

2nd tier variable name and code	Indicators used/ potential indicators to use/ definitions
Economic development (S1)	Economic growth (e.g. GDP); Standards of living; Economic health of the area (e.g. number of jobs, sectors, diversification)
Demographic trends (S2)	Population growth; Population trends, changes and/or status
Political stability (S3)	Regulatory framework of country or region; Regularity rules and values present
Other governance systems (S4)	Traditional tenure/ simple operational rules; Government resource policies; Top-down policies adopted by the national, regional and local governments
Markets (S5)	Market demand; Tour operators; Environmental awareness; Market conditions; Markets for natural resources and conservation incentives; Distance to external markets (km)
Media organizations (S6)	Number, diversity and freedom of private and public media
Technology (S7)	Relevant technology present; Communication (e.g. mobile phones, broadcasting, information storage)
Clarity of system boundaries (RS1)	Resource unit distribution; Resource unit recruitment sourcing (within/outside governance system boundaries); Zoning districts/Marine Protected Areas; International boundaries (e.g. EEZ, national borders); Clarity of the system's geographical, social and legal boundaries; Biophysical characteristics that make it feasible for actors to determine where the resource system starts or ends
Size of resource system (RS2)	Absolute or relative descriptions of the spatial extent; Size in appropriate units (e.g. square kilometers, square miles); Carrying capacity of for relevant species; Size of relevant system patches of interest; Area of exclusive interest or value within system; Physical proximity to markets; Area under management (e.g. irrigation); Percentage of system under production; Percentage area of system under different production systems
Human-constructed facilities (RS3)	Tourism industry infrastructure; Resource units storage facilities (e.g. tank-houses, lobster cages, fish pens); Irrigation infrastructures; Access structures (e.g. piers, harbors, trails, airport); Artificial habitat; Accommodation facilities; Anthropogenic structures facilitating resource management (e.g. fences, access ways, storage or transformation facilities); Tracking and/or data infrastructure

Productivity of system (RS4)	Population/ stock status; Biophysical properties; Biodiversity; Species risk; Biomass produced; Qualitative estimation of productivity; Number of users/ visitors; Production-consumption rates per unit of time, surface, or volume
Equilibrium properties (RS5)	Temperature threshold of system; Seasonality; Electric energy; Influences (positive and negative) on the equilibrium of the resource system (interaction between species, or between biological and anthropological systems); Consumption-reproduction-harvest ratio (e.g. of nutrients, species); MSY; Characterization of the type of attractor of a resource system along a range from one to multiple (chaotic) attractors
Predictability of system dynamics (RS6)	Seasonality; Risk of extreme events(e.g. Flooding, earthquakes, volcano, hurricane, fire); Rainfall variability; Weather variability; Upwelling and current variability; Spatial and temporal variability of fish population; Capacity to estimate the evolution and dynamics of the resource system and the impact of interventions or external influences; Degree to which actors are able to forecast or identify patterns in environmentally driven variability on recruitment
Storage characteristics (RS7)	Elevation and/or slope of landscape; Retention of information about the system dynamics; Degree to which the resource units can be held captive until harvested
Location (RS8)	Locations between key system components; Geographic location (e.g. coordinates); Distance to nearest hub airport; Spatial and temporal extent where resource units are found by actors; Spatial and temporal extent where system is or can be accessed by users
Resource unit mobility (RU1)	Degree of fluidity or fixed (e.g. tree vs water); Spatial and temporal distribution of larvae; Spatial and temporal distribution of adults; Extent of resource system/ infrastructure (e.g. Electricity grid); Temporal patterns (e.g. nocturnal species); Migration patterns; Park boundaries; Speed of mobility (e.g. tuna vs worms); Life cycle assessment
Growth and replacement rate (RU2)	Modelled results of growth; Years to sexual maturity; Reproductive age; years to legal commercial harvest size; Years of calving/ rearing; Life cycle assessment; Absolute or relative descriptions of changes in quantities (x) of resource units over time (t)
Interaction among resource units (RU3)	Reproduction patterns/ needs; Symbiotic relationships; Patterns/ relations between resources in similar time and space (e.g. competition, collaboration); Interactions among resource units during different life stages affecting the future structure of the population; Ecosystem structure/ trophic interactions (e.g. keystone species, Dependencies between species)
Economic value (RU4)	Price per kilo; Cultural value of individual resource units; Value of total annual landings/ harvest; Quality of resource; Value of units per unit area; Nutritional value (Calorific value/ha, Calories produced/ha, Protein

