

Appendix 2. Evaluation Framework for Sustainable Fisheries 2.4 – Sample Research Questions.

Ecological Domain

Element	Questions
Productivity	Have the appropriate metrics of productivity been identified for the population (e.g. abundance, biomass, spawner density (egg production), growth rate, body size, body condition, age structure, gonadal somatic index, mortality)? Are these metrics measured, monitored, known, estimated? How are these metrics measured, monitored, estimated? Are constraints on harvesting and incidental mortality, e.g. limit reference points, appropriately used to achieve maximum sustainable yield (MSY) and avoid growth and recruitment overfishing?
Spatial and Temporal Dynamics	Have spatial scales of population organization been identified (e.g. single site, multiple sites, regions)? Has the range of a population's distribution at different spatial scales been identified? Do identified spatial scales match up with the spatial scale of management and assessments? Are migration routes variable over time and space (e.g. annually, in-season)? What vital rates (e.g., recruitment, mortality, survival, fecundity, dispersal of larvae), or dynamic variables can influence the spatial distribution of a populations? Are rates/migration routes measured?
Phenotypic & Genetic Diversity	Has a scale of population unit been established (e.g., conservation units, runtime groups, life history groups)? Are life-history traits (e.g. age-at-maturity) quantified and monitored? Is genetic variability within a population measured?
Substrate Quality	Has the nature, type, and extent of important habitat substrate been identified, quantified and monitored for all stages of life cycle? Are substrate quality variables (e.g. dominant substrate, substrate material, substrate size, presence of riffles and pools) monitored?
Water Quality	Have water quality standards been identified? Are water quality variables (e.g. dissolved oxygen, pH, conductivity, salinity, temperature, and dissolved organic carbon) monitored?
Productive Capacity	Have the physical and biological characteristics of the habitat been identified? Have key parameters been identified to quantify the capacity of a habitat (e.g. population carrying capacity, production rate, biodiversity)? Are these parameters measured, estimated and monitored? Have historic changes to habitat capacity been identified?
Biodiversity	Have the key measures of biodiversity been identified? How many species are in the ecosystem (e.g. species richness, evenness and density, the Simpson index and Shannon index) monitored? Is species richness (number of species), evenness (how evenly distributed are species) Are indices of biodiversity calculated (e.g., Simpson's Index, Shannon's Index)?
Food Webs	Have food chains, food webs and energy flows between trophic levels been identified within the ecosystem. What is the length of the food chains that make up the ecosystem foodweb? Are there keystone species? Are there known disruptions to food webs (e.g., discard events, major die-offs, extirpations, predator-prey interactions). Trophic cascades?

Element	Questions
Regime Shifts	Is there identification of historical or potential future regime shifts in the ecosystem? Are indicators for regime shifts identified and monitored? Have there been any long-term ecosystem reorganizations (e.g., change in dominant species, change in primary producers)?

Social and Economic Domain

Element	Questions
Material Wellbeing	Are basic necessities for life acknowledged within the fisheries management system - access to food in particular? Are basic necessities of life available - water, food, shelter?
Relational Wellbeing	Does the fisheries management system recognize and support the development and maintenance of healthy social networks, or does it promote an adversarial approach that breaks down networks? Does the management agency have good working relationships with fishery participants and fishery stakeholders?
Subjective Wellbeing	Do participants in the fishery have a positive view of their fishery and their participation in the fishery? Does the society at large view the fishery and fishery participants positively? Is there a positive view of the management agency by fishery participants and society at large? Does the management agency have a positive view of the fishery and fishery participants?
Efficiency	Is there a commitment to efficient fisheries operations that are not wasteful and do not displace costs onto other participants or society at large? Is there an excessive amount of discard mortality? Is the fishing fleet highly polluting? Does the type of fishing (gear, timing) result in product that is of a much lower value than could be achieved with other fishing methods?
Viability	Are the majority of enterprises at all stages of the value chain, from harvester to off loader to processor to retailer to support services (e.g., boat works, gear suppliers) able to earn a living wage and sufficient income to reinvest and sustain their enterprise over the medium and long term?
Equity	Is there consideration of the distribution of the costs and benefits associated with management decisions? Is there a full cost accounting approach taken that recognizes not just revenue but also operating costs and income of participants in the fishery?
Poverty & Livelihoods	Is there consideration of who will bear the majority of the costs associated with management decisions and if there are individuals or groups that will bear a disproportionate cost? Will those least able to bear additional costs or reduced income be negatively impacted? Do people have opportunities to have a sustained livelihood within the fishery? Are participants able to earn a living in a meaningful way that encompasses the capabilities, assets, income and activities required to secure the necessities of life?
Women & Gender	Is there consideration of the impact of fisheries management decisions on women? Are management decisions taken with consideration of the jobs that women traditionally occupy in the fishery?

Element	Questions
Fishing Communities	Is there regional and place-based analysis of the consequences and impacts of fisheries management? Are the impacts of management decisions considered on the basis of individual communities?
Indigenous Peoples	Is there recognition of the rights of indigenous peoples? Are there mechanisms in place to ensure meaningful participation of indigenous peoples in management activities?
Future Generations	Is there consideration of the impacts on youth and on future generations? Are there mechanisms to ensure intergenerational transfer of knowledge, skills and assets? Are the long term consequences of fisheries management addressed?

Governance Domain

Element	Questions
Purpose	What is the process intended to accomplish, why does it exist? What are the main ecological, social and economic goals and objectives of the process? Who established the goals and objectives, the management authority, stakeholders and other parties or some combination of both?
Scope	Who is involved in the process? Who are the main players, in terms of groups or individuals that participate? Is the process geographically bounded, and if so, how are those boundaries defined? What are the timelines involved? Is documentation relating to the process available? When was the process established?
Rules	Is the process grounded in explicit policies, laws or regulatory frameworks? Does the process have a written or commonly understood vision or mandate? Are there operating agreements and/or terms of reference to guide how participants in the process interact and behave? How is success or failure in relation to goals and objectives to be measured and who decided the measurement criteria?
Resources	What resources are available to support the process? This includes human resources, e.g. dedicated staff, consultants and support services, technical resources and financial resources. Who provides resources, the management agency, other parties or both?
Collaborative	How does the process support the ability of parties to work together towards a common goal or set of goals? Is there access to professional facilitation, dispute resolution mechanisms, or methods such as structured decision-making? Is there a "level playing field". If not what methods are used to address imbalances between participants?
Transparent	Is all the necessary information available to participants to support informed decision-making? Is the rationale behind decisions clearly stated and made widely available? Do all parties have support to understand technical information on which decisions depend? Are trade offs (ex. among domains and dimensions) explicitly discussed and represented?
Inclusive	Are all parties with a legitimate interest involved in the process? Are resources provided to ensure that participants can be involved without disadvantage due to lack of financial, human or technical resources?
Predictable	Does the process operate according to clearly defined principles and rules that all parties understand and have agreed to? Are decisions consistent with those rules?

Element	Questions
Flexible	Is the process capable of being adapted to changing circumstances? How responsive is the process to changing conditions, both external variables, such as environmental factors or political priorities, and internal variables such as changes in personnel or funding?
Accountable	Are there mechanisms to remove or sanction individuals or groups if there is agreement that they have not carried out their responsibilities to the satisfaction of participants in the process and/or those they represent and serve?
Effective	Are there periodic evaluations of the institutional arrangements and the decision-making process that are objective and comprehensive? Are the results of these evaluations communicated to participants and other interested parties?
Legitimate	Does the process produce outcomes that are generally seen as fair and reasonable regardless of who benefits? Do participants abide by and comply with decisions regardless of whether or not they agree with them?