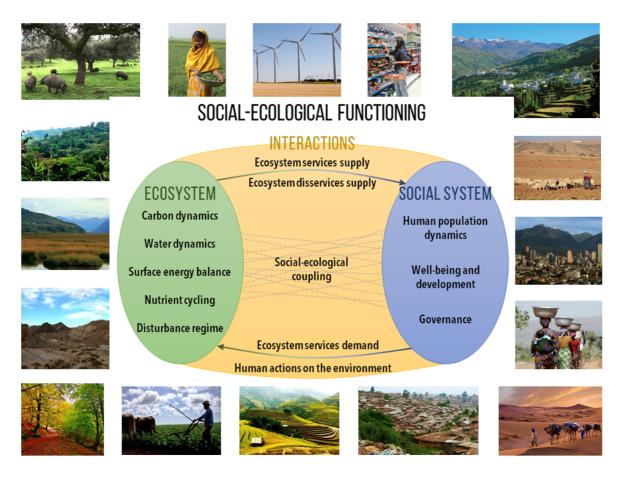
Essential variables to characterize the functioning of Social-Ecological Systems



Participating Institutions



















Introduction

This survey aims to collect expert opinions and knowledge about key variables to characterize socialecological systems functioning. The list of candidate variables is structured in three 'Components' of the social-ecological system (Social System, Ecosystem and Interactions) and each Component into several 'Functional Dimensions' (dimensions of the social system functioning, dimensions of ecosystem functioning, and dimensions of the interactions between the social system and the ecosystem). Possible indicators are shown in some cases only to exemplify, but the answers should focus on the variables.

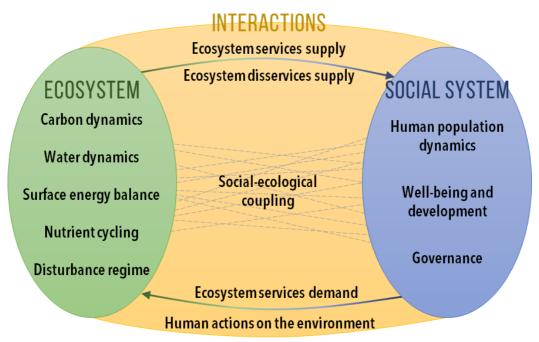
We ask you to punctuate each variable according to its relevance to characterize the functioning of social-ecological systems. A key aspect to deal with is the issue of context-dependence. We are aware of the difficulties to assess the relevance of proposed variables without bearing in mind any specific social-ecological system. However, we call for a common effort to identify those variables that better explain the differences among social-ecological systems across the world.

We consider as essential those variables that encompass and integrate critical processes to characterize the functioning of social-ecological systems. They should be coherent and appropriate for comparing across social-ecological systems diversity. Spatially, these variables aim to target the ecosystem level and the human community level. Ideally, they should be viable for regional or global implementation in monitoring programs, regional land-use planning, and sustainability and resilience assessment. Our final goal is to integrate both biophysical and social processes to produce a functional characterization and mapping of social-ecological systems at the regional scale and landscape level.

Please, feel free to visit the webpage of the E&SEFT Project: "Ecosystem & Socio-Ecosystem Functional Types: integrating biophysical and social functions to characterize and map the ecosystems of the Anthropocene" (<u>http://functionaltypes.caescg.org/</u>) to know more about project goals, scientists involved, and other partners. In this webpage you can also learn more about the variables included in this survey (selection process, definitions, etc.).

*Important: if you are viewing this survey through your mobile phone, we recommend that you use it in horizontal position for better visualization.

SOCIAL-ECOLOGICAL FUNCTIONING



Personal data (optional)

In any case, your answers will be treated as confidential

1. First name:

- 2. Last name:
- 3. Institution/Department:

4. e-mail:

5. Area of expertise:

Selecciona todos los que correspondan.

Biophysical sciences
Social sciences
Sustainability Science
Environmental management / Territorial planning
Remote sensing
Biodiversity Science
Otro:

6. Tick if you want to be acknowledged in derived publications:

Selecciona todos los que correspondan.

