Keith, H., Vardon, M., Stein, J., Stein, J., Lindenmayer, D. (2017) Experimental Ecosystem Accounts for the Central Highlands of Victoria (A scientific article is available as Keith, H., Vardon, M., Stein, J.A., Stein, J.L., Lindenmayer, D., 2017. Ecosystem accounts define explicit and spatial trade-offs for managing natural resources. Nature Ecology & Evolution 1, 1683-1692.)
5	Australia	Wentworth Group (2016) Accounting for Nature- A scientific method for constructing environmental asset condition accounts. ISBN: 978-0-9944577-3-8
6	Australia	Varcoe, T., Betts O’Shea, H., Contreras, Z. (2015) Valuing Victoria’s Parks Accounting for ecosystems and valuing their benefits: Report of first phase findings.
7	Canada	Statistics Canada Environment Accounts and Statistics Division (2013) Human Activity and the Environment. Measuring ecosystem goods and services in Canada.
8	Netherlands	de Jong, R., Edens, B., van Leeuwen, N., Schenau, S, Remme, R., Hein, L. (2014) Ecosystem Accounting Limburg Province, the Netherlands Part I: Physical supply and condition accounts
9	South Africa	Nel, J.L., Driver, A. (2015) National River Ecosystem Accounts for South Africa. Discussion document for Advancing SEEA Experimental Ecosystem Accounting Project. South African National Biodiversity Institute, Pretoria
10	UK	Eftic (2015). Developing UK Natural Capital Accounts: Woodland Ecosystem Accounts. Report prepared for the Department for Environment, Food and Rural Affairs (Defra), March 2015.
11	UK	Khan, J., Din, F. (2015) UK Natural Capital – Freshwater Ecosystem Assets and Services Accounts. Office for National Statistics
12	UK	White, C., Dunscombe, R., Dvaskas, A., Eves, C., Finisdore, J., Kieboom, E., Maclean, I., Obst, C., Rowcroft, P. & Silcock, P. (2015), ‘Developing ecosystem accounts for protected areas in England and Scotland: Main Report’, Department for Food, Environment & Rural Affairs/The Scottish Government
13	UK	Forest Enterprise England (2017) Natural capital accounts. Forestry Commission England
14	UK	Office for National Statistics (2018) UK natural capital: ecosystem

		accounts for urban areas Initial natural capital accounts containing information about green space in urban areas. Statistical Bulletin
<b>Type B case studies: Accounts that discuss aspects of condition but don't include condition account tables</b>		
15	Australia	Thackway, R., Lesslie, R. (2005) Vegetation Assets, States and Transitions (VAST): Accounting for vegetation condition in the Australian landscape. BRS Technical Report, Bureau of Rural Sciences, Canberra
16	Australia	Smith, B., Summers, D., Vardon, M. (2017) Environmental-Economic Accounting for ACT State of the Environment Reporting – Proof of Concept. Office of the Commissioner for Sustainability and the Environment.
17	EU	UNEP-WCMC (2017) Developing Ecosystem Condition Accounts for the EU and Member States
18	South Africa	Driver, A., Nel, J.L., Smith, J., Daniels, F., Poole, C.J., Jewitt, D., Escott, B.J. (2015) Land and ecosystem accounting in KwaZulu-Natal, South Africa. Discussion document for Advancing SEEA Experimental Ecosystem Accounting Project. South African National Biodiversity Institute, Pretoria
19	Uganda	UNEP-WCMC & IDEEA (2017) Experimental Ecosystem Accounts for Uganda. Cambridge, UK.
20	UK	Office for National Statistics (2017) UK natural capital: developing UK mountain, moorland and heathland ecosystem accounts.
21	UK	Office for National Statistics (2018) UK natural capital: developing semi-natural grassland ecosystem accounts
22	UK	Office for National Statistics (2016) Scoping UK coastal margin ecosystem accounts
23	UK	Dickie I, Evans C and Smyth MA (2015) Scoping the Natural Capital Accounts for Peatland, work package 3 of Report NR0165 for Defra

**Case study 1. Australia: Marine and Coastal Ecosystem Accounting: Port Phillip Bay**

This report contains accounts consistent with the SEEA. It reports extent and condition and illustrates the accounts with example tables where condition is reported as opening and closing scores under different condition levels. However, the condition accounts shown are hypothetical, not based on actual data. Lack of ecosystem condition data and spatially referenced data was a key constraint in populating the accounts for ecosystem assets. The accounts for ecosystem services and benefits are more fully developed.

**Specific information about the reporting of the condition account**

Ecosystem or asset types	Marine inlets, transitional waters and coastal ecosystems
Ecosystem extent reported	Yes
Ecosystem condition reported	Yes
Realm	Marine and terrestrial
Spatial unit for analysis	Basic Spatial Unit – seems to be a 1 ha grid although the size of the BSU is not explicitly stated
Spatial unit of reporting	5 geographic areas within Port Phillip Bay
Condition indicators	Nitrogen load and water quality index Currently developing condition indicators for 4 marine ecosystem types
Aggregated index	An example account is presented suggesting 5 condition classes with a composite condition score ranging from 0 to 10
Condition categories	5 classes
Classification of indicators	No
Reference levels	No (although reference condition of “10”?)
How is condition reported	Opening and closing stocks of area under different condition levels (ha)

**Reported condition table** (this is a hypothetical account, not based on real data)**Table 4 – Example condition account for all ecosystems (hectares)**

Condition score	0-1 poor	2-4 fair	4-6 medium	6-8 good	8-10 excellent	Total
Opening	4,977	3,246	10,386	2,164	865	21,637
Closing	4,177	3,760	6,266	4,177	2,506	20,887
Change	-649	649	-3,895	2,164	1,731	
	-13%	20%	-38%	100%	200%	

Note: Condition information applies to natural ecosystems only (built assets are not included).

**Case study 2. Australia: An Experimental Ecosystem Account for the Great Barrier Reef Region**

This account presents summary information by indexing measures of condition of terrestrial and marine ecosystems, as well as the flow of river loads, to provide an overview of the ecosystem characteristics within the region. A rationale as to why these indicators have been selected to assess ecosystem condition is lacking. It refers to the SEEA EEA.

**Specific information about the reporting of the condition account**

Ecosystem or asset types	Shelf and ocean ecosystems, coral reef system, also river catchments
Ecosystem extent reported	No
Ecosystem condition reported	Yes
Realm	Marine, inland water
Spatial unit of analysis	Not specified
Spatial unit of reporting	Whole Great Barrier Reef region, not spatially disaggregated
Condition indicators	For rivers: River loads (solids, nitrogen, phosphorus); For marine: coral, water quality, seagrass and fish numbers – although it is not clear what the metric was for “coral” or “seagrass”; For terrestrial: NPP.
Aggregated indicator	No
Condition categories	No
Classification of indicators	No
Reference levels	No (but a baseline year of 2007/8 is used)
How is condition reported	Indicator values rescaled between 0 and 100 whereby 100 is the baseline value for a selected year

**Reported condition table**

The condition table compares ecosystem condition based on indicators relative to a baseline year.

**TABLE 2: TERRESTRIAL AND MARINE ECOSYSTEM CONDITION AND RIVER LOADS, GREAT BARRIER REEF REGION, 2007-08 to 2012-13, Index (2007-08 =100)**

	Terrestrial Condition Average NPP	River Loads			Marine Condition			
		Solids	Nitrogen	Phosphorous	Coral	Water Quality	Seagrass	Fish numbers
2007-08	100	100	100	100	100	100	100	100
2008-09	97	67	64	57	102	102	97	99
2009-10	91	37	51	58	96	115	94	101
2010-11	110	105	176	197	81	73	53	92
2011-12	98	29	48	47	67	na	53	101
2012-13	94	na	na	na	73	na	78	93

na - not available

NPP - Net Primary Productivity

Source: Summary of data from tables in later chapters

**Case study 3. Australia: Victorian Experimental Ecosystem Accounts**

A set of asset accounts including the extent and condition for major vegetation types, wetlands and rivers with table reporting the condition for a specific year against a reference year (1750). All tables report condition as a single, aggregated index (condition in 1750 = 100). It refers to the SEEA EEA.

**Specific information about the reporting of the condition account**

Ecosystem or asset types	Major vegetation groups, wetland systems, rivers
Ecosystem extent reported	Yes
Ecosystem condition reported	Yes
Realm	Terrestrial, inland water
Spatial unit of analysis	Basic Spatial Unit - seems to be a 1 ha grid although the size of the BSU is not explicitly stated
Spatial unit of reporting	10 catchment regions within State of Victoria; also bioregions within State of Victoria
Condition indicators	Habitat hectares approach based on 10 indicators (Large trees, Tree (canopy) cover, Understorey (non-tree) strata, Lack of weeds, Recruitment, Organic litter, Logs, Patch size, Neighbourhood, Distance to core area)
Aggregated indicator	Mean condition per hectare for terrestrial ecosystem types based on the habitat hectares approach. Condition for wetland and for rivers based on an Index of Wetland Condition and an Index of Stream Condition, respectively. References to separate documents for calculation of these indices. The index of wetland condition is based on the weighted sum for 6 sub-index scores. The sub index scores are derived from 13 metrics. The index of stream condition is built in a similar way: 5 sub-indices and 23 metrics. Each river reach assessed is given an overall ISC score of between 0-50. This score is then categorized into one of five broad condition bands – excellent, good, moderate, poor or very poor.
Classification of indicators	Indicators assorted to site conditions and landscape context. Index of wetland condition and stream condition is built on sub-indices which constitute a classification.
Reference levels	Yes, the 1750 undisturbed situation is set to 1
How is condition reported	Opening and closing stocks of area under different condition levels (ha)

**Reported condition tables**

Three tables are included here to illustrate the accounts (major vegetation types, wetlands and rivers) but more are available in the report. The accounts report either at subnational scale (vegetation types and different types of wetland) or at basin scale (for rivers). The accounts report extent and an aggregated index for ecosystem condition for different years relative to the 1750 reference year.

