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# **FRAMEWORK FOR INTEGRATING SOCIO-ECONOMIC ANALYSIS IN *SPECIES AT RISK ACT* DECISION MAKING**

*POLICY SECTOR*

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## FRAMEWORK FOR INTEGRATING SOCIO-ECONOMIC ANALYSIS IN SPECIES AT RISK ACT DECISION MAKING

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### 1. Socio-Economic Analysis Framework: Purpose and Objective

*The purpose of a socio-economic analysis is to estimate the benefits and costs to Canadians of a SARA listing, regional impacts, and the distribution of these benefits and costs among stakeholders.*

This framework presents universal guidelines and principles for conducting socio-economic analysis in support of decisions made under the *Species at Risk Act (SARA)*. The key elements outlined in this document should be considered when conducting a socio-economic analysis, although it may not be possible and/or necessary to undertake each analytical step with the same level of detail as the magnitude of the socio-economic analysis should be proportional to the anticipated level of impacts of the activity. The scope and detail of a socio-economic analysis is also dependant on the time and resources available. As such, a tiered approach to socio-economic analysis will be undertaken in order to efficiently utilize scarce resources and to prioritize so that the most essential parts of the analysis are completed first - more detailed analysis will be conducted where impacts are expected to be greater and less detailed analysis where impacts are expected to be low.

It is expected that these guidelines and principles will evolve according to experience with socio-economic analysis, as will acceptance of socio-economic analysis with respect to decision making. Nevertheless, there will remain a certain degree of uncertainty with respect to quantitative and qualitative analysis of benefits and costs, given that actions to protect and recover species at risk may not always be known or precise, nor will the outcomes of any given set of actions be known with certainty, particularly during the early stages of the process.

In broad terms, socio-economic analysis is necessary for informed decision making. The Government of Canada's Federal Regulatory Policy requires an analysis of benefits and costs. Socio-economic analysis is necessary to inform listing / delisting decisions under SARA as well for recovery planning and implementation of recovery measures.

While listing a species as endangered or threatened under SARA triggers the prohibitions of SARA, the socio-economic impacts of listing many aquatic species flow primarily from the actions taken to protect and recover the species. As such, socio-economic analysis must be considered in the context of analyzing potential recovery measures, whether it is in support of listing decisions, for recovery planning (strategies and action plans) or in the development of management plans.

This framework has been developed in order to contribute towards integrated decision making that includes the analysis of social, economic and environmental factors. This document begins with a summary of the context for socio-economic analysis and the different analytical tools that can be applied in a socio-economic analysis, including

benefit cost analysis, cost effectiveness analysis and the multiple account approach, along with references to detailed federal guidance in these areas. The framework then clarifies the role of socio-economics throughout the SARA decision making process and provides principles and guidelines for conducting socio-economic analysis. The annexes are composed of a checklist of key factors to be considered in an analysis and the step by step approach for stakeholder and peer review.

## **2. Socio-economic considerations through the SARA process**

### *The role of socio-economics : Context*

Protection and recovery measures taken under SARA will likely result in benefits and costs. At the same time, there may be several types of recovery actions that could lead to the same outcome – protecting and recovering species at risk – while having different socio-economic impacts. An analysis of economic, social and environmental benefits and costs associated with a given proposal can be seen as movement towards a fuller, more balanced, well-documented, transparent, and accordingly, more informed tool for decision making. The federal government, in recognition of the importance of the integration of social, environmental and economic considerations in decision making, requires that benefits and costs be analyzed.

The explicit description of the implications of recovery actions is necessary for effective decision making. Socio-economic analysis illustrates the scale and distribution of benefits and costs of protecting a species under SARA. The integration of social, environmental and economic considerations allows for informed decision making and the determination of the most effective management measures for species at risk.

Listing a species as endangered, threatened or extirpated on Schedule 1 of SARA triggers immediate prohibitions on killing or harming the species, or damaging or destroying its residence, unless an activity is explicitly allowed to continue under a recovery strategy or an allowable harm permit. When a species is added to Schedule 1, the preparation of a recovery strategy and one or more action plans is required. If a recovery strategy recommends it, critical habitat could also be identified for any listed species and the destruction of any part of this critical habitat would be prohibited. Therefore, the consequences of listing an aquatic species may have significant socio-economic impacts through actions taken to protect and recover the species, on individuals, groups, industries, governments, and Canadian society in general.

The explicit incorporation of socio-economics in SARA acknowledges stakeholder concerns over the potential social and economic costs of measures to individuals, communities and industries. It also acknowledges the need to develop an understanding of the potential benefits arising from the development and implementation of such measures in so far as they contribute to the recovery of species at risk. In its preamble, SARA recognizes that wildlife species have value in and of themselves, and are valued by Canadians for aesthetic, cultural, spiritual, recreational, educational, historical, economic, medical, ecological and scientific reasons. The scope of a framework for assessing the socio-economic impact of recovery actions must take these values into consideration. The key sections of SARA regarding socio-economic analysis are as follows:

- The preamble to SARA specifies that socio-economic interests should be considered in developing and implementing recovery measures.
- Section 38 of SARA states that for recovery strategies, action plans and management plans that if there are threats of serious or irreversible

damage to the listed wildlife species, cost-effective measures to prevent the reduction or loss of the species should not be postponed for a lack of full scientific certainty.