Yes, include my name in the acknowledgments

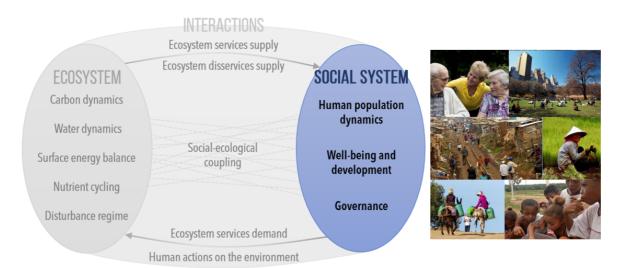
7. Tick if you want to receive the results of this study:

Selecciona todos los que correspondan.



Yes, send to me the results of this study

COMPONENT 1. SOCIAL SYSTEM



Dimension 1a. Human population dynamics

8. In your opinion, which variables that describe human population dynamics are essential to characterize social-ecological systems functioning?

Please, punctuate each variable according to its relevance for being considered as 'Essential Social-Ecological Functional Variable' (from 1 "less essential" to 5 "more essential") *Marca solo un óvalo por fila.*

	No essential	1	2	3	4	5
Population density	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\square	\bigcirc
Population distribution (e.g.: % rural population vs. % urban population)	\bigcirc	$\bigcirc ($		\bigcirc		\bigcirc
Population size	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\square	\bigcirc
Human migrations (e.g.: ratio of inmigrantion/emigration)	\bigcirc	$\bigcirc ($	\bigcirc	\bigcirc		\bigcirc
Population growth rate by natural increase	\bigcirc	$\bigcirc ($	\bigcirc	\bigcirc	\square	\bigcirc
Population growth rate by inmigration	\bigcirc	$\bigcirc ($	\bigcirc	\bigcirc	\square	\bigcirc
Age structure (e.g.: median age, population ageing index, dependency ratio)	\bigcirc	$\bigcirc ($		\bigcirc		\bigcirc
Sex Ratio	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\square	\bigcirc

9. Would you add/modify any variable of human population dynamics to better describe social-ecological systems functioning? Please specify:

Dimension 1b. Well-being and development

(You are in: Component 1. Social System)

10. In your opinion, which variables that describe human well-being and development are essential to characterize social-ecological systems functioning?

Please, punctuate each variable according to its relevance for being considered as 'Essential Social-Ecological Functional Variable' (from 1 "less essential" to 5 "more essential") *Marca solo un óvalo por fila.*

	No essential	1	2	3	4 5
Access to drinking water (e.g.: distance to drinking water)	\bigcirc	\bigcirc	\square		$\supset \bigcirc$
Water sanitation (e.g.: % of houses using improved sanitation facilities)	\bigcirc				$\supset \bigcirc$
Water scarcity	\bigcirc	\bigcirc	\square	$\supset \subset$	$\supset \bigcirc$
Electricity access			\square	\square	$\supset \bigcirc$
Access to internet			\square	\square	$\supset \bigcirc$
Educational level of the population (e.g.: illiteracy rate, % of population with higher education, school enrolment rate, out of school rate for adolescents)	\bigcirc	$\bigcirc ($	\supset		
Employment (e.g.: employment rate, unemployment rate)	\bigcirc	\bigcirc	\square		\bigcirc
Economic level of the population (e.g.: household income, income per capita)	\bigcirc	$\bigcirc ($			
Poverty (e.g. % of population with unsatisfied basic needs)	\bigcirc	$\bigcirc ($	\square		$\supset \bigcirc$
Social equality (e.g.: wealth distribution, women participation in government, women literacy rate, Gini Index)	\bigcirc	$\bigcirc ($	\square		
Environmental quality (e.g.: air, water and soil pollution levels)	\bigcirc	\bigcirc	\square		\bigcirc
Access to healthcare and other basic social services (e.g.: % of population receiving public assistance)		$\bigcirc ($	\supset		
Infant mortality rate	\bigcirc	()	$\overline{)}($)() ()
Life expectancy (e.g.: life expectancy at birth)	\bigcirc				\Box
Total fertility rate	\bigcirc	()	$\bigcirc ($)($\overline{)}$
Average household size (e.g.: people per home)	\bigcirc	\bigcirc			$\supset \bigcirc$
Subjective well-being (e.g.: life satisfaction)	\bigcirc	\bigcirc			\bigcirc
Security (e.g.: crime rate)		\bigcirc	\square	\square	$\supset \bigcirc$
Social trust (in government, institutions)	\bigcirc	\bigcirc	\square		$\supset \bigcirc$

