

Framework for Integrating Socio-Economic Analysis in the Marine Protected Areas Designation Process

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Northern Bottlenose Whale
Cover photo courtesy of Whitehead Lab

The northern bottlenose whale is endemic to the North Atlantic Ocean and is found in cool and subarctic waters. They prefer deep waters. The total population is unknown but likely to be in the order of 10,000. In Canada, the Gully – a huge submarine canyon east of Nova Scotia – has a year round population of around 160 whale. The Gully is home to a rich diversity of marine habitats and species, including the endangered northern bottlenose whales and cold-water corals (also known as deep-water corals). Located off Nova Scotia near Sable Island, the area is globally acknowledged as an important and exceptional marine habitat. In 2004 and was designated as the Gully Marine Protected Area (MPA) in 2004.

Source: Fisheries and Oceans Canada

FOREWORD

The *Framework for Integrating Socio-Economic Analysis in the Marine Protected Areas Designation Process* outlines the national guidance for assessing the socio-economic impact of designating *Oceans Act* Marine Protected Areas (MPAs). It is based on the MPA designation process outlined in the *Oceans Act* “Marine Protected Areas Policy and Operation Framework – A Practitioner’s Guide” and incorporates regional experiences in conducting such analyses. In addition, the Framework also draws on experiences implementing regulatory initiatives under other Acts administered by Fisheries and Oceans Canada (DFO). Every effort was made to develop a Framework that is consistent across the Department and adheres to the basic principles of Cost-Benefit Analysis (CBA).

The Framework has been aligned with the federal regulatory policy encapsulated in the *Cabinet Directive on Regulatory Management* (CDRM) and the accompanying guidance documents developed by Treasury Board of Canada Secretariat (TBS). This is a living document that may be updated as necessary by DFO to incorporate any significant changes that may result as revisions to the MPA Practitioner’s Guide are finalized. Finally, as work progresses on MPA network design and the associated socio-economic analysis, appropriate updates will be undertaken.

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Acronyms

AOI(s)	Area(s) of Interest
AV	Annualized Value
CBA	Cost-Benefit Analysis
CBA-MPA	Cost-Benefit Analysis of the Proposed Marine Protected Area Regulations
CDRM	Cabinet Directive on Regulatory Management
DFO	Fisheries and Oceans Canada
EGS	Ecosystem Goods and Services
GDP	Gross Domestic Product
HOTO	Health of the Oceans
IOM	Integrated Oceans Management
LQ	Location Quotient
MA	Millennium Ecosystem Assessment
MPA	Marine Protected Areas
OAP	Oceans Action Plan
P&E	Policy and Economics
PV	Present Value
RIAS	Regulatory Impact Analysis Statement
SEOA-AOI	Socio-Economic Overview and Assessment of the Area of Interest
TBS	Treasury Board of Canada Secretariat
TEEB	The Economics of Ecosystem and Biodiversity
UK NEA	United Kingdom National Ecosystem Assessment
UNEP-WCMC	United Nations Environment Program's World Conservation Monitoring Centre

FRAMEWORK FOR INTEGRATING SOCIO-ECONOMIC ANALYSIS IN THE MARINE PROTECTED AREAS DESIGNATION PROCESS

1. Introduction

In 1997 the *Oceans Act* came into force, giving authority to the Minister of Fisheries and Oceans to establish by regulation Marine Protected Areas (MPAs) for the conservation and protection of one or more of the following:

- commercial and non-commercial fishery resources, including marine mammals, and their habitats;
- endangered or threatened marine species, and their habitats;
- unique habitats;
- marine areas of high biodiversity or biological productivity; and,
- any other marine resource or habitat as is necessary to fulfil the mandate of the Minister.

The *Oceans Act* was followed by the comprehensive Canada's Oceans Strategy in 2002 and as part of the implementation of the Oceans Strategy, the Government of Canada launched the Oceans Action Plan (OAP) in 2005 in an effort to coordinate and implement oceans activities, and to provide for the sustainable development and management of Canadian oceans. One of the key elements of the OAP is the Health of the Oceans (HOTO) initiative, which identifies several activities to maintain healthy and productive ocean ecosystems and allow Canadians to realize the full economic, environmental, cultural and recreational benefits that oceans have to offer. Under HOTO, key initiatives included the development of a Federal Marine Protected Areas Strategy, and development of the *National Framework for Canada's Network of Marine Protected Areas (1999)*. The national MPA Network Framework provides strategic direction for the design of a national network of MPAs that will be composed of a number of bioregional networks. The Framework was approved in principle by the Canadian Council of Fisheries and Aquaculture Ministers in 2011.

Recognizing that achieving sustainability in the harvest of living ocean resources ultimately depends on healthy, productive ecosystems, the Government of Canada works with other countries to address concerns about the marine environment. Internationally, Canada made a commitment to establish a network of MPAs at the 2002 World Summit on Sustainable Development, and in the 2004 United Nations Convention on Biological Diversity Program on protected areas. In addition, the Government of Canada has demonstrated its commitment by endorsing conventions that pursue the goals of conservation and protection, including the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities.

1.1 Scope of the Framework

The establishment of an MPA through regulations requires a cost benefit analysis as part of the federal regulatory analysis process set out by the Treasury Board of Canada Secretariat. Meeting this requirement is the primary focus of this *Framework for Integrating Socio-Economic Analysis in the Marine Protected Areas Designation Process* (henceforth cited as the

Framework). Additionally, the MPA Practitioner's Guide¹ clearly identifies earlier stages in MPA regulatory development where socio-economic analysis is particularly useful to inform the process. In order to address client needs in a consistent and efficient manner, the Framework identifies three key points in the MPA designation process where economic information may be called upon:

- Identification of the Areas of Interest (AOIs);
- Selection of the AOI; and,
- Drafting of the regulatory intent² for the proposed MPA Regulations;

The Framework then describes the scope and content of the following three related socio-economic reports corresponding to each stage:

- **Phase I Socio-Economic Overview and Assessment of the Areas of Interest** (referred to as the Phase I SEOA-AOIs report) profiles the economic activities of key interested parties³ (including regulatory authorities, stakeholders and Aboriginal organizations) linked to the larger geographic area within which the candidate AOI may be located. This document will be developed early in the MPA designation process (see section 2.1 below) and will serve to inform: the identification of the AOIs, discussions with the interested parties, and subsequent decisions;
- **Phase II Socio-Economic Overview and Assessment of the Area of Interest** (referred to as Phase II SEOA-AOI report), provides detailed information on the economic activities of the interested parties and their interactions with the ecosystem services within the boundaries of the selected AOI. This document will be developed once the AOI has been selected (see section 2.1 below) with clearly defined boundaries. The document will serve to inform discussions with the interested parties and subsequent decisions; and
- **Cost-Benefit Analysis of the Proposed Marine Protected Area Regulations** (referred to as CBA-MPA report), evaluates the incremental impacts (costs and benefits) of the regulatory intent for the proposed MPA Regulations on the interested parties. The CBA-MPA report will be developed after the regulatory intent for the proposed MPA Regulations has been finalized (see section 2.1 below) and will inform the development of the Regulatory Impact Analysis Statement (RIAS)⁴ for publication in the Canada Gazette Part I and II.

The three socio-economic reports mentioned above are required as part of either an internal or external process. The CBA-MPA report is a required product for establishment of the regulation, and its content is driven by Treasury Board Secretariat (TBS) policy and guidance. It cannot be

¹ Fisheries and Oceans Canada, (2009), *Oceans Act Marine Protected Areas Policy and Operation Framework – A Practitioner's Guide* (Version 1)

² The regulatory intent for the proposed MPA Regulations is assumed to contain a general outline of the MPA boundaries, zones, the prohibitions and exemptions that would be applicable within the MPA (see step 3 of figure 1).

³ Throughout this framework the term "interested parties" is defined as per section 2.4 of the *Draft National Conservation Plan – Performance Management Strategy* (2015) and includes:

- Regulatory authorities: federal, provincial/territorial, municipal and aboriginal jurisdictions;
- Stakeholders: users of coastal and oceans space and resources including industry (fishing, fish processing, shipping, aquaculture, oil & gas, etc.), non-governmental organizations (NGOs) and environmental non-governmental organizations (ENGOs), the public and others (including academia and international bodies); and
- Aboriginal organizations: those who have a legal title as well as other Aboriginal groups or individuals who are users of coastal/ocean space and resources and are affected by ocean-related decisions

⁴ Timing of the CDRM Triage may vary from case to case, and any/all of these documents may also support the Triage.

completed until the final boundaries of the MPA and regulatory management measures are known. The Phase I and Phase II SEOA-AOI reports can be more flexible and are optional from a regulatory point of view. However, it is important to note that the flexibility for these two reports relates more to the decision to undertake the assessment and the time required to complete the reports rather than the scope and purpose of these two documents as outlined above. The decision of whether the Phase I and Phase II SEOA-AOI reports will be developed or not will be taken in consultation between the Integrated Oceans Management (IOM) Branch and the regional Policy and Economics (P&E) Branch. The structure and timing suggested in this framework for the first two documents should serve as the default approach, which will be assumed throughout this document. However, regional Oceans Division and P&E may negotiate alternative work plans as appropriate in any given case.

The structure and scope of the socio-economic documents suggested in this Framework was carefully developed in consultation with IOM Branch in order to:

- address the need for socio-economic information earlier in the MPA designation process, to support the refinement of geographic boundaries, the assessment of regulatory options for cost-effectiveness, and consultations;
- identify key points (in what is often a protracted process) where socio-economic information can be assembled and will meet client needs without requiring constant minor updates or revisions; and,
- manage expectations and establish a common understanding of the kind of socio-economic information that can be provided at the interim stages of AOI identification, selection and MPA designation.

Although three distinct documents are outlined in this framework, each includes information that can help to inform the next. The Phase II SEOA-AOI report builds on Phase I SEOA-AOIs report and the two together provide background information to conduct the incremental impact assessment in the CBA-MPA report⁵ once the regulatory intent for the proposed MPA Regulations has been developed. Furthermore, the CBA-MPA provides information to fulfil the *Cabinet Directive on Regulatory Management* (CDRM)⁶ requirements for the RIAS. The CBA-MPA report represents one part of the advice to inform decision makers during the MPA designation process, along with the ecological assessments and results of the consultations with Canadians.

It is important to emphasize that the term socio-economic analysis⁷ is used in this *Framework* to refer to the analysis of incremental costs and benefits of policies that affect the economic welfare of Canadians and Canada's economic activity and the potential distributional or social impacts of these policies. The scope of the analysis is guided by TBS cost-benefit analysis guidance⁸, which states:

“In these guidelines, we use the term economic when we are referring to the benefits and costs that will affect economic

⁵ If significant time passes between the three stages identified, the information in the foundation documents may need to be updated before it can be used to support the CBA-MPA report.

⁶ Treasury Board of Canada Secretariat (2012) Cabinet Directive on Regulatory Management

⁷ “Socio-economic analysis” is a general term. Cost-benefit analysis is one type of socio-economic analysis.

⁸ Treasury Board of Canada Secretariat (2007 Interim), Canadian Cost Benefit Analysis Guide: Regulatory Proposals

welfare and economic growth. The term social will refer to the potential distributional impacts of policies being evaluated”.

It should be noted that this Framework does not currently provide guidance for the socio-economic analysis that may be required for the MPA network design process or for monitoring and evaluating the socio-economic impacts of the MPAs after they are created. These products are under development in collaboration with the IOM Branch, and may be included in future revisions.

1.2 Purpose of the Framework

The Framework has been developed in order to support integrated decision making and reporting within DFO, with a nationally-consistent analytical approach. It presents guidelines and principles for conducting socio-economic analysis to support the MPA designation process and meet the requirements of the CDRM. The Framework is intended for use by economists, and provides guidance on processes for developing an analysis (including roles and responsibilities) as well as specific technical guidance for the socio-economic analysis required for MPA designation. To the extent that it represents a companion piece to the MPA Practitioner’s Guide, its contents are also of interest to MPA program staff.

Economists are provided with the following reference materials:

- methodological guidance to support the national standardization of socio-economic analyses for MPAs;
- a description of the points of entry and scope of the socio-economic analysis throughout the MPA designation process; and,
- templates for the required documentation.

1.3 Structure of the Framework

Chapter 1 outlines the purpose and scope of the Framework. Chapter 2 provides procedural guidance, showing how and where the socio-economic analysis fits into the MPA designation process. It begins by outlining the MPA designation process, providing linkages to socio-economic analysis throughout. This is followed by outlining the role socio-economic analysis plays in policy analysis and indicates how socio-economic analysis will generate useful information for decision making. Next, a description is provided of the guiding principles for socio-economic analysis that influenced the development of the Framework. Chapter 3 provides a description of the socio-economic documents that will be developed in support of the MPA designation, including the socio-economic components of the regulatory documents required under the CDRM; followed by a discussion of the review and publication of the socio-economic reports. Chapter 4 focuses on the more technical aspects, based on TBS requirements for conducting the socio-economic analyses in support of the regulatory MPA designation process; and Chapter 5 provides templates with additional suggestions and guidance for report preparation.

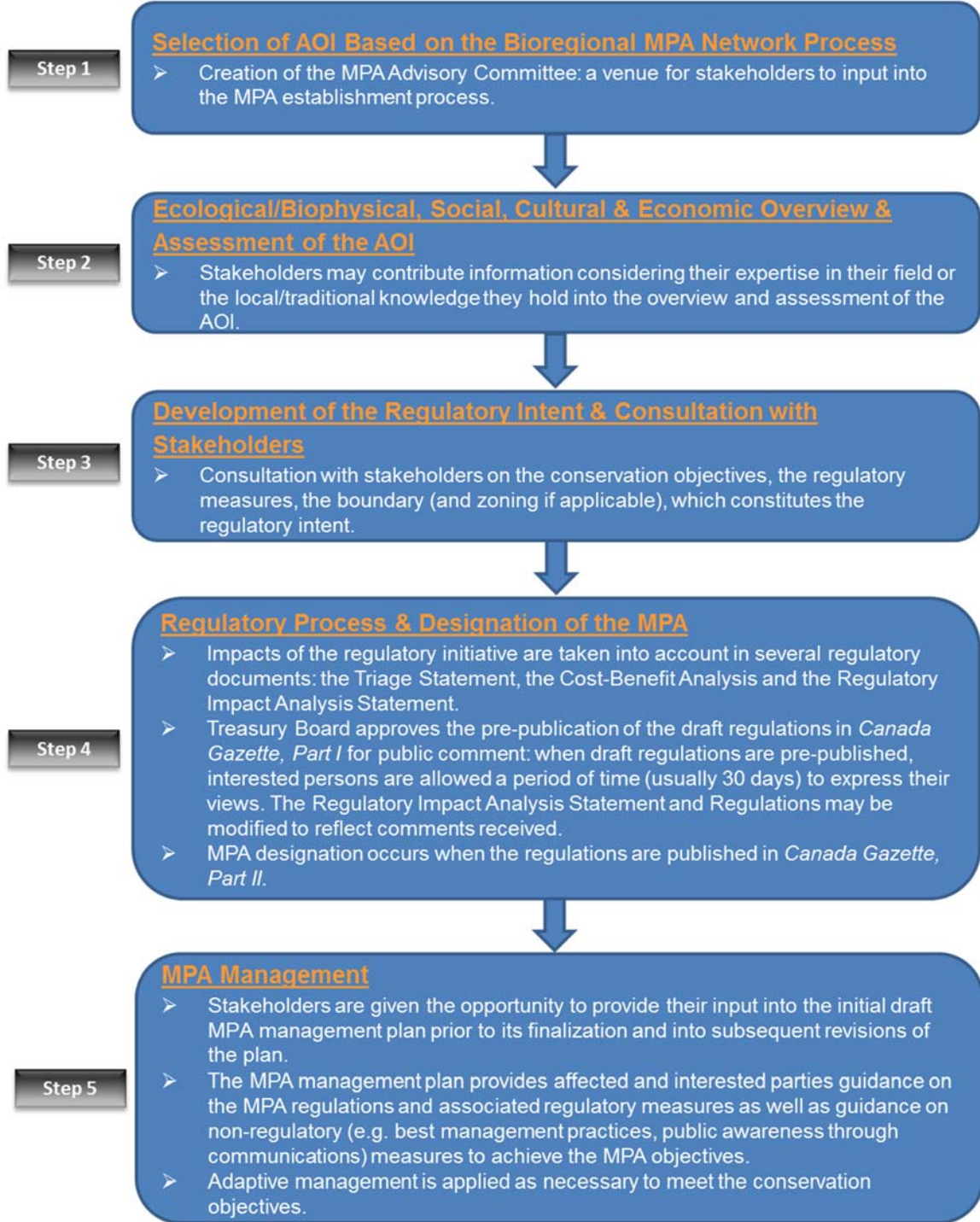
2. Context and Principles of Analysis

This section describes the MPA designation process to show how socio-economic analysis is relevant, and to highlight the required inputs to the analysis that depend on the work of scientists and MPA managers/practitioners. Principles to guide overall scope and approach are also presented.