- Section 49(1)(e) of SARA requires that an action plan must include an evaluation of the socio-economic costs of the action plan and the benefits to be derived from its implementation.
- Section 55 of SARA requires that the competent minister monitor the implementation of the action plan and the progress towards its objectives, as well as assess and report on its implementation, including ecological and socio-economic impacts five years after the plan comes into effect.

The addition (or removal) of a species from the SARA Schedule 1 list is treated as a regulatory amendment (actually an order), and as such, *Federal Regulatory Policy* guides the listing process. This entails all of the requirements of the federal regulatory process (triggered by s. 27 of SARA), including that:

- the benefits outweigh the costs to Canadian governments, businesses, and individuals;
- Canadians have been consulted;
- government intervention is justified, and that regulation is the best alternative;
- regulatory activity impedes as little as possible Canada's competitiveness;
- regulatory burden has been minimized through co-operation with other governments;
- systems are in place and resources sufficient to manage regulatory programs effectively.

#### *Role of consultations and stakeholder review*

Consultations and stakeholder review are important avenues for gathering and validating socio-economic information. Input from stakeholders may be sought on a number of areas, including potential recovery actions/scenarios (including options for stewardship and voluntary action), assumptions, data, etc. Consultation and stakeholder review on the socio-economic analysis can occur at the planning stage, concurrent with the analysis, and/or when the analysis is completed.

- Consultations workbooks and meetings regarding whether or not a species should be listed under SARA should include potential recovery scenarios and a preliminary identification of affected groups and an indication of possible impacts.
- Affected parties can also be contacted for the purpose of information gathering and / or be included on recovery teams.
- Stakeholder review should also be employed for high impact analyses includes presenting the results of the analysis with a view to seeking feedback regarding the assumptions, data used, as well as the results obtained.

The following sections clarify the role of socio-economics throughout the SARA cycle.

*Amending the List of Wildlife Species at Risk – Listing and Delisting*

The benefits and costs of a SARA listing for many species are rooted in the recovery actions to be taken, which for aquatic species may often go beyond voluntary actions or stewardship initiatives. In some cases, prohibitions are often unlikely to be a significant factor if allowable harm permits can be issued or a recovery strategy is in place. In other cases, the protection afforded through the SARA prohibitions may result in significant impacts should there be no scope for harm and permits cannot be issued.

For habitat related threats, SARA requires that as part of the environmental assessment associated with permits/authorizations, mitigation and monitoring must be undertaken to minimize threats. This applies to species designated as extirpated, endangered, threatened and special concern. This often results in significant costs to industry to redesign and/or relocate their projects to meet these requirements. As such, socio-economic analysis at the listing stage needs to consider potential recovery actions in order to meet the requirements of the Regulatory Policy and for informed decision making.

The length of the consultation process is one of the first decisions taken once the COSEWIC assessment is completed and a risk status assigned to a species at risk. The extended listing process allows for additional biological and socio-economic analyses to be completed and to ensure that Canadians are adequately consulted on whether or not Schedule 1 of SARA should be amended. Socio-economic factors are one consideration as to whether or not a species will follow an extended or normal consultation track and the broad SE criteria is whether or not the socio-economic impacts are expected to be significant and/or widespread. This determination from a socio-economic perspective can be accomplished through a preliminary screening exercise that provides an indication of the approximate number of jobs affected, vulnerable communities etc. The use of the extended and normal process is a key part of the process of determining the scope and extent of a socio-economic analysis; only a qualitative assessment can be completed for the low profile species that follow the normal process.

A quantitative analysis of the most plausible recovery scenarios can be carried out for species on the extended track. This quantitative analysis is pursued in those cases where the magnitude, distribution or extent of expected economic impacts warrants such a level of analysis. The scope of the SE analysis conducted at this stage should take into consideration not only the SARA prohibitions on harvesting and habitat destruction noted above, but also any measures that might be included in a recovery strategy and action plan. Taking these factors into account would ensure that Canadians have the benefit of a complete picture of the potential implications of listing. However, socio-economic factors cannot be considered by the Minister of the Environment with respect to emergency listing petitions.

The socio-economic analysis at the listing stage is ideally based upon a DFO Recovery Potential Assessment which identifies one or more management scenarios towards the recovery of a species at risk, the level of allowable harm etc. The availability of a draft Recovery Strategy / Action Plan also allows for a meaningful analysis of the potential implications of listing a species. However, the timelines of the SARA process may

require that a socio-economic analysis be conducted for decision making purposes prior to the completion of a RPA. Work is ongoing to streamline the process, and in the interim the socio-economic analysis will have to be based on the best available information.