	produced/ha, Fodder quality-nutritional content of fodder); Differences between live and dead/ frozen value; Market predictability; Market diversity; Recreational value; Opportunity Costs; Non-market values; Value ration in relation to the portfolio of resources available to actors
Number of units (RU5)	Total catch per year (tons); catch per individual gear type; Catch per unit effort; Differentiation between unit types (e.g. Domesticated vs wild units); Percent land cover (e.g. forest cover or density); Legal harvest rate vs Illegal, Unreported, Unregulated (IUU) rate; Total volume or amount of resource (e.g. wood volume, agriculture production volume), Number of activities for users (e.g. in a park, ocean); Number that could be potentially harvested
Distinctive characteristics (RU6)	Male/ female differences; Age differences; Reproductive indicators (e.g. carrying eggs, molting, behavioral signs); Artificial markings (e.g. branding, tagging, v-notch for lobsters); Landscape features; Markings and/or behavioral patterns that can be identified in resource units and affect actors' behavior toward them
Spatial and temporal distribution (RU7)	Elevation or depth distributions per unit time; Coverage or density across area per unit time; Migration patterns; Seasonality; Larval distribution range; Geographic limitations; Species range; Range/ distribution of viable habitat or food sources
Government organizations (GS1)	Government regulators; Public-private initiatives; Administrative Levels present(e.g National, Regional, Local); Support Enforcement; Support Funding available; Number Government departments; Quasi-government organisations (e.g. Combined state and civil society managed agencies); Presence or absence of different organizations at local level; Institutions present with governmental authority
NGOs (GS2)	Presence of organizations or active initiatives; Conservation/ environmental organizations; Universities/ research organizations; Private sector institutions; Voluntary initiatives;; Social/Welfare Organizations; Restoration orgs; NGOs at different levels (e.g. International, National, Local, Community-based organizations); Other institutions without governmental authority mandated
Network structure (GS3)	Funding providers; Multilevel governance structure; Vertical structure; Horizontal structure; Transparency; Vertical and horizontal partners in co-management; Representation of actors; Stakeholder participation options; Information flows; Network configuration at local level and their interactions; Administrative structure of organization; Social or political connections among the rule-making organizations and the population subject to these rules
Property rights systems (GS4)	Presence of property rights systems (e.g. Open access, private property, common property and no access); Informal or traditional tenure systems; Quotas; Lease agreements; Security and/or strength of tenure; Percentage of system with property rights; Local property-rights systems and their relation

	to resource management; Conflict between multiple property rights systems; Particular types of rules determining which actors have been authorized to carry out which actions with respect to a specified good or service; Patents/ licensing agreements; Different forms of privatization; Strength of land rights
Operational choice rules (GS5)	<p>Presence of formal written rules (e.g. legislation, legal documents, community documents); Rules for resource harvesting and distribution (e.g. size limits, seasonal closures, species distinctions, quotas, harvesting limits, caps on pollution, etc)</p> <p>Presence of informal rules (e.g. non-written agreements, norms, etc.)</p>
Collective choice rules (GS6)	Presence of formal and/or informal rules related to actor participation, collective action procedures and/or decision making processes to modify operational rules; Structure of management; User group distinctions; Level of stakeholder involvement; The processes through which institutions are constructed and policy decisions made by actors authorized (or allowed) to do so; Rules set defined by involved actors according to local environment and political and economic conditions
Constitutional choice rules (GS7)	Presence of regulatory framework under which collective choice and operational rules are situated within; National law; Legal mandates; International law; Taxation; Subsidies; Conservation regulations; Legal framework defined by regional and national governments; The process through which collective-choice procedures are defined and legitimized.
Monitoring and sanctioning (GS8)	Presence of enforcement authority; Locally adapted processes to monitor and sanction natural resource use and management strategies; Local actors or those legitimized by them are responsible to observe and report changes in the SES; Monitoring social or biophysical changes; Data collection activities; Graduated sanctions(Whether sanctions increase with numerous offenses)
Number of actors (A1)	Number of resource harvesters/ users; Number of boats/gear to access system; Number of different actor groups; Population growth per unit time; Availability of labour; Labour reduction(time taken to perform task); Number of IUU actors; Size of community; Number of representatives on management committee; Population in surrounding areas
Socioeconomic attributes (A2)	<p>Income; Age; Gender; Affluence; Tourism firms; Economic characteristics of the users; Proxies of user wealth; User welfare; Labor availability;; Year of household establishment; Number of people at home; Number of children at home; Number of elders at home; Age of eldest; Assets owned (Y or N); Education level of household head; Place of origin of household head; Immigration status; Socioeconomic resilience (e.g. Insurance availability); Operating costs (Replacement/renewal rates); Number of livelihoods; Population share below age 18; Unemployment status; Median income; Share in top quartile of country income; Ethnicity; Age of surrounding buildings;</p> <p>Material style of life; Education and knowledge</p>
History or past	Historical resource use; Experienced/ exposure crisis or extreme events;