2.1 Overview of the MPA Designation and Management Process

Based on information provided by the IOM Branch, five steps are followed throughout the MPA designation process – from selecting the AOI to developing the proposed MPA Regulations and management of the MPA post designation. Figure 1 outlines these steps of the MPA designation process:

Figure 1: Overview of the *Oceans Act* Marine Protected Areas Establishment Process



Source: Integrated Oceans Management Branch

The need for socio-economic analysis described in this Framework stems primarily from the requirement to fulfill the regulatory development process as outlined under the CDRM.

However, the requirement for socio-economic analysis is highlighted throughout the MPA designation process: from step 2, where information on the feasibility of establishing the MPA provides necessary background for subsequent socio-economic overview and assessment of the AOI; to step 4, where information from the MPA-CBA report is required to develop the regulatory package for approval and publication in the Canada Gazette. Stakeholders are extensively involved in the designation and management of MPAs.

The *National Framework for Establishing and Managing Marine Protected Areas (1999)*⁹ presents the general approach that DFO will take to establish and manage Oceans Act MPAs across Canada.

MPA regulations follow a life-cycle approach, meaning that attention is given not only to regulatory development but also to the implementation, monitoring, evaluation and review of regulations.

- The monitoring of indicators provides for a monitoring baseline, an important reference for the conservation objectives of the MPA. Ongoing monitoring allow for establishing trends;
- Review of monitoring results in addition to the 5-year review cycle of the MPA management plan feed into the evaluation of the regulatory tool;
- Evaluation plays an important role in the life cycle of the MPA regulations as it assesses progress towards achieving the conservation objective(s) of the MPA (i.e., whether the regulations are working as per their original intent) and of the effectiveness of the management measures. The conclusions of the evaluation may indicate that the regulations are resolving the issue at hand as planned or may point to the need for adaptive management to adjust the management tool in order to better remediate the issue and better achieve the regulatory conservation objectives.

As a result, the life cycle approach improves the effectiveness, efficiency, and accountability of the regulatory system to support the government's commitment to Canadians.

2.2 Socio-Economic Linkages with the MPA Designation Process

The ecological information from the bioregional MPA network process (see step 1 of the MPA designation process) would in large part contribute to a preliminary indication of the sectors that may be affected and determines the scope of the Phase I SEOA-AOIs report. Development of the Phase II SEOA-AOI report is initiated in step 2 of the MPA designation process. The information generated on the ecological aspects is the basic information required for socio-economic analysis. Information on the ecological resources available in the area is used to identify human uses. This provides the information required to link human uses and ecological systems, which is fundamental for an informed socio-economic analysis.

After the regulatory management measures required to achieve the conservation objectives of designating an MPA have been identified as part of the regulatory intent for the proposed MPA Regulations (in step 3 of the MPA designation process), the economic analysis for the CBA-MPA report can be initiated. The regulatory management measures

⁹ As of May 2015, the document is being updated.

that impact human activities, define the scope of the CBA required for the regulatory process. The CBA-MPA report is finalized between step 3 and 4, in order to provide the necessary information required for regulatory documents, such as the RIAS for publication in Canada Gazette, Part I for public comment and final designation through publication in Canada Gazette, Part II. While the Triage Statement is part of step 4 in the MPA designation process, the triage statement can be completed earlier on in the process – subsequent to the development of the regulatory intent for the proposed MPA Regulations in step 3 of the MPA designation process. The information needed to complete the triage statement can in part be gleaned from the Phase I and II SEOA-AOI reports, although rough estimates of incremental costs and benefits (not part of the Phase I and II SEOA-AOI reports) would need to be provided by the regional P&E. It is important to note that the triage statement sets up the level of analysis and serves to indicate the level of detail that is required for the MPA CBA report. Therefore, a full CBA is not required for completing the triage statement. The CBA is designed to satisfy the requirements of federal regulatory process, particularly the requirements set out in the TBS' Cost-Benefit Analysis Guide and the information required for the RIAS.

The MPA management plans are developed post-MPA designation and are intended to describe the implications of the MPA designation and responsibilities of regulators and non-regulators in managing the MPA, including planning, monitoring and reporting. These MPA management plans may include socio-economic indicators for monitoring and evaluation purposes, thus requiring some socio-economic analysis at this stage¹⁰.

2.3 Socio-Economic Analysis and Decision-Making

The value of socio-economic input when establishing a MPA goes beyond the fact that federal regulatory policy requires an assessment of net benefits (benefits minus costs) and distributional impacts of the MPA designation within a RIAS. Establishing a MPA is about achieving the conservation objective, and there are a number of reasons why economic analysis can provide useful information for MPA decision-making, including but not limited to:

- **MPA implementation is about managing human activity to achieve the conservation objective.** Economic activity and human uses of natural areas contribute to ecosystem impacts, and increasing concentrations of human activity generally increase the degree of impact on ecosystem services. Understanding how the intensity and pattern of human use of natural areas may shift over time and may influence the magnitude of the impacts, can aid with designing policies that achieve MPA conservation objectives. Moreover, understanding the shifts in human use as a result of the MPA designation will also be useful in developing policies that promote the MPA conservation objectives.
- **Controversy and opposition will occur.** The AOI identification, selection and MPA designation may trigger opposition due to the real or perceived losses to interested parties potentially affected by use exclusions, possibly including economic losses. In these cases, socio-economic analysis and information can aid in designing the proposed MPA Regulations and management plans that lessen these impacts. This helps demonstrate that economic impacts may be less severe than is commonly perceived, thereby alleviating fears

¹⁰ As previously noted, MPA management is currently beyond the scope of this document, but may be included in future revisions.

on the part of the interested parties active in the area. Indeed, a primary focus of economics is to better understand the economic trade-offs associated with public policy.

- **Monitoring and evaluation can be supported.** A well-founded economic analysis requires a careful articulation of the existing (pre-MPA) state and clarity on economic and ecological outcomes¹¹. This requires the collection of supporting data which can contribute to tracking and reporting on performance relative to the conservation objectives of the MPA.

In a nutshell, socio-economic analysis has more to offer than a simple check mark in the regulatory process for MPA designation. Integrating basic economic principles throughout the MPA planning process can increase stakeholder acceptance and the probability of conservation success as it allows the fundamental relationship between the environment and the economy to be taken into account.

2.4 Guiding Principles for Socio-Economic Analysis

The following five principles guide the approach to socio-economic analyses presented here:

1. **The scope and level of detail in socio-economic analysis should align with the magnitude of expected impacts.** Resources allocated to conducting the socio-economic analysis should be commensurate with the economic activities and expected impacts of the proposed regulatory management measures (i.e. the principle of proportionality). For this purpose TBS developed the “triage statement”¹² to assess regulatory proposals at an early stage to determine where resources should be focused and where federal regulatory approval processes can be streamlined. The triage statement may indicate a low impact, in which case the analysis may not need to quantify or monetize all benefits and costs. Even in the case of high expected impacts, it may not be possible to monetize all costs and benefits, and some level of qualitative assessment of the magnitude and importance of the impacts will be necessary.
2. **Analysis should be defensible, understandable, and practical.** This means that technical information will need to be assembled in a format that is easy to communicate. The underlying data and analytical assumptions used in developing the expected outcomes must also be presented in a clear and concise format.
3. **Analysis should consider both the quantitative and qualitative aspects.** The analysis should identify all expected benefits and costs using an appropriate mix of qualitative and quantitative information. The focus of the analysis is not solely on developing economic information that monetizes costs and benefits, but is instead on presenting a mix of information to illustrate expected ecological, economic and social outcomes.
4. **Identify important uncertainties.** Uncertainties dominate any analytical effort to forecast future impacts, and effort should therefore be made to identify the major uncertainties and how they affect outcomes. Notably, the net benefit rule in the CDRM that requires that benefits exceed costs is an example where major uncertainties may change an important

¹¹ Ecological outcomes refer to the final ecosystem goods and services that are valued by people. This concept is further elaborated in section 5 (subsection 5.3.9.2) of this document.

¹² Treasury Board Of Canada Secretariat (2014), The Triage Statement (<http://www.tbs-sct.gc.ca/rtrap-parfa/temp-gabar/tsf-fet-eng.asp>)

outcome, and these should be identified. The cost impacts are generally easier to estimate given the availability of information with respect to the regulatory management measures. Benefits on the other hand are usually more difficult to evaluate due to the lack of scientific data and appropriate economic information with respect to ecosystem goods and services (EGS) being targeted by the proposed regulations. Therefore, for quantified or monetized costs and benefits, the key variables such as the expected ecological outcomes, levels of human uses and subsequent costs and benefits should be examined for uncertainty and subjected to sensitivity analysis.

5. **Adopt an open and inclusive approach, including elements of external and internal review and input where appropriate.** Analytical effort is always improved when others have a chance to review and provide comments. Soliciting input early in the scoping of the analysis allows for major drivers and relationships to be identified and included in the analysis. If this input comes after the analysis is prepared, there may not be sufficient resources left to adequately address the gaps or concerns. Comments provided early in scoping the analysis help to avoid surprises at later stages of the analytical process. Whenever input is solicited, it is important to clearly communicate to reviewers the purpose and scope of the document under review so that the review and comments are appropriately focused.
6. **Adopt an Innovative Approach.** The methodologies and practices for cost-benefit analyses are evolving continuously. Socio-economic analysis should allow for the adoption of such innovative approaches. Efforts are being made at DFO for continuous improvement in methods, and in particular, in efforts to measure the benefits of ecological protection for maintaining biodiversity and associated ecosystem goods and services (EGS).

2.5 Foundations of the Socio-Economic Analysis and Interdisciplinary Linkages

Socio-economic analysis, in its broad sense, is relevant throughout the MPA designation process from AOI identification to development of the regulatory approach for the MPA. Cost-benefit analysis is a specific type of socio-economic analysis, conducted primarily in support of the TBS regulatory analysis process for MPA designation. The different types of socio-economic analysis discussed in this framework require communication among disciplines (science, economics, management), but the cost-benefit analysis requires very specific and refined interdisciplinary inputs in order to assess the level of impact of the specific regulatory proposal.¹³ This requires that:

- a) the regulatory proposal is developed, so that the new regulatory management measures are described in detail; and,
- b) the expected socio-economic and ecological outcomes of the new regulatory management measures are described, so that the level of impacts can be assessed.

In other words, while the MPA designation process requires socio-economic input at several stages, the cost-benefit analysis itself cannot be initiated until such time as the required **regulatory** and **ecological** information – the foundation of the CBA - is available. Once the information has been collected, it is the analytical needs of the regulatory process that will dictate the level of effort and the scope of socio-economic analysis.

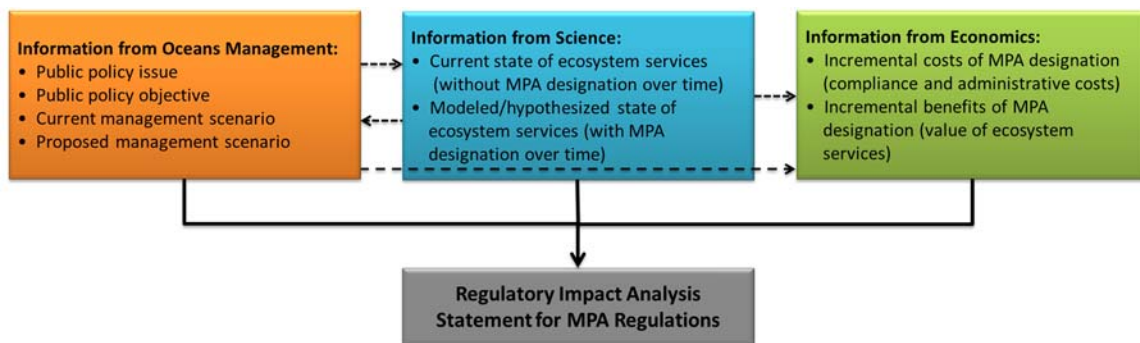
¹³ Treasury Board of Canada Secretariat (2007), Guide to the Federal Regulatory Development Process

To quantify and monetize incremental **costs**, information is required primarily on regulatory management measures that may prohibit some economic activities, or require modifications to current practices, etc. Estimating incremental **benefits** primarily requires the determination of the effects of regulatory management measures on biological and ecological outcomes. The assessment of both the incremental costs and benefits is undertaken as comparison between the baseline and regulatory management scenarios¹⁴. In general, information required for estimating the incremental costs is straightforward and well understood. However, benefits valuation is more complex and requires an assessment of the impacts of regulatory management measures on biological outcomes linked to ecosystem services. Although demand is placed on economists to assess these benefits, it must be recognized that the assessment of ecological outcomes is a necessary prerequisite to the economic work. Ideally, the ecological and economic outcomes of the proposed MPA Regulations would be hypothesized through formal modeling efforts and reflected in the “regulatory management scenario”; however, a variety of methods may be used according to the availability of resources.

In addition, cost-benefit analysis of a proposed MPA designation must be conducted in comparison to a situation in the absence of the proposed MPA Regulations referred to as “baseline scenario”. Cost-benefit analysis embodies the concept of incrementality by comparing the “with (regulatory management scenario)” and “without (baseline scenario)” the proposed MPA Regulations. The outcomes of biological and economic models for these two scenarios provide the basis for economic valuation.

The proposed regulatory management measures, plus the expected ecological and economic outcomes together provide the information needed to estimate the incremental costs and benefits of the proposed MPA Regulations. Figure 2 provides a general overview of the relevant pieces of information that combine to produce a coherent socio-economic analysis for decision making purposes.

Figure 2: Interdisciplinary Bridging



¹⁴ In the context of cost-benefit analysis, a scenario (baseline or regulatory management scenario) is a presentation of possible future events or projection of ecological and economic outcomes based on existing or proposed regulatory management measures, respectively. It is not simply a list of the existing management measures or the regulatory management measures.

Economic valuation of an ecosystem service is entirely dependent on the availability of interdisciplinary data and information as outlined in Figure 2. In the absence of such information, economic impact analysis – whether in qualitative or quantitative metrics – may not be possible. The detailed technical discussion of the information requirements for conducting a cost-benefit analysis is outlined in section 4.

2.6 Valuing Ecological Goods and Services

Benefits valuation of final EGS remains the greatest challenge for the cost-benefit analysis. As such before delving into the modalities of cost-benefit analyses, it would be useful to develop some understanding of EGS, in order to provide a basis for the information requirements for benefits analysis.

Ecosystem goods and services in general comprises of the goods and services provided by nature that are in one way or another valued by society. There are numerous definitions for EGS and organizations such as the United Nations, United Kingdom, and European Union are attempting to define EGS. For example the United States Environmental Protection Agency (US EPA) Office of Research and Development (ORD) has adopted the concept of “*Final Ecosystem Goods and Services*”¹⁵ which comprises of the “components of nature, directly enjoyed, consumed or used to yield human well-being”. Similarly the definition of ecosystem goods and services developed by the UK National Ecosystem Assessment¹⁶ (UK NEA) is “the outputs of ecosystems from which people derive benefits”. The key element of these and other definitions of EGS put forward recently is the emphasis on distinguishing between ‘*ecosystem processes and intermediate ecosystem services*’ and the ‘*final ecosystem services*’ that result in welfare gains and/or losses to society. This distinction is particularly important for the purposes of valuing final EGS and has been the focus of much of the work over the past decade or so. Over the years significant progress has been made in defining, identifying and developing approaches for valuing EGS in an effort to make informed decisions.

