

## **Supplementary material**

**Table S1.** Ecosystem services classification used and its equivalence with other classification systems.

**Table S2.** Indicators used for the biophysical assessment of ecosystem services.

**Table S3.** Monetary value coefficients in 2009 €/ha/yr estimated for each LULC category, valuation method and source of the data.

**Table S1.** Ecosystem services classification used and its equivalence with other classification systems.

<b>Ecosystem services</b>	<b>[1]</b>	<b>CICES class</b>	<b>CICES description</b>
<b>Provisioning services</b>			
Food production	Food production	Cultivated terrestrial plants grown for nutritional purposes Wild plants used for nutrition Animals reared for nutritional purposes Wild animals used for nutritional purposes	Any crops and fruits grown by humans for food; food crops Food from wild plants Livestock raised in housing and/or grazed outdoors Food from wild animals
Timber	Raw materials	Fibres and other materials from cultivated plants, fungi, algae and bacteria for direct use or processing Fibres and other materials from reared animals for direct use or processing (excluding genetic materials) Fibres and other materials from wild plants/animals for direct use or processing (excluding genetic materials)	Material from plants, fungi, algae or bacterial that we can use Material from animals that we can use Materials from wild plants/animals
Fresh water	Water supply	Surface water for drinking Surface water used as a material (non-drinking purposes)	Drinking water from sources at the ground surface Surface water that we can use for things other than drinking
<b>Regulating services</b>			
Carbon storage	Gas regulation	Regulation of temperature and humidity, including ventilation and transpiration Dilution by atmosphere	Regulating the physical quality of air for people Diluting wastes
	Climate regulation	Regulation of chemical composition of atmosphere and oceans	Regulating our global climate
Water regulation and purification	Water regulation	Hydrological cycle and water flow regulation	Regulating the flows of water in our environment
	Waste treatment	Filtration/sequestration/storage/accumulation by micro-organisms, algae, plants, and animals Bio-remediation by micro-organisms, algae, plants, and animals Water conditions	Filtering wastes Decomposing wastes Controlling the chemical quality of freshwater
Pollination and biological control	Pollination	Lifecycle maintenance, habitat and gene pool protection	Spreading the seeds of wild plants
	Biological control	Disease control Pest control (including invasive species)	Controlling disease Controlling pests and invasive species
Habitat for species	Habitat/Refugia Genetic resources	Maintaining nursery populations and habitats (Including gene pool protection)	Providing habitats for wild plants and animals that can be useful to us

**Table S1 (Continued)**

<b>Ecosystem services</b>	<b>[1]</b>	<b>CICES class</b>	<b>CICES description</b>
<b>Cultural services</b>			
Tourism and recreation	Recreation	Characteristics of living systems that that enable activities promoting health, recuperation or enjoyment through active or immersive interactions	Using the environment for sport and recreation; using nature to help stay fit
		Characteristics of living systems that enable activities promoting health, recuperation or enjoyment through passive or observational interactions	Watching plants and animals where they live; using nature to distress
Aesthetic enjoyment	Cultural	Characteristics of living systems that are resonant in terms of culture or heritage	The things in nature that help people identify with the history or culture of where they live or come from
		Characteristics of living systems that enable aesthetic experiences	The beauty of nature
		Elements of living systems that have symbolic meaning	Using nature to as a national or local emblem

**Table S2.** Indicators used for the biophysical assessment of ecosystem services.

Ecosystem services	Indicator	Equation	Variables	Format (Resolution_m)	Data sources
Food production <sup>a</sup>	Food production (FP) from agriculture, livestock and fishing (t/ha)	FP=AG+LI-FI	AG = Agricultural production for each type of crops per surface (t/ha) (2011-2015)	Shape_1:10,000	[2]
			LI = Average total weight of slaughtered cattle (2011-2015) per surface of grazed lands (t/ha)	Shape_1:10,000	Request to the Basque Government [3]
			FI = Weight of fish individuals sampled in the rivers (t/ha) (2011-2017)	-	
Timber	Timber species' growth rate (TI) (m <sup>3</sup> /ha)	TI=AIT/S	AIT = Annual increase of tree species (m <sup>3</sup> ) S = Total surface (ha)	Shape_1:10,000	[4] [5]
Fresh water	Runoff water (FW) (mm/ha)	FW=R-EV	R = Total annual rainfall (mm/ha) (SIMPA model)	Raster (125 x 125)	[6]
			EV = Total annual evapotranspiration (mm/ha) (SIMPA model)	Raster (125 x 125)	[6,7]
Carbon storage <sup>b</sup>	Total C storage (C) (tC/ha)	C=CS+CLB	CS = Stored C in soil (tC/ha)	Shape_1:25,000	[8]
			CLB = Stored C in living biomass (tC/ha)	Shape_1:10,000	[4,9-12]
Water regulation and purification	Water retention index (WRI)	-	WRI = f(retention in vegetation, soil and groundwater retention, slope and soil sealing) (ESTIMAP model)	Raster (100 x 100)	[13]
Pollination and biological control	Pollination index (PO)	PO=f(N, F)	N = Habitat availability for nesting F = Food availability	Shape_1:10000	[14-16]
Habitat for species	Natural diversity index (HAB)	HAB=NPR+HQ+LP	NPR = Native plant richness	Shape_1:10,000	[17]
			HQ = Habitat quality (successional level)	Shape_1:10,000	
			LP = Legal protection	Raster (2 x 2)	
Tourism and recreation	Recreation index (TR)	TR=PR+CR	PR = Potential for recreation = f(naturalness index, legal protection, presence of water bodies and peaks)	Shape_1:10,000	[18]
			CR = Capacity for recreation = f(Accessibility, areas for recreation, tourist spots and birds observation points)		
Aesthetic enjoyment	Landscape aesthetic index (AE)	AE=SP+T+LD+WB+LL-NE	SP = Perception of society T = Topography LD = Diversity of landscapes WB = Presence of water bodies LL = Influence of landscape landmark NE = negative elements	Shape_1:10,000	[18]