### Recovery Planning

Once a species is listed as extirpated, endangered or threatened a recovery strategy must be prepared, along with action plans to implement the strategy. A management plan is required for species of special concern. Forming a recovery team to develop the strategy is one of the first steps. SARA sets out guidelines for the composition of recovery teams, including the need to involve federal and provincial officials, aboriginal representative and other stakeholders. There is also explicit direction for extensive consultation to develop the strategy. An existing management plan or recovery strategy can be adopted, provided it is SARA compliant.

The action plan puts the recovery strategy into effect. It identifies the species' critical habitat, sets out the specific measures to be taken to implement the strategy, assigns responsibilities, establishes timelines, and sets out the methods to be used to monitor the recovery of the species and its long-term viability.

The plan must contain "an evaluation of the SE costs of the action plan and the benefits to be derived from its implementation". If SE impact work were carried out at the listing and strategy preparation stages, then preparing this evaluation would be a matter of formalizing the assessment and tailoring it to the specific measures proposed in the plan. It is understood that consultations with stakeholders form a key part of the SE impact assessment process.

The sections of the Act addressing the recovery strategy invoke a precautionary approach by stating: "...if there are threats of serious or irreversible damage to the listed wildlife species, cost-effective measures to prevent the reduction or loss of the species should not be postponed for lack of full scientific certainty". The recovery strategy is intended to guide the development of an action plan. The strategy should:

- contain the population goal and objectives;
- set out the broad approaches to respond to known threats to the survival of the species;
- identify critical habitat to the extent possible; and
- set timelines for the preparation of the action plan(s).

While SARA does not specifically require a socio-economic analysis for recovery strategies, such an analysis should be conducted wherever specific recovery actions, including critical habitat, are identified, whether that is in the recovery strategy or in the action plan. Socio-economics can also inform the development of the recovery strategy / action plan by identifying cost-effective measures to recover and protect species at risk.

Three issues of relevance for the SE impact framework emerge in meeting the recovery strategy/action plan requirements:

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- Form of participation in the recovery team – in view of the nature and scope of issues the recovery team is required to address, an economist should be included on the team, particularly in the case of species with commercial significance;
- Scope of work – participation in the recovery team provides invaluable insight into potential recovery measures and the SE implications of each, including their cost-effectiveness; and,
- Timeframe for the analysis – at a minimum of one year, this period is long enough to allow compilation of primary and secondary data (including consultations) needed to conduct a thorough SE impact assessment of the recovery options. It also provides the basis for assessing the SE impacts of the Action Plan flowing from the strategy.

*Monitoring*

Progress in achieving objectives set out in the recovery strategy must be monitored during the implementation of the action plan. A report containing an assessment of the ecological and socio-economic impacts must be prepared and included in the public registry five years after the plan comes into effect.

Two issues of relevance for the SE impact framework emerge in meeting the recovery strategy requirements:

- Ensuring that SE indicators are specified in the monitoring program set out in the action plan;
- Incorporating an SE data gathering protocol in the action plan to facilitate monitoring and reporting.

### 3. Methodological Approaches

The primary methodological tool under which a socio-economic analysis is framed is a benefit-cost analysis. Other forms of socio-economic analysis that are applicable in a SARA context are cost-effectiveness analysis or a multiple account evaluation approach. Benefits valuation and the total economic value model are other relevant concepts. Highlights of these approaches are summarized within this section, recognizing that there is considerable literature available on these concepts. Detailed federal methodological and technical guidance can be found in the *Benefit-Cost Analysis Guide for Regulatory Programmes*<sup>1</sup> (Consulting and Audit Canada, 1995) and the *Benefit-Cost Analysis Guide*<sup>2</sup> (Treasury Board of Canada Secretariat, 1998),

- A benefit-cost analysis (BCA) is a broad tool that evaluates benefits and costs of alternative measures, using a common baseline. BCA is an overarching framework where the important factor is marginal benefits and costs and comparison of situations with versus without intervention. In this context, BCA would examine impacts from SARA recovery measures as compared to a situation without SARA intervention. While a benefit-cost analysis approach is generally undertaken with respect to public investment decisions, this method is particularly relevant at the listing stage in order to provide information to decision makers on whether or not regulatory action is the best alternative to protecting and recovering a species at risk.
- Cost effectiveness analysis (CEA) can be used to establish the recovery measure that is the most effective at arriving a predetermined target, such as a recovery goal and objective for a species at risk. When a goal has not been specified, CEA can be used to demonstrate to what degree a measure may be cost-effective or as a test of reasonableness, when compared to other measures. This approach can be applied during recovery planning as part of the determination of recovery goals and objectives and as part of the process in selecting among various recovery measures.
- The multiple account evaluation (MAE) approach is a useful method for organizing a socio-economic analysis. The MAE is a way to allocate impacts to various categories (e.g. environment/communities/industry vs. natural/manufactured/human/social); it is also a means for separating non co-measurable entities. This approach is useful for exploring trade-offs between conflicting multiple objectives, some of which may not be monetized. For example, socio-economic analyses conducted under SARA may have qualitative descriptions of benefits as opposed to costs that have been quantified, which would generally lead to a focus on monetary amounts. This approach recognizes that monetization of impacts is not always possible or desirable.