The Millennium Ecosystem Assessment¹⁷ (MA), The Economics of Ecosystems and Biodiversity¹⁸ (TEEB), and the UK National Ecosystem Assessment¹⁹ (NEA), outline the basic framework for identifying EGS for purposes of benefits valuation. Figure 2 below reproduces the conceptual framework for ecosystem benefits valuation outlined in the UK NEA, which provides “*a schematic diagram of a small selection of ecosystem processes and services to illustrate how ecosystem services are linked to final ecosystem services and the goods and values they generate for people*”.²⁰

¹⁵ D. H. Landers and Nahlik A. M (2013), Final Ecosystem Goods and Services Classification System (FEGS-CS) U.S. Environmental Protection Agency, Office of Research and Development, Washington, D.C.

¹⁶ UK National Ecosystem Assessment (2011), The UK National Ecosystem Assessment Technical Report. UNEP-WCMC, Cambridge

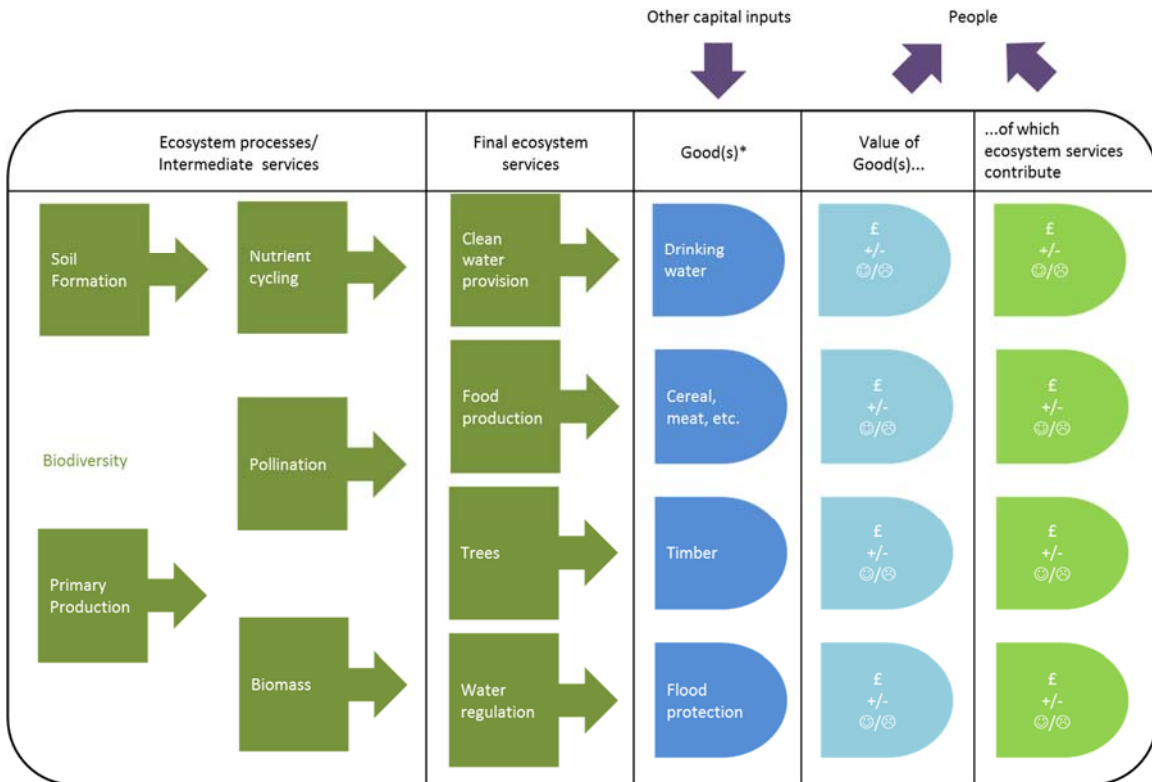
¹⁷ Millennium Ecosystem Assessment (2005) Ecosystems and Human Well-being: A Framework for Assessment. World Resources Institute, Washington, DC.

¹⁸ TEEB (2010), The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations of TEEB

¹⁹ UK National Ecosystem Assessment (2011), The UK National Ecosystem Assessment Technical Report. UNEP-WCMC, Cambridge

²⁰ *ibid*

Figure 3: UK NEA Conceptual Framework for Ecosystem Services Valuation



Source: UK NEA Chapter 2: Conceptual Framework and Methodology

Notes:

*: The term “good(s)” includes all use and non-use, material and non-material outputs from ecosystems that have value for people.

£: Represents monetary values of the EGS.

+/-: Represents a quantitative assessment of the EGS in non-monetary metrics.

☺/☹: Represents a qualitative evaluation of the EGS.

The UK NEA states in reference to the conceptual framework: *“The final ecosystem services are the outcomes from ecosystems that directly lead to good(s) that are valued by people. The full value is not just from the ecosystem, but depends on the additions of inputs from society (other capital inputs) and the value is often context dependent. The final value of the good(s) is, therefore, attributable to both the ecosystem and human inputs. For a fair valuation of ecosystem services, both the separation of final ecosystem services from underpinning processes and the accounting for other capital inputs is necessary”.*

This approach distinguishes between:

- ecosystem processes and intermediate services and the final ecosystem service that result in welfare gains/losses to avoid double counting; and
- total value of final ecosystem services and the portion that is attributable to human interventions

Another aspect of the approach is that it provides flexibility to represent EGS values in both monetary and non-monetary metrics.

In the MPA context, it is the impact of designating an MPA on final EGS (as depicted in figure 3 above) that is the focus of benefits valuation in this framework. Thus, economic assessment of EGS would begin at the final good(s) stage and end with estimating the value that is attributable to the designation of the MPA. Once the biological outcomes have been estimated, the relevant EGS can be valued through established benefits valuation methodologies (such as revealed preference, stated preference, and benefits transfer methods).

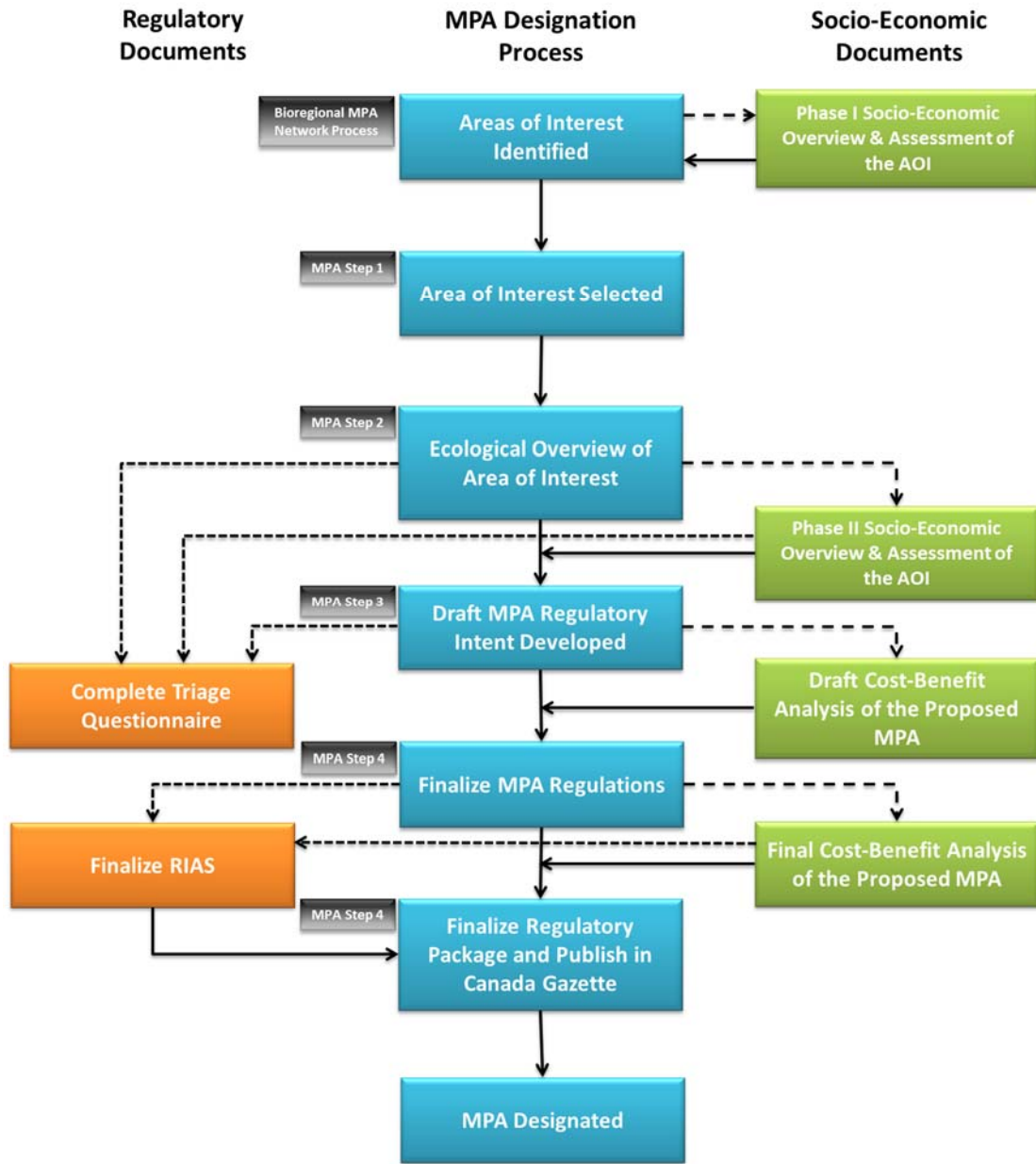
3. Procedural Guidance

This section further elaborates when the socio-economic products are developed and how they address the clients' needs at each stage of the MPA designation process outlined in figure 1, section 2.1. The time and other resources required for socio-economic analysis should be integrated into all forward planning related to development of the regulation, to ensure that the necessary inputs are available and that the socio-economic products are ready when required. To this end, ongoing communication and work planning between IOM Branch and P&E is essential.








3.1 Documents Supporting the MPA Designation Process

As part of the MPA designation process, a number of regulatory and socio-economic analysis documents will be developed. Figure 4 highlights the products resulting from the MPA designation process as illustrated in figure 1 and identifies the points at which socio-economic analysis is undertaken as well as the link to the regulatory development process. The regulatory documents developed near the end of the regulatory process (Triage and RIAS) draw on the earlier documents developed as part of the MPA designation process, including ecological assessments, stakeholder consultations, regulatory intent for the proposed MPA Regulations, socio-economic analyses, etc. A brief description of the main socio-economic and regulatory documents is provided in this section to highlight the linkages between the socio-economic analysis, MPA designation and the regulatory analysis processes. It is important that each of these socio-economic documents be appropriately identified and titled to clearly communicate the scope and intent of each document, manage expectations about the level of analysis, and avoid confusion.

Figure 4: Socio-Economic Input into the MPA Designation Process



Legend:

-  MPA Designation Process (see figure 1)
-  Responsibility Integrated Oceans Management Branch
-  Responsibility Regional Policy and Economics Branch
-  Joint Responsibility Integrated Oceans Management Branch; Legislation and Regulatory Affairs Directorate and Policy and Economics Branch
-  Documents informing the MPA Designation Process
-  Information required for drafting the socio-economic documents
-  Information summarized in regulatory documents

3.1.1 Socio-Economic Documents

As illustrated in Figure 4 and described below, the socio-economic analysis is undertaken at three distinct stages of the MPA designation process. Each of these three socio-economic analyses is driven by the need to inform consultations and decisions, but scope of analysis varies as per the requirements of each stage of the MPA designation process and the federal regulatory process.

i) Phase I Socio-Economic Overview and Assessment of the Areas of Interest

The selection of the area to be designated as a MPA from amongst a number of potential candidate sites is based primarily on ecological and feasibility criteria.²¹ The purpose of the Phase I SEOA-AOI report is to supplement the ecological information and inform the consultations with the interested parties. The Phase I SEOA-AOI report may be used in some instances for the selection of the AOI, in conjunction with the ecological and other relevant information. The scope of the Phase I SEOA-AOI report is limited to providing a profile of the key interested parties comprising of information on the socio-economic activities that are currently taking place or are dependent on the resources in the larger geographic area within which the candidate MPA may be located. This socio-economic profile of the key interested parties will supplement the ecological information by identifying the current economic activities that are linked to the final ecosystem services. The template with a description of the contents of this report is provided in section 5.1.

At the early stage of identifying the AOIs based on the Bioregional MPA Network process, there will likely be multiple possible AOI configurations and assessing and developing an overview of the socio-economic activities for each of these AOI configurations would be highly resource intensive; as such the Phase I SEOA-AOI report will be developed for a single larger geographic area within which the candidate MPA may be located. The scope of the information at this stage should be based on existing and readily available data and comprise of high level statistics to provide an overview of current economic activities taking place or dependent on the resources in this larger geographic area. Regarding future potential economic activities, economists should only include those for which business plans are in place and for which evidence of intent (e.g. leases, permits, submission of plans for approvals, etc.) to undertake the activity can be established.

It should be noted that at this juncture, when geographic boundaries and regulatory management measures are unknown, an assessment of the potential costs and benefits of MPA designation will not be undertaken as part of this analysis. As well, the number of times the Phase I SEOA-AOI report can be updated to accommodate the changing boundaries of the AOI will be limited by the availability of time and resources.

ii) Phase II Socio-Economic Overview and Assessment of the Selected Area of Interest

The Phase II SEOA-AOI report will build on the information contained in the Phase I SEOA-AOI report by focusing on the selected geographic boundary of the AOI, which would in essence represent the proposed geographic boundary for the MPA. The report will provide a more in

²¹ DFO (2009), *Oceans Act Marine Protected Areas Policy and Operational Framework – A Practitioner’s Guide* (Version 1)

depth assessment of the socio-economic activities that are currently taking place or are dependent on the resources in the selected AOI. The purpose of the Phase II SEOA-AOI report is to inform consultations with the interested parties. The scope of the report will be to build on the Phase I SEOA-AOI profile of the interested parties and provide a historical trend analysis based on past data. The data and information will be detailed and of a more quantitative nature on the key economic indicators such as GDP, fishing landed value, employment, number of establishment or other entities, revenue, trade, demographic profile of the area, etc. at the provincial or regional and national scale for the selected geographic boundaries of the AOI. The Phase II SEOA-AOI report will also include a brief summary of the unique ecological characteristics of the AOI and the reason for conservation; an outline of the existing threats and the protections currently in place; and a discussion of the existing national and international commitments. The bulk of the ecological information would draw primarily on the Ecosystem Overview of the AOI or other documents prepared by the IOM Branch in support of the MPA designation. The Phase II SEOA-AOI report in conjunction with the Ecosystem Overview will serve as the policy and economic baseline for the CBA and for informing the triage statement in the subsequent steps of the MPA designation process. The template with a description of the contents of this report is provided in section 5.2.

As the process for finalizing the MPA is iterative; the socio-economic analysis will also need to be flexible to accommodate this. However, due to resource constraints, socio-economic analyses cannot be carried out for each iteration of the AOI boundary. Therefore, the AOI for which the socio-economic overview and assessment will be conducted will need to be determined in consultation with the IOM Branch prior to conducting the analysis. The geographic boundary of the selected AOI should be formally communicated to the regional P&E Branch by the IOM Branch at the Director level. In the event that it is not possible to finalize the geographic boundary for the AOI, the IOM Branch could develop two or three potential AOI boundary scenarios for socio-economic assessment to facilitate the finalization of AOI geographic boundary during consultations with the interested parties.

As with the Phase I SEOA-AOI report, an assessment of the incremental costs and benefits of the proposed MPA designation will not be conducted as part of this analysis. In addition, the number of times the Phase II SEOA-AOI report can be updated in order to reflect the boundary changes of the selected AOI will be limited by the availability of time and resources.

iii) Draft and Final Cost-Benefit Analysis of the Proposed MPA Regulations

The CBA is a mandatory requirement of the federal regulatory process and is one of the key documents prepared in support of the decision to enact regulations (steps 3 and 4 of the MPA designation process). The purpose of the CBA-MPA report is to serve as a key background documents for the RIAS (discussed below) which summarizes the results of the CBA conducted for the proposed MPA Regulations. The scope of the CBA-MPA report, as outlined in the CDRM, is to assess the incremental impacts on the interested parties (identified in the Phase I and Phase II of the SEOA-AOI reports) as a consequence of the proposed regulatory management measures. The focus of CBA-MPA report will be on evaluating the net incremental benefits (benefits minus costs) and distributional impacts. The scope of the CBA-MPA report will differ depending on the level of expected incremental costs of the proposed MPA Regulation as assessed through the triage statement (see section 3.1.2 below). If low incremental costs are expected, the depth of the analysis is of a qualitative nature, while a more quantitative analysis

will be undertaken if the incremental costs are expected to be medium or high. Treasury Board Secretariat specifies these differences in their guidelines for the triage statement and developing the RIAS (see section 3.1.2 below).