11. Would you add/modify any variable of social well-being and development to better describe social-ecological systems functioning? Please specify:

Dimension 1c. Governance

12. In your opinion, which variables that describe regional governance are essential to characterize social-ecological systems functioning?

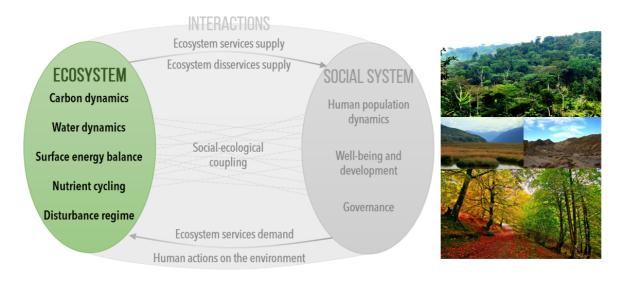
Please, punctuate each variable according to its relevance for being considered as 'Essential Social-Ecological Functional Variable' (from 1 "less essential" to 5 "more essential") *Marca solo un óvalo por fila.*

No essential	1	2	3	4 5
	\bigcirc			
\bigcirc				
	\bigcirc	\square	\supset	$\supset \bigcirc$
	\bigcirc	\square	\square	$\supset \bigcirc$
	\bigcirc	\square		

Candidate variables from 2 to 6 have been included following Foster & Barnes (2012) proposal of indicators for regional governance.

13. Would you add/modify any variable of governance to better describe social-ecological systems functioning? Please specify:

COMPONENT 2. ECOSYSTEM



Dimension 2a. Carbon dynamics

(You are in: Component 2. Ecosystem)

14. In your opinion, which variables that describe carbon dynamics are essential to characterize social-ecological systems functioning?

Please, punctuate this variable according to its relevance for being considered as 'Essential Social-Ecological Functional Variable' (from 1 "less essential" to 5 "more essential") *Marca solo un óvalo por fila.*

	No essential	1	2	3	4	5
Gross Primary Productivity (total amount of carbon fixed in the photosynthesis by plants in an ecosystem)	\bigcirc			\bigcirc		\bigcirc
Net Primary Productivity (net productivity of organic carbon by plants in an ecosystem, e.g.: Net Ecosystem Exchange, Net Carbon Flux, carbon acumulation rate)	\bigcirc	$\bigcirc ($		\bigcirc		\bigcirc
Respiration (natural carbon dioxide emissions by ecosystems)	\bigcirc	$\bigcirc ($		\bigcirc		\bigcirc
Secondary productivity (represents the formation of living mass of a heterotrophic population or group of populations)						\bigcirc
Organic Carbon Storage (biomass + litter + soil organic carbon)	\bigcirc	\bigcirc	\square	\bigcirc	\bigcirc	\bigcirc
Radiation Use Efficiency (organic carbon produced by unit of absorbed solar radiation)	\bigcirc	$\bigcirc ($		$\bigcirc ($		\bigcirc
Ecosystem composition by Plant Functional Types (plant classification according to their physical, phylogenetic and phenological characteristics)	\bigcirc					\bigcirc

15. Would you add/modify any variable of carbon dynamics to better describe socialecological systems functioning? Please specify:

Dimension 2b. Water dynamics

(You are in: Component 2. Ecosystem)

16. In your opinion, which variables that describe water dynamics are essential to characterize social-ecological systems functioning?