Table 1. Victorian terrestrial extent and condition classified by Major Vegetation Groups: 1750, 2005

Major Vegetation Group (NVIS)	1750		2005 (a)		2005 (b)	
	Extent (Ha)	Mean condition/Ha	Extent (Ha)	Mean condition/Ha	Extent (Ha)	Mean condition/Ha
<b>Native vegetation</b>						
Acacia Forests and Woodlands	22,885	1.00	41,237	0.60	18,845	0.64
Acacia Open Woodlands	271	1.00	NA	NA	256	0.61
Acacia Shrublands	15,874	1.00	109	0.35	10,053	0.59
Callitris Forests and Woodlands	5,549	1.00	464	0.33	1,934	0.40
Casuarina Forests and Woodlands	1,003,122	1.00	186,411	0.48	190,513	0.51
Chenopod Shrublands, Samphire Shrublands and Forblands	214,488	1.00	55,516	0.51	113,563	0.56
Eucalypt Open Forests	6,346,166	1.00	3,899,116	0.65	4,976,481	0.63
Eucalypt Open Woodlands	1,223,235	1.00	1	0.60	250,677	0.46
Eucalypt Tall Open Forests	53,605	1.00	632,333	0.68	53,576	0.71
Eucalypt Woodlands	7,532,842	1.00	1,559,369	0.57	2,459,569	0.46
Heathlands	299,343	1.00	35,914	0.63	244,461	0.59
Low Closed Forests and Tall Closed Shrublands	206,330	1.00	NA	NA	35,241	0.44
Mallee Open Woodlands and Sparse Mallee Shrublands	213,785	1.00	NA	NA	43,380	0.53
Mallee Woodlands and Shrublands	3,395,152	1.00	1,509,023	0.56	1,577,654	0.56
Mangroves	7,025	1.00	1,010	0.53	5,006	0.55
Melaleuca Forests and Woodlands	89	1.00	14,910	0.50	65	0.57
Naturally bare - sand, rock, claypan, mudflat	4,619	1.00	3,066	0.35	4,459	0.44
Other Forests and Woodlands	63,290	1.00	287,940	0.59	55,756	0.69
Other Grasslands, Herblands, Sedgeland and Rushlands	202,082	1.00	142,010	0.59	97,547	0.54
Other Open Woodlands	122	1.00	NA	NA	77	0.41
Other Shrublands	295,419	1.00	103,193	0.61	159,251	0.58
Rainforests and Vine Thickets	44,109	1.00	36,630	0.71	40,164	0.70
Tussock Grasslands	1,302,356	1.00	28,486	0.33	139,989	0.40
Unclassified native vegetation	45,808	1.00	1	0.73	8,074	0.61
<b>Total native vegetation</b>	<b>22,497,566</b>	<b>1.00</b>	<b>8,536,739</b>	<b>0.61</b>	<b>10,486,591</b>	<b>0.57</b>
<b>Land not classified as native vegetation</b>						
Sea and estuaries	1,677	NA	-	NA	1,613	NA
Inland aquatic - freshwater, salt lakes, lagoons	197,128	NA	177,406	NA	243,637	NA
Cleared, non-native vegetation, buildings	-	NA	365,180	NA	11,955,418	NA
Unknown/no data	-	NA	575,185	NA	10,166	NA
Unclassified	2,976	NA	13,044,837	NA	1,922	NA
<b>Total non-native vegetation</b>	<b>201,781</b>	<b>NA</b>	<b>14,162,608</b>	<b>NA</b>	<b>12,212,756</b>	<b>NA</b>

Table 7. Victorian wetland extent and condition classified by wetland system and origin: 1750, 1994, 2012

Wetland system type and origin (2012)	1750		1994		2012	
	Extent (Ha)	Average condition	Extent (Ha)	Average condition	Extent (Ha)	Average condition
<b>Origin - Naturally occurring wetlands</b>						
Estuarine	41,001	1	31,455	unknown	35,467	0.71
Lacustrine	152,437	1	138,998	unknown	169,083	0.65
Marine	3,216	1	3,160	unknown	3,302	unknown
Palustrine	218,763	1	187,497	unknown	289,405	0.78
Palustrine or Lacustrine (unknown specifics)	3,745	1	1,005	unknown	6,919	0.40
Unclassified	250,418	1	-	unknown	-	NA
<b>Total natural wetlands</b>	<b>669,580</b>	<b>1</b>	<b>362,115</b>	<b>unknown</b>	<b>504,176</b>	<b>0.70</b>
<b>Origin - Non-naturally occurring wetlands</b>						
Estuarine	-	NA	25,331	unknown	26,860	0.71
Lacustrine	-	NA	84,606	unknown	98,399	0.57
Marine	-	NA	41	unknown	633	unknown
Palustrine	-	NA	11,535	unknown	26,169	0.72
Palustrine or Lacustrine (unknown specifics)	-	NA	47	unknown	2,015	unknown
Unclassified	-	NA	46,499	unknown	-	NA
<b>Total non-natural wetlands</b>	<b>-</b>	<b>NA</b>	<b>168,059</b>	<b>unknown</b>	<b>154,076</b>	<b>0.64</b>
<b>Total wetlands</b>	<b>669,580</b>	<b>1</b>	<b>530,174</b>	<b>unknown</b>	<b>658,252</b>	<b>0.69</b>
<b>Land not classified as wetland</b>						
	22,029,767	NA	22,169,173	NA	22,041,095	NA

**Table 8. Victorian river reaches length and condition classified by river basin: 1750, 2004**

River basin	River Reach total length (km)	1750	2004
		Mean condition	Mean condition
Upper Murray	1199	1.00	0.57
Kiewa	356	1.00	0.56
Owens	1201	1.00	0.51
Broken	915	1.00	0.40
Goulburn	2097	1.00	0.45
Campaspe	643	1.00	0.38
Loddon	1888	1.00	0.32
Avoca	536	1.00	0.37
Mallee	692	1.00	0.33
Wimmera	1333	1.00	0.38
East Gippsland	664	1.00	0.76
Snowy	855	1.00	0.61
Tambo	760	1.00	0.59
Mitchell	772	1.00	0.64
Thomson	925	1.00	0.46
Latrobe	839	1.00	0.48
South Gippsland	952	1.00	0.38
Bunyip	583	1.00	0.37
Yarra	614	1.00	0.37
Maribyrnong	416	1.00	0.42
Werribee	503	1.00	0.42
Moorabool	452	1.00	0.33
Barwon	642	1.00	0.34
Corangamite	482	1.00	0.36
Otway	702	1.00	0.51
Hopkins	1287	1.00	0.27
Portland	464	1.00	0.42
Glenelg	1326	1.00	0.38
Millicent Coast	unknown	1.00	unknown
Total	24098		0.44

**Case study 4. Australia: Experimental Ecosystem Accounts for the Central Highlands of Victoria**

This study presents Experimental Ecosystem Accounts for the Central Highlands of Victoria. It is a test of how the SEEA tables can be populated with existing data. The starting point of the report is quantifying the extent and condition of assets rather than of ecosystem types. The study refers to the SEEA EEA. The bulk of the report deals with ecosystem service accounts.

**Specific information about the reporting of the condition account**

Ecosystem or asset types	Land, Water, Carbon, Timber, Agriculture, Tourism, Biodiversity
Ecosystem extent reported	Yes
Ecosystem condition reported	Yes but only for forests
Realm	Terrestrial, inland water
Spatial unit for analysis	
Spatial unit of reporting	Sub national
Condition indicators	No condition indicators as such but different sub groups for assets (e.g., types of forest and age classes) could be used to infer condition
Aggregated indicator	No
Classification of indicators	No
Reference levels	The 1750 situation.
How is condition reported	The extent of different age classes of different types of forests

**Reported table with information that can be used to assess condition**

The table contains data from 1990 until 2015 but only a part of the table is included here. The table reports the area of different woodland types and breaks the surface area values down over different cohorts which could be used to infer ecosystem condition.

Table 10.3. Account of the change in area for each forest type and age class from 1990 to 2015

Land Cover class	Age	1990	change	1995	change	2000
Wet mixed forest	< 1939	195,693	-679	195,014	-681	194,333
	1939-59	4,261	-59	4,202	-75	4,127
	1960-82	10,069	-6	10,063	-125	9,938
	1983-08	3,058	744	3,802	882	4,683
	2009-15					
Open mixed forest	< 1939	147,113	-307	146,806	-450	146,356
	1939-59	640	-32	608	-25	583
	1960-82	3,460	0	3,459	-71	3,389
	1983-08	739	339	1,078	546	1,624
	2009-15					
Alpine Ash	< 1939					
	1939-59	59,373	-2,128	57,244	-1,517	55,728
	1960-82	3,609	-43	3,566	-21	3,545
	1983-08	1,494	2,171	3,665	1,538	5,203
	2009-15					
Mountain Ash	< 1939	216	0	216	0	216
	1939-59	115,233	-4,749	110,483	-5,374	105,109
	1960-82	6,044	-106	5,937	-124	5,813
	1983-08	19,091	4,856	23,946	5,499	29,445
	2009-15					
Rainforest	< 1939					
	1939-59	5,344	-1	5,343	-1	5,342
	1960-82	37	0	37	0	37
	1983-08	265	1	266	1	267
	2009-15					
Woodland	< 1939	6,415	0	6,415	0	6,415
	1939-59	43	0	43	0	43
	1960-82	96	0	96	0	96
	1983-08	23	0	23	0	23
	2009-15					
Montane woodland	< 1939	13,712	-1	13,711	0	13,711
	1939-59	23	0	23	0	23
	1960-82	92	0	92	0	92
	1983-08	8	1	9	0	9
	2009-15					

### Case study 5. Australia: Accounting for Nature- A scientific method for constructing environmental asset condition accounts

This report is a step by step guide with real case examples of how to assess condition and structure a condition account. The study refers to SEEA and includes table structure, method and indicators for condition accounts, with examples of condition tables for South East Queensland.

#### Specific information about the reporting of the condition account

Ecosystem or asset types	Five asset classes: Land (e.g. native vegetation, soil), Water (e.g. rivers, wetlands), Coasts (e.g. estuaries, beaches), Marine (e.g. reefs, seagrass), Atmosphere (e.g. air quality)
Ecosystem extent reported	Yes
Ecosystem condition reported	Yes
Realm	Terrestrial, inland water, marine
Spatial unit for analysis	
Spatial unit of reporting	National and sub-national
Condition indicators	Nitrogen, sediment, and phosphorous loads; Physical/chemical index; Chlorophyll-a; Dissolved Oxygen; Total Nitrogen; Total Phosphorus; Turbidity; Biological Health Rating; Mixing Plots; $\delta^{15}N$ ; Foreshore/riparian habitat extent; Total Foreshore/riparian habitat extent; various biological habitat health indices
Aggregated indicator	Yes, Econd, a composite indicator between 0 and 100
Classification of indicators	Not formal classification but recognition of ecological processes, biodiversity, physical/chemical
Reference levels	1788 situation (=100)
How is condition reported	The account reports the indicator values, aggregated values and the composite indicator Econd as opening and closing stock per ecosystem type in combination with extent information

#### Reported condition tables

The three accounting tables which are here included are structured from summarizing condition for high-level asset classes (figure 10), aggregated information for one asset (figure 11) through to detailed condition indicators for an individual estuary (figure 12).

The first table is hierarchically structured (from left to right) and contains aggregated information for terrestrial, inland water, coastal and marine ecosystems. The second table for estuaries reports values for the same three sub-indices as the first table does for estuaries (physical/chemical, biological health rating and foreshore and riparian habitat extent) but it reports the values for individual estuaries. A third table finally includes data for the different indicators that compose the sub-indices.

REGIONAL ENVIRONMENTAL ASSET ACCOUNT – SEQ CATCHMENTS, QUEENSLAND											
Class	Asset	Econd & ICS	2003	2004	2005	2006	2007	2008	2009	2010	2011
LAND	Native Vegetation	Econd				29					
		Extent				53					
		Composition				53					
		Configuration									
FRESHWATER	Rivers	Econd	74				70	76	78	79	81
		Physical/chemical index	82				77	84	85	86	91
		Nutrient cycling index	64				60	75	70	73	61
		Macroinvertebrates index	76				69	74	79	82	88
		Fish index	62				68	65	69	71	76
COASTAL	Estuaries	Econd		57		55	42	44	39	41	41
		Physical/chemical index	51	57		57	39	40	34	36	37
		Biological Health Rating		58		51	50	53	51	53	49
		Foreshore/riparian habitat extent					48	51	51	51	51
	Moreton Bay	Econd		87	83	82	81	81	68	75	75
		Physical/chemical index		90	85	84	83	82	69	78	77
		Biological Health Rating		73	74	74	74	75	64	64	66
MARINE	Dugongs	Econd			11						
		Dugong Populaton			11						

Figure 10: Summary table showing Econd scores for assets in South East Queensland.