The CBA will be carried out after the draft regulatory intent for the proposed MPA Regulations (step 3 of the MPA designation process) has been developed and communicated to the regional P&E Branch in writing at the Regional Director level.

Subsequent to the publication of the RIAS in Canada Gazette, Part I, the cost-benefit analysis may need to be revised to account for any significant changes made to the proposed regulatory management measures in response to public comments received. As a consequence, the CBA-MPA report will also need to be revised, which would then inform the revisions to the RIAS for publication in Canada Gazette, Part II.

3.1.2 Regulatory Documents

The regulatory documents (namely the triage statement and the RIAS) inform the regulatory process and are mandatory under the CDRM. These documents are required at two key points of the regulatory process:

- the triage statement: is developed early in the process and determines the scope of the socio-economic analysis; and
- the RIAS: is developed to inform the decision making process and serves as a consultation piece for Canadians in general.

Both these regulatory documents draw on a number of other documents including Ecosystem Overview, consultations, and the socio-economic documents as illustrated in Figure 4.

i) Triage Statement

Once the AOI has been selected and the draft regulatory intent for the proposed MPA Regulations is available, the triage statement can be completed and submitted to TBS for preliminary review and approval. Although in the MPA designation process (figure 1) the triage statement is completed in step 4, the triage statement can in fact be completed subsequent to the identification of the regulatory management measures in step 3 of the MPA designation process.

The purpose of the triage process is to facilitate early involvement of TBS and assess the level of effort to be expended for the CBA. The triage statement is based on readily available information and does not require detailed information to be collected at this stage. The information on stakeholders needed to complete the triage statement can in part be gleaned from Phase II SEOA-AOI report. However, preliminary estimates of incremental costs and benefits – which are not part of the Phase I or II SEOA-AOI report – would need to be estimated by the regional P&E separately. These preliminary estimates would be back of envelop type calculations based on readily available information and do not require a full CBA. As such, the triage for the proposed MPA Regulations will be based on the overview documents (ecological and socio-economic), draft regulatory intent, consultations, and preliminary estimates of incremental costs and benefits.

The triage statement facilitates an early assessment of the expected impacts of regulatory proposals and determines where analytical resources should be focused. The assessment of the impact level (i.e. low, medium or high) in the triage statement is based primarily on incremental cost impacts²² of the regulation under consideration. Once the regulatory impact level is determined and agreed upon in consultation with TBS, the more detailed regulatory CBA may be undertaken. In keeping with the principle of proportionality, a detailed CBA is only carried out for proposals that are assessed in the triage statement as having a medium to high impact on costs to businesses, government and/or Canadians (including Aboriginal groups). For low cost impact proposals a qualitative analysis will be conducted.

ii) Regulatory Impact Analysis Statement

After the decision has been taken to propose the MPA Regulations, work on writing the RIAS is initiated and finalized in step 4 of the MPA designation process. The RIAS summarizes the results of the MPA-CBA report and other supporting documents. It provides a concise, non-technical synthesis of information that allows the various RIAS audiences to understand the reason for the regulation, the government's objectives, the costs and benefits of the regulation, who will be affected, who was consulted in developing the regulation, and how the government will evaluate and measure the performance of the regulation against its stated objectives. The RIAS is, in effect, a public accounting of the rationale for regulations.

3.2 Review and Publication

The review of Phase I and II SEOA-AOI and the CBA-MPA reports can be undertaken through multiple means, including stakeholder, academia and/or internal or inter-departmental review. The purpose is to ensure the information is accurate and the methodology used is appropriate given the scope of the analysis. A review of these reports, especially high impact CBAs, would be particularly useful if a new approach or methodology is adopted.

Academic or peer review and departmental review of the socio-economic analysis ensures that the analysis follows a sound methodology, analytical techniques and uses valid data, and provides a set of clearly articulated conclusions and their associated caveats that inform the decision-making process. Through such reviews the analysis is subjected to rigorous scrutiny by those who, on the basis of their knowledge and experience in the relevant field, can perform an impartial review of the reports.

Review of the socio-economic analysis can also be undertaken as part of the AOI and MPA consultation processes. However, it is important to note that the review of socio-economic analysis is a quality control process and should not be construed as formal consultation for meeting the regulatory requirement.

It should also be noted that the CBA-MPA report presents the incremental impacts without making any recommendations with respect to decisions.

²² The low impact RIAS template would be used even if the regulatory proposals results in medium or high incremental benefits but low incremental costs.

The publication of the SEOA-AOI and the CBA-MPA reports is optional but is encouraged. If published, all publications will need to meet the *Official Languages Act*, and be made available in both French and English.

The scope of the review and publication of the reports will be determined on a case by case basis.

4. The Socio-Economic Analytical Framework

This section develops the analytical framework to be used to conduct the socio-economic analysis throughout the MPA designation process and includes guidance on the scope of Phase I and II SEOA-AOI reports and the CBA-MPA reports. These reports relate to bioregional MPA network process and steps 2 through 4 of the MPA designation process (see section 2.1 and Figure 1 for a summary of the steps).

Although three distinct socio-economic reports will be developed as part of the MPA designation process, this section provides high level guidance on the scope of the socio-economic analysis in its entirety. The three reports should be viewed as iterations of one document that is developed and updated as the MPA designation process moves through the various stages of development and economic analysis work progresses from a high level overview to a detailed cost-benefit analysis. Thus, Phase I SEOA-AOI report is primarily comprised of sections 4.1.1 and 4.1.2 which are also common to all three reports, while the Phase II SEOA-AOI report includes section 4.1.3(i) which, along with the remaining sections (4.1.3(ii) to 4.1.8), constitutes the CBA-MPA report.

The analysis that is common to all three reports will be developed in a manner such that the focus becomes specific to a more refined geographic area as the MPA designation process progresses from the identification to selection of the AOI to MPA designation. Detailed technical guidance for each of the three socio-economic reports is further elaborated in section 6, within the reporting templates for each analysis.

4.1 Analytical Guidance

The sections presented below closely follow the TBS Cost-Benefit Analysis Guide but have been tailored to meet the particular needs for MPA decision-making. The coloured text boxes identify the areas for which information would need to be provided by DFO Programs other than the regional P&E Branch. The IOM Branch would determine the roles and responsibilities of these other DFO programs and engage them accordingly to ensure the information required to undertake the socio-economic analysis is provided to the economists on the agreed schedule.

4.1.1 *Ecological Characteristics, Associated Risks and the Objectives*

The section provides a summary overview of the ecosystem services that are of interest and the risks posed to these by natural processes and human interaction related to the conservation objectives to be achieved by protecting the geographical area within which the candidate MPA would be located. This information should be summarized from existing documents such as the Ecosystem Overview report. Some of the key questions that would be addressed include, but are not limited to:

- What is the spatial boundary of the AOI or MPA?
- What are the marine habitats, species and final EGS of importance to society in the AOI or MPA?
- What is the extent of the threats to these habitats, species and/or final EGS?
- What is to be achieved with respect to habitat, species and/or final EGS protection?

4.1.2 Socio-Economic Overview and Assessment of the Areas of Interest

This section describes the socio-economic activities of the interested parties that are linked to the use or management of the ecological resources (section 4.1.1) within the AOI or MPA. This provides insight into the regional and distributional importance of the AOI or MPA. Responding to the following helps in identifying the key socio-economic activities being undertaken:

- What are the main human activities in the AOI or MPA?
- What are main socio-economic activities that are linked to the final EGS in the AOI or MPA?
- What are the socio-economic activities that may need to be balanced with the MPA objectives without compromising the conservation objective, such as maintaining local livelihoods?

4.1.3 Baseline Management Measures

This section, for clarity, is divided into two parts to: (i) describe the existing or baseline management measures in place; and (ii) describe the ecological and economic outcomes as they relate to the baseline conditions.

- (i) Baseline Management Measures: outline the regulatory and non-regulatory management measures that are currently in place, or are proposed and approved for implementation. A description of international commitments should also be included if the MPA designation helps meet those obligations. The following helps in clarifying the scope of this section:
 - What management measures (federal, provincial and territorial) are already in place or are proposed and approved for implementation in the MPA?
 - Is Canada party to any international agreements and conventions that relate to Canada's commitments for MPA designation or any other commitment with respect to habitats or species to be found in the MPA?
- (ii) Baseline Scenario: describe the ecological and economic outcomes, starting with the year in which the MPA regulation is proposed to come into force. Ideally, the ecological and economic outcomes would be estimated for a minimum period of 10 years as specified in TBS guidance documents. While it is recognized that due to data and modeling constraints, it may not always be possible to provide quantitative estimates of the ecological and economic outcomes; however, a qualitative description should be included to facilitate the assessment of incremental impacts. Where possible, the impacts of existing and potential management measures (outlined in section 4.1.3(i)) that have high likelihood of being implemented should be accounted for in the baseline forecasts of ecological outcomes. The baseline would also include the implication of likely changes to economic activity on the ecological outcomes. The baseline scenario is a projection of the state of ecological and economic outcomes in the absence of the proposed MPA Regulations. The timeframe for the baseline and management (see 4.1.4 below) scenarios needs to start and end at the same point in time so that the incremental impacts can be evaluated (see section 5.3 section 5.3.5). The following questions help develop the baseline outcomes:
 - What is start and end date of the timeframe?

- What are the expected ecological outcomes under the baseline scenario without the MPA?
- What will be the level of economic activities without the MPA, including those that depend on the EGS?
- How do the ecological outcomes compare with the proposed conservation objective to be achieved?

4.1.4 Proposed MPA Regulations

This section, for clarity, is divided into two parts to: (i) describe the proposed MPA Regulations; and (ii) describe the ecological and economic outcomes as they relate to the regulatory management scenario.

- (i) Regulatory Management Measures: outline the regulatory management measures under the proposed MPA Regulations. The following helps in clarifying the scope of this section:
 - What is date on which the proposed MPA Regulations come into force?
 - What management zones are proposed to be established within the MPA?
 - What are the prohibitions and exceptions for each of these management zones?

- (ii) Regulatory Management Scenario: outline the ecological and economic outcomes, starting with the year in which the proposed MPA Regulations come into force. The ecological and economic outcomes are estimated for a minimum period of 10 years (similar to the baseline scenario). The timeframe for the baseline and management scenarios needs to start and end at the same point in time so that the incremental impacts can be evaluated (see section 5.3 section 5.3.5). The regulatory management scenario is described in response to the following questions:
 - What is start and end date of the timeframe?
 - What are the expected ecological outcomes under the regulatory management scenario?
 - How do the ecological outcomes compare with the proposed conservation objective to be achieved?

The regulatory management scenario and the associated ecological outcomes will be used by the regional P&E Branch to estimate the incremental costs and benefits (see section 4.1.7 below). This information is essential for developing the rationale for the proposed MPA Regulation.

4.1.5 Flexible Management Option

The development and analysis of the flexible management option is required under the CDRM, if the regulatory proposal is triaged as medium or high cost impact or if a low impact proposal has a disproportionate cost impacts (to be determined on a case-by-case basis) on small businesses. The flexible management option requires the identification of at least one regulatory or non-regulatory option (in addition to the one being recommended) that reduces compliance and/or administrative costs on small businesses.

This section, like the previous section on the proposed MPA Regulations, is divided into two parts to: (i) describe the flexible management option; and (ii) describe the cost impact of the flexibilities on small businesses as well as the ecological risk consideration.

(i) Flexible Management Option: outline the regulatory and/or non-regulatory management measures under the flexible management option. The following helps in clarifying the scope of this section:

- What is date on which the proposed flexible management option comes into force?
- What are the differences in the flexible management measures (including compliance and administrative requirements) as compared to the proposed MPA Regulations?
- Does the flexible management option provide less stringent regulatory and/or non-regulatory management measures or more flexibility to businesses, particularly small businesses, as compared to the proposed MPA Regulations?

The management design considerations for the flexible management option are provided in the Guide for the Small Business Lens.²³

(ii) Flexible Management Scenario: outline the ecological and economic outcomes, starting with the year in which the flexible management option comes into force. The ecological and economic outcomes are estimated for a minimum period of 10 years (similar to the regulatory management scenario). The flexible management scenario is described in response to the following questions:

- What is start and end date of the timeframe?
- What are the expected ecological outcomes under the flexible management option?
- How do the ecological outcomes compare with the proposed conservation objective to be achieved?

4.1.6 Incremental Costs and Benefits

This section identifies, quantifies and monetizes (where possible) or qualitatively assesses the incremental costs and benefits over time, as a response to the following questions:

- What is the scope and scale of the incremental costs and benefits?
- What are the incremental costs and benefits of the prohibitions identified for the regulatory management scenario (section 4.1.4(i)) and, if applicable, the flexible management option (section 4.1.5(i))?
- What are the incremental costs and benefits of the exemptions identified for the regulatory management scenario (section 4.1.4(ii)) and, if applicable, the flexible management option (section 4.1.5(ii))?

It should be noted that as per TBS guidance, the estimate of incremental costs should not include the cost of developing the regulatory proposal. Similarly, developing regulatory proposal

²³ Treasury Board of Canada Secretariat (2012), Hardwiring Sensitivity to Small Business Impacts of Regulations: Guide for the Small Business Lens

to fulfil international commitments, meeting international or national commitments or avoiding corporate risk do not constitute incremental benefits.

The regional P&E Branch is primarily responsible for evaluating the incremental costs and benefits of the proposed MPA designation as well as the flexible management option, if applicable. The estimates of the incremental costs and benefits are based on the baseline and regulatory management scenarios, and the flexible management option, if applicable. In the absence of the requisite information on regulatory management measures and the ecological outcomes, it will not be possible to conduct a comprehensive CBA of the proposed MPA designation.

4.1.7 Distributional Impacts

Response to the following can help identify the associated distributional impacts on the interested parties:

- How are the costs and benefits distributed amongst these interested parties, i.e. which group benefits from the proposed MPA Regulations and which ones bear the bulk of the costs?
- What regulatory management measures have been included to minimize the regulatory burden and to what extent have the negative impacts on firms/entities and sector competitiveness been minimized?

The distributional analysis is carried out by the regional P&E Branch and will be based on the incremental costs and benefits assessed in section 4.1.7.

4.1.8 Net Benefit Statement

Establish if incremental benefits exceed incremental costs, quantitatively or qualitatively, as a response to the following question:

- Does the regulatory proposal result in overall net benefits?

This does not only require a net benefit statement (i.e. costs exceeding benefits), but the rationale to demonstrate how the costs and benefits balance. The responsibility for this section lies with the regional P&E Branch.

5. Detailed Analytical Guidance and Reporting Templates

The following five sections provide templates and technical guidance for the completion of the socio-economic products described above, including the relevant portions of the TBS Triage form:

- 5.1 Phase I Socio-Economic Overview and Assessment of the Areas of Interest Report
- 5.2 Phase II Socio-Economic Overview and Assessment of the Area of Interest Report
- 5.3 Medium/High Impact Cost-Benefit Analysis Report
- 5.4 Low Impact Cost-Benefit Analysis Report
- 5.5 Completing the Treasury Board Secretariat's Triage Statement (SE Elements)

Although economists should make every effort to complete the analysis as described in the following sections, it is recognized that information may not be available for every element, nor in as much detail as specified. In these cases, the economist should rely on his or her judgment on how to proceed. The key principle is to provide the best available information to decision makers, so that they can take into account the consequences of regulatory decisions. These templates are designed with that principle in mind.

5.1 Phase I Socio-Economic Overview and Assessment of the Areas of Interest Report

This section provides guidance on the scope and content of the Phase I Socio-Economic Overview and Assessment of the Areas of Interest (Phase 1 SEOA-AOI) report and respond to the questions raised in sections 4.1.1 and 4.1.2. The purpose of the Phase I SEOA-AOI report is to describe the variety and intensity of economic activities and the current uses of the resources within the larger geographic boundaries encompassing the candidate Areas of Interest (AOIs). The local level contribution can subsequently be contextualized at the provincial and national economy level.