Please, punctuate this variable according to its relevance for being considered as 'Essential Social-Ecological Functional Variable' (from 1 "less essential" to 5 "more essential") Marca solo un óvalo por fila.

	No essential	1	2	3 4	4 5
Precipitation (water + snow)	\bigcirc	())()($\bigcirc\bigcirc$
Snow precipitations	\bigcirc	$\overline{()}$	$\overline{)}$	$\overline{)}$	$\overline{)}$
Snow storage	\bigcirc	$\overline{()}$	$\overline{)}$	$\overline{)}$	$\overline{)}$
Horizontal precipitation (e.g.: fog, dew, frost)	\bigcirc	\bigcirc	\square		$\supset \bigcirc$
Extra-precipitation water contributions (e.g.: surface or groundwater inputs by rivers or acuifers, respectively)	\bigcirc	\bigcirc			
Potential evapotranspiration		\bigcirc	\square		\bigcirc
Actual evapotranspiration			\square	\bigcirc	$\supset \bigcirc$
Potencial water deficit -or excess- (due to climate conditions)	\bigcirc	\bigcirc	\square		$\supset \bigcirc$
Actual water deficit -or excess- (due to climatic and ecohydrological conditions)	\bigcirc	\bigcirc	\square		$\supset \bigcirc$
Evaporation - Transpiration ratio	\bigcirc	\bigcirc	\square	$\supset \subset$	$\supset \bigcirc$
Soil water infiltration capacity	\bigcirc	\bigcirc	\square	$\supset \subset$	$\supset \bigcirc$
Deep drainage (to aquifers)	\bigcirc	\bigcirc	\square	$\supset \subset$	$\supset \bigcirc$
Groundwater depth	\bigcirc	\bigcirc	\square	$\supset \subset$	$\supset \bigcirc$
Actual Soil Water Storage	\bigcirc	\bigcirc	\square	$\supset \subset$	$\supset \bigcirc$
Total water yield or "blue water" (runoff + deep drainage)	\bigcirc	\bigcirc	\square		$\supset \bigcirc$
Flows of green water (water in and on soils and on vegetation canopy)	\bigcirc	\bigcirc			$\supset \bigcirc$
Precipitation Use Efficiency (organic carbon produced by unit of precipitation or by unit of evapotranspiration)		\bigcirc			
Vegetation water stress (e.g. precipitation minus [potential or actual] evapotranspiration)	\bigcirc	\bigcirc			$\supset \bigcirc$

17. Would you add/modify any variable of water dynamics to better describe social-ecological systems functioning? Please specify:

Dimension 2c. Surface energy balance

(You are in: Component 2. Ecosystem)

18. In your opinion, which variables that describe surface energy balance are essential to characterize social-ecological systems functioning?

Please, punctuate each variable according to its relevance for being considered as 'Essential Social-Ecological Functional Variable' (from 1 "less essential" to 5 "more essential") *Marca solo un óvalo por fila.*

	No essential	1	2	2	3	4	5
Net solar radiation (insolation)	\bigcirc	()(\supset	\bigcirc	\bigcirc	\bigcirc
Downward shortwave (visible [0.4- 0.8 μm] + near ultraviolet [0.4-0.3 μm] + near infrared [0.8-2.5 μm]) radiation							
Upward shortwave (visible [0.4-0.8 µm] + near ultraviolet [0.4-0.3 µm] + near infrared [0.8-2.5 µm]) radiation (i.e. albedo)		\square				\square	
Upward longwave radiation (electromagnetic radiation)	\bigcirc	\square			$\supset \sub$	\Box	\supset
Sensible heat, land surface temperature	\bigcirc	\square		\square	$\supset \sub$	\Box	\square
Downward longwave radiation (thermal infrared [2.5-50 μm])	\bigcirc	\square			\supset	\Box	\supset
Latent heat flux (heat spent in water evapotranspiration)	\bigcirc	\square			\supset	\Box	\supset
Snow heat flux	\bigcirc	\square)(\supset	\supset	\supset	\supset
Deep ground heat flux	\bigcirc	\square)	\supset	\supset	\Box	\supset
Air temperature	\bigcirc	\square)(\supset	\supset	\square	\supset

19. Would you add/modify any variable of surface energy balance to better describe socialecological systems functioning? Please specify:

Dimension 2d. Nutrient cycling

(You are in: Component 2. Ecosystem)

20. In your opinion, which variables that describe nutrient cycling are essential to characterize social-ecological systems functioning?