<sup>a</sup> Agricultural production was estimated using available data from Biscay and as for livestock, cattle, sheep, goats and horses were only included. To estimate fishing service we used available data for *Anguilla anguilla*, *Barbatula quignardi*, *Gobio lozanoi*, *Parachondrostoma miegii*, *Phoxinus phoxinus* and *Salmo trutta fario* species. The supply of (shell)fishing was not possible to quantify since there was no weight data. Besides, professional (shell)fishing is not permitted in the estuary [19] and recreational (shell)fishers do not have the obligation to declare their captures.

<sup>b</sup> There was no data available for coastal system in the UBR, so other data from other nearby places with similar characteristics [20,21] were used to estimate carbon storage.

**Table S3.** Monetary value coefficients in 2009 €/ha/yr estimated for each LULC category, valuation method and source of the data.

<b>Ecosystem services</b>	<b>LULC category</b>	<b>Estimation method</b>	<b>Ecosystem services coefficient (€/ha/yr)</b>	<b>Source</b>
Food production	Cropland	Market based	1724	[1]
	Natural and semi-natural grassland	Market based	884	[1]
	Coastal system	Market based	1237	[1,22]
	Native forest	-	0 <sup>1</sup>	-
	Scrubland	-	0 <sup>1</sup>	-
	Pine and eucalyptus plantations	-	0 <sup>1</sup>	-
Timber	Cropland	-	0 <sup>1</sup>	-
	Natural and semi-natural grassland	-	0 <sup>1</sup>	-
	Coastal system	-	0 <sup>1</sup>	-
	Native forest	Market based	44	[1]
	Scrubland	-	0 <sup>1</sup>	-
	Pine and eucalyptus plantations	Market based	197	[23]
Fresh water	Cropland	Replacement Cost	139	[24]
	Natural and semi-natural grassland	Replacement Cost	167	[24]
	Coastal system	-	0 <sup>2</sup>	-
	Native forest	Replacement Cost	237	[24]
	Scrubland	Replacement Cost	196	[24]
	Pine and eucalyptus plantations	Replacement Cost	179	[24]
Carbon storage	Cropland	Market based	1688	[25]
	Natural and semi-natural grassland	Market based	1126	[25]
	Coastal system	Market based	977	[20,21]
	Native forest	Market based	3252	[25]
	Scrubland	Market based	1347	[25]
	Pine and eucalyptus plantations	Market based	2893	[25]
Water regulation and purification	Cropland	Replacement Cost	6	[24]
	Natural and semi-natural grassland	Replacement Cost	10	[24]
	Coastal system	Contingent Valuation	105	[22]
	Native forest	Replacement Cost	8	[24]
	Scrubland	Replacement Cost	8	[24]

**Table S3 (Continued)**

<b>Ecosystem services</b>	<b>LULC category</b>	<b>Estimation method</b>	<b>Ecosystem services coefficient (€/ha/yr)</b>	<b>Source</b>
Pollination and biological control	Cropland	-	41	[1]
	Natural and semi-natural grassland	Factor Income / Production Function	49	[1]
	Coastal system	Contingent Valuation	533	[26,27]
	Native forest	Replacement Cost	348	[1]
	Scrubland	Factor Income / Production Function	23	[28]
	Pine and eucalyptus plantations	-	41 <sup>3</sup>	-
Habitat for species	Cropland	Conservation Cost estimation	12	[24]
	Natural and semi-natural grassland	Conservation Cost estimation	19	[24]
	Coastal system	Contingent Valuation	193	[1]
	Native forest	Conservation Cost estimation	144	[24]
	Scrubland	Conservation Cost estimation	23	[24]
	Pine and eucalyptus plantations	Conservation Cost estimation	27	[24]
Tourism and recreation	Cropland	-	61	[1]
	Natural and semi-natural grassland	Market based	23	[1]
	Coastal system	Market based	522	[1]
	Native forest	Contingent Valuation, Travel Cost	730	[1]
	Scrubland	Market based	5	[28]
	Pine and eucalyptus plantations	-	268 <sup>4</sup>	-
Aesthetic enjoyment	Cropland	Contingent Valuation	279	[29]
	Natural and semi-natural grassland	Contingent valuation, Hedonic Pricing	124	[1]
	Coastal system	Contingent Valuation, Market based	32	[1]
	Native forest	Travel Cost	1	[1]
	Scrubland	-	na	-
	Pine and eucalyptus plantations	-	na	-

<sup>1</sup> Since the biophysical value was rated as zero, even if the supply of these services might be higher, we did not estimate their monetary value.

<sup>2</sup> We assumed that coastal systems are a kind of embayment where rivers meet and mix with ocean, so fresh water outflow cannot be important.

<sup>3</sup> Due to lack of data and considering that its biophysical value was equal to croplands, we assigned the same monetary value as in croplands.

<sup>4</sup> No data available. However, being this service usually estimated on the basis of people's perception, and assuming that when visiting a place people perceive all the landscape as a whole, we believed that mean value of the rest of LULC categories could display its monetary value.

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