The Phase I SEOA-AOI report may also describe some of the potential future economic activities that may be implicated in the larger geographic area. However, the assessment will be limited to only those economic activities for which the probability and level of confidence is high in terms of these activities taking place in future.

The Phase I SEOA-AOI report is optional and as the geographic boundaries and regulatory management measures are unknown, an assessment of the potential costs and benefits of MPA designation will not be undertaken as part of this analysis.

The Phase I SEOA-AOI report could include, but is not limited to, the following sections:

5.1.1 Preamble

This section will consist of a standard text briefly outlining the national and international policy context for the MPA designation process and the socio-economic analysis requirements. Text (in *italics*) in the following subsections may be added to accommodate specific regional considerations by the regional economists in consultation with the IOM Branch.

5.1.1.1 Context

Canada's Oceans Act tasks the Minister of Fisheries and Oceans to lead and coordinate the development and implementation of a national network of MPAs on behalf of the Government of Canada.

In 1997 the Oceans Act came into force, providing Canada with a framework for managing oceans followed by the comprehensive Oceans Strategy in 2002. As part of the implementation of the Oceans Strategy, the Government of Canada launched the Oceans Action Plan (OAP) in 2005 in an effort to coordinate and implement oceans activities, and for the sustainable development and management of Canadian oceans. One of the key elements of the OAP was the Health of the Oceans (HOTO) initiative, which identified several activities to maintain healthy and productive ocean ecosystems to allow Canadians to realize the full economic, environmental, cultural and recreational benefits that oceans have to offer. Under HOTO, one of the key initiatives was implementation of the Federal Marine Protected Areas Strategy; another was development of the National Framework for Canada's Network of Marine Protected Areas.

The Strategy establishes the foundation for developing a marine protected areas network in Canada. The national MPA Network Framework provides strategic direction for the design of a national network of MPAs that will be composed of a number of bioregional networks. The Framework was approved in principle by the Canadian Council of Fisheries and Aquaculture Ministers in 2011.

In addition, a global commitment to establish networks of marine protected areas was made at the 2002 World Summit on Sustainable Development, and in the 2004 United Nations Convention on Biological Diversity Program on protected areas. Recognizing that achieving sustainability in the harvest of living ocean resources ultimately depends on healthy, productive ecosystems, the Government of Canada works with other countries to address concerns about the marine environment. Internationally, Canada has demonstrated its commitment by endorsing conventions that pursue the goals of conservation and protection, including the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities.

The Oceans Act Areas of Interest will in most cases be identified through bioregional MPA network development efforts.

5.1.1.2 Purpose

The purpose of the Phase I SEOA-AOI report is to provide an overview and assessment of the current and future economic activities linked to the area within which the candidate MPA may be located and may be used to inform consultations.

Socio-economic analyses are an integral part of the AOI selection process and call for information on the current and potential future economic activities that are linked to area within which the candidate MPA may be located. However, it is important to note that the analysis does not assess the incremental costs and benefits of the proposed MPA designation. The Phase I SEOA-AOI report characterizes the social and economic activities and their interactions with the ecosystem in the area within which the candidate MPA may be located.

5.1.2 Background

5.1.2.1 Spatial Boundary

This section establishes the geographical scope of the Phase I SEOA-AOI report by specifying the coordinates for the spatial boundary within which the candidate MPA is likely to be located, ideally this will be at the bioregional scale. Where possible, this should also be depicted on a map. Clearly defining the spatial scope provides the information to determine the socio-economic activities being carried out in the area.

5.1.2.2 Ecological Rationale

This section draws on the existing science advice to describe the ecological importance of the AOIs and the need for protecting the ecosystem goods and services (EGS). That is, what is the primary purpose for proposing the designation of an area as MPA and what are the EGS of importance in the candidate AOIs that require protection. A brief summary of the information on the key EGS of interest in the candidate AOIs will suffice. Where possible, the ecological layer should be added to the spatial map discussed above. Identifying the key EGS also helps in focusing the Phase I SEOA-AOI report to those socio-economic activities that are directly or indirectly dependent on the EGS – i.e. the final EGS of value to society in the area.

5.1.2.3 Final Ecological Goods and Services

The description of the final EGS of value to society in the area draws on the information outlined in the previous two sections by linking the ecological resources targeted for protection to human activity. At this early stage of the MPA designation process, the focus should be on those final EGS that have direct or indirect use value (e.g. commercial fisheries, oil and gas, shipping, tourism, etc.). The information to be provided for each final EGS should include, but not limited to:

- total quantity and monetary value (national and provincial breakdown);
- import and export quantities and monetary values; and
- breakdown of import and export quantities and values for the major trading partners.

The data should be collected largely through readily available data sources.

5.1.3 Socio-Economic Profile

Drawing on the above information, the Regional P&E Branch will identify the main socio-economic activities of interested parties linked to the AOIs. The purpose is to assess the use of the final EGS by these groups.

5.1.3.1 Industry

The industry sectors linked to final EGS should be identified using the North American Industry Classification System (NAICS), where possible. To the extent possible, for each industry sector include information at the appropriate geographic level (local, provincial, regional and/or national) on:

- industry structure and organization including data and discussion on large, medium and small-sized business (such as percentage of market share by industry size);
- breakdown by size of employment and revenues;
- percentage share of the industry sector in total national and/or provincial GDP; and
- trade statistics for the industry sector

Other related information that could be included, if readily available relates to:

- discussion of upstream and downstream linkages to other businesses in the domestic and/or international economy and the importance of the interdependencies;
- discussion on the health of the industry sector by referencing profitability, industry growth rates and trends, and other indicators; and
- discussion of the overall competitiveness of the industry sector, nationally and/or internationally.

In cases where there is high probability or certainty of a new activity starting up, or a significant growth in on-going economic activities, a qualitative discussion of these may be included. Only those new economic activities will be included in analysis for which business plans are in place and for which evidence of intent (e.g. business plans, permits, submission of plans for approvals, etc.) to undertake the activity can be established. The discussion should present the evidence which supports the assertion of imminent economic growth. The discussion should provide an indication of the magnitude of the activity, such as revenue and employment generation potential for the Canadian economy.

Past data, where available, should be provided to allow for past and future trend analysis. The data should be collected largely through readily available data sources.

5.1.3.2 Communities

This section provides a description of the communities that make the greatest use of the resources available in the area. The description could include, but is not limited to, information on:

- population size (with breakdown by age, male, female, etc.); and
- main occupation groups (with breakdown by employment levels, average incomes, etc.); and,
- migration trends.

The section should clearly state whether or not Aboriginal communities (population size, occupation, etc.) are dependent on the AOIs for use of the resources for Food, Social and Ceremonial (FSC) purposes (i.e. rights-based) and commercial fisheries.

The data should be collected largely through readily available data sources.

5.1.3.3 Government

This section provides an overview of the various levels of government (federal, provincial/territorial and municipal) that are responsible for the management of the AOIs. The description could include, but is not limited to, information on:

- jurisdictional responsibility; and
- Acts and regulations governing the AOIs

5.1.4 Summary

The section summarizes the key observations with a brief discussion of the key socio-economic activities of interested parties linked to the AOIs and main issues related to them. The summary should also highlight the key characteristics of the interested parties that are the greatest users of the resources available in the candidate AOIs.

5.2 Phase II Socio-Economic Overview and Assessment of the Area of Interest Report

The following subsections provide guidance on the scope and content of the Phase II SEOA-AOI report and respond to the questions raised in sections 4.1.1 to 4.1.3(i). The Phase II SEOA-AOI report provides more detailed socio-economic data and information for the selected AOI. The purpose of the overview report is to restate the ecological justification for the selected AOI and articulate it in a format that demonstrates the linkages with human use. It consists of restating the ecological rationale (importance and threats); and the socio-economic profile of the activities linked to the selected AOI.

The Phase II SEOA-AOI report will build on the Phase I SEOA-AOI report and provide updated, geographically specific and detailed information on the current socio-economic activities being undertaken in the selected AOI. However, the scope of the report may be extended to include an analysis of potential growth of the current as well as new socio-economic activities in the future. Such an analysis will be based on past trends and information collected from DFO's own resources, other federal departments and other sources of information. The management measures already in place should also be described and factored into the analysis.

It should be noted that the Phase II SEOA-AOI report is optional and would be developed in discussion between the regional P&E Branch and IOM Branch. In addition, as the geographic boundaries for MPA as well as the regulatory management measures would not have been finalized at this stage of the MPA designation process, an assessment of the potential costs and benefits of MPA designation will not be undertaken as part of this analysis.

The text boxes in the subsections below indicate the areas for which information would need to be provided by DFO Programs other than the regional P&E Branch. The IOM Branch would determine the roles and responsibilities of these other DFO programs and engage them accordingly to ensure the information required to undertake the socio-economic analysis is provided to the economists in a timely manner.

Initial information from step 1 of the MPA designation process provides useful information for the Phase II SEOA-AOI report.

The Phase II SEOA-AOI report could include, but is not limited to, the following sections:

5.2.1 Preamble

This section will consist of a standard text briefly outlining the national and international policy context for the MPA designation process and the socio-economic analysis requirements. Text (in *italics*) in the following subsections may be added to accommodate specific regional considerations by the regional economists in consultation with the IOM Branch.

5.2.1.1 Context

Canada's Oceans Act tasks the Minister of Fisheries and Oceans to lead and coordinate the development and implementation of a national network of MPAs on behalf of the Government of Canada.

In 1997 the Oceans Act came into force, providing Canada with a framework for managing oceans followed by the comprehensive Oceans Strategy in 2002. As part of the implementation of the Oceans Strategy, the Government of Canada launched the Oceans Action Plan (OAP) in

2005 in an effort to coordinate and implement oceans activities, and for the sustainable development and management of Canadian oceans. One of the key elements of the OAP was the Health of the Oceans (HOTO) initiative, which identified several activities to maintain healthy and productive ocean ecosystems to allow Canadians to realize the full economic, environmental, cultural and recreational benefits that oceans have to offer. Under HOTO, one of the key initiatives was implementation of the Federal Marine Protected Areas Strategy; another was development of the National Framework for Canada's Network of Marine Protected Areas.

The Strategy establishes the foundation for developing a marine protected areas network in Canada. The national MPA Network Framework provides strategic direction for the design of a national network of MPAs that will be composed of a number of bioregional networks. The Framework was approved in principle by the Canadian Council of Fisheries and Aquaculture Ministers in 2011.

In addition, a global commitment to establish networks of marine protected areas was made at the 2002 World Summit on Sustainable Development, and in the 2004 United Nations Convention on Biological Diversity Program on protected areas. Recognizing that achieving sustainability in the harvest of living ocean resources ultimately depends on healthy, productive ecosystems, the Government of Canada works with other countries to address concerns about the marine environment. Internationally, Canada has demonstrated its commitment by endorsing conventions that pursue the goals of conservation and protection, including the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities.

The Oceans Act Areas of Interest will in most cases be identified through bioregional MPA network development efforts.

5.2.1.2 Purpose

The purpose of the Phase II SEOA-AOI report is to provide an overview and assessment of the current and future economic activities linked to the selected AOI and may be used to inform consultations.

Socio-economic analyses are an integral part of the AOI selection process and call for information on the current and potential future economic activities that are linked to area identified as the site for MPA designation. However, it is important to note that the analysis does not assess the incremental costs and benefits of the proposed MPA designation. The Phase II SEOA-AOI report characterizes the social and economic activities and their interactions with the ecosystem within the selected AOI. The analysis contained in this report will in part inform the regulatory triage statement as required by the federal regulatory policy.

5.2.2 Background

5.2.2.1 Spatial Boundary

This section establishes the geographical scope of the Phase II SEOA-AOI report by specifying the coordinates for the spatial boundary of the selected AOI. Where possible, this should also be depicted on a map. Clearly defining the spatial scope provides the information to determine the socio-economic activities being carried out in the selected AOI.

5.2.2.2 Ecological Rationale

A profile of the ecosystem and species helps provide the justification for identifying the AOI. Based on the scientific analysis already conducted, it is useful to restate and convey why the AOI has been selected for potential designation as a MPA, and the main underlying ecological rationale for the selection (e.g. threats to the ecosystem functions, uniqueness of the ecosystem, etc.). This then enables the analyst to identify the potential final EGS that flow from the ecosystem as well as the existing and future human uses in the AOI.

5.2.2.3 Final Ecological Goods and Services

The description of the final EGS of value to society in the selected AOI draws on the information outlined in the previous sections by linking the ecological resources targeted for protection to human activity. The focus of this section would be on those final EGS that have direct or indirect use value (e.g. commercial fisheries, oil and gas, shipping, tourism, etc.). The information to be provided for each final EGS should include, but not limited to:

- total quantity and monetary value (national and provincial breakdown);
- import and export quantities and monetary values; and
- breakdown of import and export quantities and values for the major trading partners.

The data should be collected largely through readily available data sources.

5.2.3 Baseline Management Measures

The purpose of this section is to provide a description of the existing regulatory and non-regulatory management measures that are currently in place for the management of the selected AOI. This section will also describe the measures that may be put in place for which there is a high level of certainty especially with respect to measures that are not currently in effect, but for which there is either a regulatory or policy commitment to implement.

In the case of AOIs that have international implications, describe the initiatives that are in place in response to the relevant international commitments. If relevant, include a discussion on international agreements (multilateral or bilateral) to which Canada is signatory.

5.2.4 Overview and Assessment of Socio-Economic Activities

5.2.4.1 Industry

Cataloguing the socio-economic activities requires information to be collected with the goal of defining the existing scale of human activity for the selected AOI. This will also serve as the socio-economic baseline for the CBA. Major areas of focus for information collection include:

- Consumptive activities such as species harvesting (recreational, aquaculture and commercial), mining, oil and gas, etc.
- Non-consumptive activities including tourism, recreation, scientific research, and shipping corridors.
- Aboriginal uses such as subsistence food and other traditional uses.

Ideally a SE profile of interested parties (similar to the one developed for the Phase I SEOA-AOI report) associated with each activity should be developed, seeking to identify the scale of the activity using indicators such as landings/revenues, production, costs and earnings, employment, or extent of activity in geographic zone, to name a few.

Providing a baseline of local employment by industry helps identify which industries are particularly important to the local economy, which may indicate a significant distributional impact later in the CBA. Reviewing census data is an easy way for the analyst to rapidly gain some insight into what is and is not going on in the geographic area in which the selected AOI is situated. An economic base analysis is a simple way to identify the importance of an industry to a local economy.²⁴ This may be calculated as:

$$LQ = \frac{e_i/e}{E_i/E}$$

Where:

LQ = Location quotient

e_i = Local employment in industry i

e = Total local employment

E_i = Provincial or national employment in industry i

E = Total provincial or national employment

If this ratio is greater than one, then the local industry is a significant contributor to the local economy relative to the provincial or national average. Census employment data is the simplest and easiest source of data to conduct this analysis.

If the AOI is in or borders on a coastal zone, identify the land use activities in the proposed area, including major infrastructure such as ports, dams, harbours, fish processing facilities, aquaculture sites, boat launches or bridges. Also identify any upstream land uses such as forestry or agriculture that may discharge into waters and subsequently impact downstream habitat or species.

Past data, where available, should be provided to allow for a trend analysis.

5.2.4.2 Community

Identify and profile the demographics of the local communities. Census information can be used to construct a demographic profile in general at the provincial level, including an understanding of employment by industry in close proximity to the selected AOI using the census subdivision (CSD) data where available. Identifying the appropriate geographic scope of the analysis is a common problem for the analyst and will vary from case to case. The analyst should decide this in consultation with other relevant programs.

Past data, where available, should be provided to allow for a trend analysis.

5.2.4.3 Government

Provide an overview of the various levels of government (federal, provincial/territorial and municipal) that are responsible for the management of the selected AOI. The jurisdictional responsibilities of the various levels of government, including the legislative authorities under

²⁴ For more information and for some caveats about and modifications to this approach, see Stedman, R, White, W., Patriquin, M., and Watson, D. 2007. Measuring Community Forest-Sector Dependence: Does Method Matter? *Society and Natural Resources*, 20:629–646.

which they operate should be discussed. However, the discussion should be high level and details on the specific legislation are not needed.