Please, punctuate each variable according to its relevance for being considered as 'Essential Social-Ecological Functional Variable' (from 1 "less essential" to 5 "more essential") *Marca solo un óvalo por fila.*

	No essential	1	2	3	4	5
Nitrogen fixation (atmospheric nitrogen fixed by N-fixer organisms, e.g.: Rhizobium)	\bigcirc	\square		$)\bigcirc$	\bigcirc	\bigcirc
Nitrogen deposition (wet and dry deposition of ammonium, nitrate, and particulate nitrogen)	\bigcirc	\square	$) \subset$	$)\bigcirc$	\bigcirc	\bigcirc
Phosphorus deposition (e.g.: aerosols and atmospheric dust, etc.)	\bigcirc	\square	$) \subset$	$)\bigcirc$	\bigcirc	\bigcirc
Gross nitrogen mineralization (e.g.: rate of production of ammonium in soils)	\bigcirc	\square		$)\bigcirc$	\bigcirc	\bigcirc
Net nitrogen mineralization (e.g.: net rate of production of plant- available nitrogen)	\bigcirc	\square		$)\bigcirc$	\bigcirc	\bigcirc
Soil phosphorus availability (e.g.: concentrations of non-occluded soil phosphorus)	\bigcirc	\square		$)\bigcirc$	\bigcirc	\bigcirc
Nitrogen status of plants (e.g.: plant tissue nitrogen concentrations)				$)\bigcirc$	\bigcirc	\bigcirc
Phosphorus status of plants (e.g.: plant tissue phosphorus concentrations)	\bigcirc	\square		$)\bigcirc$	\bigcirc	\bigcirc

21. Would you add/modify any variable of nutrient cycling to better describe social-ecological systems functioning? Please specify:

Dimension 2e. Disturbance regime

(You are in: Component 2. Ecosystem)

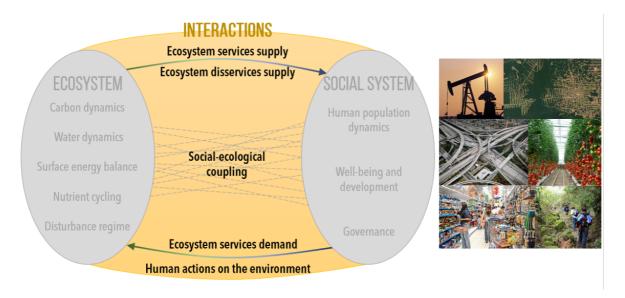
22. In your opinion, which variables that describe disturance regime are essential to characterize social-ecological systems functioning?

Please, punctuate each variable according to its relevance for being considered as 'Essential Social-Ecological Functional Variable' (from 1 "less essential" to 5 "more essential") *Marca solo un óvalo por fila.*

	No essential	1	2	3	4	5
Drought occurrence [freq severity, extension]	uency,	\bigcirc		\square	\square	\supset
Fire occurrence [frequence severity, extension]	су,	\bigcirc	\square	\square	\square	\supset
Flood occurrence [freque severity, extension]	ency,	\bigcirc		\square	\square	\supset
Herbivory (natural, not ca grazing) [frequency, seve extension]		\bigcirc			\Box	\supset
Pest outbreaks occurrence [frequency, severity, extended]	()	\bigcirc		\square	\square	\supset
Hurricanes/ storms occur [frequency, severity, exte		\bigcirc	\square	\square		\supset
Landslides occurrence [fr severity, extension]	requency,	\bigcirc		\square		\square
Volcanic eruptions occurr [frequency, severity, exter		\bigcirc		\square		

23. Would you add/modify any variable of disturbance regime to better describe socialecological systems functioning? Please specify:





Dimension 3a. Ecosystem services supply

(You are in: Component 3. Interactions)

24. In your opinion, which variables that describe provisioning services supply are essential to characterize social-ecological systems functioning?