experiences (A3)	Duration living in area or using resources; Chronological description of the main events related to the resources and its management; Year founded (e.g. village, city, park); Process of management over time; Age of users/ group/ community; Past interactions that affect current actor's behavior and fisheries dynamics
Location (A4)	Is system remote and isolated; Clarity of boundaries; Exclusion problems; Geographic proximity to resource/ system; Distance to resources; Port/Harbors/Built Infrastructures (Man-made); Beaches/ Non-built/ natural access (Natural); Geographical location of resource system's users (e.g. settlements, villages, dispersed); Physical place where the actors are in relation to the resource itself and the market
Leadership/ entrepreneurship (A5)	Presence of formal leaders; Educated and well-connected leaders are present; Active individual(s) to lead collective action; Existence of, and attitude towards leadership and entrepreneurship among users; Local individuals who are capable of leading resource management and are respected by their peers; Actors who have skills useful to organize collective action and are followed by their peers; Trust in community
Norms, trust, social capital (A6)	Closeness of community; Degree of shared norms; Substantial social capital; "Sticking together"; Spatially significant organization of actors (Clubs/Organizations/Chapters); Non-spatially significant organization of actors (Online format, publications); Social capital(Degree to which each actor can depend on the other; actors share the same code of ethics and develop levels of trust; Motivations and attitudes of actors; Confidence and cooperation among actors; Levels of social and institutional interactions among users, including aspects like reciprocity and trust; Years of educational attainment; Voter turnout rates; Trust in community ;Migration status; Attendance at community events; Social network strength
Knowledge of SES/ mental models (A7)	Education rates; Degree of knowledge about system; Educational level of the user; Number of trainings received/a certain period of time; Presence/ degree of Traditional ecological knowledge (TEK); Presence/ degree of Western science and management knowledge (SMK); Presence/ degree of Local ecological knowledge (LEK); Degree of knowledge sharing/social learning;Which perceptions exist and how are they formed by SES conditions; Management practices; Level of knowledge among the users of the SES conditions, the potential and real disturbance patterns and its possible effects; Degree to which stakeholders understand and make sense of the characteristics and/or dynamics of the SES; Human agency (Perceptions about whether human activities can increase the number of fish in the sea)
Importance of resource (dependence) (A8)	Number of alternative livelihood opportunities; Degree of economic dependence; Degree of social/ cultural dependence; Occupational diversity; Dependence on natural system to sustain livelihood; Dependence on subsidies; Land ownership
Technologies available (A9)	Degree of access to appropriate technologies; Number of technologies adopted over time; Percent of land on which a technology has been adopted;

	<p>Percentage of users adopting a technology;</p> <p>What technology is used for harvesting, repairing, access, communication, decision making, management</p>
Climate patterns (ECO1)	Sea level rise; Climate change; Coral bleaching; Ocean acidification; Bioöhyiscal changes in system
Pollution patterns (ECO2)	Levels of toxic chemicals or materials; Presence of point sources (e.g. runoff pipes, rivers); Regional pollution pattern trends
Flows in/out of SES (ECO3)	--
Harvesting (I1)	Quantity of resources harvested by different users
Information sharing (I2)	Forums and media to keep actors abreast of developments; Methods for information sharing among users; Exchange of information regarding management process through written or spoken means
Deliberation processes (I3)	Presence of organizational/ decision making processes among users; participation of users
Conflicts (I4)	Presence of forums to address conflicts and reach amenable conclusions); Existence of new types of actors (foreign tourists, kites); Presence of existing conflicts among users
Investment activities (I5)	Presence of subsidies; Private investment or development; Building of human and resource capacity in SES; Investments for improving and managing the resources (e.g. time, money); Budgets (in dollars per visitor)
Lobbying activities (I6)	Internal and external influential capacity of the users
Self-organizing activities (I7)	Collective action activities to govern SES; Internal rules for the extraction and management of resources among users
Networking activities (I8)	Interactions within the social sub-system (e.g Informal networks; Formal networks); Liaise with horizontal and vertical partners to foster collective action; Networking and partnership activities of the users within and outside the community; market access
Monitoring activities (I9)	Monitoring activities on the use and management of resources (e.g. locally-defined by users, controlled by the government) and their performance;

	Community-based monitoring of social and/or ecological outcomes
Evaluative activities (I10)	Processes of evaluation of the resource situation and of the effects of management initiatives
Social performance measures (O1)	Co-management outcomes; Coproduction of knowledge; efficiency; learning; Evolution and impacts of the socio-economic characteristics; Measure of social outcomes resulting from interactions; Perceived impacts on livelihoods; gender equity; resource use efficiency
Ecological performance measures (O2)	Ecosystem services; Wildlife conservation; Evolution and impacts of the ecological conditions; Measure of ecological outcomes resulting from interactions; GHG emissions; soil erosion; agricultural yield; water footprint; livestock welfare; yield gap; yield variability; CO2 emissions; salinization; carbon sequestration
Externalities to other SES (O3)	Non desired effects (positive and negative) that occur as results of processes