Much of the information could be drawn from the Phase I SEOA-AOI report and updated to align with the selected AOI boundaries. Where information and data are available, an outlook for the future may also be included for the interested parties drawing on past trends to support the analysis.

5.2.5 Summary

The Phase II SEOA-AOI report concludes with a short summary highlighting the key observations with respect to the socio-economic profile that are particularly important from a conservation and management perspective.

5.3 Medium/High Impact Cost-Benefit Analysis Report

The following sections provide guidance on the scope and content of the CBA-MPA report and respond to the questions raised in sections 4.1.4 to 4.1.9 above. The purpose of the CBA-MPA report is to present the incremental impacts of the proposed MPA designation, inform decisions and fulfill the regulatory analysis process. The report will develop the baseline, the regulatory management scenario and the flexible management option, if applicable and assess the incremental impacts of the proposed management scenarios in comparison to the baseline scenario.

5.3.1 Executive Summary

The executive summary should cover the following topics:

Issue: a brief statement to describe the geographic boundary of the proposed MPA and the key threats and issues that will be addressed through government intervention.

Proposed MPA Regulations: a high level description of the proposed MPA Regulations as well as a brief description of the baseline.

Socio-Economic Analysis of the Proposed MPA Regulations: a summary statement of the quantitative and qualitative incremental costs associated with the proposed MPA Regulations. Also include a short statement of what the incremental benefits would be of designating the proposed MPA on the quality of the ecosystem services, and the social and economic well-being of Canadians. Include the total estimated incremental costs, benefits (if applicable) and net benefits of the proposed MPA regulation. If incremental costs and benefits have not been quantified and/or monetized include a statement of how the proposed MPA regulation maximizes net benefits. Include the CBA Statement as outlined in table 5.3.9 in section 5.3.9 below.

Socio-Economic Analysis of the Flexible Management Option (if applicable): a summary statement of the quantitative and qualitative incremental costs and benefits associated with the flexible management option on small businesses. The discussion in this section would be similar to the *Socio-Economic Analysis of the Proposed MPA Regulations* section above, however, the analysis would be limited to small businesses only. Include the Flexible Management Option table 3.10 in section 3.11 below.

Administrative Costs: if available an estimate of the administrative costs (calculated using the Regulatory Cost Calculator) by industry size. The administrative cost calculations by industry size serve to meet the CDRM requirement for the “*One-for-One*” Rule and the “*Small Business Lens*”. If the small business lens applies, highlight the total incremental cost savings (compliance and administrative costs) for small business as estimated under the flexible management option.

Distributional Analysis: a short statement on the distribution of the impacts of the proposed MPA Regulations on the region, businesses (particularly small businesses), employment, competition, Aboriginal and vulnerable groups.

Uncertainty and Sensitivity Analysis: a brief description of the results of the sensitivity analysis around the key variables (e.g. discount rate, species mortality rates, incremental cost variables, etc.)

5.3.2 Preamble

This section will consist of a standard text briefly outlining the national and international policy context for the MPA designation process and the socio-economic analysis requirements. The text (in *italics*) in the following subsections may be revised to accommodate specific regional considerations by the regional economists in consultation with the IOM Branch.

5.3.2.1 Context

Canada’s Oceans Act tasks the Minister of Fisheries and Oceans to lead and coordinate the development and implementation of a national network of MPAs on behalf of the Government of Canada.

In 1997 the Oceans Act came into force, providing Canada with a framework for managing oceans followed by the comprehensive Oceans Strategy in 2002. As part of the implementation of the Oceans Strategy, the Government of Canada launched the Oceans Action Plan (OAP) in 2005 in an effort to coordinate and implement oceans activities, and for the sustainable development and management of Canadian oceans. One of the key elements of the OAP was the Health of the Oceans (HOTO) initiative, which identified several activities to maintain healthy and productive ocean ecosystems to allow Canadians to realize the full economic, environmental, cultural and recreational benefits that oceans have to offer. Under HOTO, one of the key initiatives was implementation of the Federal Marine Protected Areas Strategy; another was development of the National Framework for Canada’s Network of Marine Protected Areas.

The Strategy establishes the foundation for developing a marine protected areas network in Canada. The national MPA Network Framework provides strategic direction for the design of a national network of MPAs that will be composed of a number of bioregional networks. The Framework was approved in principle by the Canadian Council of Fisheries and Aquaculture Ministers in 2011.

In addition, a global commitment to establish networks of marine protected areas was made at the 2002 World Summit on Sustainable Development, and in the 2004 United Nations Convention on Biological Diversity Program on protected areas. Recognizing that achieving sustainability in the harvest of living ocean resources ultimately depends on healthy, productive ecosystems, the Government of Canada works with other countries to address concerns about

the marine environment. Internationally, Canada has demonstrated its commitment by endorsing conventions that pursue the goals of conservation and protection, including the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities.

5.3.2.2 Purpose

The purpose of this report is to provide an analysis of the potential socio-economic impacts associated with the proposed MPA Regulations and to contribute to the development of the regulatory package for designating the proposed MPA.

Socio-economic analyses are considered to be an integral part of the MPA designation process as well as the federal regulatory process encapsulated in the Cabinet Directive on Regulatory Management (CDRM). The CDRM requires, among other things, an analysis of the incremental costs and benefits of regulation, including the potential positive and negative socio-economic impacts on industry, consumer, Aboriginal groups and government and how these impacts may be distributed across affected parties, sectors of the economy and regions of Canada. The analysis contained in this report will be used to inform decision makers and in preparing the Regulatory Impact Analysis Statement (RIAS) required by the CDRM.

5.3.3 Background

The purpose of this section is to contextualize the socio-economic analysis. It is therefore important to restate the coordinates for the spatial boundary of the proposed MPA. The ecological importance and the objectives of the proposed MPA should be clearly spelt out. The bulk of the information will draw on the Ecosystem Overview and the Phase II SEOA-AOI reports. Information that is relevant from a socio-economic analysis perspective should be presented here. This information is also important for establishing the baseline for the proposed MPA.

5.3.3.1 Final Ecological Goods and Services

Based on the information in the background section, provide a description of the final EGS of value to society in the area. The information for the final EGS should include quantitative measures and where available current monetary value for these EGS. For final EGS that are traded internationally, include information on import and export quantities and values, and a breakdown of import and export quantities and values for the major trading partners. The data should be provided at the appropriate geographic scale (local, provincial, regional or national). For final EGS for which quantitative data is not available, include a short description highlighting the importance of these final EGS for the economy at the appropriate scale.

Past data, where available, should be provided to allow for a trend analysis.

5.3.3.2 Socio-Economic Profile

Drawing on the above and information presented in the Phase II SEOA-AOI report, the Regional P&E Branch will update the descriptions of the interested parties that may be impacted by the proposed MPA Regulations. The purpose is to assess the dependencies of these interested parties on the final EGS present in the area. The guidance provided in sections 5.1.2.4 and 5.2.3 above should be followed for the geographic area proposed for an MPA designation.

Past data, where available, should be provided to allow for past and future trend analysis.

5.3.4 Baseline Management Measures

The purpose of this section is to provide a description of the current prohibitions or restrictions (federal, provincial, territorial or municipal) that protect the habitat or species within the geographical zones of the proposed MPA. This section will discuss the status of the regulatory or non-regulatory management measures that are in place, as well as measures that will be in place irrespective of the MPA designation decision. This requires a high level of certainty especially with respect to measures that are not currently in effect, but for which there is either a regulatory or policy commitment to implement. If information is available, the degree of success or failure of the existing measures should be provided as well.

In the case of MPAs that have international implications, describe the initiatives that are in place in response to the relevant international commitments in order to reflect the impact of these initiatives. If relevant, include a discussion on international agreements (multilateral or bilateral) to which Canada is signatory.

Outlining the regulatory and non-regulatory management measures that are already in place in the MPA serves multiple purposes such as providing a rationale, highlighting national or international obligations, the current management situation, etc. Describing these measures also highlights the management gaps which, when combined with the information on the threats, informs the additional management actions that will be needed to provide the appropriate level of protection. This in turn helps to identify the key interested parties that may be implicated by potential management action. It also serves as background information to justify the need for government intervention. And most importantly, it is one set of information that contributes towards the development of a baseline against which to assess the incremental impacts of any regulatory proposal. This incremental impact assessment is at the core of the CBA discussed in section 3.1.6.

5.3.5 Proposed MPA Regulations

5.3.5.1 Objectives

Having established the issues and threats in the Phase II SEOA-AOI report (section 5.2.2), the objectives for the proposed MPA Regulations should be reproduced here to provide context to the economic analysis. The objectives serve as the benchmark against which the baseline and regulatory management scenarios and flexible management option, if applicable (discussed below) are evaluated for the incremental costs and benefits. In essence, the difference between the ecological outcomes under the baseline and the regulatory management scenarios and the flexible management option, if applicable, when compared with the stated objective provides the information that enables decision-makers to assess whether or not the incremental costs and benefits justify government intervention. It is therefore important that the IOM Branch clearly establish the objectives it aims to achieve with the designation of the proposed MPA. Moreover, objectives stated in concrete terms facilitate monitoring and evaluation of the proposed Regulation once it is enforced.

5.3.5.2 Description of the Proposed MPA Regulations

Outline the “means” or the proposed regulatory management measures, including both compliance and administrative requirements. This information needs to be specific enough to allow economists to identify the industry (e.g., fish harvesters, tourism industry, seafood processing industry, etc.) that will be impacted as well as the economic impacts (e.g. lost revenues due to change in harvesting rules) and biological impacts (e.g., change in fish biomass

due to restrictions on fishing, etc.). Detailed information with respect to the proposed regulatory management measures helps to ensure that the relevant information is collected in subsequent steps for estimating the ecological outcomes under the baseline and management scenarios, as well as for estimating the costs and benefits of the proposed regulatory management measures. The description of the proposed MPA regulation should be in layman terms (i.e. not reproduce the regulatory text) including, but not limited to:

- Description of the geographical area of the proposed MPA
- Details of the prohibitions, including those related to:
 - Commercial activities in certain zones;
 - destruction, damage, disturbance or removal of any living marine organism or any part of its habitat from the MPA; or
 - Any activity (including depositing, discharging or dumping any substance) that could result in destruction, damage or disturbance
- Details of the exceptions for activities that may be carried out in the MPA, including:
 - Aboriginal fishing activities;
 - Activities carried out for the purpose of public safety, national security or law enforcement or in response to an emergency;
 - Scientific or educational activities; and
 - Any other exceptions
- Details on reporting requirements
- Any other regulatory requirement

5.3.6 Description of the Flexible Management Option

If the Small Business Lens applies requiring the development of a flexible management option, outline the compliance and administrative requirements of the flexible management, similar to the proposed MPA Regulations. The key information that needs to be highlighted is the difference in the compliance and administrative requirements between the proposed MPA Regulations and the flexible management option. While the economic analysis for the flexible management option would be similar to that of the proposed MPA Regulation, the scope of the cost analysis would be limited to small businesses only. The scope of the ecological benefits would likely be similar to that of the proposed MPA Regulations as it would be extremely difficult and complex to isolate the ecological benefits attributable to small businesses only.

Information requirements would be similar to the proposed MPA Regulations to allow economists to assess the incremental cost and benefit impacts in subsequent steps with respect to economic and ecological outcomes.

The description of the flexible management option would be similar to that outlined above for the proposed MPA Regulations. However, the flexibilities provided under this option as compared to the Proposed MPA Regulations should be clearly stated.

5.3.7 Analytical Framework

The guidance in this section would be applicable to both the proposed MPA Regulations and the flexible management option, if applicable. The Regional P&E Branch is responsible for this section which should include a description of the analytical approach used (i.e. cost-benefit analysis or economic impact analysis) along with the timeframe for the analysis, discount rates, assumptions, risks and uncertainties, etc. as follows:

Incremental impacts: Impacts should be analyzed in terms of incremental ecological outcomes, costs and benefits to all interested parties as well as the economy resulting from the proposed regulatory provisions to achieve the objectives. The incremental impacts are determined by comparing two scenarios: one “with” (or “regulatory management scenario” and flexible management option, if applicable) and the other “without” (or “baseline scenario”) the proposed MPA Regulations.

Approach to cost and benefit estimates: Estimates of incremental costs and benefits should be provided in monetary terms to the extent possible. Whenever this is not possible, due either to lack of appropriate data or difficulties in valuing certain components or data inputs, the cost or benefit element should be evaluated in qualitative terms.

Timeframe for analysis: The time horizon used for evaluating the impacts should be clearly spelt out. TBS recommends a 10 year timeframe. However, for measures aimed at protection and conservation of EGS, a longer time horizon may be warranted (e.g. the three generation timeframe used for species population modeling). As such, the appropriate time horizon should be determined on a case by case basis keeping in mind the characteristics of the EGS of interest, the ecological models, baseline and regulatory management scenarios, etc. The first year of the analysis should be clearly stated, which is usually the year the proposed regulatory management measures are implemented, unless specified otherwise in the proposed MPA Regulations. While there may be some mitigation measures that may have a staggered implementation schedule, it is not necessary to provide the details here. The implementation schedule should be taken into account when estimating the incremental costs and benefits.

Discount rate: A discount rate of 7 percent is recommended by TBS²⁵. However, a different discount rate may be used in consultation with TBS. For example in certain circumstances where consumer consumption is involved and there are no or minimal resources involving opportunity costs (such as certain human health and EGS), factors other than the economic opportunity cost of funds can be used for determining the value of the discount rate. Usually the social discount rate is lower than the 7 percent recommended by TBS. For Canada, the social time preference rate has been estimated to be around 3 per cent.²⁶ The rationale for using a different discount rate will, however, need to be provided and confirmed with the TBS analyst prior to proceeding with the analysis.

Assumptions: Outline the key assumptions that have implications for the CBA, the basis for the assumptions and the uncertainties should also be provided.

Sensitivity Analysis: To address the uncertainties with respect to the potential future impacts, identify the key variables that will be subjected to sensitivity analysis (e.g. conservation outcomes, levels of human uses and subsequent costs and benefits).

²⁵ Treasury Board of Canada Secretariat (2014), Regulatory Impact Analysis Statement: Medium- and High-Impact Template (<http://www.tbs-sct.gc.ca/rtrap-parfa/temp-gabar/mhitrias-gimereir-eng.asp>)

²⁶ For additional detail see TBS cost-benefit analysis guide (2007).

5.3.8 Baseline and Regulatory Management Scenarios/Flexible Management Option

The purpose of developing the baseline and regulatory management scenarios and flexible management option, if applicable, is to provide the basis for evaluating the incremental impacts. These scenarios are primarily in terms of the outcomes related to the identified policy issue and the stated objectives over the timeframe defined in the previous section. Thus, under the baseline the ecological outcome (e.g., species X biomass forecast or habitat X status over 10 years) is estimated in the absence of policy intervention. Similarly, under the regulatory management scenario and flexible management option, if applicable, the ecological outcomes are estimated taking into account the proposed MPA Regulations. The two scenarios are then compared to determine the divergence or convergence of the ecological outcomes to the stated conservation objectives. In the absence of such models it will not be possible to conduct a comprehensive CBA of the proposed MPA designation. The construct of these scenarios is discussed in detail below.

5.3.8.1 Baseline Scenario

For a robust CBA the proper definition of the baseline and the estimate for the relevant ecological outcome is extremely important. Modeling to estimate the ecological outcome requires both ecological and socio-economic information, the specifics of which will vary depending on the proposed MPA Regulations under consideration. However, a realistic representation of the ecological outcome under the baseline combines the existing management measures and the basic socio-economic activity with ecological information (e.g. fishing and natural mortality). This requires cataloguing the existing management measures and socio-economic information with the goal of defining the current scope and scale of human activity with respect to the ecosystem service of interest. The hypotheses regarding future ecological outcomes can be constructed using various trends observed under the baseline conditions, including but not limited to existing management structures, trends in the relevant economic sectors, the growth rate of species and environmental trends. Pathways of effect models may also be used where available for mapping the linkages between socio-economic activities and ecological end-points. For example, the measure could be one of change in biological stock (such as fishery biomass) or a change in the flow of biological stock (such as change in fishery harvest). Finally, consultations and discussions can be invaluable in both cataloguing current economic activities but also to forecast how the future might unfold. It is the dynamic rather than a static baseline that needs to be developed. This may require projections of the biological indices for the final EGS overtime under realistic assumptions for which specific terms of reference may need to be developed to provide estimates of the ecological outcomes of relevance to socio-economic analysis.

Such an exercise may require large amounts of data that are reliable and robust. In the event that data are not available, the next best option may be to construct models such that inferences can be drawn from other data sets about the ecological outcomes. However, it is acknowledged that it may not always be possible to estimate the ecological and economic outcomes under the baseline conditions due to data and/or modelling constraints. Nonetheless, it is preferable that to the degree possible, a qualitative description of the ecological and economic outcomes be provided to ensure a comprehensive accounting of the incremental costs and benefits of the proposed MPA Regulations as described below (see section 5.3.9).

5.3.8.2 Regulatory Management Scenario/Flexible Management Option

Similar to the baseline, the regulatory management scenario and the flexible management option, if applicable, will estimate the ecological and socio-economic outcomes after taking into account the proposed regulatory management measures. For example, prohibition on fish harvesting (economic activity) will be modeled in combination with natural mortality to estimate the species biomass (ecological outcome) over the timeframe of analysis.

Under the regulatory management scenario and the flexible management option, if applicable, the impacts of the proposed MPA Regulations requirements on the selected biological indices will be evaluated. The evaluation should begin in the year the proposed MPA Regulations (or the flexible management option, if applicable) come into force and should estimate the impact of the management requirements (zoning, prohibitions, exceptions, etc.) on the biological indices over the time frame of analysis. This may require projections of the biological indices for the final EGS overtime under realistic assumptions for which the Science sector may need to develop specific terms of reference to provide estimates of the ecological outcomes of relevance to socio-economic analysis.

In essence, the baseline model is adjusted for the implications of the proposed MPA Regulations on socio-economic and ecological variables to estimate the ecological and socio-economic outcomes.

As with the baseline, the data requirements for the exercise are extensive and mostly comprise of the results of biological modeling so that inferences can be drawn from the data about the selected biological indices. The result of the modeling exercise will be estimates of the same biological indices selected for the baseline, but accounting for the proposed MPA Regulations requirements. The results of the modeling exercise will allow for estimation of incremental changes in biological stock, as well as change in flows of biological stock and inform the economic valuation exercise.

5.3.9 Incremental Costs and Benefits of the Proposed MPA Regulations

The guidance in this section would be applicable to both the regulatory management scenario and the flexible management option, if applicable. However, for the flexible management option the scope of the cost analysis would be limited to small businesses only. If the flexible option results in ecological outcomes different than those under the regulatory management scenario, these should also be discussed. However, as it may not be possible to isolate the incremental benefits attributable to small businesses, the benefits analysis would likely be inclusive of all interested parties.

With information on the proposed MPA Regulations requirements and the ecological outcomes under the baseline, regulatory management scenario and the flexible management option, if applicable, the next step is to estimate the incremental cost and benefit impacts. The incremental costs are primarily estimated for each affected group based on the proposed MPA Regulations requirements. The incremental benefits will generally be estimated based on the difference between the ecological outcomes under the baseline and the regulatory management scenarios, as well as baseline and the flexible management option, if applicable. It should be noted that as per TBS guidance, the estimate of incremental costs should not include the cost of developing the regulatory proposal. Similarly, developing a regulatory proposal to fulfil international commitments, meeting international or national commitments or avoiding

corporate risk do not constitute incremental benefits even though they may be part of the rationale for the proposed MPA Regulations.

To the extent possible, the incremental costs and benefits should be quantified and monetized. Where this is not possible, a qualitative description of the incremental impacts should be included. The impacts should be estimated over a sufficiently long period of time over which majority of the incremental costs and benefits are likely to materialize. Generally benefits tend to accrue much later in time as compared to costs which are generally incurred in the first few years. The present value of the incremental costs and benefits should be estimated using the discount rate established above. Any additional assumptions that relate to the estimation of specific incremental costs and benefits should be spelt out in this section as well.

The determination of a dynamic and realistic baseline (as described above), the regulatory management scenario and the flexible management option, if applicable, provides the basis from which the incremental impacts of the policy intervention are assessed. The incremental economic impacts are estimated for both the costs and benefits of the proposed MPA Regulations and the flexible management option, if applicable. The incremental costs to various interested parties relate to the change in behaviour as a consequence of the requirements under the proposed MPA Regulations (e.g., costs in terms of revenue losses associated with fishing prohibitions, costs due to changes in fishing gear, requirement to maintain records, etc.). Incremental benefits on the other hand are estimated as the economic value of the improvements in biological indices linked to the final EGS as a result of the requirements under the proposed MPA Regulations. There may, however, be certain limitations as a result of which it may not be possible to fully quantify and monetize all the incremental costs and benefits. Therefore, it should be acknowledged that a mix of quantitative and qualitative information should be collected to compare the incremental costs and benefits of the proposed policy. That is, an exclusive focus on monetization is not likely; however, lack of monetization does not preclude informed decision-making.

5.3.9.1 Incremental Costs

The incremental costs will generally be estimated for three main categories of interested parties – businesses or industry, governments and Canadian consumers. Incremental costs in some instances may also include negative impacts, if any, on ecological outcomes and should be included in the estimates of impacts on the relevant interested parties. The incremental costs should be detailed for each of these interested parties. The CDRM also requires a breakdown of the incremental cost by industry size (e.g., large, medium and small size businesses) as well as separately by compliance²⁷ and administrative²⁸ costs for each type of industry and by industry size.

Incremental Cost to Industry

There are two categories of incremental costs to industry – compliance costs and administrative costs. The compliance costs include incremental costs incurred by business to be in compliance with the proposed MPA Regulations and the flexible management option, if applicable (e.g.

²⁷ Compliance costs comprise of incremental costs incurred by business to be in compliance with the proposed regulations (e.g. capital investments, annual variable costs for labour, raw material, maintenance, etc.).

²⁸ Administrative costs comprise of incremental costs incurred by business to demonstrate they are in compliance with the proposed regulations (e.g. time and resources required for preparing and submitting reports, filling out forms, testing, etc.)

capital investments, annual variable costs for labour, raw material, maintenance, etc.). While, administrative costs comprise of incremental costs incurred by business to demonstrate they are in compliance with the proposed MPA Regulations and the flexible management option, if applicable (e.g. time and resources required for preparing and submitting reports, filling out forms, testing, etc.). The incremental costs for both these categories have to be estimated. In addition, if the implementation of the proposed MPA Regulations disproportionately impacts small businesses, the flexible management option would need to be assessed. The scope of the flexible management option would be limited to evaluating the incremental compliance and administrative costs for small businesses only.

It is important to note that the administrative costs should be estimated using the Regulatory Cost Calculator developed by TBS. For this purpose, the IOM Branch will need to identify the specific administrative requirements such as record keeping, testing, reporting, etc. This may require collection of information from businesses on time, human and financial resources that may need to be expended to fulfil the administrative requirements of the regulatory management scenario and the flexible management option, if applicable. Economists may be called upon to assist in these calculations; however, they will not be responsible for collecting the information as programs have direct access to this.

The Regional P&E Branch will have the primary responsibility for assessing the incremental costs and benefits for all relevant interested parties quantitatively or qualitatively.

Thus, the cost to industry may be presented as follow, depending on the level of information available for the proposed MPA Regulations and the flexible management option, if applicable, separately:

- Incremental Cost to Fish Harvesting Sector
 - Compliance Costs (specify each compliance cost category)
 - Large and Medium Enterprises
 - Small Enterprises
 - Administrative Costs (specify each administrative cost category)
 - Large and Medium Enterprises
 - Small Enterprises
- Incremental Cost to...
- ...
- Total Incremental Cost to Industry
 - Total Compliance Costs to Industry
 - Large and Medium Enterprises
 - Small Enterprises
 - Total Administrative Costs to Industry
 - Large and Medium Enterprises
 - Small Enterprises

Include the following table to provide a summary of the incremental costs of the proposed MPA Regulations:

Table 5.3.1: Discounted Present Value of Total Incremental Compliance and Administrative Costs to Industry (20XX to 20XX)

(Constant C\$ 20XX)

Industry	Large/Medium Size Businesses	Small Size Businesses
1. Fish Harvesting Sector	-	-
• Compliance Costs (itemized)	-	-
• Administrative Costs (itemized)	-	-
2. Industry Sector X	-	-
• Compliance Costs (itemized)	-	-
• Administrative Costs (itemized)	-	-
3. Industry Sector Y	-	-
• ...	-	-
• ...	-	-
Total Costs	-	-
• Compliance Costs	-	-
• Administrative Costs	-	-

Incremental Costs to Industry under Flexible Management Option

If the implementation of the proposed MPA Regulations disproportionately impacts small businesses, the flexible management option would need to be assessed. The scope of the flexible management option would be similar to the proposed MPA Regulations, however the analysis would be limited to evaluating the incremental compliance and administrative costs for small businesses only.

If an economic analysis of the flexible management option is required, the following table should be included to support the discussion of the incremental costs. This table will also be used to populate the “*Regulatory flexibility analysis statement*” section of the RIAS.

Table 5.3.2: Discounted Present Value of Total Incremental Compliance and Administrative Costs to Small Businesses (20XX to 20XX)

(Constant C\$ 20XX)

Industry	Incremental Costs	Number of Small Businesses
1. Fish Harvesting Sector	-	-
• Compliance Costs (itemized)	-	-
• Administrative Costs (itemized)	-	-
2. Industry Sector X	-	-
• Compliance Costs (itemized)	-	-
• Administrative Costs (itemized)	-	-
3. Industry Sector X	-	-
• ...	-	-
• ...	-	-
Total	-	-
• Compliance Costs	-	-
• Administrative Costs	-	-

Incremental Cost to Governments

Incremental costs for government include costs to the sponsoring federal department, other federal departments, provincial and territorial governments as well as municipal governments, where relevant. Incremental costs to government comprise of costs incurred for enforcement and compliance promotion, monitoring and evaluation and other costs related to the proposed MPA Regulations. The costs for developing regulations should not be included as part of the incremental costs. The costs to government should be presented separately for each level of government impacted to facilitate a better understanding of the distribution of the costs. Thus, the cost to government may be presented as follow, depending on the scope of the regulations and level of information available:

- Federal Government
 - Fisheries and Oceans Canada
 - Transport Canada
 - ...
- Provincial/Territorial Government
 - Specify provinces and territories
- Municipal Government
 - Specify municipalities
- Total Incremental Cost to Government

The following table summarizes the costs to different levels of government:

Table 5.3.3: Discounted Present Value of Total Incremental Costs to Government (20XX to 20XX)

(Constant C\$ 20XX)

Government	Incremental Costs
1. Federal Government	-
• Fisheries & Oceans Canada (itemized)	-
• Department... (itemized)	-
2. Provincial/Territorial Government (itemized)	-
• Province X (itemized)	-
• Province Y (itemized)	-
3. Municipal Government (itemized)	-
• Municipal Government X (itemized)	-
• Municipal Government Y (itemized)	-
Total	-
Federal Government	-
Provincial/Territorial Government	-
Municipal Government	-

Incremental Costs to Canadian Consumers

Finally, the incremental cost impacts of the requirement under the proposed MPA Regulations may also implicate Canadian consumers. These may impact all Canadian consumers, specific consumer groups (e.g. Aboriginal groups, scuba divers prohibited from visiting specific areas in the MPA), consumers in specific regions, etc. Where information is available, the cost impacts for each group should be presented separately:

- Aboriginal Groups
- Low-Income Groups
- ...
- Total Incremental Costs to Canadian Consumers

The following table summarizes the costs to Canadian consumers:

Table 5.3.4: Discounted Present Value of Total Incremental Costs to Canadian Consumers (20XX to 20XX)

(Constant C\$ 20XX)

Canadian Consumers	Incremental Costs
1. Aboriginal Groups (itemized)	-
2. Low-Income Groups (itemized)	-
3. ... (itemized)	-
Total	-

Summary of Incremental Costs

While not necessary, a summary statement of the key incremental costs to industry, government and Canadian consumers may be provided to highlight the significant impacts. At the end of this sub-section a table for the total incremental costs at the general interested parties' level may be presented to summarize the incremental cost section.

Table 5.3.5: Discounted Present Value of Total Incremental Costs (20XX to 20XX)
(Constant C\$ 20XX)

Interested Parties	Incremental Costs
1. Industry	-
• Medium/Large Businesses	-
• Small Businesses	-
2. Government	-
3. Canadian Consumers	-
Total	-

5.3.9.2 Incremental Benefits

In general, incremental benefits of a proposed MPA designation will comprise of benefits derived from the improvements in the EGS over a period of time. However, benefits of government action may also take the form of cost savings to businesses or governments; improvements in human and environmental health; and, economic and social conditions. Some of these lend themselves easily to quantification and monetization and use standard valuation methodologies; others are more difficult to assess – particularly EGS. Where monetization is not possible, other means can be used to demonstrate the importance or value of the ecosystem service. The incremental benefits are evaluated as the difference between the ecosystem service outcomes under the baseline and the regulatory management scenario.

Similar to incremental costs, incremental benefits should be presented individually for each affected group and/or for each ecosystem service of interest. The methodology used and assumptions made should also be clearly stated to facilitate an understanding of the benefit values generated in the analysis. Where information is available, the benefits for each group or ecosystem service should be presented separately:

Incremental Benefit to Industry

- Increase in revenue
- Administrative cost savings
- ...

Incremental Benefit to Government

- Management cost saving
- Public health care cost savings (e.g. from improvement in human health from clean drinking water)
- ...

Incremental Benefits to Canadian Consumers

- Improved tourism opportunities
- Improved existence value of species

- Health care cost savings (e.g. from improvement in human health from clean drinking water)
- ...

Total Incremental Benefits

The following table summarizes the benefits to various beneficiary groups:

Table 5.3.6: Discounted Present Value of Total Incremental Benefits (20XX to 20XX)
(Constant C\$ 20XX)

Beneficiaries	Incremental Benefits
1. Industry (itemized)	-
2. Government (itemized)	-
3. Canadian Consumers (itemized)	-
Total	-

Alternatively, the discussion of benefits could be around the EGS that may be impacted as a result of the proposed MPA regulation:

Ecosystem Goods and Services 1

- Benefit to industry from spill-over affect
- Benefit to government from improved human health
- Benefit to Canadians from improved EGS

Ecosystem Goods and Services 2

- ...

Total Incremental Benefits

The following table summarizes the benefits of the identified final ecosystem goods and services:

Table 5.3.7: Discounted Present Value of Total Incremental Benefits (20XX to 20XX)
(Constant C\$ 20XX)

Beneficiaries	Incremental Benefits
1. Ecosystem Goods and Services 1	-
• Industry (itemized)	-
• Government (itemized)	-
• Canadians (itemized)	-
2. Ecosystem Goods and Services 2	-
• Industry (itemized)	-
• Government (itemized)	-
• Canadians (itemized)	-
Total	-

Incremental Benefits of the Flexible Management Option

If an analysis of the flexible management option is required, the impacts of this option on benefits also need to be considered. As per the CDRM, this takes the form of “risk consideration”, implying that the impact of the flexible management option on the conservation objective should be evaluated. Such an impact is likely if the flexibility to businesses, particularly small business, takes the form of less stringent compliance requirements as these would have a direct bearing on the biological outcomes. Flexibilities in administrative requirements would be captured in lower costs to business as compared to the proposed MPA Regulations and would not have any implications for biological outcomes. Therefore, the analysis of benefits for the flexible management option should discuss, quantitatively where possible, the impact on biological outcome in comparison to the proposed MPA Regulations. This entails estimating the difference between the incremental benefit of the regulatory management scenario and the incremental benefit of the flexible management option.

Summary of Incremental Benefits

While not necessary, a summary statement of the key incremental benefits to Canadians may be provided to highlight the significant impacts. At the end of this sub-section a table for the total incremental benefits either at the general group level or for ecosystem goods and services may be presented to summarize the incremental benefits section.

Table 5.3.8: Discounted Present Value of Total Incremental Benefits (20XX to 20XX)
(Constant C\$ 20XX)

Ecosystem Goods and Services	Incremental Benefits
1. Ecosystem Goods and Services 1	-
2. Ecosystem Goods and Services 2	-
3. Ecosystem Goods and Services 3	-
Total	-

5.3.10 Distributional Impacts

As described above, a number of diverse interested parties will be impacted by the proposed MPA Regulations. Up to this point in the analysis, the incremental costs and benefits directly attributable to the proposed MPA Regulations have been estimated. The distributional analysis attempts to take the analysis one step further by identifying the degree to which various interested parties may be impacted, and how much they stand to gain or lose as a result of the proposed MPA Regulations. For example, while an industry may bear the incremental costs up front, they may be able to pass a portion of these on to consumers in the form of price increases, such that the impact may also be felt by consumers. Similarly, the incremental benefits of knowing that an ecosystem service will continue to exist accrues not only to current but to future generations and not just within the region in which it is found. A section on regional analysis should be included if relevant. The Regional P&E Branch will be responsible for assessing the distributional impacts on these interested parties.

If the incremental compliance costs are likely to impact the competitiveness of businesses in the domestic and international market, these should also be assessed with special attention to small businesses. It is not necessary to assess the impact on each and every firm. An assessment at an aggregate level may be sufficient. However, if the regulatory management scenario is likely to significantly impact only one or two entities, then a more detailed analysis may be called for (subject to confidentiality considerations).

5.3.11 Net Benefit Statement

The final step in the CBA is the estimation of net benefits. However, a net benefits analysis requires quantification and monetization of all or at least the significant incremental costs and benefits. Even if not all the incremental costs and benefits have been monetized for various reasons, the results should be summarized and presented in an accounting statement table as per TBS requirements.²⁹ The purpose of the table is to highlight the key components of the incremental costs and benefits associated with the proposed MPA Regulations.

²⁹ For a more detailed description on TBS requirement for this section see Table 1 of the TBS *Interim* Canadian Cost-Benefit Analysis Guide: Regulatory Proposals.

Table 5.3.9: Incremental Cost-Benefit Statement

(Constant C\$ 20XX)

Incremental Costs and Benefits	Base Year	Mid Year	Final Year	Total <i>n</i> Year (PV)	Annualized Average
A. Quantified Impacts \$					
<u>Incremental Costs \$</u>					
By Stakeholder	-	-	-	-	-
- By Business Size	-	-	-	-	-
Sub-Total	-	-	-	-	-
<u>Incremental Benefits \$</u>					
By Stakeholder	-	-	-	-	-
By Ecosystem Service	-	-	-	-	-
Sub-Total	-	-	-	-	-
Total	-	-	-	-	-
B. Quantified Impacts in Non-\$					
<u>Positive Impacts</u>					
By Stakeholder	-	-	-	-	-
By Ecosystem Service	-	-	-	-	-
<u>Negative Impacts</u>					
By Stakeholder	-	-	-	-	-
By Ecosystem Service	-	-	-	-	-
C. Qualitative Impacts					
By Stakeholder	<ul style="list-style-type: none"> • Short description of qualitative impacts (positive and negative) 				
By Ecosystem Service	<ul style="list-style-type: none"> • Short description of qualitative impacts (positive and negative) 				

Adapted from the *Interim Canadian Cost-Benefit Analysis Guide: Regulatory Proposals* (Treasury Board of Canada Secretariat, 2007).

The annualized average over the *n* policy impact periods is estimated as:

$$AV = [PV \cdot \rho] / [1 - (1+\rho)^{-n}]$$

Where:

AV is the annualized value of net benefits over the n periods;
 PV is the present value of net benefits over the n periods;
 ρ is the economic discount rate; and
 n is the duration of the policy impact periods.

This approach allows for net benefits that occur in different policy impact time periods to be expressed and compared on a consistent basis. Annualization simply spreads the net benefits smoothly through time.

5.3.12 Sensitivity Analysis

To address the uncertainties with respect to the potential future impacts, it is necessary to identify the uncertainties around the key variables and demonstrate how they affect the net benefit outcome. Sensitivity analysis varies the key variables and assumptions in the analysis in order to show how the results may change. Care should be taken to ensure that the most important variables are identified and a realistic range of variance built into the model. Monte Carlo analysis³⁰ is one such methodology that may be used for the purpose of developing a probabilistic model of the expected net benefits, including uncertainties around conservation outcomes, levels of human uses and subsequent costs and benefits. The analysis can also be subjected to a risk analysis to demonstrate the probability distribution of the proposed regulatory management outcomes.

5.3.13 Regulatory Flexibility Analysis Statement

Briefly describe the difference between the proposed MPA Regulations considered as well as the flexible management option for small businesses, and complete the table below for the incremental impacts on small businesses only:

Table 5.3.10 Regulatory Flexibility Analysis Statement

(Constant C\$ 20XX)

	Proposed MPA Regulations		Flexible Management Option	
Short description	(e.g., all firms face the same reporting requirements)		(e.g., small businesses can report less frequently)	
Number of small businesses impacted	-		-	
	Annualized average (\$)	Present value** (\$)	Annualized average (\$)	Present value** (\$)
Compliance costs to small businesses (itemize if appropriate)	-	-	-	-

³⁰ This is a statistical and computational method that predicts how the results of an economic analysis will vary given uncertainty in key parameters, such as discount rates or costs. This is particularly useful when the decision rule for establishing the MPA requires that the costs of the MPA be less than the benefits, and there is uncertainty in the costs and benefits because of uncertainty about the underlying data. With Monte Carlo analysis, uncertainty in key input variables is propagated through the model, allowing predictions of the probability that the costs are less than the benefits, given the range of uncertainty. This in effect strengthens the confidence in the economic analysis.

Administrative costs to small businesses (itemize if appropriate)	-	-	-	-
Total costs (all small businesses)	-	-	-	-
Total cost per small business	-	-	-	-
Risk considerations*	-		-	

*: Risk considerations are stated in terms of incremental benefits for the regulatory management scenario and the flexible management scenarios.

5.3.14 Summary

A short summary of the CBA highlighting the key findings should be provided, particularly those that are significant and merit special consideration in the decision-making process.

5.4 Low Impact Cost-Benefit Analysis Report

A low impact CBA report may be developed for proposals triaged as having low or minimal impact on costs to businesses, government and Canadians, as per the principle of proportionality. While the regulatory management measures will apply, a detailed CBA in this case is not required. As per the CDRM requirements for a low impact proposal, a qualitative analysis will suffice. Nonetheless, in order to maintain corporate memory, as well as a record of the information that was used to evaluate the incremental costs and benefits associated with the proposed MPA Regulations, it is advisable to prepare a separate report, especially since this information may be needed for the triage statement and the RIAS. This report will follow the medium/high impact CBA template in principle but only sections that are relevant for low impact proposal will need to be completed, and that too primarily in qualitative terms. It should be noted that while the RIAS for a low impact proposal does not require a separate section on CBA, it is possible that the Department may include this information to ensure transparency and to communicate clearly to Canadians the incremental impacts of the proposed MPA Regulations. Moreover, a discussion of the incremental costs and benefits is required in the “Rationale” section of the RIAS.

The abridged CBA template for low impact proposals could include the following sections:

5.4.1 Preamble

The preamble will be similar to the medium/high impact socio-economic analysis template.

5.4.2 Background

The purpose of this section is to contextualize the socio-economic analysis. It is therefore important to restate the coordinates for the spatial boundary of the proposed MPA Regulations, the ecological importance, the issues and the objectives of the proposed MPA Regulations should be clearly spelt out. The section could also include a short profile of the interested parties (section 5.3.3 in section 5.3 above). The bulk of the information will draw on the Ecosystem Overview and Phase II SEOA-AOI reports. Information that is relevant from a socio-economic analysis perspective should be presented here. This information is also important for establishing the baseline for the MPA.

5.4.3 Baseline

The baseline should include a description of the regulatory or non-regulatory management measures that are in place as well as measures that may be put in place irrespective of the decision with respect to proposed MPA designation. The description should briefly outline the existing measures in layman terms. If information is available, the degree of success or failure of the existing measures relative to their intent should be provided as well. This requires a high level of certainty especially with respect to measures that are not currently in place, but for which there is either a regulatory or policy commitment to implement.

The baseline should also include information on current socio-economic activities. In cases, where there is high probability or certainty of a new activity starting up, or a significant growth in on-going economic activities, a qualitative discussion of these may be included. Only those new economic activities will be included in analysis for which business plans are in place and for which evidence of intent (e.g. business plans, permits, submission of plans for approvals, etc.) to undertake the activity can be established. The discussion should present the evidence which supports the assertion of imminent economic growth. The discussion should provide an indication of the magnitude of the activity, such as revenue and employment generation potential for the Canadian economy.

In the case of MPAs that have international implications, describe the initiatives that are in place in response to the relevant international commitments in order to reflect the impact of these initiatives. If relevant, include a discussion on international agreements (multilateral or bilateral) to which Canada is signatory.

Based on the above, a qualitative discussion of the fate of the final EGS under the baseline conditions and its impacts on socio-economic activities will need to be undertaken, if quantitative analysis is not practical. The baseline will serve as the reference point against which the regulatory management scenario will be compared. To assess the incremental impacts of the proposed MPA Regulations, the information on the baseline will be needed prior to undertaking the socio-economic analysis.

5.4.4 Regulatory Management Scenario

The regulatory management scenario provided by the IOM Branch outlining the regulatory management measures of the proposed MPA Regulations will be restated in this section. The scope of the analysis will be determined by the measures that will come into force under the proposed MPA Regulations. Similar to the baseline, for the regulatory management scenario a qualitative discussion of the fate of the final EGS and its impacts on socio-economic activities will need to be undertaken, if quantitative analysis is not practical.

The socio-economic analysis report will compare the regulatory management scenario to the baseline in order to assess the incremental impacts (costs and benefits) of implementing the proposed MPA Regulations.

5.4.5 Flexible Management Option

While unlikely, a flexible management option may need to be evaluated if it is determined in the triage statement that there are disproportionate impacts on small businesses. The determination of disproportionate impacts on small businesses will be done in consultation with the TBS Analyst. If an analysis of the flexible management option is required, the guidance

provided in section 5.3 would need to be applied for the estimation of incremental costs to small businesses and impact on ecological benefits as a consequence of the flexibilities provided under this option.

5.4.6 Cost-Benefit Analysis

The discussion on the two categories of incremental costs to industry – compliance costs and administrative costs will primarily be qualitative in nature. In addition, if the implementation of the proposed MPA Regulations disproportionately impacts small businesses, the administrative costs will need to be estimated and monetized. A discussion of the impacts on small businesses will also need to be included as would table 5.3.10.

It is important to note that the administrative costs should be estimated using the Regulatory Cost Calculator developed by TBS. For this purpose, the IOM Branch will need to identify the specific administrative requirements such as record keeping, testing, reporting, etc. This may require collection of information from businesses on time, human and financial resources that may need to be expended to fulfil the administrative requirements of the management scenario. Economists may be called upon to assist in these calculations; however, they will not be responsible for collecting the information as programs have direct access to this.

5.4.7 Summary

While not essential, a short summary of the CBA highlighting the key findings may be provided, particularly those that are significant and merit special consideration in the decision-making process.

5.5 Completing the Treasury Board Secretariat’s Triage Statement (SE Elements)

The triage statement should be completed in collaboration between Oceans, the regional P&E Branch in consultation with other relevant DFO programs. The regional P&E Branch is primarily responsible for questions related to assessing the incremental benefits and costs of the proposed MPA Regulations as well as the distributional impacts (i.e. questions 1-3 and 8 in the August 2012 version of the TBS triage statement and as specified below). Although some of the information for responding to these questions can be drawn from the Phase I and Phase II SEOA-AOI reports; preliminary estimates of the incremental costs and benefits will need to be calculated. It is important to note that the estimates for incremental gross costs and benefits³¹ are based on readily available information. A detailed CBA is not required for the purposes of the triage statement. The purpose of the triage statement is to determine whether or not a detailed CBA is required based on the assessed impact level.

For all regulatory proposals, it is required that **Section I: Overview** of the TBS triage statement must be completed prior to completing the questions related to socio-economic impacts (that is question 1-3 and 8). The following is based on the guidance provided for the triage by TBS:

5.5.1 Triage Section II Questions

Q1. Benefits of the Proposal

³¹ Note: The term “gross” as used by TBS in the triage statement template refers to “total” costs. The intent is to present the costs to Canadians, government and business stakeholders as a total cost within each group and not to provide breakdown by type and size of the stakeholders. The costs estimated can be terms of “net” values in keeping with the economic definitions of the terms “gross” and “net”.

Benefits will primarily be focussed on the contribution of the proposed MPA designation to the stated conservation objective(s) linked to the final EGS, for example, maintaining the habitat to enhance the species population. The ecological information pertaining to the habitat and species in this context will be based on the science input; however, where possible, the biological information will be presented in economic terms. In addition, any cost savings or benefits to interested parties resulting from the proposed MPA designation should be discussed, where available.

According to the triage statement, where information is available, the level of gross benefits to government, industry, consumers, and Canadians as a result of the regulatory proposal should be discussed in the justification section of the question in qualitative terms. If readily available, quantitative information can also be included.

Notes:

1. Benefits do not include the benefits from developing the regulatory proposal to fulfil legal requirements, meeting international commitments or avoiding corporate risks.
2. “Incremental benefits” are benefits related to the proposed regulatory option, as compared with the baseline (i.e. in the absence of the proposed MPA Regulations). Benefits that may occur under the baseline are not part of the incremental benefits associated with the regulatory option.

Q2. Costs of the Proposal

While estimating the costs of the proposal calls for specific information about costs imposed on the regulated community, it is not necessary to have precise numbers – a range of values or unit costs will be sufficient. However, it does require information on activities that are likely to be impacted. For example, the impact on an industry that has to change its operations or undertake capital investments may be significantly different from the impact due to a reporting requirement – high vs. low. The information needed to respond to this question will be similar to that of any CBA. As stated earlier, the difference is that for the triage statement relevant information that’s readily available should be used. Extensive efforts, requiring significant resources, to collect the information do not need to be undertaken. The triage statement is a high level assessment of potential impacts and not a precise estimation of incremental costs and benefits of the proposed intervention.

The triage calls for an estimate of gross costs to government, businesses, consumers, and Canadians as a result of the regulatory proposal in Canadian dollars (including the cost categories as outlined in the triage statement). The incremental costs should be estimated either in terms of present value based on a minimum 10-year forecast and a 7% discount rate, or expressed annually, based on preliminary analysis or available information. If a quantitative assessment of a cost item is not possible or not available, include a qualitative assessment in the justification section.

Notes:

1. Government costs do not include the cost of developing the regulatory proposal.
2. “Incremental costs” are costs related to the proposed regulatory option, as compared with the baseline (i.e. in the absence of the proposed MPA Regulations). Costs that may be

incurred under the baseline are not part of the incremental costs associated with a regulatory option.

Q3. Other Costs and Distributional Issues

Identify other costs or potentially adverse impacts and distributional issues arising from the proposed MPA Regulations. These could relate to the impact imposed on the economy (national and regional), trade (national and international), competition, jobs, and labour mobility as a consequence of the incremental costs. It could also relate to the distributional impact of the incremental costs to vulnerable segments of social and economic groups, such as Aboriginal peoples, official-language minorities, lower-income Canadians, recent immigrants, and other groups affected on the basis of age, gender, race or culture.

In the justification section, a brief description of the costs or potentially adverse impacts and distributional issues identified, including any available quantitative information should be provided.

Q8. “One-for-One” Rule and small business lens

Response to this question (Q8) primarily determines whether the “One-for-One” Rule or the small business lens applies. For low impact proposals, IOM Branch will primarily be responsible for this question. However, since the information for the “One-for-One” Rule relates to administrative costs of the proposed MPA Regulations to businesses and these must be included in the med-high impact cost-benefit analysis, the Regional P&E Branch may be called upon to assist with the calculations in these latter cases. For more information, consult *Controlling Administrative Burden That Regulations Impose on Business: Guide for the “One-for-One” Rule*³² and *Hardwiring Sensitivity to Small Business Impacts of Regulation: Guide for the Small Business Lens*³³.

³² The TBS guidance document for the “One-for-One” Rule is available at: <http://www.tbs-sct.gc.ca/rtrap-parfa/cabtrib-lfarie/cabtrib-lfariepr-eng.asp?format=print>

³³ The TBS guidance document for the “Small Business Lens” is available at: <http://www.tbs-sct.gc.ca/rtrap-parfa/hssbir-tcirpese/hssbir-tcirpesepr-eng.asp?format=print>