Please, punctuate each variable according to its relevance for being considered as 'Essential Social-Ecological Functional Variable' (from 1 "less essential" to 5 "more essential") *Marca solo un óvalo por fila.*

	No essential		1	2	3	4	ŀ	5
Agricultural production	\bigcirc	$\left(\right)$	\bigcirc		$) \bigcirc$	$) \subset$)(\supset
Livestock production	\bigcirc	\subset	\bigcirc		$) \bigcirc$	$) \subset$)(\supset
Surface and ground water sources for drinking	\bigcirc	\subset	\Box		$) \subset$			\supset
Surface and ground water sources for non-drinking purposes	\bigcirc	\subset	\Box		$) \subset$			\supset
Biomass-based energy sources	\bigcirc	\subset	\Box		$) \bigcirc$	$) \subset$	\bigcirc	\supset
Fibres and other materials from plants, algae and animals for direct use or processing	\bigcirc	\subset	\Box					\supset
Wild plants, algae and their outputs for food	\bigcirc	\subset	\Box		$) \subset$			\supset
Wild animals and their outputs for food	\bigcirc	\subset						\supset

25. In your opinion, which variables that describe regulation & maintenance services supply are essential to characterize social-ecological systems functioning?

Please, punctuate each variable according to its relevance for being considered as 'Essential Social-Ecological Functional Variable' (from 1 "less essential" to 5 "more essential") *Marca solo un óvalo por fila.*

	No essential	1	2	3	} 2	1	5
Hydrological cycle and water flow maintenance	\bigcirc	\square				$\supset $	\supset
Local climate regulation	\bigcirc	\square	$) \subset$	$) \subset$	$\mathbb{D}\mathbb{C}$	$\supset \subset$	\supset
Pollination and seed dispersal	\bigcirc	\square	$) \subset$	$) \subset$	\mathbb{DC}	$\supset \subset$	\supset
Pest and disease control	\bigcirc	\square	$) \subset$	$) \subset$	$\supset \subset$	$\supset ($	\supset
Bioremediation	\bigcirc	\square	$) \subset$	$) \subset$	\mathbb{DC}	\supset	\supset
Chemical conditions maintenance of freshwaters and salt waters	\bigcirc	\square					\supset
Mass stabilisation and control of erosion rates	\bigcirc	\square					\supset
Ventilation (air renewal)	\bigcirc	\square	$) \subset$	$) \subset$	\bigcirc	$\supset \sub$	\supset

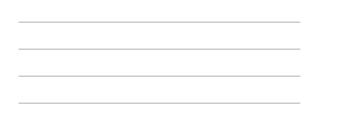
26. In your opinion, which variables that describe cultural services supply are essential to characterize social-ecological systems functioning?

Please, punctuate each variable according to its relevance for being considered as 'Essential Social-Ecological Functional Variable' (from 1 "less essential" to 5 "more essential") *Marca solo un óvalo por fila.*

	No essential	1	2	3	4	5
Physical and experiential interactions (with plants, animals, landscapes, seascapes)	\bigcirc	\bigcirc		\bigcirc		
Intellectual and representative interacions (scientific, educational heritage and cultural, entertainment, aesthetic contemplation)		\square		\bigcirc		
Spiritual and/or emblematic (symbolic, sacred and/or religious) interactions		\square		\bigcirc		

This candidate variables have been adapted from the Common International Classification of Ecosystem Services (CICES) 4.3 version ('class' level of this classification for provisioning and regulating services, and 'group' level for cultural services) (European Environment Agency, 2013).