ESTUARIES ASSET TABLE – SEQ CATCHMENTS, QUEENSLAND										
Class/Indicator (unit)	Reference Benchmark	2009			2010			2011		
		Measure	ICS	Econd	Measure	ICS	Econd	Measure	ICS	Econd
TOTAL				39			41			41
Albert River estuary				22			18			20
Physical/chemical index	100	15.2	15		9.2	9		12.4	12	
Biological Health Rating	100	29.2	29		29.2	29		29.2	29	
Foreshore/riparian habitat	32.2	15.5	48		15.5	48		15.5	48	
Bremer River estuary				22			21			22
Physical/chemical index	100	15.2	15		13.0	13		14.2	14	
Biological Health Rating	100	33.3	33		33.3	33		33.3	33	
Foreshore/riparian habitat	34.8	15.3	44		15.3	44		15.3	44	
Brisbane River estuary				30			31			32
Physical/chemical index	100	26.2	26		24.8	25		29.4	29	
Biological Health Rating	100	47.2	47		55.6	56		47.2	47	
Foreshore/riparian habitat	160.6	51.4	32		51.4	32		51.4	32	
Cabbage Tree Creek estuary				22			27			36
Physical/chemical index	100	10.6	11		17.8	18		28.0	28	
Biological Health Rating	100	36.1	36		36.1	36		50.0	50	
Foreshore/riparian habitat	12.5	7.4	59		7.4	59		7.4	59	

Figure 11: Asset table showing indicator themes for individual estuaries.

ESTUARIES DATA TABLE – SEQ CATCHMENTS, QUEENSLAND			
Albert River estuary	Reference Benchmark	2010–2011	
		Measure	ICS
Physical/chemical index	100	12.4	<b>12</b>
Chlorophyll-a	100	2	2
Dissolved Oxygen	100	46	46
Total Nitrogen	100	14	14
Total Phosphorus	100	0	0
Turbidity	100	0	0
Biological Health Rating	100.0	29.2	29
Mixing Plots	3	1	33
$\delta^{15}\text{N}$	4	1	25
Foreshore/riparian habitat extent	32.3	15.5	48
Total Foreshore/riparian habitat extent	32.29	15.50	48

Figure 12: Data table, Albert River Estuary, South East Queensland, 2010–2011.

## Case study 6. Australia: Valuing Victoria's Parks Accounting for ecosystems and valuing their benefits

This account covers the total area of parks and reserves in Victoria and reports ecosystem condition for various asset types. The report refers to SEEA.

### Specific information about the reporting of the condition account

Ecosystem or asset types	Native vegetation, Wetlands, Rivers, Marine
Ecosystem extent reported	yes
Ecosystem condition reported	yes
Realm	Terrestrial, inland water, marine
Spatial unit for analysis	
Spatial unit of reporting	Subnational
Condition indicators	For each ecosystem type an aggregated indicator is calculated based on specific metrics (Vegetation score, index of wetland condition is a hierarchical index on a 10-point score scale based on six key characteristics that define wetlands, namely wetland catchment, physical form, hydrology, soils, water properties and biota; index of stream condition is based on a 50-point score scale and is made up of five sub-indices describing the condition of a river reach, namely hydrology, streamside zone, physical form, water quality and aquatic life; Marine condition based on Parks Victoria's marine monitoring program and marine report cards which assesses condition of key habitats across multiple parks, as follows: VG = Very Good, F = Fair
Aggregated indicator	Index per ecosystem type
Classification of indicators	No
Reference levels	No but probably dependent on the construction of the index; the vegetation score takes 1750 as reference
How is condition reported	Extent and condition reported for areas under different levels of protection (using the IUCN classification) and per ecosystem type for different subtypes

### Reported condition tables

The condition of different ecosystem types or assets is reported for different levels of protection using a condition index which is specific per ecosystem or asset type. The table reports extent and condition data for different years. Separate tables are available per ecosystem type but they report extent only. A detailed breakdown of the extent, condition and significance (representation) of each native vegetation type is provided as well to compare average condition within parks with condition outside (Table 4.2 of the report but this table is not included here).

## SEEA EEA Revision – Expert Consultation

**Table 4.1 Stocks and condition of ecosystem assets in parks network – extent and condition by IUCN category**

Ecosystem assets	Native vegetation		Wetlands		Rivers		Marine	
	2010		2014	2011	2011		2014	
	Extent	Condition	Extent	Condition	Extent	Condition	Extent	Condition
Assets measures	Hectare	Native Vegetation score <sup>1</sup>	Hectare	Index of wetland condition <sup>2</sup>	Hectares with river	Index of stream condition <sup>3</sup>	Hectare	Marine Habitat condition <sup>4</sup>
<b>Protected Areas (IUCN PA Categories)</b>								
IA Nature Conservation Reserves	254,255	71	16,009	7	2,911	29	-	-
IB Wilderness Parks	200,094	82	22	1	1,000	41	-	-
II National and State Parks	3,061,274	79	68,681	7	31,874	32	52,809	VG
III Natural Features Reserves	63,097	62	1,788	7	4,026	28	231	F
IV Bushland Reserves	41,287	61	1,821	6	512	27	-	-
V Protected landscape		62		-			-	-
VI Wildlife Reserves	111,078	63	112,867	6	1,926	25	-	-
<b>Non-protected areas</b>								
Conservation reserve	113,140	62	61,854	6	2,600	29	-	-
Port and coastal asset	1	7	194	10			-	-
Urban, regional and other parks	92,784	63	11,598	7	3,056	25	-	-
<b>Parks total</b>	<b>3,937,010</b>	<b>65</b>	<b>274,834</b>	<b>7</b>	<b>47,905</b>	<b>29</b>	<b>53,040</b>	<b>-</b>
<b>Parks share of total assets in Victoria (%)</b>	<b>38%</b>		<b>42%</b>		<b>16%</b>			

<sup>1</sup> The Native Vegetation Condition score is a normalised value in a 100-point scale to assess the quality of native vegetation, based on DEPI's modelled condition.

<sup>2</sup> The index of wetland condition is a hierarchical index on a 10-point score scale based on six key characteristics that define wetlands, namely wetland catchment, physical form, hydrology, soils, water properties and biota (DSE, 2005). Large wetland areas in parks are unassessed in the most recent dataset.

<sup>3</sup> The index of stream condition is based on a 50-point score scale and is made up of five sub-indices describing the condition of a river reach, namely hydrology, streamside zone, physical form, water quality and aquatic life (DEPI 2012).

<sup>4</sup> Marine condition based on Parks Victoria's marine monitoring program and marine report cards which assesses condition of key habitats across multiple parks, as follows: VG = Very Good, F = Fair

**Case study 7. Canada: Measuring ecosystem goods and services in Canada**

The report considers ecosystem condition as “ecosystem quality” (page 19 of the report) which is measured as human landscape modification. Landscape modification indicators presented in detailed tables in an appendix, but not as a condition account. The report includes an accounting table on ecosystem quality. Condition is measured using a set of indicators which are reported for different sub-drainage areas.

**Specific information about the reporting of the condition account**

Ecosystem or asset types	Forest and woodland, agro-ecosystems, urban, and marine inlets, transitional waters and coastal ecosystems
Ecosystem extent reported	Yes
Ecosystem condition reported	Yes
Realm	Terrestrial, inland water and marine
Spatial unit of analysis	
Spatial unit of reporting	National
Condition indicators	Degree of modification from natural state (human landscape modification): five measures of ecosystem quality: landscape type, natural land parcel size, distance to natural land parcel, barrier density and population density
Aggregated indicator	N/a
Classification of indicators	N/a
Reference levels	N/a
How is condition reported	Indicator values

**Reported condition table**

The table included here is an extract from a larger table. It reports the values of three indicators per sub drainage area for 2011. For one indicator there is also data for 2001.

**Table 3**  
**Landscape analysis by sub-drainage area, 2001 and 2011**

	Sub-drainage area code	Natural land parcel size <sup>1</sup>	Average distance to natural land parcel <sup>2</sup>		Barrier density <sup>3</sup>
		2011	2001	2011	2011
	code	square kilometres	metres		metres per square kilometre
Saint John and Southern Bay of Fundy, New Brunswick	01A	57.0	15	14	823
Gulf of St. Lawrence and Northern Bay of Fundy, New Brunswick	01B	88.6	6	6	673
Prince Edward Island	01C	2.3	236	229	1,374
Bay of Fundy and Gulf of St. Lawrence, Nova Scotia	01D	19.9	28	26	1,201
Southeastern Atlantic Ocean, Nova Scotia	01E	39.8	4	4	858
Cape Breton Island	01F	38.0	6	6	911
Northwestern Lake Superior	02A	104.2	1	1	296
Northeastern Lake Superior	02B	213.1	0 <sup>s</sup>	0 <sup>s</sup>	213
Northern Lake Huron	02C	57.1	3	3	443
Wanapitei and French, Ontario	02D	61.7	3	3	469
Eastern Georgian Bay	02E	6.3	85	86	1,191
Eastern Lake Huron	02F	0.8	392	404	1,258
Northern Lake Erie	02G	0.3	574	580	1,812
Lake Ontario and Niagara Peninsula	02H	2.7	244	247	2,172
Upper Ottawa	02J	39.9	9	9	378
Central Ottawa	02K	23.7	22	22	669
Lower Ottawa	02L	12.7	56	56	844
Upper St. Lawrence	02M	1.9	265	264	1,856

**Case study 8. Netherlands: Ecosystem Accounting Limburg Province (Physical supply and condition accounts)**

This study is a test case for the Netherlands. It contains a conceptual proposal for a condition account. An elaborated condition account for the Netherlands is currently in review and will be published later so this account could not be included in this paper. The report refers to the SEEA.

**Specific information about the reporting of the condition account**

Ecosystem or asset types	Cropland, Forest and woodland, Rivers and lakes, urban and grassland
Ecosystem extent reported	Yes
Ecosystem condition reported	Yes
Realm	Terrestrial, inland water
Spatial unit of analysis	In principle mapped at high spatial resolution (1 ha)
Spatial unit of reporting	Sub-national (province)
Condition indicators	nitrogen content, heavy metal content, PM2.5 concentration, PM10 concentration, nitrous oxide exceedance days, annual rainfall, annual no. growing days, depth to groundwater table, degree of fragmentation, naturalness of biota, species richness, red-listed species, water quality
Aggregated indicator	
Classification of indicators	Physical state, environmental state (chemical quality) and ecosystem state
Reference levels	
How is condition reported	reported as indicator values together with the extent per ecosystem type

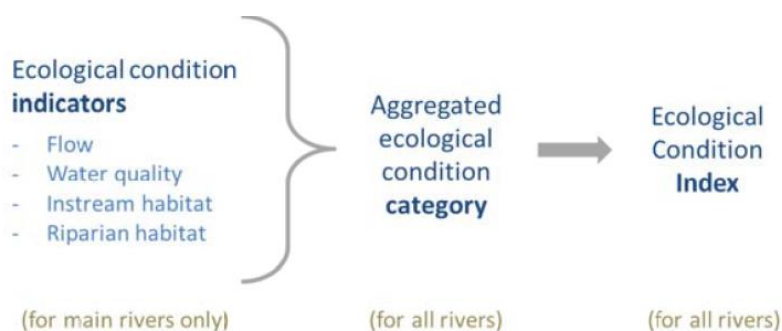
**Reported condition table**

The table reports both extent of ecosystem units (EU) and condition for 6 ecosystem types. Condition is reported using a set of indicators assorted by three different categories. Indicator values refer to a single year and still many data gaps are evident

			EU extent 2013			Phys. state ind.			Env. State indic.			Ecosys. state ind.						
	EU map unit number	Ecosystem Units	extent in ha	of which protected*	protected in %	annual rainfall	annual no. growing days	depth to groundwater table	nitrogen content	heavy metal content	PM2.5 concentration (ug per m3)	PM10 concentration (ug per m3)	nitrous oxide exceedance days	degree of fragmentation	naturalness of biota	species richness	red-listed species	water quality
Agricultural land	1	Non-perenn. plants	53,629	3,530	7						15.1	23.1						
	2	Perennial plants	8,133	1,012	12						15.1	23.1						
	3	Greenhouses	995	-	-						15.2	23.1						
	4	Meadows	27,066	5,224	19						15.1	23.0						
	5	Hedgerows	2,940	2,481	84						14.9	22.4						
	6	Farmyards, barns	2,142	45	2						15.2	23.5						
totals			94,905	12,293														
Dunes and beaches	11	Dunes perm. veg.	-	-														
	12	Active coastal dunes	-	-														
	13	Beaches	-	-														
totals			-	-														
Forests and other (semi) natural environments incl. unpaved terrain	21	Deciduous forest	11,414	8,297	73						15.1	22.7						
	22	Coniferous forest	7,091	6,694	94						14.8	22.6						
	23	Mixed forest	10,437	9,498	91						14.8	22.5						
	24	Heath land	2,149	2,091	97						14.7	22.2						
	25	Inland dunes	114	99	87						14.6	22.1						
	26	Fresh water wetlands	936	919	98						15.0	23.1						
	27	Natural grassland	3,121	2,847	91						15.0	22.5						
	28	Public green space	4,761	-	-						15.1	22.6						
	29	Other unp. terrain	22,591	3,623	16						15.1	22.9						
totals			62,614	34,067														
Temp. inundated lands	31	River flood basin	14,126	5,494	39						15.0	22.4						
	32	Salt marshes	-	-							15.1	22.7						
totals			14,126	5,494														
Built up areas		(units 41-48)	42,349	-							15.2	22.7						
Water	51	Sea																
	52	Lakes and ponds	3,122	1,105	35						15.1	22.5						
	53	Rivers and streams	3,807	2,407	63						15.0	22.7						
totals			6,929	3,512														
Totals Limburg			220,922	55,366														

### Case study 9. South Africa: National River Ecosystem Accounts

This report links condition accounts to extent accounts and presents a fairly complete reporting of indicators, aggregated indicators and a composite index. The study refers to SEEA. Condition accounts presented in various forms (see Figure A from the report).



**Figure A: Schematic showing the three sets of ecosystem condition accounts for rivers**

Condition accounts based on the ecological condition indicators were developed for main rivers only due to lack for tributaries in 1999 data.

#### Specific information about the reporting of the condition account

Ecosystem or asset types	Rivers
Ecosystem extent reported	Yes
Ecosystem condition reported	Yes
Realm	Inland water
Spatial unit for analysis	River reaches (at quaternary and sub-quaternary catchment level)
Spatial unit of reporting	National, also sub-national (Water Management Area)
Condition indicators	Ecological condition indicators (Flow, water quality, instream habitat, riparian habitat),
Aggregated indicator	Aggregated ecological condition category (natural state and three classes or levels of modification) and ecological condition index
Classification of indicators	Implicit typology
Reference levels	Natural state (ecological condition index =100) while the other states are defined based on percentiles
How is condition reported	Complete reporting (indicator values, aggregated values, index, + linked to the extent account in km)

#### Reported condition tables

The study reports condition accounts using on four indicators for main rives as well as a table with data for an aggregated condition category. A final table aggregates the information of the second table into a single index.

Table D: Ecosystem condition account for main rivers using four ecological condition indicators, 1999 – 2011

Kilometres	Degree of modification from natural					Total
	None/ small	Moderate	Large	Serious/ Critical	No Data	
FLOW						
Opening stock 1999	34 084	22 814	10 328	5 447	3 637	76 310
Opening stock as a % total river length	45	30	14	7	5	100
Increase/decreases	-10 546	-2 316	6 017	5 129	1 715	
Increases/decreases as % opening stock	-31	-10	58	94	47	
Opening stock 2011	23 538	20 499	16 345	10 576	5 352	76 310
Opening stock as a % total river length	31	27	21	14	7	100
WATER QUALITY						
Opening stock 1999	40 579	24 634	5 518	1 943	3 637	76 310
Opening stock as a % total river length	53	32	7	3	5	100
Increase/decreases	-5 769	-3 591	6 149	1 496	1 715	
Increases/decreases as % opening stock	-14	-15	111	77	47	
Opening stock 2011	34 810	21 043	11 667	3 439	5 352	76 310
Opening stock as a % total river length	46	28	15	5	7	100
STREAM BANK/RIPARIAN HABITAT						
Opening stock 1999	22 469	32 951	14 164	3 088	3 639	76 310
Opening stock as a % total river length	29	43	19	4	5	100
Increase/decreases	-50	-3 612	1 255	1 667	740	
Increases/decreases as % opening stock		-11	9	54	20	
Opening stock 2011	22 418	29 339	15 420	4 755	4 379	76 310
Opening stock as a % total river length	29	38	20	6	6	100
INSTREAM HABITAT						
Opening stock 1999	39 736	26 188	5 446	1 301	3 639	76 310
Opening stock as a % total river length	52	34	7	2	5	100
Increase/decreases	-11 245	426	8 180	1 898	740	
Increases/decreases as % opening stock	-28	2	150	146	6 840	
Opening stock 2011	28 491	26 615	13 626	3 200	4 379	76 310
Opening stock as a % total river length	37	35	18	4	6	100

Table E: Ecosystem condition account for rivers based on the aggregated ecological condition category, for main rivers, tributaries and all rivers

Kilometres	Degree of modification from natural					Total
	Natural	Moderately modified	Heavily modified	Unacceptably modified	No Data	
MAIN RIVERS						
Opening stock 1999	46 541	22 315	2 791	1 026	3 637	76 310
Opening stock as a % total river length	61	29	4	1	5	100
Increase/decreases	-24 100	9 467	13 168	1 465		
Increases/decreases as % opening stock	-52	42	472	143		
Opening stock 2011	22 441	31 782	15 960	2 492	3 637	76 310
Opening stock as a % total river length	29	42	21	3	5	100
TRIBUTARIES						
Opening stock 1999	40 294	7 470	2 084	328	37 047	87 223
Opening stock as a % total river length	46	9	2		42	100
Increase/decreases	-17 062	11 339	4 766	957		
Increases/decreases as % opening stock	-42	152	229	292		
Opening stock 2011	23 232	18 809	6 850	1 285	37 047	87 223
Opening stock as a % total river length	27	22	8	1	42	100
ALL RIVERS						
Opening stock 1999	86 835	29 784	4 875	1 354	40 684	163 533
Opening stock as a % total river length	53	18	3	1	25	100
Increase/decreases	-41 163	20 806	17 935	2 422		
Increases/decreases as % opening stock	-47	70	368	179		
Opening stock 2011	45 673	50 591	22 810	3 776	40 684	163 533
Opening stock as a % total river length	28	31	14	2	25	100

Table 15: The Ecological Condition Index for 1999 and 2011 for main rivers and tributaries, on a scale of 0 – 100

	Main rivers	Tributaries	All rivers
1999	81.3	84.9	82.8
2011	70.1	75.2	72.2
Change between 1999 and 2011	-11.2	-9.7	-10.6

## Case study 10. United Kingdom. Developing UK Natural Capital Accounts: Woodland Ecosystem Accounts.

This report is part of a series of DEFRA and ONS (Office for National Statistics ) reports on accounts of various ecosystem types in the UK. It describes the account making reference to the SEEA EEA.

### Specific information about the reporting of the condition account

Ecosystem or asset types	Woodland
Ecosystem extent reported	Yes
Ecosystem condition reported	Yes
Realm	Terrestrial
Spatial unit for analysis	High spatial resolution (gridded data sets used <1km <sup>2</sup> )
Spatial unit of reporting	National
Condition indicators	Extent of species type and volume, age, biomass stock, carbon biomass stock, Site of Special Scientific Interest extent, woodland in flood risk areas, soil carbon stocks
Aggregated indicator	No
Classification of indicators	No
Reference levels	No as per principle: The reference condition should not be adopted and changes should simply be measured as differences between opening and closing stocks
How is condition reported	Asset account with combined information on extent and condition. As a closing stock (indicator values)

### Reported condition tables

Table 4.1 presents the physical ecosystem stock account (closing stock) showing total extent of woodland and the condition of woodland measured by stock values (extent for certain types or for certain designations, biomass, carbon)

Table 4.1: Physical account of ecosystem condition and extent (stock) at the end of an accounting period for GB woodland

Ecosystem: Woodland 2012	Ecosystem extent	Characteristics of ecosystem condition														
	Total Area	Species Type (Extent and Volume)				Age (years)				Biomass Stock	Carbon Stock		Woodland in Flood Risk Areas <sup>10</sup>			Woodland SSSI
		Broadleav ed (BL)	Coniferous (C)	BL	C	0-40	41-60	61-80	>80		Total	Total Biomass	Total Soil	FZ1	FZ2	
	(million ha) <sup>1</sup>	Extent (million ha) <sup>2</sup>	Volume (mill m3) <sup>3</sup>		Age by Volume (mill m3) <sup>4</sup>				Million tonnes (Mt) oven dry <sup>5</sup>	MtCO <sub>2</sub> <sup>6</sup>	MtCO <sub>2</sub> <sup>7</sup>	Extent (mill ha) <sup>8</sup>	Extent (mill ha) <sup>9</sup>			
Coverage (Countries/ regions)	GB	GB		GB		GB				GB	GB	SW England	E&W	E&W	E&W	GB
Closing Stock (2012)	2.78	1.27	1.51	239	375	163	251	105	109	426	780	133	2.61	0.094	0.075	0.243

**Case study 11. United Kingdom: Freshwater Ecosystem Assets and Services Accounts.**

This report is part of a series of DEFRA and ONS (Office for National Statistics) reports on accounts of various ecosystem types in the UK. It describes the account making reference to the SEEA EEA.

**Specific information about the reporting of the condition account**

Ecosystem or asset types	Rivers and lakes, open waters and wetland
Ecosystem extent reported	Yes
Ecosystem condition reported	Yes
Realm	Inland water
Spatial unit for analysis	
Spatial unit of reporting	National
Condition indicators	Ecological condition of wetlands is based on Wetland birds, Mean species richness, Mean total nitrogen stock, Mean soil carbon concentration, Accessible wetlands (population with access to wetlands within X kilometres) For open waters: mean reservoir stock, river flow, surface water status, and accessible open waters (population with access to open waters within X kilometres)
Aggregated indicator	Yes for open waters (surface water status is an aggregated index required under the EU water framework directive)
Classification of indicators	Ecological condition, soil and access
Reference levels	
How is condition reported	Asset account: extent of wetlands + values of condition indicators per year of reporting; asset account for open waters with percentage area under a particular status

**Reported condition tables**

Both tables (for wetlands and waters) are constructed in a similar way as the UK case study on woodland and report extent and condition. Condition is represented by several indicators with closing stock values.

**Table 1 - Wetland ecosystems assets account**

Indicators	Ecosystem Characteristics of condition					
	Extent					
	Land cover	Ecological condition	Soil			Accessibility
		Wetland birds	Mean species richness	Mean total nitrogen stock	Mean carbon conc <sup>6</sup>	Accessible wetlands - population with access to wetlands within X kilometres <sup>1</sup>
Units of measure	Size of area (hectares in '000)	No. of wetland birds at inland wetland sites in the UK ('000)	Diversity of species per pond	Mean total nitrogen in soil(% of dry soil)	Mean level of carbon in soil in (gram/kilogram <sup>-1</sup> )	-
<b>Year 2008</b>	2833 (2007) <sup>2</sup>	4666	39.1 (2007)	1.5 (2007)	401.2 (2007)	-
<b>Net change<sup>3</sup></b>	0	163	-5.4	<sup>4</sup> -0.2	-17.2	-
<b>Year 2012</b>	2833 <sup>5</sup>	4829	33.7	1.3	384.0	-

**Table notes:**

1. Further analysis is required to develop this indicator.
2. The bracket shows the year of the data.
3. Net change is the difference between the opening and the closing period.
4. Expressed in percentage points.
5. These numbers are based on extrapolating from 1998 – 2007. The rate of change between 1998 and 2007 was not statistically significant and therefore the area of land cover is estimated to have remained the same.
6. Mean carbon concentration.

**Table 2 - Open water ecosystems assets account**

Ecosystem Characteristics of condition Extent						
Indicators	Land cover	Water	Ecological condition			Accessibility
		Mean reservoir stock	River Flow	Surface water status	Accessible open waters - population with access to open waters within X kilometres <sup>3</sup>	
	Units of measure	Size of area (hectares in '000)	Average number of reservoirs above or below mean normal capacity	Percentage of rivers recorded as normal and abnormal	Percentage of rivers and canals in high, moderate or bad ecological condition <sup>1</sup>	Percentage of lakes in high, moderate or bad ecological condition <sup>2</sup>
Year 2008	331 (2007) <sup>4</sup>	19 / 12	<sup>5</sup> 47 / 53	2 / 50 / 4	6 / 44 / 3	-
Net change	6	2 / -2	<sup>6</sup> - 21 / 21	0 / -4 / 0	0 / 2 / -1	-
Year 2012	337	21 / 10	26 / 74	2 / 46 / 4	6 / 46 / 2	-

**Table notes:**

1. In 2008, 2% of rivers were in high ecological condition, 30% in good, 50% in moderate, 14% poor and 4% bad. Whereas in 2012, 2% of rivers were in high ecological condition, 31% in good, 46% moderate, 17% poor and 4% in bad ecological condition.
2. In 2008, 6% of lakes were in high ecological condition, 37% in good, 44% in moderate, 10% in poor and 3% in bad. Whereas in 2012 6% of lakes were in high ecological condition, 31% in good, 46% in moderate, 14% in poor and 2% in bad - figures may not sum to 100% due to rounding.
3. Further research is required to develop this indicator.
4. Figures in brackets show the year data were produced.
5. In 2008, 10% of all rivers assessed recorded exceptionally high levels of river flow, 21% above normal, 15% notably high, 47% normal, 6% below normal, 1% notably low and 0% recorded exceptionally low levels. In 2012, 16% of all rivers assessed recorded exceptionally high levels of river flow, 17% notably high, 20% above normal, 26% normal, 6% below normal, 8% notably low and 7% exceptionally low levels.

## Case study 12. United Kingdom: Developing ecosystem accounts for protected areas in England and Scotland

This study contains a series of accounting tables for different ecosystem types situated within protected areas. It refers to the SEEA. The technical annex of about 150 pages gives a huge amount of detail especially on ecosystem services.

### Specific information about the reporting of the condition account

Ecosystem or asset types	Farmland, grassland, forest and woodland, open waters wetlands rivers, groundwater, and heathland and sparsely vegetated land, coastal ecosystems
Ecosystem extent reported	Yes
Ecosystem condition reported	Yes
Realm	Terrestrial, inland water and marine
Spatial unit for analysis	
Spatial unit of reporting	National
Condition indicators	A mix of indicators (see technical annex) for Biomass/carbon, biodiversity, soil quality, water quality (water framework directive), access and conservation status
Aggregated indicator	No aggregation
Classification of indicators	Yes: biomass, biodiversity, soil and water quality, accessibility and conservation status
Reference levels	To some extent (e.g. for indicators on the WFD or other EU directives)

### Reported condition tables

The study contains tables for various assets (extent and condition) and report indicator values as closing stocks for a given year.

**Table 5. Woodland asset account results for New Forest NP in 2013**

Ecosystem extent											
Total area											
Woodland		Broadleaved woodland		Coniferous woodland		Ancient woodland		Managed woodland			
(ha) <sup>1</sup>		(ha) <sup>1</sup>		(ha) <sup>1</sup>		(ha) <sup>2</sup>		(ha) <sup>2</sup>			
20,371		15,069		5,302		9,339		17,646			
Ecosystem condition											
Biomass/carbon				Biodiversity	Soil/water quality	Accessibility				Conservation status	
Standing timber volume	Mean annual increment	Topsoil carbon stock	Vegetation carbon stock	Woodland bird index	-	Length national trails	Accessible ecosystem	Light pollution	Tranquillity	SSSI cover	SSSI favourable
(m <sup>3</sup> ) <sup>4,5</sup>	(m <sup>3</sup> ) <sup>6,7</sup>	(tonnes carbon in 15 cm) <sup>8</sup>	(tonnes carbon) <sup>9</sup>	- <sup>10</sup>	-	(km) <sup>2</sup>	(%) <sup>2</sup>	(0 to 255) <sup>11</sup>	(-141 to 149) <sup>12</sup>	(%) <sup>2</sup>	(%) <sup>2</sup>
5,971,000	130,506	1,368,348	1,425,970	-	-	0	18%	59	15	69%	33%

<sup>1</sup> CEH (2007) Land Cover Map

<sup>2</sup> Natural England (2015) GIS digital boundary datasets

<sup>3</sup> Natural England (2013) FMEOP

<sup>4</sup> Forestry Commission (2011) Standing timber volume for coniferous trees in Britain

<sup>5</sup> Forestry Commission (2013) NFI preliminary estimates of quantities of broadleaved species in British woodlands, with special focus on ash

<sup>6</sup> Forestry Commission (2012) GB 25-year forecast of standing coniferous volume and increment

<sup>7</sup> Forestry Commission (2014) 50-year forecast of hardwood timber availability

<sup>8</sup> CEH (2007) Countryside Survey 2007: Model estimates of topsoil carbon

<sup>9</sup> Natural England (2012) Carbon storage by habitat: Review of the evidence of the impacts of management decisions and condition of carbon stores and sources

<sup>10</sup> Data is available from the BTO on bird populations associated with different ecosystems over time although the actual estimates were not available for this project.

<sup>11</sup> CPRE (2000) Dark skies mapping

<sup>12</sup> CPRE (2000) Tranquillity mapping

**Table 6. Enclosed farmland asset account results for New Forest NP in 2013**

Ecosystem extent					
Total area					
Enclosed farmland		Arable and horticulture		Improved grassland	
(ha) <sup>1</sup>		(ha) <sup>1</sup>		(km) <sup>2</sup>	
16,773		5,205		11,568	
				1,790	
Ecosystem condition (part 1)					
Biomass/carbon		Biodiversity		Soil/water quality	
Accessibility					
Topsoil carbon stock		Vegetation carbon stock		Farmland bird index	
Grade 1 & 2 land		Length national trails		Accessible ecosystem	
(tonnes carbon in 15 cm) <sup>3</sup>		(tonnes carbon) <sup>4</sup>		-	
(km) <sup>2</sup>		(km) <sup>2</sup>		(km) <sup>2</sup>	
1,363,536		16,773		7%	
				0	
				3%	
Ecosystem condition (part 2)					
Accessibility		Conservation status			
Light pollution		Tranquillity		SSSI cover	
SSSI favourability		SSSI favourable		ELS agreements	
(0 to 255) <sup>6</sup>		(-141 to 149) <sup>7</sup>		(%) <sup>2</sup>	
(km) <sup>2</sup>		(km) <sup>2</sup>		(km) <sup>2</sup>	
69		4		8%	
				62%	
				18%	
				78%	
				0%	

<sup>1</sup> CEH (2007) Land Cover Map

<sup>2</sup> Natural England (2015) GIS digital boundary datasets

<sup>3</sup> CEH (2007) Countryside Survey 2007: Model estimates of topsoil carbon

<sup>4</sup> Natural England (2012) Carbon storage by habitat: Review of the evidence of the impacts of management decisions and condition of carbon stores and sources

<sup>5</sup> Data is available from the BTO on bird populations associated with different ecosystems over time although the actual estimates were not available for this project.

<sup>6</sup> CPRE (2000) Dark skies mapping

<sup>7</sup> CPRE (2000) Tranquillity mapping

<sup>8</sup> Natural England (2013) FMEOP

**Table 7. SNGL asset account results for New Forest NP in 2013**

Ecosystem extent										
Total area										
SNGL		Rough grassland		Neutral grassland		Calcareous grassland		Acid grassland		
(ha) <sup>1</sup>		(ha) <sup>1</sup>		(ha) <sup>1</sup>		(ha) <sup>1</sup>		(ha) <sup>1</sup>		
4,190		2,874		1,312		0		4		
Ecosystem condition										
Biomass/carbon		Biodiversity		Soil/water quality	Accessibility				Conservation status	
Topsoil carbon stock	Vegetation carbon stock	Butterfly abundance	Butterfly richness	-	Length national trails	Accessible ecosystem	Light pollution	Tranquillity	SSSI cover	SSSI favourable
(tonnes carbon in 15 cm) <sup>2</sup>	(tonnes carbon) <sup>3</sup>	(no. butterflies) <sup>4</sup>	(no. species) <sup>4</sup>	-	(km) <sup>5</sup>	(%) <sup>5</sup>	(0 to 255) <sup>6</sup>	(-141 to 149) <sup>7</sup>	(%) <sup>5</sup>	(%) <sup>5</sup>
107,672	4,190	18,081	34	-	0	56%	68	10	71%	74%

<sup>1</sup> CEH (2007) Land Cover Map

<sup>2</sup> CEH (2007) Countryside Survey 2007: Model estimates of topsoil carbon

<sup>3</sup> Natural England (2012) Carbon storage by habitat: Review of the evidence of the impacts of management decisions and condition of carbon stores and sources

<sup>4</sup> Butterfly Conservation (2013) UK butterfly monitoring scheme

<sup>5</sup> Natural England (2015) GIS digital boundary datasets

<sup>6</sup> CPRE (2000) Dark skies mapping

<sup>7</sup> CPRE (2000) Tranquillity mapping

Table 8. OWWF asset account results for New Forest NP in 2013

Ecosystem extent								
Total area								
OWWF	Fen, marsh, and swamp	(Lowland) bog	Freshwater	Length rivers	Standing waterbodies	Groundwater bodies	Average precipitation	
(ha) <sup>1</sup>	(ha) <sup>1</sup>	(ha) <sup>1</sup>	(ha) <sup>1</sup>	(km) <sup>2</sup>	(no.) <sup>2</sup>	(no.) <sup>2</sup>	(mm/year/km <sup>2</sup> ) <sup>2</sup>	
180	23	2	155	280	3	6	824	
Ecosystem condition (part 1)								
Biomass/carbon		Biodiversity			Soil/water quality			
Topsoil carbon stock	Vegetation carbon stock	Fish abundance	Fish richness	Wetland bird index	Rivers in high / good status	Standing water in high / good status	Groundwater in high / good status	Lowland peatland favourable
(tonnes carbon in 15 cm) <sup>3</sup>	(tonnes carbon) <sup>4</sup>	(no. fish) <sup>5</sup>	(no. species) <sup>5</sup>	- <sup>6</sup>	(%) <sup>2</sup>	(%) <sup>2</sup>	(%) <sup>2</sup>	(%) <sup>7</sup>
-	50	5,525	25	-	29%	33%	83%	45%
Ecosystem condition (part 2)								
Accessibility				Conservation status				
Length national trails	Accessible ecosystem	Light pollution	Tranquillity	SSSI cover	SSSI favourable	Eutrophic NVZs	Groundwater NVZs	Surface water NVZs
(km) <sup>7</sup>	(%) <sup>7</sup>	(0 to 255) <sup>8</sup>	(-141 to 149) <sup>9</sup>	(%) <sup>7</sup>	(%) <sup>7</sup>	(ha) <sup>7</sup>	(ha) <sup>7</sup>	(ha) <sup>7</sup>
0	9%	68	12	66%	45%	8,663	436	4,919

<sup>1</sup> CEH (2007) Land Cover Map

<sup>2</sup> Natural England (2013) FMEOPL

<sup>3</sup> CEH (2007) Countryside Survey 2007: Model estimates of topsoil carbon

<sup>4</sup> Natural England (2012) Carbon storage by habitat: Review of the evidence of the impacts of management decisions and condition of carbon stores and sources

<sup>5</sup> Data requested from the Environment Agency.