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<sup>1</sup> [http://www.pco-bcp.gc.ca/raoics-srdc/docs/publications/CostBenefitGuideforRegul/CostBenefitGuideforRegul\\_e.pdf](http://www.pco-bcp.gc.ca/raoics-srdc/docs/publications/CostBenefitGuideforRegul/CostBenefitGuideforRegul_e.pdf)

<sup>2</sup> [http://www.tbs-sct.gc.ca/fin/sigs/Revolving\\_Funds/bcag/BCA2\\_E.asp](http://www.tbs-sct.gc.ca/fin/sigs/Revolving_Funds/bcag/BCA2_E.asp)

- Estimates of non-market values are not generally available without undertaking specific studies to quantify them (stated preference, revealed preference methods etc.). Nevertheless, benefits can be quantitatively or qualitatively assessed through the Total Economic Value (TEV) model. The TEV can be used as an organizing principle for benefits and the categories are developed according to the reasons that individuals value a species, as follows:
  - *direct use values* - in which a market price is not paid
  - *indirect use values* - benefits from the ecological function of the species within its ecosystem
  - *option value* - benefits arising from potential future uses. Individuals may wish to preserve the species in order to retain the option to use it in the future
  - *bequest value (non-use value)* - the willingness to pay to preserve the species for the benefit of one's descendants
  - *existence value (non-use value)* - an intrinsic value based upon respect for the rights and welfare of a species or ecosystem.

The following are areas of guidance that may be applied to SARA socio-economic analysis:

- In instances where it is evident that listing will have significant impacts on consumer's and/or producer's surplus, they should be included in the analysis. Otherwise they can be assumed to be negligible.
- Unless there are indications to the contrary, the most significant benefits and costs will be regional.
- Non-use benefits merit national consideration.
- In the case of fished species, normally the primary focus should be on the use values. If others, such as existence are considered important, they should be assessed in a separate account, as they are not measured in the same way.

#### **4. SOCIO-ECONOMIC ANALYSIS PRINCIPLES**

##### **1. Scope of socio-economic analysis and resources allocated should be commensurate with the current and anticipated future social and economic importance of species, and expected impacts**

The level of socio-economic analysis conducted is to be proportional to the anticipated impact of recovery actions on stakeholders. At one extreme, recovery actions may have relatively limited social and economic impacts; for example, through minor amendments or adoption of an existing management plan / recovery strategy. Such actions may have little, if any, impact on stakeholders; as such the analysis required will likely be minimal. On the other hand, potential recovery actions may include sizeable changes to fisheries, major habitat initiatives, restrictions to development etc. Major restrictions to activities or modification of existing large scale structures and changes to traditional behaviors would require that social and economic indicators be considered in detail, and a more extensive socio-economic analysis will be necessary.

Judgment should be used in determining the level of analysis; the analysis should be customized to the scale of the issues and problems identified during the initial scoping exercise. In cases where significant concern about potential recovery scenarios are expressed by Aboriginal peoples, provinces/territories, stakeholders, industry, etc., or where there may be conflict between various user groups, then the level (or depth) of analysis should be increased. Ultimately, the availability of data may determine the limits of analysis, but appropriate efforts should be undertaken to obtain necessary information.

A lengthy checklist prepared by DFO in 2003 provides questions that should be considered during the scoping exercise (Appendix 1). The scope of the analysis will depend on (but is not limited to) the following criteria:

- Recovery actions under consideration
- Aboriginal considerations (e.g. Food, Social and Ceremonial (FSC) harvest, economic opportunities)
- Data availability
- Number of stakeholders involved
- The geographic area covered
- International implications

There are three broad categories of socio-economic analysis that may be conducted:

- a) *In-depth Quantitative and Qualitative Analysis:* This type of detailed analysis would require that the species fall under the extended consultation track when conducted at the pre-listing phase. Species designated as endangered or threatened would be candidates for this level of analysis. In addition, threats to the species must be clearly articulated so that specific recovery actions can be identified (scenarios) and their impacts analyzed.
- b) *Industry Profile Analysis:* This type of analysis stops after the establishment of a base case and would be applicable in instances where threats are not specific and recovery actions cannot be forecasted for species designated as

endangered and threatened. This level of analysis would also require that the species fall under the extended consultation track when conducted at the pre-listing phase. As a general rule, species designated as special concern would not require level this level of analysis. However, if the management plan required under SARA would involve extensive interaction with existing activities, or if stakeholders raised concerns about potential impacts, and the species was placed on the extended consultation track, an industry profile may be conducted.