27. Would you add/modify any variable of ecosystem services supply to better describe social-ecological systems functioning? Please specify:



Dimension 3b. Ecosystem disservices supply

(You are in: Component 3. Interactions)

28. In your opinion, which variables that describe ecosystem disservices supply are essential to characterize social-ecological systems functioning?

Please, punctuate each variable according to its relevance for being considered as 'Essential Social-Ecological Functional Variable' (from 1 "less essential" to 5 "more essential") *Marca solo un óvalo por fila.*

	No essential	1	2	3	4	5
Bio-economic (e.g.: biological invasions, agricultural and fisheries pests and diseases incidence, red tydes)	\bigcirc		\bigcirc	\bigcirc	\bigcirc	
Abiotic-economic (e.g.: droughts and fires occurrence, siltation, leaching of nutrients)	\bigcirc		\bigcirc	\bigcirc	\bigcirc	
Bio-health (e.g.: human diseases incidence from pathogens, allergens)	\bigcirc	$\bigcirc ($	\bigcirc	\bigcirc	\bigcirc	
Abiotic-health (e.g.: flood and storm events occurrence)	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\square	$)\bigcirc$
Bio-cultural (e.g.: bird droppings on outdoor sculptures, tree roots cracking pavements)	\bigcirc	$\bigcirc ($	\bigcirc	\bigcirc	\bigcirc	
Abiotic-cultural (e.g.: soil erosion rates, mud/landslide scar events, unpleasant odours from rotting organic matter)			\bigcirc	\bigcirc		

It is noted that this candidate variables express the incidence of different kinds of harmful events. For simplicity, they have been classified according to their origin and primary dimension of human well-being affected, following Shackleton et al. (2016) approach.

29. Would you add/modify any variable of ecosystem disservices supply to better describe social-ecological systems functioning? Please specify:

Dimension 3c. Ecosystem services demand

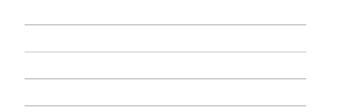
(You are in: Component 3. Interactions)

30. In your opinion, which variables that describe the human capture of ecosystem goods and services are essential to characterize social-ecological systems functioning?

Please, punctuate each variable according to its relevance for being considered as 'Essential Social-Ecological Functional Variable' (from 1 "less essential" to 5 "more essential") *Marca solo un óvalo por fila.*

	No essential	1	2	3	4	5
Water use level (e.g.: water consumed per capita/ per year)	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Water use for irrigated agriculture (e.g.: water use per hectare/ per year)	\bigcirc	$\bigcirc ($	\bigcirc	\bigcirc		\bigcirc
Energy use level (e.g.: energy consumed per capita/ per year)	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Material use level (e.g.: raw materials consumed per capita/ per year)	\bigcirc	$\bigcirc ($	\bigcirc	\bigcirc		\bigcirc
Human Appropriation of Net Primary Production (e.g.: Tn C extracted/ per hectare/ per year)	\bigcirc	$\bigcirc ($	\bigcirc	\bigcirc		\bigcirc
Appropriation of land for agriculture	\bigcirc	$\bigcirc ($	\bigcirc	\bigcirc		\bigcirc
Nature tourism (e.g.: number of visitors to natural areas)	\bigcirc					\bigcirc

31. Would you add/modify any variable of ecosystem services demand to better describe social-ecological systems functioning? Please specify:



Dimension 3d. Human actions on the environment

(You are in: Component 3. Interactions)

32. In your opinion, which variables that describe the human actions on the environment are essential to characterize social-ecological systems functioning?