<sup>6</sup> Data is available from the BTO on bird populations associated with different ecosystems over time although the actual estimates were not available for this project.

<sup>7</sup> Natural England (2015) GIS digital boundary datasets

<sup>8</sup> CPRE (2000) Dark skies mapping

<sup>9</sup> CPRE (2000) Tranquillity mapping

Table 9. MMH asset account results for New Forest NP in 2013

Ecosystem extent											
Total area											
MMH		Heather		Heather grassland		Montane habitats		Inland rock		(Upland) bog	
(ha) <sup>1</sup>		(ha) <sup>1</sup>		(ha) <sup>1</sup>		(ha) <sup>1</sup>		(ha) <sup>1</sup>		(ha) <sup>1</sup>	
12,134		6,433		5,551		0		150		-	
Ecosystem condition											
Biomass/carbon		Biodiversity	Soil/water quality	Accessibility				Conservation status			
Topsoil carbon stock	Vegetation carbon stock	Upland bird index	Upland peat favourable	Length national trails	Accessible ecosystem	Light pollution	Tranquillity	SSSI cover	SSSI favourable		
(tonnes carbon in 15 cm) <sup>2</sup>	(tonnes carbon) <sup>3</sup>	- <sup>4</sup>	(%) <sup>5</sup>	(km) <sup>5</sup>	(%) <sup>5</sup>	(0 to 255) <sup>6</sup>	(-141 to 149) <sup>7</sup>	(%) <sup>5</sup>	(%) <sup>5</sup>		
1,215,157	23,968	-	-	0	91%	63	20	99%	74%		

<sup>1</sup> CEH (2007) Land Cover Map

<sup>2</sup> CEH (2007) Countryside Survey 2007: Model estimates of topsoil carbon

<sup>3</sup> Natural England (2012) Carbon storage by habitat: Review of the evidence of the impacts of management decisions and condition of carbon stores and sources

<sup>4</sup> Data is available from the BTO on bird populations associated with different ecosystems over time although the actual estimates were not available for this project.

<sup>5</sup> Natural England (2015) GIS digital boundary datasets

<sup>6</sup> CPRE (2000) Dark skies mapping

<sup>7</sup> CPRE (2000) Tranquillity mapping

**Table 10. Coastal margins asset account results for New Forest NP in 2013**

Ecosystem extent						
Total area						
Coastal margins	Supra-littoral rock	Supra-littoral sediment	Saltmarsh	Coastal waterbodies	Transitional waterbodies	
(ha) <sup>1</sup>	(ha) <sup>1</sup>	(ha) <sup>1</sup>	(ha) <sup>1</sup>	(no.) <sup>2</sup>	(no.) <sup>2</sup>	
430	0	120	310	3	4	
Ecosystem condition (part 1)						
Biomass/carbon		Biodiversity	Soil/water quality			
Topsoil carbon stock	Vegetation carbon stock	Seabird index	Bathing water compliance	Blue flag beaches	Coastal waterbodies in high/good status	Transitional waterbodies in high/good status
(tonnes carbon in 15 cm) <sup>3</sup>	(tonnes carbon) <sup>4</sup>	- <sup>5</sup>	(% beaches) <sup>6</sup>	(no.) <sup>7</sup>	(%) <sup>2</sup>	(%) <sup>2</sup>
0	310	-	100	0	0%	50%
Ecosystem condition (part 2)						
Accessibility				Conservation status		
Length national trails	Accessible ecosystem	Light pollution	Tranquillity	SSSI cover	SSSI favourable	
(km) <sup>8</sup>	(%) <sup>8</sup>	(0 to 255) <sup>9</sup>	(-141 to 149) <sup>10</sup>	(%) <sup>8</sup>	(%) <sup>8</sup>	
0	0%	68	17	26%	36%	

<sup>1</sup> CEH (2007) Land Cover Map

<sup>2</sup> Natural England (2013) FMEOPL

<sup>3</sup> CEH (2007) Countryside Survey 2007: Model estimates of topsoil carbon

<sup>4</sup> Natural England (2012) Carbon storage by habitat: Review of the evidence of the impacts of management decisions and condition of carbon stores and sources

<sup>5</sup> Data is available from the BTO on bird populations associated with different ecosystems over time although the actual estimates were not available for this project.

<sup>6</sup> Environment Agency (2013) Bathing water quality

<sup>7</sup> Blue Flag Beaches (2015) Beaches and marinas with blue flags

<sup>8</sup> Natural England (2015) GIS digital boundary datasets

<sup>9</sup> CPRE (2000) Dark skies mapping

<sup>10</sup> CPRE (2000) Tranquillity mapping

### Case study 13. United Kingdom: Natural capital accounts for assets managed by the public forests estate (PFE)

This report published an account for natural assets on land managed by the public forest estate (PFE). It does not refer to the SEEA.

#### Specific information about the reporting of the condition account

Ecosystem or asset types	Focus on woodland but including accounting information for other asset types managed by the PFE: grassland, mountains, moors and heathland, enclosed farmland, freshwater, urban, coastal
Ecosystem extent reported	Yes
Ecosystem condition reported	Yes
Realm	Terrestrial and freshwater
Spatial unit of reporting	National
Condition indicators	A mix of aggregated indicators (5 status classes + individual indicators on birds, forest structure, carbon, standing stock, spatial configuration, accessibility)
Aggregated indicator	Yes: for woodland and other asset types 5 status classes
Classification of indicators	There is a grouping of indicators but somewhat inconsistent for the different asset types)
Reference levels	No but a baseline is used and some indicators which are measured under EU legislation have reference values.
How is condition reported	A mix of aggregated indicators as a percentage and indicator values; condition reported together with extent

#### Reported condition tables

The tables report extent and condition of ecosystem assets. Here only the condition tables are presented. The account contains values for indicators for a reporting year relative to a baseline year.

Indicator		*Baseline year 2013-14	Reporting year 2016-17	Trend	% change	Units	Explanation of trend
Condition	Conditions of SSSIs						
	% in favourable condition	35.6	36.8	↑	3.3%	%	<b>Conditions of SSSIs</b> Changes to SSSI condition occur slowly as both resurvey and the result of restoration works combine but the increase in favourable condition reflect ongoing work to improve these important habitats.
	% in unfavourable recovering condition	63.9	61.8	↓	-3.2%		
	% in unfavourable no change or declining condition	0.5	1.4	↑	182.0%		
	% part destroyed or destroyed condition	-	-	↔	0.0%		

Condition	Site condition of non-SSSI priority woodland habitat					%	Site condition of non-SSSI priority woodland habitat Habitat condition records are new for this so there is no long term trend at present.
	Ancient and semi-natural woodland						
	Favourable	1,422	1,422		-		
	Recovering	2,667	2,667		-		
	Declining	170	170		-		
	Unfavourable	763	763		-		
	Not known	92	92		-		

Woodland bird indicator					Index	Woodland bird indicator This is an area that Defra have been investigating, though as yet we are not aware of a method of calculating. We have retained it as an area for future expansion.
All	-	-		-		
Generalists	-	-		-		
Specialists	-	-		-		
Carbon stock in...					1000 metric tonnes	Carbon stock in... This represents the carbon stored in the PFE. This is distinct from the assessment of carbon dioxide (equivalent) flows from the PFE that are assessed in the physical and monetary accounts.
Living biomass	12,397	13,143	↑	6.0%		
Deadwood and litter	-	-		-		
Soils	-	-		-		
CO <sub>2</sub> e stock in...					1000 metric tonnes	CO <sub>2</sub> e stock in... This shows carbon dioxide equivalent (CO <sub>2</sub> e) of the carbon stored in the PFE. The change in the stock as a result of sequestration or emissions of carbon (CO <sub>2</sub> e) enter the physical account, monetary account and balance sheet.
Living biomass	45,456	48,190	↑	6.0%		
Deadwood and litter	-	-		-		
Soils	-	-		-		
Biomass stock...					1000 metric tonnes oven-dry weight	
Total above and below ground	24,794	26,285	↑	6.0%		
Above ground	19,295	20,456	↑	6.0%		
Below ground	5,499	5,829	↑	6.0%		
In deadwood	-	-		-		

**Case study 14: United Kingdom: Initial ecosystem accounts for urban areas**

This report is part of a series of DEFRA and ONS (Office for National Statistics) reports on accounts of various ecosystem types in the UK. It describes the account making reference to the SEEA EEA.

**Specific information about the reporting of the condition account**

Ecosystem or asset types	urban areas
Ecosystem extent reported	yes
Ecosystem condition reported	yes
Realm	terrestrial
Spatial unit of reporting	national
Condition indicators	condition of sites of special scientific interest (SSSI) sites and number of sites awarded Green Flag status; also accessibility and proximity of green space
Aggregated indicator	SSSI indicator are aggregated indicators
Classification of indicators	No
Reference levels	No (but there is a favourable and unfavourable level for the first indicator)
How is condition reported	Linked to extent accounts and broken down over two condition classes

**Reported condition table**

The table breaks down the extent of urban green space over two condition categories: favourable and unfavourable.

**Table 5: Breakdown by country of urban SSSI/ASSI condition and extent as known at May 2018, United Kingdom**

Country	Extent (hectares)	Condition <sup>5</sup>	Favourable	Unfavourable	Destroyed/ Partially destroyed	NA
England <sup>1</sup>	9,590	Units	1,317	1,592	20	3
		%	45%	54%	1%	0%
Scotland <sup>2</sup>	1,170	Units	335	134	3	18
		%	68%	27%	1%	4%
Wales <sup>3</sup>	580	Units	1,090	1,344		20
		%	44%	55%		1%
Northern Ireland <sup>4</sup>	220	Units	NA	NA	NA	NA
United Kingdom	11,560	Units	NA	NA	NA	NA

Source: Natural England, Natural Resources Wales, Natural Scottish Heritage, Opendata Northern Ireland

SSSI: sites of special scientific interest

## Type B case studies: Ecosystem accounts that include relevant information for developing condition accounts

### Case study 15. Australia: Accounting for vegetation condition in the Australian landscape

This document describes a method for estimating ecosystem condition based on the modification of vegetation. No accounting table is presented. But the method can be used to assess different ecosystem types and to break down their extent over different degrees of modification. Although the term “accounting” appears in the title and in the document, there’s no reference to “ecosystem accounts” or SEEA and there are no accounting tables.

#### Specific information about the reporting of the condition account

Ecosystem or asset types	Heathland and shrub, cropland, forest and woodland
Ecosystem extent reported	No
Ecosystem condition reported	No
Realm	Terrestrial
Spatial unit for analysis	
Spatial unit of reporting	
Condition indicators	Degree of modification from natural state and non-native vegetation cover
Aggregated indicator	7 status classes of vegetation cover
Classification of indicators	
Reference levels	
How is condition reported	Area of different classes of vegetation status

**Table 1** shows the VAST classification. The table elaborates the seven states, the diagnostic criteria used to distinguish them, and provides examples. These states can be mapped onto the landscape as vegetation condition classes where appropriate input data and information satisfy the required diagnostic criteria.

Increasing vegetation modification from left to right							
Native Vegetation Cover				Non-native Vegetation Cover			
Dominant structuring plant species indigenous to the locality and spontaneous in occurrence – i.e. a vegetation community described using definitive vegetation types relative to estimated pre1750 types*				Dominant structuring plant species indigenous to the locality but cultivated; alien to the locality and cultivated, or alien to the locality and spontaneous*			
Vegetation Cover Classes	Type 0: RESIDUAL BARE Areas where native vegetation does not naturally persist	Type I: RESIDUAL native vegetation community structure, composition, and regenerative capacity intact – no significant perturbation from land use/land management practice	Type II: MODIFIED native vegetation community structure, composition and regenerative capacity intact – perturbed by land use/land management practice	Type III: TRANSFORMED native vegetation community structure, composition and regenerative capacity significantly altered by land use/land management practice	Type IV: REPLACED - ADVENTIVE native vegetation replacement – species alien to the locality and spontaneous in occurrence	Type V: REPLACED - MANAGED native vegetation replacement with cultivated vegetation	Type VI: REMOVED vegetation removal
Diagnostic criteria	Current regenerative capacity	Natural regenerative capacity unmodified	Natural regeneration tolerates / endures under past &/or current land management practices	Natural regenerative capacity limited / at risk under past &/or current land use or land management practices. Rehabilitation and restoration possible through modified land management practice	Regeneration of native vegetation community has been suppressed by ongoing disturbances of the natural regenerative capacity. Limited potential for restoration.	Regeneration of native vegetation community lost or suppressed by intensive land management. Limited potential for restoration	Nil or minimal
	Vegetation structure	Nil or minimal	Structural integrity of native vegetation community is very high	Structure is predominantly altered but intact e.g. a layer / strata and/or growth forms and/or age classes removed	Dominant structuring species of native vegetation community altered e.g. a layer / strata frequently & repeatedly removed	Dominant structuring species of native vegetation community removed or predominantly cleared or extremely degraded	Vegetation absent or ornamental
	Vegetation composition	Nil or minimal	Compositional integrity of native vegetation community is very high	Composition of native vegetation community is altered but intact	Dominant structuring species present – species dominance significantly altered	Dominant structuring species of native vegetation community removed	Vegetation absent or ornamental
Examples	Bare mud, rock, river and beach sand, salt and freshwater lakes	Old growth forests; Native grasslands that have not been grazed; Wildfire in native forests and woodlands of a natural frequency and/or intensity;	Native vegetation types managed using sustainable grazing systems; Selective timber harvesting practices; Severely burnt (wildfire) native forests and woodlands not of a natural frequency and/or intensity	Intensive native forestry practices; Heavily grazed native grasslands and grassy woodlands; Obvious thinning of trees for pasture production; Weedy native remnant patches; Degraded roadside reserves; Degraded coastal dune systems; Heavily grazed riparian vegetation	Severe invasions of introduced weeds; Invasive native woody species found outside their normal range; Isolated native trees/shrubs/grass species in the above examples	Forest plantations; Horticulture; Tree cropping; Orchards; Reclaimed mine sites; Environmental and amenity plantings; Improved pastures. (includes heavy thinning of trees for pasture); Cropping; Isolated native trees/ shrubs/ grass species in the above examples	Water impoundments; Urban and industrial landscapes; quarries and mines; Transport infrastructure; salt scalded areas

## Case study 16. Australia: Environmental-Economic Accounting for ACT State of the Environment Reporting – Proof of Concept

This report presents accounts on land, environmental condition, biodiversity, water, air emissions, solid waste and environmental expenditure. Chapter 3 deals with “environmental condition accounts”, including for land and water ecosystems. It includes condition scores for a range of indicators and categories, reported in graphs rather than condition account tables. The study refers to SEEA.

### Specific information about the reporting of the condition account

Ecosystem or asset types	Land and water
Ecosystem extent reported	Yes, land accounts are reported
Ecosystem condition reported	Yes
Realm	Terrestrial, Inland water
Spatial unit of assessment	Water: river reaches
Spatial unit of reporting	Land: Subnational (Australian Capital Territory, ACT) Water: three catchment areas within the ACT Land: tree cover, soil exposure, leaf area, river inflow, inundation and carbon uptake
Condition indicators	Water: chemical composition, macro-invertebrate diversity and riparian condition of natural and managed waterways, based on the data from the Catchment Health Indicator Program (CHIP) Land: Environmental Condition Score (ECS).
Aggregated indicator	Water: The CHIP scores and the individual indicators are scored from one to five. A score of 1 signifies an ‘excellent’ condition system, 2 a ‘good’ condition, 3 a ‘fair’ condition, 4 a ‘poor’ condition and 5 is ‘degraded’.
Classification of indicators	
Reference levels	
How is condition reported	In figures

The condition is not reported in accounting tables but presented in graphs.

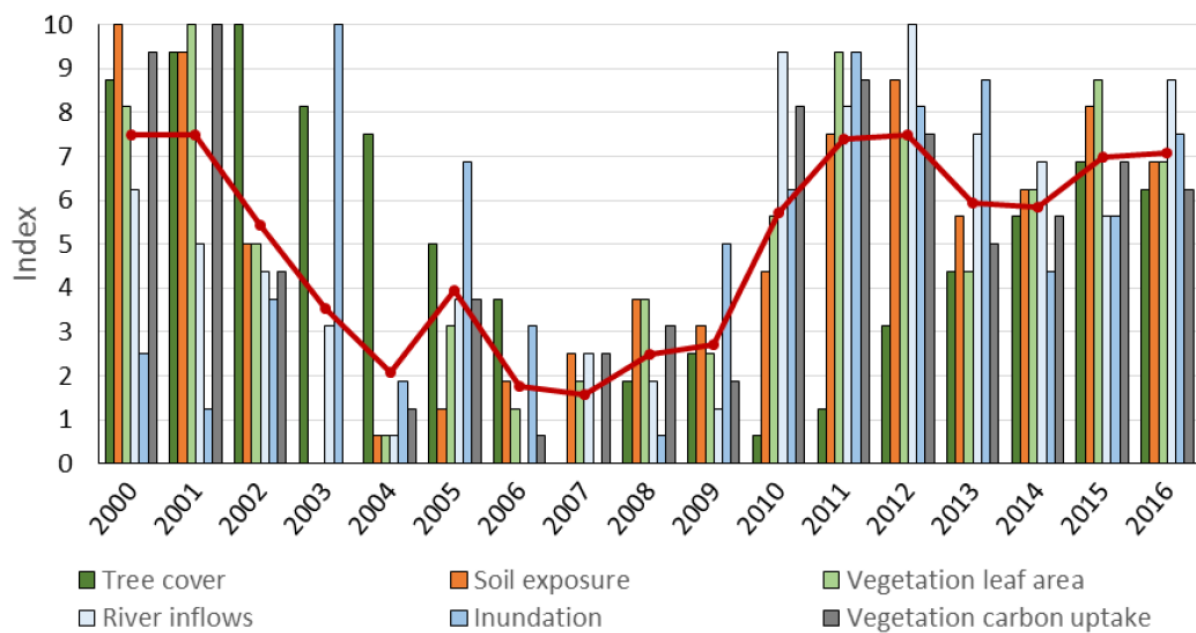


Figure 3 Environmental Condition Score for the Australian Capital Territory

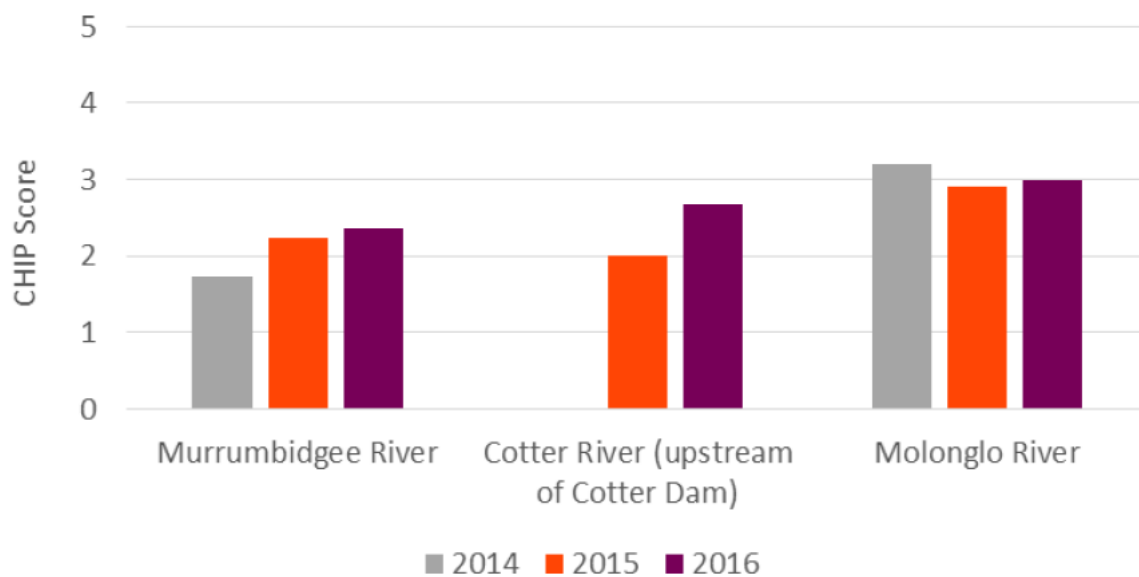


Figure 6 Catchment Health Indicator Program Scores aggregated for select rivers across the ACT

## Case study 17. European Union. Developing Ecosystem Condition Accounts for the EU and Member States

This report presents bird accounts based on the reporting under Art.12 of the EU Birds Directive and species accounts based on the reporting under Art.17 of the EU Habitats Directive. The accounts are not directly usable as condition accounts but should be used as species accounts.

### Specific information about the reporting of the condition account

Ecosystem or asset types	MAES typology for ecosystems for the EU with 7 terrestrial types, 1 freshwater and 4 marine
Ecosystem extent reported	No
Ecosystem condition reported	No, instead species accounts are published
Realm	Terrestrial, Inland water, Marine
Spatial unit of reporting	Biogeographical regions of the EU
Condition indicators	No
Aggregated indicator	Yes, species conservation status and bird conservation status which are aggregated indicators based on several sub assessments
Classification of indicators	No
Reference levels	No
How is condition reported	The number of species assessments over three conservation status classes

Table 6 is an extract of an account with the number of assessments of conservation status per bioregion and per ecosystem type. Table 8 is a species abundance account using all bird species records for which population estimates meet certain criteria.

Table 6 Account for Belgium using Article 17 Approach

Bioregion		1 Urban	2 Cropland	3 Grassland	4 Forest	5 Heathland and shrub	6 Sparsely vegetated land	7 Inland wetlands	8 Rivers and lakes	9 Marine Inlets and transitional waters	11 Marine coastal water	12 Marine shelf	Total by CS
Conservation status 2006													
Atlantic	FV Favourable	2		2	9	2		7	4				14
	U1 Inadequate			2	4			5	5				13
	U2 Bad		2	1	5	1		9	10				24
	XX Unknown	2		3	4	3	1	3	6				9
	Total	4	2	8	22	6	1	24	25				60
Continental	FV Favourable	3	1	2	7	2	1	5	7				17
	U1 Inadequate	4	2		3	2	1	2	2				18
	U2 Bad	2	1	5	2	1	2	7	8				21
	XX Unknown	3	1	1	10	3	2	7	7				8
	Total	12	5	8	22	8	6	21	24				64
Marine Atlantic	U1 Inadequate									2	2		2
	U2 Bad										1	1	1
										2	3	1	3

Table 8 Species Abundance Account - all birds for Belgium

Population Based Account Using Article 12 Data for 2007 and 2012:					Belgium						
	MAES										All Ecosystems
	Coastal	Cropland	Grassland	Heathland / Shrub	Marine Inlets	Rivers / Lakes	Sparsely Vegetated	Urban	Wetlands	Woodland / Forest	
Situation 2005-2007 <sup>2</sup>											
Total abundance (No. individuals)											
Number of species											
Shannon's Index											
Trends in Status 2008 - 2012											
Prevailing Trends <sup>1</sup>	-	23.81	33.33	-14.29	-	55.17	28.57	37.50	47.27	16.22	32.17
Overall Trend <sup>3</sup>	-	0.00	0.00	-42.86	-	34.48	14.29	12.50	25.45	8.11	13.91
Intensity of change <sup>5</sup>	-	76.19	57.14	71.43	-	68.97	78.57	62.50	65.45	89.19	74.78
Coverage of trends <sup>7</sup>	-	100.00	90.48	100.00	-	89.66	92.86	87.50	87.27	97.30	93.04
Net Change <sup>8</sup>											
Total abundance (No.)											
Number of species											
Shannon's Index											
Situation 2008 - 2012											
Total abundance (No.)	0.00E+00	5.82E+04	3.75E+04	1.55E+04	0.00E+00	3.06E+04	3.79E+04	2.78E+04	3.10E+04	3.14E+05	5.52E+05
Number of species	0	21	21	14	0	58	28	8	55	37	115
Shannon's Index	-	2.05	1.94	1.53	-	3.06	1.65	0.85	2.92	2.57	3.42

**Case study 18. South Africa: Land and ecosystem accounting in KwaZulu-Natal**

The focus of this report is on presenting land accounts but the tables contain information about the extent of each reported area (biome, vegetation type, municipality) under natural or degraded state, which could form the basis for a condition account. The study refers to the SEEA.

**Specific information about the reporting of the condition account**

Ecosystem or asset types	Vegetation types, biomes
Ecosystem extent reported	Yes
Ecosystem condition reported	Yes
Realm	Terrestrial
Spatial unit for analysis	1 hectare grid
Spatial unit of reporting	Sub-national
Condition indicators	
Aggregated indicator	A proposal for an indicator with three levels based on degree of modification from natural state
Classification of indicators	
Reference levels	Yes (the natural state)
How is condition reported	Reported together with the extent account under different levels of condition (natural state versus degraded); assessment based on land cover and land use. Not reported as an explicit ecosystem condition account.

**Reported table (example)**

In Table 17 we show a breakdown of land cover change within a few vegetation types in KZN.

Table 17: Integrated ecosystem and land cover change matrix for selected vegetation types in KZN, 2005 to 2011

Hectares		Increases (positive numbers) and decreases (negative numbers) from other land cover classes within each vegetation type															
Vegetation type	Biome	Natural	Degraded	Fallow lands	Plantation	Subsistence agriculture	Dryland agriculture	Irrigated agriculture	Sugarcane	Rehabilitated mines	Severe erosion	Dams	Low density settlement	Turfed recreation areas	Built-up areas	Mines	Transport network
Freshwater Wetlands (all)	Wetland	-8336	1039	563	365	3104	2331	548	-1102	-193	-1873	2500	521	-596	594	-206	731
Alluvial Wetlands (all)	Wetland	-18363	-344	775	209	10066	5045	680	-2710	-1961	-7854	11512	1967	-683	864	-828	1589
Southern Drakensberg Highland Grassland	Grassland	-1053	895	0	50	1	30	0	0	0	-32	35	37	1	4	-63	92
Northern Drakensberg Highland Grassland	Grassland	-1744	1685	0	-13	-27	1	0	0	-68	64	-274	350	-28	41	-15	28
Subtropical Dune Thicket	IOCB	-285	293	0	1	1	0	0	-11	0	0	-2	3	-7	8	0	0
KwaZulu-Natal Dune Forests (all)	Forest	-2535	1806	19	438	57	0	0	-218	413	-5	-23	44	-208	-132	215	130
KwaZulu-Natal Coastal Belt Grassland	IOCB	-27056	1190	2501	-31	37574	142	2348	-33535	0	-798	-22303	29021	-57394	62998	-7869	13209
KwaZulu-Natal Sandstone Sourveld	Grassland	-10577	3256	492	873	4047	845	410	-3861	0	-252	-11888	14493	-5800	6879	-2530	3612

Table notes:

- Vegetation types in this table were selected based on the specific contribution they are known to make to biodiversity and ecosystem services.
- Freshwater Wetlands in this table combine 12 different vegetation types from the KZN vegetation map; Alluvial Wetlands combine seven; and KwaZulu-Natal Dune Forest combines two.

**Case study 19. Uganda: Experimental Ecosystem Accounts**

This report presents extent and biodiversity accounts. The extent accounts includes some information on condition (linked to degree of modification from natural based on land cover classes), which could be used as a starting point for a condition account. The study refers to the SEEA

**Specific information about the reporting of the condition account**

Ecosystem or asset types	Grassland, Forest and woodland, and wetland
Ecosystem extent reported	Yes
Ecosystem condition reported	No
Realm	Terrestrial
Spatial unit for analysis	
Spatial unit of reporting	National
Condition indicators	Species richness and biodiversity values are used for species accounts
Aggregated indicator	Red list index (for species accounts)
Classification of indicators	
Reference levels	
How is condition reported	Indicator values (number of species and red list index); not linked to the extent account

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**Case study 20. United Kingdom: UK natural capital: developing UK mountain, moorland and heathland ecosystem accounts**

This article scopes the development of ecosystem accounts for mountains, moorlands and heathlands and discusses several methodological challenges arising from the unique characteristics of these habitats. The document contains an extent account but no condition account. Yet, the scoping paper provides relevant information for developing condition accounts. A set of indicators for condition is proposed with a rationale as to why to include them. The article refers to the SEEA EEA.

**Specific information about the reporting of the condition account**

Ecosystem or asset types	Mountains, moorlands and heathlands
Ecosystem extent reported	Yes
Ecosystem condition reported	No
Realm	Terrestrial
Spatial unit for analysis	
Spatial unit of reporting	National
Condition indicators	Carbon content, Soil ammonia and nitrogen levels, Specialist bird populations, Mammal populations, Species richness scores, Invertebrates:, Sites of Special Scientific Interest (SSSI) and Areas of Special Scientific Interest, (ASSI) condition status, Wildfire, Managed burning, Water quality, Proximity of human habitation to MMH habitat, Length of National Trails, Volume of sheep grazing, Volume of air pollutants
Aggregated indicator	
Classification of indicators	Seven dimensions of quality for which condition can be indicated. The dimensions are as follows: relevant volume estimates, biodiversity indicators, soil indicators, ecological condition indicators, spatial configuration, access, management practises, Managed burning
Reference levels	NA
How is condition reported	NA

**Case study 21. United Kingdom: UK natural capital: developing semi-natural grassland ecosystem accounts**

This article scopes the development of ecosystem accounts for semi-natural grasslands and discusses several methodological challenges arising from the unique characteristics of these habitats. The document contains no final accounting tables. Yet, the scoping paper provides relevant information for developing condition accounts. A set of indicators for condition is proposed with a rationale as to why to include them. The proposed indicators are also connected to key ecosystem services. For most of the proposed data no or limited data is available. The article refers to the SEEA EEA.

**Specific information about the reporting of the condition account**

Ecosystem or asset types	Semi-natural grasslands (acid grassland, neutral grassland, calcareous grassland, purple moor grass and rush pasture)
Ecosystem extent reported	No (but different data sources and statistics about extent are reported)
Ecosystem condition reported	No
Realm	Terrestrial
Spatial unit for analysis	National
Spatial unit of reporting	National
Condition indicators	Plant species richness, Characteristic species, Invertebrate abundance, Cutting and grazing, Sites of Special Scientific Interest, and Areas of Special Scientific Interest, Grazing intensity, Air quality, Naturalness of water levels, Proximity to insect pollinated crops, Fragmentation, Access
Aggregated indicator	
Classification of indicators	Soil indicators Biodiversity indicators Management Indicators Ecological Condition Indicators Spatial Configuration Indicators
Reference levels	NA
How is condition reported	NA

**Case study 22. United Kingdom: Scoping UK coastal margin ecosystem accounts**

This article scopes the development of ecosystem accounts for coastal margins. The document contains no final accounting tables. Extent is estimated based on a number of studies and predictions up till 2060. The scoping paper also proposes a set of indicators for developing the condition account. The article refers to the SEEA EEA.

**Specific information about the reporting of the condition account**

Ecosystem or asset types	Sand dunes, shingle, machair, salt marches, coastal lagoons and seacliffs
Ecosystem extent reported	No (but different data sources and statistics about extent are reported)
Ecosystem condition reported	No
Realm	Terrestrial
Spatial unit for analysis	
Spatial unit of reporting	National
Condition indicators	Carbon stock in the soil, different biodiversity indicators, Designated areas, SSSI condition status, Blue flag status, Compliance with the Bathing Water Directive, Good status under the EU water framework directive, Access to coastal margins
Aggregated indicator	
Classification of indicators	Soil Biodiversity Conservation status Water Access
Reference levels	NA
How is condition reported	NA

**Case study 23. United Kingdom: Scoping UK coastal margin ecosystem accounts**

This note scopes the development of a peatland account within the developing UK environmental accounts. Peatland is defined as the presence of deep peat soils according to national definitions, i.e. organic soils of at least a minimal depth. The note cites the SEEA.

**Specific information about the reporting of the condition account**

Ecosystem or asset types	Peatland
Ecosystem extent reported	No
Ecosystem condition reported	No
Realm	Terrestrial
Spatial unit for analysis	
Spatial unit of reporting	National
Condition indicators	NA
Aggregated indicator	The note proposes a list of potential condition categories based on specific land cover (going from near natural to modified, presence of woodland, fens and cropland) assessed together with pressures on peatland and management practices in order to infer condition.
Classification of indicators	
Reference levels	NA
How is condition reported	NA