- c) *Qualitative Analysis:* For all other species, a qualitative analysis would be suitable, given that impacts are not anticipated to be great or that recovery actions would not negatively affect many people.

The use of more qualitative methods should not imply that these values do not exist or are not important. For example, cultural, heritage and spiritual values associated with the study area are not conducive to quantification but can be extremely important.

## ***2. Analysis should be defensible, understandable to our stakeholders, and practical***

Socio-economic analyses are intended to support decision making with respect to SARA. These analyses inform the decision-making process by outlining the impacts of an action, making tradeoffs transparent and aiding in the prioritization of recovery measures. The analysis should be a coherent and defensible assessment of the possible benefits and costs of various SARA recovery actions.

Assumptions should be made explicit and documented. Data sources should be identified, subject to privacy concerns. Proprietary information employed in the analysis should be identified as such. The analysis should be presented using clear and transparent language and not be overly theoretical.

## ***3. Consider alternative scenarios using models where possible***

The first element of the analysis is establishing the baseline case, or the status quo. The baseline needs to be described prior to starting the analysis. This description should include the characteristics of affected industries, communities, etc. The baseline is a description as close to the situation as data permits; essentially an industry profile.

The baseline description of each industry sector that may be affected by measures to protect and recover a species at risk could include relevant economic, financial, demographic, and community information such as:

- industry profiles (e.g. present and historical participation in the industry; current cost structures, dependence on existing activities by stakeholders)
- uses by Aboriginal peoples (FSC/Economic)
- revenues and costs to industry, governments, local communities
- income, employment
- existing activities that protect and recover the species (voluntary activities, other federal or provincial legislation etc.)

Scenarios, which describe various alternative measures to protect and recover a species at risk, generate information for decision makers about possible future outcomes of

SARA required actions, such as measures to protect critical habitat etc. These scenarios are developed on the basis of the scientific information available at the time of the analysis development, from COSEWIC assessments and DFO Science Recovery Potential Assessments. Other policy and regulatory options and the recovery actions that may flow from them are not part of the SARA analysis as they would not be the impacts resulting from SARA itself.

Suggested scenarios for SARA listing socio-economic analysis include:

- a) *do not list, continue present management program;*
- b) *do not list, achieve recovery through other means;*
- c) *list, with alternative recovery strategies;*
- d) *list, with prohibitions only.*

**4. For each scenario:**

- a) *identify all potential benefits and costs, including non-market;*
- b) *use qualitative and quantitative information.*

Benefits and costs for each scenario must be described. Both quantitative and qualitative information should be used.

The various groups and activities that will be bearing the costs and those receiving the benefits should be identified. This would include:

- Aboriginal peoples
- Industry
- Local communities
- Government
- Environment

**5. Consider population dynamics:**

- a) *candidate species/population;*
- b) *other impacted species.*

Population dynamics should be considered where information is available for the species under analysis, as well as for species that may be affected through the measures undertaken to protect and recover the candidate species.

**6. Identify important uncertainties in model**

Without complete information, it is difficult to estimate the full range of possible impacts associated with each identified scenario. The impacts of SARA are not known with certainty, but can be estimated based on the best information available at the time of the analysis. Conclusions should be drawn on how uncertainty would affect the range of results/outcomes.

The areas and treatment of uncertainty must be clearly identified in the analysis and include the following:

- a) *benefits and costs*
- b) *who is affected*
- c) *biology*
- d) *threats*
- e) *policy*

- f) *adjustment by individuals, and unintended consequences.*

**Timeframe for Analysis**

As a general rule, the period or time-frame covered by the analysis should be for a minimum of three generations of the species under consideration, unless existing data points to another period of time. The time-frame for an analysis should be long enough to allow a consideration of all expected social and economic impacts, as well as future benefits when a species has recovered. Analytical time-frames should be the same for all streams of analysis - biological, economic (including benefits and cost analysis) and social impact analyses.

Benefits are often realized in the future while costs are immediate. In addition, benefits are less certain while costs are more defined. As such, a discount rate should be used, along with sensitivity analysis. As a rule, the discount rate should approximate the "real" rates of interest (market rates of interest minus the rate of inflation) on government of Canada long term securities. Recent analyses have used a discount rate of 5%, and a sensitivity analysis of 3% and 7%.

**7. *Open and inclusive approach:***

- a) *provincial/territorial, aboriginal and stakeholder review;***
- b) *professional peer review where appropriate;***
- c) *revise as appropriate.***

A transparent approach to decision making requires that Aboriginal peoples, interested stakeholders and provincial governments have the opportunity to review and provide comments regarding socio-economic analyses for SARA decisions. To that end, DFO has developed a review process, comprised of provincial/territorial, Aboriginal and stakeholder and academic review for analyses conducted at the listing phase (Appendix B). This review process complements the existing SARA consultations. Recovery planning is conducted in consultation and cooperation with those likely to be affected.

Where significant assumptions are employed and/or there is debate about the methodological aspect of the analysis, academic review should be considered. Feedback received from the stakeholder review and peer review is to be addressed in the development of the final analysis.

## **5. SOCIO-ECONOMIC ANALYSIS GUIDELINES**

The following are the recommended guidelines for conducting socio-economic analysis in support of decision making in a SARA context, recognizing that developing a socio-economic analysis is an iterative process.

1. Scoping Exercise: This preliminary analysis brings together knowledgeable and interested people to identify the extent of the analysis. At the listing phase, the scoping exercise can be used as one factor in the determination of whether the extended or normal consultation track should be followed. This working group should include DFO subject matter experts from Science, Fisheries and Aquaculture Management and Oceans and Habitat.
  - Define the issue;
  - Outline an approach to analysis;
  - Develop the organizational and project plan. All relevant DFO regions are to be involved in the socio-economic analysis for zonal/transboundary species, starting at this preliminary scoping exercise.
  - Assess data holdings and baseline information;
  - Start to establish the base case and to explore existing and future possible management scenarios/recovery actions. Establish whether an existing management plan or draft recovery strategy can be used to estimate impacts of proposed recovery measures. Scenarios are to be based on the best scientific advice available. Ideally, the science advice will be provided through a DFO Recovery Potential Assessment.
  - Identify resource needs.
2. Collect and review existing information.
  - The collection of preliminary data for the proposed scenarios will assist in the screening exercise to determine the depth of the analysis.
  - This preliminary comparison of benefits and costs will serve to focus and clarify the proposed scenarios as well as eliminate those that are not realistic.
  - The information gathered at this stage may provide an approximate indication of the magnitude of direct and indirect benefits and costs as well as other environmental, legal, social, and economic implications.
3. Identify key information gaps and determine whether or not the information gaps can be filled and if filling the gaps is worthwhile.
  - Diminishing returns
  - Cost
  - primary vs. secondary research
4. Finalize the screening assessment to determine if further, more detailed analysis is required. \*Choose depth of analysis. (\*different path depending upon situation)
  - In-depth Quantitative and Qualitative analysis
  - Industry Profile analysis
  - Qualitative-only analysisConsiderations:

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- Will prohibitions and/or proposed recovery measures (including identification of critical habitat) require changes to human behaviour?
  - Will proposed recovery actions result in socio-economic impacts?
5. Refine the scenarios/recovery actions as a basis for consultation.
    - Additional data collection
    - Identify key stakeholders
    - Refine baseline information, industry and community profiles
    - The economist should participate in the RPA meeting
    - Preliminary model with range of science results possible.
    - Balance between providing enough information for discussion, without appearing to have decisions made.
  6. Public consultations
    - Ideally, consultations are to take place after a draft of the socio-economic analysis is completed. However, this has not been possible to date due to the restrictive timelines of the SARA process and given that the socio-economic analysis cannot be completed without the Recovery Potential Assessment and the proposed management scenarios.
  7. Revise as necessary.

*(Stop here for species requiring qualitative or for some industry profile analyses)*

For species where an in-depth analysis is warranted:

8. Evaluate incremental benefits and costs of proposed recovery measures relative to the base case. Obtain or develop appropriate dynamic model (qualitative or quantitative) and validate.
  - Biological population model
  - Policy model
9. Specify model uncertainties.
10. Assess the distributional impacts of the scenarios and determine groups (e.g. Aboriginal peoples; environmental; industry) for which separate accounts of benefits and costs will be estimated.
11. Conduct sensitivity analysis and choose discount rate (social rate of time preference). Consider sensitivity of analysis to alternative rates.
12. Risk management. Where possible, estimate extinction risk explicitly.
13. Generate results (direct and indirect impacts), including uncertainty assessments.
14. Prepare complete documentation.
  - This includes the draft socio-economic report, presentation materials, summary of impacts etc.

15. Internal review and sign-off.

- Species responsibility centre to coordinate approvals process. A regional led analysis will require approval of all relevant regional directors involved in the development of the recovery scenarios.
- Analyses for zonal/transboundary species require approval by all affected DFO regions.

16. Peer, provincial/territorial, Aboriginal and stakeholder review.

- This includes review meetings as well as translation and publication of the socio-economic report. At minimum, the publication of the final draft should coincide with the final comment period for the proposal. For listing decisions this would be the pre-publication of recommendations in Canada Gazette 1, which summarizes the benefits and costs of the proposal. For recovery planning, this refers to the final consultation period on the SARA Public Registry.

17. Revise if necessary and finalize the report.

## **APPENDIX 1**

### **Checklist: Key elements to be identified in SARA socio-economic analyses**

In conducting socio-economic analysis, some important questions should be considered. This is a rather exhaustive checklist that covers many different aspects that would not necessarily be applicable to all situations and/or species.

#### **PART A: IDENTIFICATION (who, what, where)**

- 1. What activities and which individuals/groups will be affected by the listing of the species?**
  - Are there any stakeholders that would be affected? If yes, who will be affected? (e.g.: individuals, industries/firms, communities, aboriginal groups, other organizations, etc.).
  - For each stakeholder, what specific activities will be affected? (e.g.: directed/by-catch commercial/recreational fishery, food, social, and ceremonial fishery, aquaculture, fish processing sector, other fishing activities, agriculture, logging, oil and gas, hydro-electricity, shipping, transportation, tourism/ecotourism, other non-fishing activities, etc.).
  
- 2. Where will the impacts occur?**
  - In what areas will the impacts occur? (e.g.: federal/provincial/territorial/municipal lands or waters, First Nations reserves/traditional territories, marine protected areas, private lands, other areas, etc.).
  - Will the impacts occur in distinct areas/jurisdictions, or in areas of overlapping jurisdiction? (if yes, federal-provincial/territorial relations may be an issue).
  - Will the impacts be concentrated in, or affect mainly, a specific or limited area? (e.g.: if impact will be felt by a small number of communities, a regional analysis of the effects of the recovery measures should be considered - next section).

#### **PART B: ANALYSIS**

- 3. How will stakeholders/sectors be affected?**
  - For each stakeholder/sector identified in Section 1, can the effect be quantified? If yes, what will be the magnitude of the impacts? (e.g. value of activities affected, revenue, operating costs, direct profit, employment losses/gains, increase/loss in property value, new/lost business opportunities). If no, how can the effect be described in qualitative terms?
  - What will be the impacts of the recovery measures on communities/regions?
  - Will the recovery measures have any cultural impacts/benefits to Aboriginal groups and/or traditional fishing communities?
  - Will the recovery measures have any community/societal impacts/benefits to Canadian society in general?
  - What is the timeframe for the recovery of the species?
    - Will the impacts/degree of impacts change over time?

- What is the likelihood of de-listing? (i.e. if the species fully recovers, would it be possible to engage in or reopen commercial/recreational fisheries or non-fishing activities in the future?).
  - Do realistic substitute activities exist for the affected stakeholders identified in Section 1 (according to their demographic profile)? (e.g.: harvest/process a different species, harvest/process the same species at a different location, develop and adopt alternative methods/practices to avoid shutting down an activity or moving it to a different location, use different shipping routes, develop different tourist attractions/tours).
  - Where substitute activities exist, what are the costs associated with these alternatives (e.g.: equipment changes, travel/moving costs, labor costs, re-training costs, other costs), and who would bear these costs? (e.g.: stakeholders immediately affected by the recovery measures, those already participating in the alternate activity, governments).
  - What will be the distribution of benefits and costs of the listing decision/recovery strategy/action plan among the various stakeholders identified in Section 1 as being affected? (i.e. who will bear the costs and who will receive the benefits?).
- 4. How will the Federal government be affected by the decision to list the species?**
- What will be the immediate costs of the listing decision for the Federal government? (e.g.: monitoring, enforcement, social programs, education/awareness/communication, resource management/sustainability, additional workload/capacity, consultations, development of recovery plans/action plans).
  - What will be the longer term funding issues? (e.g.: increased need for stock assessment, enhancement, enforcement).
  - How would these new costs compare to any decreased costs to the Federal government in affected fisheries and other human activities? (e.g. monitoring, enforcement).
  - What are the legal obligations with respect to Fisheries Agreements (Aboriginal Fisheries Strategy; *Marshall* Response Initiative; Wildlife Management Boards under treaties)?
  - What are the policy and economic issues surrounding federal-provincial/territorial relations?
  - What Canadian international obligations/commitments will be affected?
  - Is there any possibility of litigation? If so, what would be the estimated costs? (e.g.: aboriginal rights, access to alternative fisheries, compensation issues)

## **APPENDIX 2**

### **REVIEW OF SOCIO-ECONOMIC ANALYSIS FOR SARA SPECIES LISTINGS**

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Objective: To ensure that interested stakeholders, provinces and Aboriginal peoples have the opportunity to review and provide comments regarding socio-economic analyses for SARA listing decisions. Review is a quality control process, not a further round of consultation.

#### ***General Consultation Phase***

- At the commencement of consultations on species proposed for listing, consultation workbooks will be prepared and circulated. DFO will issue a call for interested government and stakeholders to participate and also provide information pertaining to the species in question. Separate consultation meetings are also held with Aboriginal peoples, as required.
- Preliminary potential SARA management measures and their subsequent impacts will be discussed during this round of general consultations so as to allow for a meaningful consultation process.
- If there is reason to anticipate significant impacts on some stakeholders and/or some Aboriginal peoples, social and economic analyses will be conducted commensurate with the magnitude of the possible impact.

#### ***Socio-Economic Analysis Phase – All Listings***

- Provinces/territories will be involved in the development of socio-economic analyses. However, their level of involvement will vary according to the species and its relative social and economic importance; the province may participate as a co-lead, provide data and/ or be involved in the development of recovery scenarios.
- This analysis will assess the impacts of potential recovery measures or scenarios. In the event that a delay is expected in adopting a recovery plan and recovery scenarios, potential listing scenarios (where there would be immediate effects from automatic prohibitions) will be analyzed. These scenarios are to be provided by the relevant sector(s) (e.g. Fisheries and Aquaculture Management, Habitat Management) and are to be based on advice from Science, including the Recovery Potential Assessment.
- Scenarios should include specific fisheries management and habitat management measures and anticipated stock recovery projections. They may involve impacts on other stakeholders and/or Aboriginal peoples beyond the fishery.
- The socio-economic analysis will consider and incorporate relevant data/information acquired through the general consultation process in addition to the potential impacts resulting from the listing and recovery scenarios.
- To the extent possible, the socio-economic analysis will include the forecasted social and economic costs and benefits of listing and recovery measures on stakeholders and communities (Aboriginal and non-Aboriginal) during the anticipated recovery period.

*Draft for discussion*

- Prior to the post-analysis review phase, an internal inter-sectoral review will be conducted.
- The socio-economic analysis will be revised on the basis of input received from the inter-sectoral review.
- The Minister will be advised as to the status of analyses, along with main findings, after the inter-sectoral review is conducted. He will also be provided with a recommendation as to whether or not a species should go through the post analysis review phase.

***Post Analysis Review Phase – High Risk Listings Only***

- The analysis will be drafted into a technical report that summarizes the methodology employed; the data used as well as the resulting impacts, but make no recommendations.
- Where necessary, a one-day public forum with invited participants (i.e., Aboriginal peoples, academics, industry representatives, OGDs, ENGOs, provinces/territories, etc.) will be held to discuss the findings for species analyses. If possible, a multi-species meeting may be held that would review analyses for several species and populations. A separate meeting for Aboriginal peoples that are directly affected will be held, if required.
- The technical report will be presented to the meeting participants by the DFO officials who were involved in the development of the analysis; this would suggest that scientists, fisheries managers and habitat staff may also attend this meeting.
- Items for discussion will comprise the data, methodology and assumptions used to formulate the analysis. Participants will be provided the opportunity to contribute additional relevant data, and comment on the analysis.

***Final Socio-Economic Analysis Report***

- The Minister will be briefed on the outcome of the review meeting.
  - The final socio-economic analysis will incorporate and/or address the feedback received at the review meeting(s).
  - The final product, a technical report with no listing recommendations, will be posted on the departmental website and mailed to meeting participants.
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**Considerations:**

- The process outlined above would not need to be undertaken for each species under consideration for a SARA listing. The level of analysis and necessity of a stakeholder socio-economic review meeting would be proportional to the projected impact of the species listing and stakeholder interest.
- If a recovery strategy is not already under development, potential recovery measures and scenarios can still be projected, based on available information. These projected scenarios, which will form the basis of the socio-economic analysis, may not be the actual measures put in place once a SARA compliant recovery strategy is developed, but would serve to provide a reasonable indication of the measures that may be required under a SARA listing. This information will serve to better inform Ministers as to the potential benefits and costs associated with a SARA listing.
- As well as potential management scenarios are intended to guide the development of the socio-economic analysis. Ideally, the bulk of the socio-economic analysis would commence after the completion of the RPA and refinement of potential management scenarios. In the case that an RPA is not conducted or the results are not provided within the timeframe for the listing process, the socio-economic analysis shall be based on the best available scientific advice.
- The review meeting would be focussed on the socio-economic analysis presented and would not be another round of general consultations.
- The identified Responsibility Centre for each species will lead on the socio-economic analysis.
- Neither the analysis nor the review meeting will identify species listing recommendations. Listing recommendations will be developed subsequently, using the final socio-economic report, along with the relevant scientific and management considerations etc.
- While participation may vary, this analysis should be conducted in close collaboration with the provinces. Provinces/territories are to be invited to participate in the development of the analysis, including scenarios. Provinces/territories may be asked to participate as a co-lead, especially in the case of freshwater aquatic species.
- INAC may also participate where there are implications for aboriginal peoples.
- Review meetings would need to be held after Science advice provided and management scenarios determined (including a Recovery Potential Assessment) has been completed, and prior to internal decision-making meetings. The precise timeline for incorporating this review process into the larger SARA and regulatory timelines is under development.

List of principles:

1. Scope of socio-economic analysis and resources allocated should be commensurate with the current and anticipated future social and economic importance of species, and expected impacts
2. Analysis should be defensible, understandable to our stakeholders, and practical
3. Consider alternative scenarios using models where possible
4. For each scenario:
  - a) identify all potential benefits and costs, including non-market;
  - b) use qualitative and quantitative information.
5. Consider population dynamics:
  - a) candidate species/population;
  - b) other impacted species.
6. Identify important uncertainties in model
7. Open and inclusive approach:
  - a) provincial/territorial, aboriginal and stakeholder review;
  - b) professional peer review where appropriate;
  - c) revise as appropriate.