Please, punctuate each variable according to its relevance for being considered as 'Essential Social-Ecological Functional Variable' (from 1 "less essential" to 5 "more essential") *Marca solo un óvalo por fila.*

	No essential	1	2	3 4	4 5
Land cover/Land use change (e.g.: agriculturization, urbanisation, land abandonment)	\bigcirc	\bigcirc	\square		
Land use intensity	\bigcirc		\square	$\supset \subset$	\bigcirc
Territorial connectivity (e.g.: distance to main roads, travel time to major cities)	\bigcirc	$\bigcirc ($	\square		$\supset \bigcirc$
Anthropogenic water management (e.g.: water delivery, drainage and storage systems)	\bigcirc	$\bigcirc ($	\square		$\supset \bigcirc$
Anthropogenic carbon dioxide emissions (e.g.: per capita CO2 emissions, CO2 emissions by sector of economic activity)		$\bigcirc ($	\square		
Net carbon dioxide flux (e.g.: CO2 emissions - CO2 sequestration)	\bigcirc	\bigcirc	\square		$\supset \bigcirc$
Pollution (toxic emissions and spills)	\bigcirc	\bigcirc	\square		$\supset \bigcirc$
Eutrofization of water bodies			\square	\bigcirc	$\supset \bigcirc$
Soil erosion (by anthropogenic practices)	\bigcirc	\bigcirc	\square		\bigcirc
Conservation tillage (sustainable agricultural practices for soil preservation)	\bigcirc	$\bigcirc ($			$\supset \bigcirc$
Ecological restoration	\bigcirc	\bigcirc	\square	\bigcirc	\bigcirc
Land protection (e.g.: % of the territory declared as natural protected area with a management plan)					

33. Would you add/modify any variable of human actions on the environment to better describe social-ecological systems functioning? Please specify:

Dimension 3e. Social-ecological coupling

(You are in: Component 3. Interactions)

34. In your opinion, which variables that describe the degree of connection of a community to its local environment are essential to characterize social-ecological systems functioning?

Please, punctuate each variable according to its relevance for being considered as 'Essential Social-Ecological Functional Variable' (from 1 "less essential" to 5 "more essential") *Marca solo un óvalo por fila.*

	No essential	1	2	3	3 4	1	5
Local natural capital dependence (e.g.: % of final ecosystem services consumed by the population that are provided directly by local environment)	\bigcirc						\supset
Import [export] rates of agricultural and livestock products	\bigcirc	\square					\supset
Weight in the economy of the non- ecosystem services market (goods and services that do not come directly from ecosystems, e.g.: socioeconomic services like hospitals, schools or culture, internet, manufactured products, technology)							\supset
Airports [ports] activity	\bigcirc	\square	$) \subset$	$) \subset$	$\supset \subset$	$\supset \subset$	\supset
Dependence on fossil energies (e.g.: % of energy consumed coming from fossil resources)	\bigcirc						\supset
Renewable energy use (e.g.: % of energy consumed coming from renewable sources)	\bigcirc	\square	$) \subset$				\supset
Weight of sectors in the economy (agriculture vs. industry vs. services)	\bigcirc	\square	$) \subset$				\supset
Weight of traditional (vs. intensive) agricultural and livestock sector in the economy	\bigcirc	\square					\supset
Population employed by sectors (agriculture vs. industry vs. services)	\bigcirc	\square					\supset
Population employed in traditional (vs. intensive) agriculture and stockbreeding	\bigcirc	\square					\supset
Biocapacity (capacity of ecosystems to meet people's local demand and assimilate waste products)	\bigcirc	\square	$) \subset$				\supset
Land tenure (e.g.: % communal lands vs. private lands vs. government lands)	\bigcirc	\square	$) \subset$				\supset
Access to natural or seminatural areas (e.g.: distance to a natural or seminatural area)	\bigcirc	\square					\supset
Human perception of ecosystem services (awareness level of the population about services provided by local ecosystems)	\bigcirc	\square					\supset
Human population ethnicity (e.g.: % of indigenous population)	\bigcirc						\supset
Cultural attachment to nature		\square	$) \square$	$) \subset$	\mathcal{DC}	\bigcirc	\supset
Local green initiatives (e.g.: in agriculture, cities, touristic activities, local companies)	\bigcirc						\supset

	No essential	1	2	3	4	5
Non-ecosystem services demand (goods and services that do not come directly from ecosystems, e.g.: socioeconomic services like hospitals, schools or culture, internet, manufactured products, technology)						

35. Would you add/modify any variable of social-ecological coupling to better describe socialecological systems functioning? Please specify:

