REVIEW OF THE ASSESSMENT OF POSITIVE EFFECTS

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LIST OF ACRONYMS

BCEAA	*British Columbia Environmental Assessment Act*
CAC	Community Advisory Committee
C-NLOPB	Canada-Newfoundland & Labrador Offshore Petroleum Board
CEAA	*Canadian Environmental Assessment Act*
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
EAO	British Columbia Environmental Assessment Office
EIA	Environmental Impact Assessment
EMCP	ExxonMobil Canada Properties
FPIC	Free Prior and Informed Consent
GBA+	Gender-Based Analysis Plus
GIA	Gender Impact Assessment
GHG	Greenhouse Gas
HMDC	Hibernia Management and Development Company Ltd.
IAA	*Impact Assessment Act*
IAAC	Impact Assessment Agency of Canada
IFC	International Finance Corporation
IBA	Impact Benefits Agreement
LCA	Life-cycle Assessment
LNG	Liquefied Natural Gas
LTMP	Long Term Monitoring Plan
MW	Megawatt
PBPL	Port of Brisbane Pty Ltd.
SEEMP	Socio-Economic Effects Management Plan
SEIS	Socio-Economic Impact Statement
SIA	Social Impact Assessment
TAC	Technical Advisory Committee
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
VAFFC	Vancouver Airport Fuel Facilities Corporation
VC	Valued Component
YVR	Vancouver International Airport

1.0 INTRODUCTION

Hatfield Consultants LLP (Hatfield) has been retained by the Impact Assessment Agency of Canada (IAAC) to review how positive effects of major projects have been, or are being assessed, both within Canada and internationally (the Project). The Project was initiated on December 18, 2020, via a kickoff meeting with the IAAC and their Technical Advisory Committee (TAC) to discuss the overall Project scope, context, and objectives, including perspectives of the various participants and next steps.

Effective communication and engagement with the IAAC and TAC is key to this assignment. In addition to the two rounds of review on the "preliminary draft" and "final draft" reports, two presentations will be prepared to showcase the findings described in this "final draft" report. In mid-March, a presentation including Q&A will take place with the TAC sub-committee (or full TAC) and the same presentation will take place with the IAAC.

For this report, the terms environment impact assessment, environmental assessment or impact assessment have been used to refer to specific jurisdictional processes. For simplification, the term "assessment" has generally been used to refer to the regulatory process for assessing major projects.

2.0 OBJECTIVES

The objective of this assignment is to provide the IAAC and TAC with definitions and a broad inventory of positive project effects and how these have, could or should be, created, enhanced, assessed, measured and monitored. The intent is to provide tangible examples and suggest approaches to help improve how positive effects (both direct and indirect) are identified and advanced during various phases of a project (i.e., planning, construction, operations, and decommissioning and reclamation) and considering both the assessment process (how the effects are created and assessed) and post-assessment (how the predictions are verified and adaptively managed to achieve the intended positive result).

Conclusions and recommendations resulting from this research may be used to inform new policies, guidance, and training materials that support the effective assessment, measurement and monitoring of positive effects, and ultimately, Ministerial decisions on major projects focused on sustainability and public interest under the new IAA.

3.0 METHODS

A combination of primary and secondary research methods was used to obtain and aggregate data for analysis, develop case studies, and draw conclusions and recommendations.

3.1 DESKTOP RESEARCH

An inventory of positive project effects was initially developed through desktop research. Canadian and international policy documents, project assessment reports, Benefits Plans and scientific publications were reviewed. The objective was to gain a broader understanding of existing practices of defining, assessing, and quantifying positive effects. The research also aimed to identify barriers to effective measurement of positive effects and how it may translate into delivering equitable benefits. Research focused on projects that were approved under CEAA 2012 by the former Canadian Environmental Assessment Agency and the National Energy Board (now Canada Energy Regulator), the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB), Alberta's *Environmental Protection and Enhancement Act*, and the revitalized *British Columbia Environmental Assessment* Act (BCEAA).

Desktop research then focused on published reports, international assessment processes and project examples that were identified as resulting in positive effects.

3.2 KEY INFORMANT INTERVIEWS

Desktop research was complemented by key informant interviews with a sample of project proponents, academics and practitioners experienced in advancing projects through various review and assessment regimes. Positive effects were examined from two perspectives: during the regulatory assessment process (how the effects are identified and assessed) and post-assessment (what happened once the assessment process was over, and how the predictions were verified, and benefits delivered).

An interview guide (Appendix A1) was developed with input from the IAAC and TAC, including guidance to seek practical examples of positive project benefits from proponents or practitioners with subject matter expertise. In some cases, interviews did not produce tangible findings but were nonetheless useful for advancing research and helping identify other interview candidates. Interviews were conducted in an online format and were completed with the following individuals:

1. Adrian Pollard, Principal, TACK Engineering Ltd., Vancouver, Canada;
2. Anne Currie, Senior Partner, ERM Consultants Canada Ltd, Canada;
3. David Bursey, Partner, Bennett Jones LLP, Vancouver, Canada;
4. Frank Vanclay, Professor, Director, Urban & Regional Studies Institute, University of Groningen the Netherlands;
5. George Meadows, VP Human Environment, Hemmera, Vancouver, Canada;
6. Jody Shimkus, CEO, Kirk Environmental, Vancouver, Canada;
7. Kate Lazarus, Senior Asia Environment, Social and Governance Advisory Lead, International Finance Corporation, Bangkok, Thailand;

8. Keith Storey, Professor, Department of Geography, Memorial University of Newfoundland, Canada;
9. Kent Gustavson, Partner, ERM Consultants Canada Ltd., Canada;
10. Kevin Hanna, Associate Professor, Geography; Director, Centre for Environmental Assessment Research, University of British Columbia, Canada;
11. Mark Breitfuss, Principal, Epic Environmental Pty Ltd., Brisbane, Australia;
12. Matt Kennedy, VP Environment, Innergex Renewable Energy Inc., Vancouver, Canada;
13. Michael Linde, Senior Environmental Advisor, Port of Brisbane Pty Ltd., Australia;
14. Mohammed Ali, VP Environment, Kirkland Lake Gold Inc., Toronto, Canada;
15. Paul Anderson, Principal Consultant, Anderson & Associates, Calgary, Canada;
16. Scott Hanna, Principal, Roberschan Environmental, Vancouver, Canada; and
17. Steve Roberts, Senior Environmental Inspector, SRE Consulting Ltd., Vancouver, Canada.

4.0 BACKGROUND

The following provides additional historical context to the assessment of positive project effects including linkages to Indigenous peoples and vulnerable populations and the shift toward assessing positive effects under the IAA to embrace a broader public interest determination.

4.1 POSITIVE EFFECTS

The requirement for conducting environmental impact assessments dates back to the passage of the National Environmental Policy Act in 1970 in the United States (NEPA 1970, CEQ 1978). In Canada, EIA was introduced in 1973 by the Federal Environmental Assessment and Review Process (EARP). In 1992 EARP was replaced by the first *Canadian Environmental Assessment Act*, which went into effect in 1995. Earlier EIAs included 'discussions' of socio-economic effects which gained wide-spread interest in the 1980s, becoming formal guidelines in the mid-90s. The United States was the first country to establish guidelines and provisions for social impact assessment (SIA) in 1993 requiring agencies to assess "aesthetic, historic, cultural economic, social, or health [effects]…whether direct, indirect, or cumulative" (IOCGP 1993).

There is a considerable body of knowledge and well-established methodologies for the assessment of adverse effects, less effort has been invested in defining the established methodologies and prescribed frameworks to assess positive effects (AECOM 2017).

Historically, the assessment of positive effects has focused on socio-economic dimensions, for which there are established methodologies and prescribed frameworks (Barrow 1997; Becker & Henk 1997; Burdge 1998).

A formal definition of "positive effects" under the *Impact Assessment Act* (IAA) does not currently exist, however, the word "effect" under the IAA is interpreted as "unless the context requires otherwise, changes to the environment or to health, social or economic conditions and the positive and negative consequences of these changes" (IAA 2019).

Under the British Columbia Environmental Assessment Office's (EAO) Effects Assessment Policy (BCEAO 2020), a positive effect is defined as "a result that is considered desirable or beneficial by participants in the EA including Indigenous nations, government agencies, the Technical Advisory Committee and Community Advisory Committee (CAC), the public, or the proponent." This definition recognizes the complexity of determining positive effects of a project and that perspective is critical, i.e., direct effects of the same activity or component of a project may result in apparently competing, negative and positive effects, or there may be competing views on whether an effect is positive or negative.

In the international development context, impact assessment is rooted in the vision for sustainable development and serves as a critical tool for poverty reduction and a mechanism whose aim is to harmonize the three pillars of sustainable development: economy, environment, and society. Positive effects are defined as anything that improves environmental and social performance and are measured in terms of their contribution to reducing poverty, promoting opportunity, facilitating the empowerment of disadvantaged populations and enhancing security and are therefore often framed within a sustainability context (WB 2000, 2017; OECD-DAC, 2006).

Net gain is an important concept that is analogous to an overall positive effect from a project. This has typically been applied in an international context to biodiversity under the International Finance Corporation (IFC) performance standards but is gaining traction in other jurisdictions, for example, the UK government is in the process of embedding biodiversity net gain within the planning system[1]. where it will be embedded with biodiversity net gain and is discussed in relation to IFC.

Existing tools and methodologies can assist with assessing positive effects. Tools range from simple risk-based assessments through to complex life-cycle assessment (LCA) or methodologies that monetize positive and adverse effects (AECOM 2017), although they are not widely used within the effects assessment community. Proponents quantify socio-economic impacts of the project and develop mitigation or enhancement measures using well-developed methods and tools such as economic impact analysis (based on input-output modelling), cost-benefit analysis, multiple account benefit-cost analysis and multiple-criteria decision analysis (Baker & Rapaport 2005; MAL 2007; Gunton et al. 2020).

The extent to which assessment of positive effects has occurred and the methods that are used varies depending upon the Valued Component (VC) being assessed (AECOM 2017).

João et al. (2012) identified the following criteria for the successful implementation of enhancements that apply to positive effects:

- Early consideration of positive impacts, benefits and beneficiaries;
- Meaningful consultation and empowerment of beneficiaries;
- Including benefit enhancement measures in project finance agreements; and
- Independent monitoring of project benefits.

The report also discusses the role of adaptive management: where it may be appropriate, and how modifying approaches, practices and initiatives can be used as a tool to increase the understanding of interactions between project development and the environment (both natural and socio-economic), in order to ensure the sustainable delivery and equitable distribution of benefits.

Some positive effects are incidental, that is they result directly from project activities and components that are essential to project delivery. Others involve enhancement to realize or increase positive effects, and finally, there are specific compensation, offsetting or conservation initiatives that are implemented that may provide a positive effect from projects.

Ideally, positive effects should be attributed to individual VCs, however, it is not uncommon for a net positive effect to result from a combination within or across VCs and therefore an integrated approach to positive effects may improve outcomes. This is discussed later in the report.

[1] https://www.gov.uk/government/consultations/biodiversity-net-gain-updating-planning-requirements

The IAA uses an updated definition of "effects" to include "changes to the environment or to health, social or economic conditions and the positive and negative consequences of these changes" (Section 2, IAA 2019). Similarly, the purpose of the assessment of designated projects now includes consideration of both positive and adverse effects. IAAC has published guidance and a framework for practitioners to support and encourage the assessment of projects through a sustainability lens (Government of Canada 2020), which is also one of the factors to be considered in the IAA (s.22(1)(h)) and in decision making (e.g., s. 63)

4.2 INDIGENOUS PEOPLES

Indigenous peoples around the world have historically suffered from the impacts of resource development and infrastructure projects such as roads, railways, and dams. Their interests and rights were rarely considered during the earliest forms of impact assessment. Over time, and especially since the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) in 2007, assessment processes have sought to better understand and account for the effects of projects on Indigenous people. Today international standards such as the IFC Performance Standards (PSs) have formal requirements for how and what projects need to do with respect to how they will understand and protect Indigenous rights and interests.[2] The standards and requirements with respect to the assessment of positive effects is less explicit, although IFC Performance Standard 7 does focus on the importance of projects to consistently and meaningfully engage with Indigenous people and take steps to ensure that project benefits are equitably shared with affected Indigenous communities.[3]

In Canada Indigenous rights and interests were explicitly recognized in the Constitution Act (1982) and, subsequently, reaffirmed and more clearly defined in numerous court cases and decisions, many of which have risen to the Supreme Court of Canada. Consideration of effects on Indigenous people and communities in Canada has followed a similar trajectory to the international sphere: Early effects assessment paid little heed to Indigenous issues or concerns, and positive effects were more or less assumed to follow from economic development. As Indigenous people found recognition and reaffirmation of their rights in the Constitution and in the courts, assessment of effects on Indigenous people and communities made its way to the forefront of effects assessment legislation. This trend is exemplified by the IAA itself and in provincial legislation such as the 2018 British Columbia *Environmental Assessment Act* and associated regulations that came into effect in late 2019. Both explicitly acknowledge UNDRIP and place much more emphasis on consideration of effects on Indigenous peoples and adverse effects, with a particular focus on Indigenous engagement and involvement, starting from the earliest stages of project design and development.

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[2] See for example; https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/performance-standards/ps7

[3] https://www.ifc.org/wps/wcm/connect/9fc3aaef-14c3-4489-acf1-a1c43d7f86ec/GN_English_2012_Full-Document_updated_June-27-2019.pdf?MOD=AJPERES&CVID=mRQmrEJ

In many respects, positive effects on Indigenous people and communities are not unlike the mainly social and economic benefits that are seen for other affected communities. There are, nevertheless, important differences that need to be better understood and examined so that they may be properly accounted for during project assessments. The heightened awareness and recognition of Indigenous interests and rights in contemporary effects assessment legislation and regulation set the stage for a more collaborative process with Indigenous groups and their identification of potential positive effects in the future. Some initial discussion is provided in Section 6.0.

4.3 VULNERABLE POPULATIONS

Many projects take place in close proximity to vulnerable populations. The National Collaborating Centre for Determinants of Health defines vulnerable populations as those with higher sensitivity to and at higher risk for experiencing social and economic shocks. Vulnerable populations include women, children and youth, persons with disabilities, racialized populations, Indigenous populations, new immigrants, members of LGBTQ2+ communities, persons living with addictions, among others (NCCDH 2020). Vulnerability factors commonly include food insecurity, age, gender, race, socio-economic status, physical and mental health, and marital status, among others. Vulnerable populations are more likely to experience greater risks and adverse effects associated with project development, including, but not limited to; gender-based violence, increased rates of HIV/AIDS, reduced access to and capacity to manage, land and water resources, and loss of social networks and established family structure due to resettlement. Vulnerable populations are also less likely to have access to socio-economic, health, cultural and other benefits, generated by major projects.

In developing countries, these inequalities are further exacerbated by poverty, corruption and conflict. Interviewees noted that vulnerable communities are generally more concerned about the induced positive effects and what these would mean to them in the long-term. To be able to deliver benefits to these communities with the ultimate objective of reducing poverty and inequality, it is important to understand the linkages between inequalities at different community levels (WB 1993a, 2003; IUCN 2015; Capacity4dev 2015; UN Women 2018; FAO n.d.). Vulnerability assessment and intersectional gender approach to data collection and assessment methodology are critical elements of impact assessment, as they allow for more accurate targeting of mitigation and enhancement measures, and consequently, more equitable distribution of a project's socio-economic benefits. Several specific tools exist to assess effects on vulnerable populations, including the following:

- Contextual risk tool that looks at risks outside of the project concept that may not be the responsibility of a developer but will still have an effect on the project. This tool takes into consideration broader societal and biodiversity issues. Ultimately, it enables the developer to be more aware of the broader context and refine their assessment process and delivery (IFC 2017).
- IFC Performance Standards, World Bank's Environmental and Social Framework and European Bank for Reconstruction and Development Environmental and Social Policy and Performance Requirements. Free Prior and Informed Consent (FPIC) is implemented to determine whether the project meets the IFC PS7: Indigenous Peoples.

- Participatory Rapid Appraisal (PRA) and Rural Rapid Appraisal (RRA) are critical participatory methods that are grounded in local knowledge and allow for early engagement, inclusion of community perceptions and their own definitions and assessment of vulnerability. These methods enhance the understanding of the true value of benefits and what is best for the communities (WB 1993b).

- Sustainable Livelihood Framework (SLF) or Sustainable Livelihood Approach (SLA) examines the interrelation of factors that can hinder or enhance livelihood assets and opportunities (ADB 2008).

- Resettlement Action Plan (RAP) is required for all projects where displacement may take place as a result of project activities. RAP allows for targeted engagement of vulnerable populations and management of the resettlement process in such a way as to maximize economic opportunities and improve livelihoods post-resettlement. It is prepared in conjunction with Livelihood Restoration Plan (LRP) (IFC 2002). EBRD performance requirement 5, for example, requires the development of a Livelihood Restoration Strategy (LRF).

- Health Impact Assessment (HIA) uses the social determinants of health approach to identify positive and negative impacts, including perceived impacts (WHO 2021).

- Human Rights Impact Assessment (HRIA) uses a gender-sensitive approach to identify human rights risks and potential project impacts on human rights (DIHR 2020).

- Community-based Impact Assessment (CBIA) is led by community members and aims to identify unique community needs and potential impacts that may be outside of traditional regulatory assessment frameworks (CIDA 2005; Stolp et al 2002).

- Gender Impact Assessment (GIA), or gender and diversity analysis, conducted as part of SIA or as a stand-alone study, allows for the collection of gender-disaggregated data and supports focussed and meaningful engagement. The disaggregated data add more rigour to the assessment process, as it supports an early understanding of the unique features of the community, what the socio-economic barriers and strains on livelihoods are, and how the project will affect the community beyond direct economic gains. Data can also be used to develop a gender-responsive livelihood restoration or benefits-sharing plan, as well as a social management plan. Gender analysis is a two-way process. It is not enough to conduct the analysis or follow other international regulations if gender perspectives are not internalized. Project proponents need to ensure they have internal policies in place to address gender issues and translate this culture of diversity and inclusion into their project design, assessment methodology and benefits delivery.

- In the Canadian context, Gender-Based Analysis Plus (GBA+) was developed by the Status of Women Canada and is defined as an “intersectional analytical process for examining how various intersecting identity factors impact the effectiveness of government initiatives” (Status of Women Canada 2016). The Impact Assessment Act makes provisions for GBA+ requirement under paragraph 22 (1)(s), requiring proponents to consider gender, age, and other identity factors in their assessment process (IAA 2020). While some forms of gender-based analyses have existed in Canada since the 1970s, they applied to the general population and national averages, and Indigenous populations were largely overlooked (NWAC 2010). Research conducted by the

Native Women Association of Canada (NWAC) acknowledges the improvements made in GBA+ and its consideration of unique Indigenous identity factors, but points out still existing gaps in recognizing, for example, cultural values, inter-generational relations and gender-based violence. NWAC led the development of Indigenous Gender-Based Analysis (specifically for mining-related projects) and Culturally Relevant Gender Application Protocol (CR-GAP) (NWAC 2010, 2018; MMIWG National Inquiry 2019).

- Conflict assessment is key in countries with ongoing conflict and legacy issues as development can create further instability. Understanding and incorporating conflict into the stakeholder engagement process will help to highlight broader stakeholder issues and how conflicts will affect them.

When assessing effects on vulnerable populations, the first challenge is the scarcity or absence of reliable data. Indigenous Knowledge in the case of Indigenous communities, and citizen science in non-Indigenous communities can help overcome data gaps.

4.4 IMPACT ASSESSMENT ACT

In August 2019, the IAA replaced the former *Canadian Environmental Assessment Act*, 2012 (CEAA 2012) along with a new set of regulations. The IAA differs from previous legislation in several ways, including a focus on assessing positive or beneficial project effects and has moved away from a long-standing focus on "significant adverse environmental effects" as the primary threshold for project approvals.

Under section 22(1) of the IAA, it is stated that the impact assessment of a designated project, whether it is conducted by the Agency or a review panel, must take into account, among other factors;

a) the changes to the environment or to health, social or economic conditions and the positive and negative consequences of these changes that are likely to be caused by the carrying out of the designated project.

Additional factors to be taken into consideration in the Minister's or Governor in Council's public interest determination include the report with respect to the impact assessment, and the following under section 63 of the IAA;

b) The extent to which the designated project contributes to sustainability;

c) The extent to which the adverse effects within federal jurisdiction and the adverse direct or incidental effects that are indicated in the impact assessment report in respect of the designated project are significant;

d) The implementation of the mitigation measures that the Minister or the Governor in Council considers appropriate;

e) The impact that the designated project may have on any Indigenous group and any adverse impact that the designated project may have on the rights of the Indigenous peoples of Canada recognized and affirmed by section 35 of the Constitution Act, 1982; and

f) The extent to which the effects of the designated project hinder or contribute to the Government of Canada's ability to meet its environmental obligations and its commitments in respect of climate change.

The definition of "effects" under the IAA was updated to reflect "changes to the environment or to health, social or economic conditions and the positive and negative consequences of these changes". Similarly, section 22(1) of the IAA was changed such that the assessment of designated projects accounts for all effects, both positive and adverse. Additional guidance was issued by the IAAC for impact assessment practitioners to consider the extent to which a project contributes to sustainability (Government of Canada, 2020), and a framework for the implementation of the sustainability guidance was published (Government of Canada (a), 2020). The consideration of a project's contribution to sustainability is an incentive for the assessment of positive effects under the IAA and is an important theme in this report.

Previously project assessments such as CEAA 2012 and earlier legislation have focussed on avoiding, mitigating or compensating for adverse effects, with limited focus on positive effects beyond basic socio-economic benefits associated with job creation and tax revenues. The shift toward assessing positive effects under the IAA could result in a more balanced approach that embraces a broader public interest determination and includes a more robust analysis of social, economic, biophysical, and cultural benefits of each project. However, there are numerous challenges to the successful incorporation of positive effects as highlighted in this report.

At this time, no projects have completed an assessment under the IAA (2019) or submitted an Impact Statement documenting their positive effects assessment approach or methods.

4.5 OTHER POLICY EXAMPLES

4.5.1 BC Environmental Assessment Act

Under section 25(2)(a) of the revitalized BCEAA (2018), proponents are now required to assess positive direct and indirect effects, including environmental, economic, social, cultural and health effects. The revitalized Act came into force on December 16, 2019, and a new Effects Assessment Policy (BCEAO 2020) was released in April 2020 to guide proponents and others involved in carrying out effects assessments.

The policy defines positive effect as "a result that is considered desirable or beneficial by participants in the EA including Indigenous nations, government agencies, the Technical Advisory Committee (TAC) and Community Advisory Committee (CAC), the public, or the proponent." Examples are provided that include infrastructure (e.g., roads, water, or power transmission) and other improvements that may also benefit the community, additional environmental reclamation activities beyond project effects, the creation of local employment including training, and strategic hiring of people in the community who are under- or unemployed. Positive health effects that result from improved economic opportunities or increased access to health services were also cited.

Proponents are encouraged to make deliberate attempts to provide a wide range of direct and indirect benefits that could reasonably flow from the project, however, offsetting and mitigation to address adverse effects attributable to a project are not considered positive effects under the policy. Positive effects may, however, result from mitigation that addresses effects to the human or the biophysical environment beyond what is predicted to be attributable to the project. In these examples, effectiveness monitoring may be required to demonstrate that this type of mitigation is providing the predicted positive effects.

Proponents are expected to develop mitigation and identify opportunities to enhance positive effects through "net gain/benefits initiatives" in consultation with the EAO, Indigenous nations and technical experts within the TAC, any CAC, the public, local governments, provincial and federal government agencies, and stakeholders. Although the terms "net gain/benefits initiatives" are not defined under the Effects Assessment Policy, examples of enhancement measures provided include skills training, local procurement strategies and investments in community infrastructure, such as roads and services. Proponents are encouraged to look for opportunities to create positive effects and practically extend the scope or extent of project-specific mitigation, restoration and enhancement measures to produce net project benefits.

When identifying and assessing potential positive effects, proponents must provide sufficient information to identify, predict, and describe the effect. During the early engagement phase of the assessment, proponents may propose potential positive effects of the project and engage with the EAO, Indigenous nations and the TAC to identify what positive effects may be considered in the assessment. If a proponent proposes to undertake a positive effects assessment, an appropriately robust assessment method for assessing positive effects must be identified. These methods would be confirmed through the EAO's Procedural Order (establishing the formal scope of the project, procedures and methods for the assessment, factors to be considered, etc.) and with input from Indigenous nations and the TAC. The residual effects characterization criteria should be used as a starting point for describing potential positive effects.

In regard to the spatial and temporal scale of the assessment of positive effects, the policy is limited in its description, and simply states that it should be consistent with the identified scope of the project, such that the positive effects assessment should not identify international benefits unless this geographic scope is within the scope of assessment for all other components of the project. No additional information or rationale is provided in regard to the spatial or temporal scale of the assessment of positive effects.

Other considerations in assessing positive effects include long-term trends (e.g., changing environment, employment and technology) and market fluctuations. Where appropriate, proponents should provide information regarding potential positive effects on human and community well-being presented by sex, age and other community-relevant identity factors to identify disproportionate potential effects for diverse subgroups.

Although the EAO has developed an Effects Assessment Policy, at this time no projects have completed an assessment under BCEAA (2018), nor have any proponents applied for an Environmental Assessment Certificate documenting their positive effects assessment approach or methods. The Cariboo Gold Project is the only one that has reached a "readiness decision" to formally enter the revitalized assessment process.

The key points relating to positive effects are as follows:

- Proponents are now required to assess positive effects under BCEAA (2018) as described in the EAO's new Effects Assessment Policy (BCEAO 2020);
- Offsetting and mitigation to address adverse effects attributable to a project are not considered positive effects under the policy. However, the EAO recognizes that mitigation and offsetting beyond the predicted adverse effect may be considered;
- Proponents are encouraged to look for opportunities to create positive effects and practically extend the scope or extent of project-specific mitigation, restoration, and enhancement measures to produce net project benefits;
- An appropriately robust assessment method for assessing positive effects must be identified during the early engagement phase (equivalent to the IAAC's planning phase);
- The policy focuses on the VC approach as the basis for assessing positive effects. However, it is questionable how and if this assessment approach can be used at a project level to determine net project benefits; and
- The spatial and temporal scale of any assessment of positive effects should also be consistent with the identified scope of the project.

Other provincial legislation may also advance the positive effects of a project. For example, emissions and discharges permits under the BC *Environmental Management Act* may have requirements for emissions reduction, improved treatment, and more broadly the implementation of methodologies such as Best Available Technologies, that result in positive effects.

4.5.2 Canada – Newfoundland and Labrador Offshore Petroleum Board

The C-NLOPB is responsible for the management of petroleum resources in the Canada-Newfoundland and Labrador Offshore Area, pursuant to the federal *Canada-Newfoundland and Labrador Atlantic Accord Implementation Act (Accord Act)*, and the provincial *Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act.*

Section 45 of the *Accord Act* requires that a "Canada-Newfoundland and Labrador Benefits Plan" must be submitted and approved before any petroleum work or activity can take place in the Canada-Newfoundland and Labrador Offshore Area. The Benefits Plan must contain sufficient information to satisfy C-NLOPB that the provisions of section 45 of the *Accord Act* are respected. Benefits Plan Guidelines (Guidelines, 2016) have been issued to assist proponents in complying with the legislation. Approval of a Benefits Plan is a prerequisite to approval of a Development Plan Application. However, approval of a Benefits Plan is not a fundamental decision, and therefore not subject to approval by Ministers.

A proponent's Benefits Plan must contain specific provisions to ensure that:

- An office is established in the province where appropriate levels of decision-making are to take place;
- Individuals who reside in the province shall be given first consideration for training and employment;
- Expenditures shall be made for research and development to be carried out in the province and for education and training to be provided in the province;
- First consideration shall be given to services provided from within the province and to goods manufactured in the province, where those services and goods are competitive in terms of fair market price, quality and delivery; and
- Designated individuals or groups have access to training and employment opportunities and to enable such individuals or groups or businesses owned or operated by them to participate in the supply of goods and services.

Benefits Plans are also expected to include a Diversity Plan, as an intrinsic part of the Benefits Plan, or as a stand-alone document. The proponent is expected to review, assess and apply models such as the federal *Employment Equity Act*, and the Federal Contractors Program as appropriate in preparing its Diversity Plan. Such plans will normally encompass employment equity measures with an explicit objective to facilitate the participation of "designated groups", including women, aboriginal groups, persons with disabilities and members of visible minorities. The adequacy of a proponent's Diversity Plan is assessed against 14 key elements, many of which align with the IAA GBA+ requirements. They include, but are not limited to, the elimination of employment barriers, gender equity strategies, liaising with educational institutions, supportive work environments and outreach initiatives.

As per section 44(2) of the *Accord Act*, and depending on the nature of a project, the C-NLOPB may also require the proponent to submit, as part of its Development Plan Application, a Socio-Economic Impact Statement (SEIS). The SEIS is a systematic analysis used to identify and evaluate potential socio-economic changes and consequences resulting from a proposed project on the lives and circumstances of people, their families and their communities.

SEIS Guidelines (Guidelines 2016) have also been issued to outline the C-NLOPBs expectations for assessing and managing the socio-economic effects of offshore petroleum projects. Socio-economic effects may be adverse or beneficial, and in some cases, both, potentially affecting stakeholder groups in different ways and at different times. The management of those effects includes ways of avoiding adverse effects where possible, mitigating them if not, and creating or enhancing beneficial effects where there are opportunities to do so.

The C-NLOPB stresses the importance of engagement with proponents during the development of the Benefits Plan to ensure it meets the legislative requirements, and early/ongoing engagement with the public regarding the SEIS to determine the key issues to be addressed, and appropriate management approaches designed to address adverse and beneficial effects.

Section 5.3 provides an overview of the Hebron and Hibernia Offshore Platform Projects and examples of positive effects that resulted from the creation of a project-specific Benefits Plan.

The key points relating to positive effects are as follows:

- A Benefits Plan and Diversity Plan must be submitted and approved before any petroleum work or activity can take place in the Canada-Newfoundland and Labrador Offshore Area;
- Depending on the nature of a project, proponents may also be required to submit an SEIS as part of their Development Plan Application; and
- Early engagement with the C-NLOPB in regard to the Benefits Plan and early/ongoing engagement with communities in regard to the SEIS, is key. Similarly, early engagement in regard to aspirations for future positive effects is beneficial.

4.5.3 Fisheries and Species at Risk Acts

Impact assessment does not occur in isolation and other legislation, such as the federal *Fisheries Act* and *Species at Risk Act*, are important within the review and assessment process. Therefore, the regulatory requirements and policies associated with these Acts will influence the creation, enhancement and assessment of positive effects on biodiversity.

The *Fisheries Act* is based on a no-net-loss policy for fish and fish habitat and offsetting is required if effects cannot be avoided or mitigated. At face value, no-net-loss, as opposed to net-gain, will not result in a positive effect as per the definition under the BC *Environmental Act*. As discussed in Section 5.0, no-net-loss policies can incentivize the assessment and enhancement of positive effects and the *Fisheries Act*, includes monitoring requirements that provide opportunities to identify and communicate positive effects, and a financial guarantee mechanism to support the realization of positive effects.

The Fisheries and Oceans Canada Offsetting Policy (DFO 2019) does not allow positive incidental effects of projects to be considered in the habitat balance. This is an example of where a regulatory policy that takes place outside of, and after an impact assessment process may not encourage any effort to identify positive effects. It is unclear whether enhancement would allow these positive effects to be credited in the *Fisheries Act* process. If so, then it may encourage enhancement considerations.

Similarly, the *Species at Risk Act* has three pre-conditions for the issuance of a permit for activities affecting a listed wildlife species, any part of its critical habitat or the residences of its individuals. One of these is the requirement that all feasible measures will be taken to minimize the impact of the activity on the species or its critical habitat or the residences of its individuals. The focus here is on adverse effects and it seems there is little opportunity to consider positive effects.

Given that these permitting processes typically come after the impact assessment, where there is one, the information may not be available to fully assess the positive effect within the review and assessment process.

4.5.4 International Finance Corporation (IFC) Guidance and Performance Standards

Internationally, there are broader policy and assessment tools that link with positive effects and include the concepts of no-net-loss or in fact, net gain.

The IFC's guidance (IFC 2012) recommends that project proponents should develop a program of measures and actions to avoid, minimize, compensate for or offset potential adverse effects, or to enhance positive or beneficial effects. As part of the management program, the proponent may wish to establish its own internal performance measures to enhance positive effects and the desired outcomes as measurable events to the extent possible. These include measures such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods, to ensure continuous improvement of performance in these areas. However, this monitoring and reporting can be a barrier to the assessment of positive effects, and in particular for their enhancement. The guidance also identifies the potential to use a sustainability context to report on the financial, environmental and social aspects of their operations, including areas of success of performance measures and positive project effects that are being enhanced. This may be where the proponent can use an existing tool within their Environmental Management System (a set of processes and practices that enable an organization to reduce its environmental impacts and increase its operating efficiency) to manage positive effects outside of the assessment compliance process. An example would be continual improvement under the ISO:14001 Environmental Management System requirements.

A specific example of the assessment of positive effects includes the IFC Performance Standard 6, which requires Net Gain within Critical Habitat and is a key driver of positive effects assessment in international EIA. No-net-loss is typically expected within the project, with Net Gain achieved through additional conservation actions. This is not dissimilar to in-kind and out-of-kind offsetting under the federal *Fisheries Act.*

5.0 PROJECT EXAMPLES

The following project examples illustrate direct and indirect benefits, including unexpected benefits and missed opportunities. Challenges developing, implementing and monitoring positive effects are described, together with key lessons learned.

5.1 VANCOUVER AIRPORT FUEL DELIVERY PROJECT

Vancouver Airport Fuel Facilities Corporation (VAFFC), a consortium owned by most of the major airlines serving Vancouver International Airport (YVR), received the necessary environmental assessment approvals in 2013 to construct and operate a replacement aviation fuel delivery system. The system includes a marine terminal, fuel receiving facility and underground pipeline connecting with YVR (VAFDP 2009). The existing fuel delivery system is unable to meet demand, resulting in more than 60% of YVR's fuel arriving by barge and tanker truck from the Cherry Point Refinery in Washington State. The new replacement fuel delivery system will increase capacity and eliminate risks associated with reliance on an unsustainable system, and provide a long-term, safe, secure and reliable supply of fuel to YVR.

The direct positive biophysical effects of the system replacement provided a crucial narrative to the successful engagement strategy of this project. By demonstrating the comparatively smaller environmental footprint of the system, highlighting the reduction in GHG emissions by removing the need for tanker trucks, and addressing environmental concerns by upgrading the spill modelling and incident response processes, local residents and businesses largely supported the project. In addition, the project also resulted in biophysical enhancements, including remediation and shoreline enhancement at the project terminal site.

Public engagement on the economic positive effects required concise and articulate delivery to successfully convey the immediate direct effects alongside the long-term indirect benefits. The project supports YVR's critical role in BCs profile as Canada's Pacific Gateway. By offering a secure and long-term competitive fuel supply, YVR will help grow the regional and national economy, representing a significant economic generator with more than 23,000 employees. A daily international flight creates about 186 person-years of direct employment, moreover, for every direct job at YVR, there are 2.5 more indirect and induced jobs. The project represents an example of a crucial upgrade to an existing utility provision, the consequence of not replacing the existing system arguably unsustainable to the point of being unacceptable. Environmental assessment and reviews typically do not consider the missed opportunities of positive effects within the analysis of alternatives to the project. Instead, the focus is generally on the economic and technical justification for the project and its location. This can also be missed when talking about project justification and alternatives within the context of the engagement process.

The upgraded project will ultimately remove over 1,000 fuel delivery tankers from the infrastructure network within the municipality of Richmond and the Lower Mainland, alleviating traffic congestion, reducing GHG emissions and improving regional road safety. This was an important part of the justification for the project and key messaging during engagement. However, the scope of the assessment did not recognize or give 'credit' for GHG emission reductions, hence what was clearly going to be a positive effect of the project was not recognized within the EA process.

In a bid to build on these positive effects within the host community, the proponent identified a derelict railway line as a possible brownfield site that offered an ideal route for the pipeline and submitted a case on this rationale. This proposal represented an opportunity to rejuvenate an abandoned industrial site, while potentially developing a green belt parkway featuring a bike path, however, the proposal was rejected due to the lack of agreement between local jurisdictions and stakeholder groups. Questions remain about whether the provincial government should have taken ownership in this scenario to avoid missing an opportunity to enhance the positive effects of a project.

Take-aways and lessons learned:

- Although the project involved remediation within the project footprint, resulting in positive effects, there was a proposal to redevelop a larger existing brownfield site, which offered potential positive social, economic, biophysical and health effects. However, the lack of agreement between local jurisdictions and stakeholder groups resulted in a missed opportunity. This is an example of how positive effects are best achieved in a collaborative manner and require meeting the needs or aspirations of various stakeholders. In some cases, different levels of government may need to take accountability for difficult decisions to avoid missed opportunities.
- The positive effect of removing trucks from local roads was a key message used in early engagement to support the project rationale and increase community support. However, the reduction in GHG emissions was not fully realized in the assessment and therefore not clearly understood by the public.
- The positive effect of shoreline restoration was not assessed with the EA and associated enhancement opportunities were not identified. Municipal requirements post-EA were the driver for the enhancement.
- A focus on compliance associated with the mitigation of adverse effects and the lack of positive effects assessment within the EA means that positive effects are not part of monitoring and regulator compliance auditing at the site.

5.2 INNERGEX RUN-OF-RIVER HYDROELECTRIC FACILITIES

Innergex Renewable Energy Inc. (Innergex) owns and operates six run-of-river hydroelectric facilities in the Harrison and Stave watersheds in southwestern BC, with a total combined capacity of approximately 150 megawatts (MW). Employed as an alternative to using a dam to create an artificial lake, run-of-river generating station technology produces electricity without having to store the water. Avoiding the need to create a reservoir to drive the generation station, the technology offers an additional positive effect by providing an even more environmentally sustainable source of renewable energy.

As a requirement under the Conditional Water License and *Fisheries Act* Authorization for each project, a 5-year Long-Term Monitoring Plan (LTMP), was designed and implemented after commencing operations to evaluate the effects of project construction and operations. The LTMP monitors a specific set of parameters to assess the following:

- Verify that the projects were constructed as designed and approved;
- Quantify the net change in habitat productive capacity;

- Inform flow management protocols to avoid adverse effects of altered temperatures; and
- Provide information to help inform future decisions on instream flow release for new projects.

The LTMP adopted an extensive array of assessment tools to ensure compliance across the project sites and a subsequent review by DFO concluded the monitoring framework to be sufficient for the consideration of fish in streams with small hydropower projects (DFO 2016). Examples of tools employed include: waterflow and ramping compliance, water temperature monitoring, stream channel morphology monitoring, operational monitoring and performance evaluation analysis, which demonstrate that compensation habitats function as intended resulting in increased Coho Salmon fry abundance (Ecofish 2017). Additional mitigation and compensation monitoring include aquatic and riparian footprint effects assessments, and revegetation monitoring to confirm compliance of minimum 80% survival of planted vegetation and the establishment of long-term vegetation cover.

Fish abundance and biomass density monitoring revealed an unexpected positive increase in total fish density and biomass across all six streams. These effects contrasted strongly with the small-to-moderate habitat losses that were predicted by the habitat modelling completed as part of the project environmental assessment (Ecofish 2017). The increases in fish densities were stable or showed an increasing trend throughout the monitoring period. The LTMP is inherently employed as a tool to monitor the adverse biophysical effects, yet the results of this monitoring program supported a conclusion of no lasting serious harm to fish and fish habitat in the diversion reaches (between the water intake and powerhouse) from the construction and operation of the hydroelectric projects. The controlled flows in the diversion reaches were shown to improve fish access and habitat, including enhanced spawning areas that were normally disturbed by inconsistent or extreme natural flows.

Take-aways and lessons learned:

- Successful revegetation and habitat compensation required as a condition of project approvals was complimented by a surprise positive effect and subsequent increase in fish abundance.
- An external examination of the monitoring program from the federal agency verified the methodology and vindicated the value of the empirical data derived from similar LTMPs. The unexpected increase in abundance revealed a gap in scientific knowledge. It is important to consider the LTMPs as an assessment tool for both positive and adverse biophysical effects, in doing so it could improve the accuracy of predictions of flow withdrawal effects on run-of-river hydroelectric project streams. In addition, the LTMP should have been designed with a mechanism to incorporate adaptive management into the monitoring program. The proponent reached out to regulators to increase the generation capacity of the project on the basis that it would make the best use of the resource but was not successful.
- The additional positive effects represented an engagement opportunity for the proponent to provide affected stakeholders with positive information, a deviation from the typical notification requirements associated with monitoring which focus on adverse effects. The EAO's current system does not allow for the effective communication of positive effects, and instead is focussed primarily on compliance and enforcement of approval conditions. Refining the EAO's requirement for follow up programs and reporting structure to incorporate unexpected positive effects could provide a platform for proponents to engage and receive positive recognition.

5.3 HIBERNIA AND HEBRON OFFSHORE OIL PROJECTS

The Hibernia and Hebron Offshore Platform Projects (Hibernia or Hebron) offer examples of the additional positive project effects that resulted from the creation of a Benefits Plan, a requirement regulated by the C-NLOPB (Section 3.1).

Hibernia is an oilfield in the North Atlantic Ocean, approximately 315 kilometres southeast of St. John's (Hibernia, 2021). The approximately $5.2 billion development began in 1990 and included the construction of a concrete gravity-based structure, offshore loading system and topside facilities. The Hibernia platform is currently operated by the shareholders of the Hibernia Management and Development Company Ltd., which comprises ExxonMobil, Chevron Canada Resources, Suncor Energy, Canada Hibernia Holding Corporation, Murphy Oil and Equinor Canada Ltd. Hibernia began producing oil in November 1997 and is expected to continue producing until at least 2040.

The *Canada-Newfoundland Atlantic Accord Implementation Act* and *The Canada-Newfoundland Atlantic Accord Implementation (Newfoundland) Act* (the Acts) defined the benefit principles upon which the Hibernia Benefits Plan and Hibernia Development Plan submissions were based. These Acts ensured that the proponent was held accountable for ensuring that hydrocarbon resources off Newfoundland's coast were developed in such a way that maximum benefits accrue to the Province and to Canada, across all phases of the Projects. The assessment prompted the proponent to initiate several studies examining the physical, biological and human environment including potential effects on demography, housing, community services, fisheries and the Newfoundland social fabric (Mobil 1985). The studies were complemented by a significant public consultation program employed by the proponent, the results of which proved to be particularly influential in the planning of effects management strategies. Widespread early engagement lay the groundwork for understanding community perspectives and this ultimately created a level of trust and community cooperation that was maintained throughout the project. The development of the Benefits Plan focused the engagement within the host region, demonstrated by the proponent's commitments to providing a full and fair opportunity for all Canadian businesses and individuals, with first consideration to those in Newfoundland, to participate in the supply of goods, services, and employment opportunities (C-NLOPB 1990).

The community consultation process identified and articulated concerns of local residents, a key step in developing an appropriate adverse effects management strategy to minimize social disruption in local communities. Taking this into consideration alongside the objectives identified during community engagement, the proponent adopted a self-contained 3,500-person workcamp strategy to minimize demographic effects in the local communities. The demand for workers and potential in-migration within rural host communities with populations mostly less than 1,000 had the potential to cause social divisions through increased cost of living, reduced access to services and a decrease in quality of life. While some local economic benefits were foregone, the workcamp strategy provided direct employment at the site and minimized the effects of community disruption. The success of this strategy in avoiding excessive demands on services and infrastructure has been recognized and consequently adopted by several other projects that are also defined by the relatively short-term influx of a large workforce within rural communities.

An overarching economic objective of any Benefits Plan is to capture significant employment and industrial benefits within the province. In addition to the workcamp strategy, the proponent also made the conscious decision to seek individual and local contracts for services associated with catering, cleaning and security, rather than a full-service out-of-province provider. This decision was heavily influenced by the early engagement process and resulted in significant local economic benefits.

Direct economic benefits can be derived from the quarterly and annual reporting required by the proponent as part of the Benefits Plan agreement. The reports show that most project expenditures took place within Canada, including up to 82% in Q3 of 2020 (Hibernia 2020). The Benefit Reports also confirmed the realization of employment targets described in the Benefit Plan, which as of Q3 of 2020 also showed that 99% of the Hibernia employees were Canadian, of which 94% were Newfoundland and Labrador residents. Hibernian along with other offshore oil and gas projects continues to be the primary driver within the province.

Indirect benefits have also resulted from Hibernia as companies have maximized opportunities to diversify their operations to sustain long-term growth. Cougar helicopters has now diversified away from a sole reliance on Hibernia following fluctuations in the oil and gas market, such as the downturn in 2015. The company now provides expanded services to a variety of other proponents and government agencies, including aerial construction, helideck inspections as well as exploration services. The supply and service sector, born from interactions with projects such as Hibernia has allowed the continued diversification of the economy within the province (Shrimpton 2005).

The Benefit Plan also outlined the proponent's commitments to technology transfer and supplier development as part of the project execution and contracting strategy. This adoption of industrial benefits planning underlines the ways in which the local communities and region can benefit from new industrial activity, in turn delivering benefits to both local residents and proponents (Shrimpton 2005). In 2016, the Hibernia proponent funded a $16 million helicopter training, research and development centre in Newfoundland and Labrador providing an unprecedented facility offering the first night vision capable simulator in Canada. In 2017, they also contributed to the funding of a world first centre for Environmental Genomics Applications by eDNAtec, Inc. a resource dedicated to the use of genomics for environmental assessment and monitoring. These types of investments not only empower regional employees to learn new skills in key industries within the province but also influence and expedite research and development within the global offshore petroleum sector. The ongoing investments in education infrastructure also address provincial gaps in skilled labour, ensuring the original proponent commitments to "hire local" stated in the Benefit Plan are satisfied.

A missed opportunity of the Hibernia project is the considerable shortfall in tourism benefits that were originally anticipated. The Benefits Plan requirement provides an excellent provincial-centric socio-economic framework for the proponent to structure their project upon, however, the framework has not been amended since its inception in 1988 and the lack of consideration for, and assessment of, benefits derived from tourism would be a worthy revision given the successes that have been well documented elsewhere, such as the Icelandic power corporation (Shrimpton 2002).

Hebron is another more recent example of the positive project effects that resulted from the creation of a Benefits Plan and Diversity Plan (also known as Hebron's Gender Equity and Diversity Program), a requirement regulated by the C-NLOPB as described in Section 3.1.

Like the Hibernia example, Hebron is an offshore oil field discovered in 1980 and is located offshore in the Jeanne d'Arc Basin, approximately 350 kilometres southeast of St. John's, the capital of Newfoundland and Labrador. It is the province's fourth stand-alone offshore oilfield development project, located approximately 32 kilometres southeast of the Hibernia Project. ExxonMobil Canada Properties (EMCP) made the final decision to develop Hebron in January 2013, in collaboration with its partners Chevron Canada Limited, Suncor Energy Inc. through the Hebron Petro-Canada Partnership, Equinor Canada Ltd. and Nalcor Energy – Oil and Gas Inc. The capital cost of the project is estimated at $14 billion and is estimated to have a total duration of over 30 years.

In May 2011, EMCP filed the Hebron Benefits Plan (Hebron 2011) with the C-NLOPB and it was conditionally approved in May 2012. The Benefits Plan focussed on the construction and operations phases of the project, including the following five key principles:

1. Meeting local benefits commitments while maintaining the highest levels of safety, environmental performance, efficiency and integrity of operations;
2. Selecting contractors and suppliers that will work diligently to deliver benefits to the people of the Province;
3. Promoting the development of local skills and industry capacity that leaves a lasting legacy for the communities in which the Project operates and for the Province;
4. Delivering execution certainty so that Hebron delivers a best-in-class return on investment to stakeholders, including the Province of Newfoundland and Labrador; and
5. Working collaboratively with industry, government, academic and training institutions, community and other stakeholder groups for the effective delivery of benefits.

The Benefits Plan also addressed the requirements of the Benefits Agreement reached between EMCP (and partners) and the Government of Newfoundland and Labrador, including the requirements of the Atlantic Accord, which requires specific provisions to employ Canadians (Newfoundland and Labrador residents in particular) and provide local manufacturers, consultants, contractors, suppliers and service companies a fair opportunity to participate in the supply of goods and services.

Its content was also driven by ExxonMobil's conviction that making the most of energy resources goes beyond their production. It is an ExxonMobil objective to develop industry and labour capacity and create and deliver sustainable benefits to host jurisdictions down to the community level, including the further development of diverse supply, service, labour, education, training and research and development (R&D) capacity and capabilities.

The Benefits Plan also describes benefits approaches and mechanisms (including mechanisms whereby more detailed benefits initiatives will be identified, approved and implemented) that have the flexibility to respond to change. This greater flexibility and emphasis on renewal and evaluation allowed EMPC to better influence strategy, drive implementation and adjust as issues emerged.

During the detailed design process, and prior to project construction, EMCP rolled out the Hebron Benefits Monitoring and Reporting System (HBMRS) to contractors and subcontractors during 2012. The software is a multi-level data collection and reporting system that was designed to capture company

information, employment, expenditures, procurement activities and training on the Hebron Project. Training sessions were also held for subcontractors throughout 2012 to present how to calculate local and Canadian content to assist in reporting processes. Annual benefits update sessions were also held in local communities to invite and update stakeholders on the progress providing benefits to the province and other project updates.

EMCP also created a Hebron Benefits Team to undertake various initiatives to create and enhance a benefits culture on the project. The initiatives included, but were not limited to:

- Creating an internal 'Hebron Benefits Bulletin' newsletter for distribution to all Hebron project offices.
- Hosting benefits awareness sessions for EMCP and the main contractors to ensure team members are familiar with benefits-related requirements.
- Creating and distributing posters detailing benefits-related requirements to contribute to the benefits culture. One poster categorizes benefits requirements from the *Atlantic Accord Act*, the Hebron Benefits Plan and the Hebron Benefits Agreement. The second poster provided a detailed listing of the Hebron Benefits Agreement requirements. Both posters were distributed throughout project offices in Newfoundland and Labrador and Houston.
- Distribution of a one-page 'Building a Benefits Culture Focus Area' to ensure benefits commitments and requirements are instilled and considered in project decisions and activities.

Quarterly reporting on the results on the Benefits Plan (including Diversity Plan) has shown that the strategy has worked. Employment statistics for the ~8,200 full-time jobs created during the construction period showed approximately two-thirds of employees were Newfoundland and Labrador residents (~60%), with the remaining being non-Canadians (~35%) and other Canadians (~5%) (Hebron 2014) likely due to the requirement for specialized services. Of those employed, approximately 90% were male and 10% female. According to the latest Hebron Benefits Report for the period of October 1 to December 31, 2020, the number of current long term, full-time equivalents (FTE) employed in project operations was 1,153 of whom 94% were Newfoundland & Labrador residents, 4% were other Canadian and 2% were non-Canadian. Of those 1,153 FTEs, 13% were female and 87% were male. EMPC also reported on new or extended service contracts with a value greater than $250,000 awarded during the quarter. Of the 2,091 purchase orders issued in the quarter (total value of $177,993,736) approximately 58% were awarded within Newfoundland, 40% to other Canadian companies and 2% to non-Canadian firms (Hebron 2020).

Additional benefits not captured in the Benefits Plan or quarterly reports include changes in Newfoundlander's attitudes, in a province where the economy has often been depressed and jobs have been hard to find. Hebron and the prosperity created by similar projects in the oil industry has created a culture of entrepreneurship and risk-taking, particularly among university graduates in the last 15 years who have gotten high-paying jobs, learned transferable skills, travelled, and made money in the oil industry.

Take-aways and lessons learned:

- The early adoption of software to track performance against Benefit Plan goals was key and allowed accurate monitoring and reporting of performance on a quarterly and yearly basis.
- The creation of a "Benefits Team" and various communications tools (i.e., posters, newsletters, etc.) helped create awareness and buy-in during the design phase, and support Hebron team members in meeting their obligations throughout construction and operations.
- The Hebron Benefits Plan was a high-level document that addressed the requirements over the life of the project including the mechanisms that have the flexibility to allow ECMP to respond and adapt to change as new issues or opportunities arise.
- The Hibernia project had very few negative social effects on the host region which can be largely attributed to the commitment from the proponent to an extensive Benefits Plan built around early community engagement.
- Hibernia's early engagement supported a better understanding of the context of project effects from a regional socio-economic perspective. The effects management objectives identified by the proponent and the affected communities enabled alignment during the process of defining a positive effect within the context of the project, exemplified by the adoption of a workcamp strategy. The workcamp not only minimized adverse social effects but due to the proponent's engagement and assessment within the regional service sector, the workcamp contracts were restructured to ensure they were made accessible to local businesses.
- Hibernia illustrates the positive provincial-focused effects that a Benefits Plan framework can deliver. However, opportunities to update the plan to address changing conditions would likely result in new targets and avoid missed opportunities.

5.4 THE MACASSA MINE

The Macassa Mine case study illustrates how technology transformed the mining sector and how unexpected socio-economic benefits occurred in a small mining community in Ontario as a result of technological innovation and the use of existing distinctive local assets. This case study examines how the positive socio-economic effects can be scaled up using the place-based approach and ultimately strengthen the community's resilience and sense of identity.

Kirkland Lake Gold Ltd. is a senior gold producer, headquartered in Toronto, with operations in Canada and Australia. Canadian operations include the Macassa Mine, the Detour Mine and the Holt Complex (consisting of three mines), all located in the province of Ontario. The focus of this case study is the Macassa Mine, in the town of Kirkland Lake, approximately 600 km from Toronto. The mine has been continuously operating since 1933, and since 2002 under Kirkland Lake Gold ownership. The mining complex is located on the edge of the town of approximately 8,000 inhabitants. Such location makes the mine an inherent part of the community. The company has submitted several permitting applications in the last five years, including the ones for the new tailings storage facility and the new #4 shaft project. It has also submitted a mine closure plan amendment application to support the aforementioned permitting processes. As part of these regulatory processes, the company conducts environmental and social effects assessment studies and voluntary assessments (KLG 2019, 2020).

In the context of this project, the positive effects are defined as any effects that leave the community in a better space and state, with the necessary skills to grow businesses and sustain livelihoods beyond the life of the mine. The local community is heavily integrated into the supply chain, with most of the workforce and contracts sourced locally. The company has introduced several innovative initiatives to further enhance local employment and skills development. For example, the company introduced new electric vehicles to be used at the mine and made an agreement with the California-based company (where the cars were originally made) for the cars to be assembled locally in Kirkland Lake. Even though the assembly plant was eventually moved to Sudbury and long-term positive economic effects were diminished, the local community has seen new business activity emerge as the result of the acquired skills, technologies, and networks. In addition, it made the community proud and put the town on the map.

The company has seen direct benefits in wages and revenue generation, and indirect benefits in capacity building, skills development and new business opportunities. Financial tools are well-developed and are commonly used to assess direct and indirect effects. These tools include metrics and indicators for the number of jobs, local contracts (e.g., within 100 km) and income. It is somewhat difficult to assess smaller-scale effects and perceived effects, using the existing tools. Small communities are very susceptible to the smallest of changes, and a new cash influx is the first sign of a socio-economic change, when new cars and bigger houses appear, new businesses start up, and new hotels and restaurants open.

Long-term indirect positive effects start to emerge when there is sustained income, as evidenced by the creation of not-for-profit organizations, community service organizations and centres, growth of social programs, voluntarism, and such initiatives as meals on wheels, for example. These activities can be initiated and maintained when there is a sense of a long-term cash flow into the community. One of the important long-term indirect effects is the enhanced sense of social awareness and cultural integration. Presently, there are no standardized tools or metrics that would support the measurement of these types of effects and communication to the community. To optimize the positive effects in small communities like Kirkland Lake, a long-term vision from the start is important as it shows a commitment that goes beyond the assessment process. A commitment that is built on the community's pride and identity.

In this particular case study, gender and diversity or Gender-Based Analysis Plus (GBA+) was not developed, therefore gendered impacts of the project were not fully understood, quantified or managed.

Take-aways and lessons learned:

- Every community is unique and has its own definition of what positive means to them. Early engagement and a community-based approach to developing socio-economic indicators are important.
- The community needs to be a part of the growth of the mine and be able to see long-term vision and understand 'before' and 'after' at the onset of the project. The 'after' scenario should include economic analysis and modelling data to show what percentage of the local economy will be tied to the project and what economic diversification initiatives should be put in place to ensure the community's prosperity after the mine closes. A social management plan should be prepared as part of the assessment process to verify the accuracy of predictions and confirm the effectiveness of the proposed mitigation and enhancement measures.

- Conventional impact assessment methods and tools are geared towards assessing large-scale effects. They need to be more flexible and scalable. In small communities, every small gain or loss counts. GBA+ could be a helpful tool in collecting more precise data, disaggregated by gender, age, disability and socio-economic status, in order to enhance equitable distribution of economic benefits.
- A framework or guidance is needed to understand the net outcomes of projects and how to determine if the project is truly 'worth it' and who will determine its worth.

5.5 PORT OF BRISBANE

Large infrastructure projects are often met with criticism and even hostility by the public and stakeholders due to their potential to cause harm to the environment and ecosystem health. Due to the lack of legislated requirements, positive effects of such projects tend to be understudied or overlooked or not properly communicated to the public and stakeholders.

Port of Brisbane is the largest cargo port in the State of Queensland and is managed by the Port of Brisbane Pty Ltd (PBPL) under a 99-year lease from the state government. In 2000, an Environmental Impact Assessment (EIA) was conducted for a 2.3 km^2 land reclamation expansion project at the Port of Brisbane. The project consisted of rock wall construction and infilling with river-dredged material. PBPL conducted comprehensive environmental studies and identified several positive environmental effects. These were recorded in EIA documentation but due to the limitations of EIA methodology, were not fully acknowledged as objectives in the assessment process (Linde et al. 2013).

The assessment identified eelgrass expansion as a positive effect, but recommendations only included strategies for mitigating adverse effects and not enhancing positive. This presented a missed opportunity to alter project design from the start and enhance the extent of positive effects. The design was improved at a later stage and a rigorous monitoring program identified further eelgrass growth as the result of the sediment management and protection from waves, which counterbalanced the predicted eelgrass loss. Another missed opportunity was in a seawall expansion project completed in 2005. A better design could have enhanced the habitat value but there was no driver within the EIA, as it was not connected to an adverse effect. These positive effects could have been enhanced if they were not incidental but part of the EIA objectives.

An important positive effect was observed on migratory shorebirds. Two permanent habitats were created by infilling with dredged material. If not identified and planned for in the early stages, temporary habitats degrade quickly and cannot be made permanent. Since 2012, PBPL has been working with the Queensland Wader Study Group to monitor the status of birds and document findings in annual reports. Over the last ten years, no downward trend in bird counts was recorded on port lands. The birds are thriving. As the reclamation work in Port of Brisbane starts to wind down, a new approach is being developed to ensure habitats remain available and bird count remains stable. PBPL will also undertake studies to understand the use of habitat by specific bird species to better plan for site redevelopment in the future (PBPL 2019).

PBPL is located near the largest mangrove ecosystem in Moreton Bay. Over the past 20 years, the mangrove health has been declining and public and media largely attributed it to development activities in the port. Specifically, historically stormwater had been considered a pollutant that needed to be mitigated through collection, treatment and offshore discharge. However, it became apparent that mangrove health was suffering due to a lack of freshwater. PBPL developed an innovative approach to stormwater management as part of a development project, which dispersed the stormwater through the mangroves. This resulted in a positive effect on the mangroves that are monitored by PBPL, under an adaptive management approach to stormwater management. Better communication is needed to ensure there is an understanding of a broader picture and knowledge of the role natural events (e.g., floods, droughts) play in ecosystem degradation.

As part of PBPL's ongoing operational efforts for sustainability, they are reviewing the use of tools to assess sustainability across their operations, including capital projects. This includes tools to monetize positive and negative environmental effects. They are taking a management, rather than an effects/mitigation approach to the environment, working closely with stakeholders and the local community, but have not yet identified a methodology that works for them and expect that additional analysis will occur on a project or VC specific basis. For example, they have reviewed and are aware that other ports in Queensland are implementing multi-criteria analysis methodologies and tools for the assessment of alternatives for capital projects, including dredging, and see this as a good opportunity to identify and enhance positive effects (CIE 2020; GoA 2019; Infrastructure Australia 2011; Argyrous 2009; Dobes 1999). There is not an assessment driver to undertake this type of analyses.

Take-aways and lessons learned:

- There is a lot of pressure to focus on adverse effects and mitigations, which results in missed opportunities for enhancement, as a lot of effort and money are spent on fixing the negatives. By fully recognizing the positive effects, EIA can help drive the change in project planning and design to optimize positive effects.
- As engagement plays an increasingly large role in the assessment process, there has been a shift towards 'soft' assessment that places greater emphasis on the qualitative data and stakeholder perceptions. In this project context, it is acknowledged that robust methods and long term data acquisition is required to support the assessment of positive effects and to achieve community 'buy-in'.
- For ecological assessment, more complex methods of calculating the positives versus the adverse effects are needed, rather than the existing area-based approach, used in Queensland, to assess positive and adverse effects on habitat, including offsetting. In the example of shorebirds, the existing calculations do not distinguish different habitats, some of which provide much greater value by area to birds; foraging vs roosting habitat. This is different from the Canadian federal *Fisheries Act*, which uses productivity and habitat equivalency rather than just area to balance positive and adverse effects.

- Although this EIA was conducted 20 years ago there has been no progress on the inclusion of positive effects in EIA and it would be the same today. PBPL has developed a comprehensive Environmental Management System driven by engagement and sustainability objectives that promotes and delivers positive effects, through adaptive management, and provides supporting science that has led to community buy-in. These positive effects have not been created, enhanced or assessed through the EIA process.

6.0 POSITIVE EFFECTS AND INDIGENOUS COMMUNITIES

Positive effects specific to Indigenous Nations, communities, and individuals relate to their constitutionally protected Indigenous rights and interests and the extent to which they are free to manage their lands and resources. To fully assess and optimize effects (including positive effects) of projects with respect to Indigenous people and their specific interests a number of key issues and/or considerations are especially relevant:

- Early engagement at the project planning and design phase;
- UNDRIP considerations and meaningful input into the decision-making process;
- Participation in and better control of the assessment process through Indigenous-led assessment;
- Engagement with the Indigenous Knowledge (IK) holders and incorporation of IK beyond baseline and land use data collection;
- Vision for the project impacts on future generations and incorporation of reconciliation; and
- Economic partnerships.

As with other segments of the population, the assessment of socio-economic effects on Indigenous communities tends to disproportionally focus on economic issues, and communities' access to housing and facilities. Critiques point to insufficient attention paid to social issues, such as family structure, inter-generational relations, gender relations, socio-cultural relationships to nature, and consideration of needs of Elders, youth, Indigenous women, girls and Two-Spirited and gender-diverse persons (Firelight 2017).

A specific issue in the Indigenous context is confidentiality relating to positive effects. Typically, two processes occur in parallel: an effects assessment process and an Impact Benefits Agreement (IBA) negotiation process. The former happens in a public domain with all project information fully disclosed and accessible to the public and stakeholders. The IBA is a largely confidential process, carried out at the community level. When negotiations are complete, some elements of the IBA may become public, but the process of reaching an agreement typically does not allow for the incorporation of these positive effects in the assessment process.

In the Indigenous context, long-term indirect positive effects can be seen in changing levels of quality of life and how they compare to national averages. Economic reconciliation and transformative change are key to this process. Large-scale projects have the potential to transform communities for many generations. IBAs negotiated for these projects could provide hundreds of millions of dollars in direct benefits, opportunities and revenue sharing. To fully understand the transformative power of these projects, an intersectional equity approach should be taken as part of the assessment process, and a balance of positive and adverse effects must be monitored after the process is complete.

An example of indirect positive benefits is illustrated by the Sea-to-Sky Highway Improvement Project. An innovative approach was taken with the Squamish Nation around land allocation and cultural recognition. A Cultural Journey program was implemented which consisted of placing cultural displays on shoulders along the highway. The displays are an important mechanism that allows the Squamish Nation to tell their story and advance cultural awareness. The program was a direct result of negotiations in the context of the EA.

Take-aways and lessons learned:

- Existing regulatory guidance is inadequate to properly assess positive effects on Indigenous groups. Further guidance is needed on how to engage Indigenous Knowledge holders and obtain meaningful input beyond the baseline and land use data in order to assess positive effects on Indigenous culture, spirituality and Aboriginal rights in a more fulsome way.
- There are challenges with obtaining public data or data directly from Indigenous communities. Socio-economic data is often confidential and the lack of information creates uncertainty and risk. Better mechanisms are required for information sharing, including the promotion of Indigenous-led assessments to ensure rights and obligations articulated in UNDRIP are met.
- Increased openness and transparency to the assessment process should be promoted, especially with respect to what positive effects are and how they will be distributed to avoid creating divisions and conflicts within a community.
- To better understand the net outcomes of projects, clear and measurable conditions to monitor and manage positive socio-economic effects should be imposed by regulators through project approval conditions and support the delivery of anticipated positive results.
- Accountability for consultation and monitoring of positive effects needs to be shared between relevant government authorities, proponents and Indigenous groups to ensure it is efficient and effective.

7.0 DISCUSSION

All interviewees confirmed that positive effects were more challenging to assess and that historically the focus of environmental assessment has been biased towards adverse effects other than direct economic benefits such as jobs, contracts and taxation. Economic and social benefits of projects are more common and tend to be much better documented than environmental/biophysical ones. Positive effects on ecology/biodiversity were generally incidental and, in many cases, were realized through monitoring for adverse effects rather than a focus on the management and monitoring of positive effects.

The IAA and associated guidance documents are ahead of other jurisdictions reviewed for this study in regard to the assessment of positive effects. However, many respondents and literature on positive effects identified that barriers to the assessment of positive effects were largely not related to policy but to human behaviour and the natural instinct to focus on reducing negative effects, and less so on advancing positive effects. A number of interviewees recognized the importance of incentivizing or removing barriers to the assessment of positive effects for proponents.

Linde et. al. (2013) identified the following four key benefits for infrastructure developers in assessing positive effects:

- Allaying community and regulator concerns about negative environmental effects if substantial positive effects also result;
- Increasing the likelihood of a smooth development approval process for developers that create positive effects;
- Creating an incentive for developers to identify development opportunities that are inherently beneficial; and
- Creating an incentive for developers to identify and put in place management initiatives for beneficial effects.

There is a specific incentive for the creation, enhancement and assessment of positive effects within IAA embedded the requirement to consider the sustainability of a project as part of the determination of whether it is in the public interest. The definition of sustainability within the IAA is “the ability to protect the environment, contribute to the social and economic well-being of the people of Canada and preserve their health in a manner that benefits present and future generations.” Clearly, positive effects assessment could support this.

The inclusion of positive effects within a sustainability framework has been considered over many years. A Canadian example is the Joint Panel Review process for the MacKenzie Gas Project in 2006, which was conducted within a sustainability framework (Gibson 2006). The IFC also references sustainability in their environmental and social guidance documents as a framework to create and enhance positive effects. Interviewees also recognized the importance of internal sustainability objectives in the creation, enhancement and ongoing monitoring of positive effects, such as in the examples of the Port of Brisbane and Macassa Mine projects.

Examples of challenges to the successful assessment and enhancement of positive effects include (Linde et al. 2013; João et al. 2012):

- Costs of enhancement measures;
- Additional monitoring and follow-up needed (i.e., increased operational costs);
- Potential to be seen as covering-up, and grounds for arguing that the assessment is a "green-washing" process;
- Knowledge gaps and lack of data and experience;
- Institutional knowledge and culture;
- Lack of clarity about who is responsible for the delivery of positive effects;
- Ongoing liability associated with maintaining the positive effect;
- If the predicted benefit does not fully materialize it may become grounds for arguing the development was not in compliance with its conditions of approval;
- If the positive effect is identified as permanent it may later create a restriction on future development;
- Regulators actively discourage the inclusion of assessment of positive effects and there is a lack of knowledge and experience of how to assess positive effects;
- It is not required by the review and assessment process; and
- Approvals can be obtained by focussing energy on minimizing the negative while ignoring opportunities to enhance positive outcomes.

Some of these barriers were identified in a paper on the undervaluing of positive effects, prepared by Michael Linde of the Port of Brisbane (Linde et al. 2013), who was interviewed for this study (see Section 5.5).

Early engagement and a community-based approach to understanding priorities, fears and future aspirations is key to advancing community-specific positive effects, including the development of monitoring and adaptive management approaches to achieve long-term success. Focussing on the needs and opinions of local communities is the best approach, rather than seeking to appease peripheral stakeholders that are not directly affected (either positively or negatively). If local communities buy into a project, it is likely that there are tangible and measurable benefits flowing to them.

To ensure the successful delivery of benefits, communities must participate in the assessment process from the start. Transparency and full disclosure are critical, and participatory methods should be used as much as possible in data collection and design of mitigation/enhancement measures. Free, prior and informed consent (FPIC) is an important tool to make sure community concerns are heard and acted upon and a proper compensation mechanism is established. It is an opportunity to identify benefits the community sees as feasible and explore other ones they may not have immediately thought of. FPIC

helps ensure a more fulsome assessment process. Early engagement done in a culturally sensitive way is an important part of this process. It is also important to take extra steps to ensure the participation of women and youth and not just deal with predominantly male leaders.

There continues to be a disconnect between local effects and national benefits, and how the benefits can be properly captured and attributed to a project. Current assessment practice lacks standardized approaches, or a set of tools designed specifically for the assessment of positive effects on Indigenous communities. Recent improvements have been made in consultation and engagement processes, particularly early engagement. Proponents are now encouraged to develop specific tools and indicators jointly with Indigenous groups during the early engagement processes. While this addresses some gaps and promotes the adoption of standard tools (including cost/benefit analyses, input/output models or sets of scientific indicators for assessing biophysical effects), there are still deficiencies. Existing methods and tools are largely designed to assess socio-economic benefits at regional and even national scales (i.e., jobs and tax revenues), while effects are often localized.

Interviewees pointed out that assessment of positive socio-economic effects tends to focus on the economic dimensions, and specifically short term jobs and long term careers. While jobs are important, communities want to see a long-term vision for the project, shared ownership and contributions beyond jobs. These contributions may include tangible benefits that could help lift the communities out of poverty, as well as intangible, such as better health, improved community cohesion and wellbeing, enhanced decision-making and better tools to manage and sustain livelihoods.

As evidenced by literature review and interviews, critical weaknesses of current socio-economic methods and tools relate to deficiencies in being able to fully disaggregate data, conducting culturally appropriate analysis, quantifying local impacts, understanding the demographic distribution of costs and benefits and incorporating stakeholder input in order to more accurately predict the net benefits of projects. GBA+ helps to fill the gaps in data disaggregation and deeper stakeholder engagement (EU Gender 2017; Peletz & Hanna 2019; Stienstra et al. 2020). However, there are several limitations to the current GBA+ methodology and implementation, that need to be addressed by further research and more comprehensive guidance, including:

- How to move beyond gender dimensions into other intersecting categories such as race, sexism, disability, etc.;
- How to conduct culturally appropriate consultations;
- How to properly engage with and account for effects on youth, children and non-Indigenous people of colour;
- How to properly identify and engage with the LGBTQ2S+ population and persons with disabilities, and incorporate them into the decision-making process;
- How to incorporate intersectional approach beyond assessment and into the project design and benefits delivery; and

- How to incorporate Indigenous values and Indigenous Knowledge and address inter-generational relations, gender-based violence and unique characteristics of Indigenous women and Two-Spirited persons.

Interviewees requested clear guidelines and identified the need for good science (data and methodologies/tools) to be able to assess positive effects. Often the project assessment process does not support this because it is short in duration and the success of positive effects are generally realized over longer timescales, for example through corporate sustainability drivers, or ongoing operational plans and improvements. Methods and tools for assessing positive effects are generally geared towards large-scale effects. They need to be more flexible and scalable to accommodate, for example, small communities where every small gain or loss counts.

Effects assessment for atmospheric, acoustic, visual landscape, water and soil/sediment tends to be quantitative and, as a result, positive effects may be assessed with similar methodologies to those used typically for adverse effects. An example of a positive project biophysical effect that has been widely assessed is the reduction in greenhouse gas (GHG) emissions, typically associated with renewable energy development but also relevant to other projects, such as the Vancouver Airport Fuel Delivery Project discussed in Section 5.1. Remediation of contaminated soils, sediments and waters within brownfield sites that are selected for redevelopment is another common positive effect that is relatively easy to create and assess, again this occurred on the Vancouver Airport Fuel Delivery Project.

There is a need to evaluate positive effects more objectively and engage with potentially affected Indigenous groups, stakeholders and others to understand these benefits.

Rajvanshi et al. (2011) identified the importance of effective monitoring and evaluation of implementation, correction and adaptive management to get the most out of planned enhancements and this was highlighted by multiple interviewees.

There is typically not enough monitoring or follow-up post EA, to ensure that anticipated benefits occur, as it is typically narrowly focussed on compliance associated with mitigation of adverse effects. IBAs typically include some tracking tools, developed and incorporated at the request of Indigenous groups and it would be beneficial to link these to conditions of an EA, where confidentiality allows. However, as the project evolves, in many cases the IBAs are not renegotiated regularly, if at all, and there are often no clearly defined implementation strategies.

While well-established protocols exist for measuring and managing a project's biophysical effects and changes over time against a baseline to support quantification and assessment of the changes in the biophysical environment, multiple respondents explained that such requirements were included within EA conditions for their projects. However, it was noted by multiple respondents that the EA certificate did not allow for the effective monitoring or communication of positive effects, and instead was focused primarily on compliance and enforcement of approval conditions. Monitoring the receptor rather than the activity or mitigation would result in greater opportunity to identify positive effects and it would also act as a platform for engagement and to receive community buy-in. This could be an incentive to create and enhance positive effects but also identify when a positive effect is not realized, requiring adaptive management. The federal *Fisheries Act* is a policy example where monitoring of offsetting is required, including definition of success criteria, and adaptive management measures if the criteria are not met. This could

be a model for the monitoring of positive biophysical effects. Although it is limited and opportunities for enhancement are realized by going beyond compensation or no net loss to achieve net gain.

In the socio-economic domain, even when the assessment process is comprehensive, there are often challenges with verifying these predictions and ensuring that the predicted benefits not only materialize but are also equitably distributed (Dipper et al. 1998; Arts et al. 2001). As pointed out in the interviews, these challenges can be attributed to the following factors:

1. Lack of guidance, prescribed policies or requirements for implementing, measuring and monitoring socio-economic effects;
2. Lack of tools to quantify and measure changes to the baseline over time;
3. Lack of reliable publicly available data for remote and small communities, both Indigenous and non-Indigenous;
4. Lack of recognition of the importance of primary social research and, consequently, lack of funding for field studies, surveys, focus groups, etc.;
5. Existing socio-economic analysis methods and tools are largely geared towards assessing regional impacts. Local impacts are not well understood and quantified;
6. Lack of understanding of community needs and what economic benefits mean in their context. Not all communities may want jobs and some communities may want smaller-scale development; and
7. Lack of guidance, prescribed policies or requirements for a) collecting gender, age, disability, ethnicity and socio-economic status disaggregated data; and b) using this data to assess gendered impacts of projects to design mitigation/enhancement measures in such a way as to ensure equitable distribution of benefits.

A number of respondents recognized the importance of assessing positive effects across VCs. For example, the importance of considering the local community when creating and enhancing positive biophysical effects. This is supported by literature where Rajvanshi et al. (2011) stated the importance of biodiversity or ecological benefits also maximizing societal benefits by aiming to reduce stress on ecosystem services. For example, by increasing ecological productivity to improve resource security, e.g., fish, while not restricting access to that resource. Rajvanshi et al. (2011) also advocated for cost-benefit analysis and total economic valuation as tools to provide realistic estimates of proposed project benefits. Numerous approaches have been developed for economic valuation of biodiversity (Laurila-Pant et al. 2015) but no practical examples of implementation in relation to positive effects assessment were identified through the literature review or interviews for this study. This is likely due to it being very rare, particularly in Canada, to take such an approach. Interviewees recognized the challenge of assessing and balancing negative and positive effects across VCs.

Multiple interviewees recognized that to fully realize long-term positive effects of projects, they need to be incorporated at the project design level, not at the assessment level. With this in mind opportunities also exist to identify positive effects and enhancements during the analysis of “alternatives means” of carrying

out a project, typically required during an assessment process. The relative benefits of each alternative that is assessed should be identified and evaluated concurrently with the assessment of relative adverse effects of each alternative being considered (AECOM 2017). Interviewees recognized that positive effects in alternatives analysis are not well done. The Port of Brisbane is investigating multi-criteria analysis as a tool to support alternatives analysis, and better consider positive effects. More robust assessment of alternatives, including defined scoring, criteria and weighting should help the realization of positive effects, and such requirements are detailed within the new BC Effects Assessment Policy (BCEAO 2020) and associated guidance. Greater oversight and scrutiny of the alternatives assessed to make sure positive effects opportunities are not missed would also be beneficial. The alternatives assessment should also include a review of opportunities for enhancement. Rajvanshi et al. (2011) identified the importance of continually seeking opportunities to improve upon and make a positive difference to the receiving environment iteratively through the design and implementation of the proposed activity.

Interestingly, none of the interviewees thought that a better assessment of positive effects in the assessment process would have resulted in a different outcome for the EA determination of the projects in which they were involved, a potential indicator that there is little incentive to better assess positive effects at this time. However, some explained that it had been a requirement of other permits and an important factor in successful consultation and engagement with the local communities. The importance of positive effects in the context of stakeholder and Indigenous engagement was highlighted multiple times, including examples where the proponent felt that the local community understood the positive benefits better than the regulators.

8.0 CONCLUSIONS AND RECOMMENDATIONS

- Positive effects are more challenging to assess and historically the focus of project assessment has been strongly focused on adverse effects other than direct economic benefits such as jobs and taxation revenues.
- Economic and social benefits of projects are more common and tend to be much better documented than environmental/biophysical ones.
- Positive effects on ecology/biodiversity were generally incidental and, in many cases, were realized through monitoring for adverse effects rather than a focus on the management and monitoring of positive effects.
- A number of respondents recognized the importance of assessing positive effects across VCs. For example, the importance of considering the local community when creating and enhancing positive biophysical effects.
- Project approvals do not allow for the effective monitoring or communication of positive effects, and instead, focus primarily on compliance and enforcement of approval conditions.
- The IAAC is ahead of other jurisdictions in regard to the assessment of positive effects which many interviewees acknowledged was important for removing barriers and incentivizing the incorporation of positive effects into project design, engagement, assessment and monitoring activities.
- Every community is unique and has its own definition of what “positive” means to them. Transparency and full disclosure are critical, including free, prior and informed consent to make sure community concerns and aspirations are heard and acted upon.
- Accurately predicting socio-economic benefits is difficult because positive effects are often unevenly distributed. Understanding the distribution of potential positive effects is further hampered by challenges associated with the lack of demographic data, and especially lack of tools that support the disaggregation of data. GBA+ helps to fill this gap, however, there are several limitations to the current GBA+ methodology and implementation.

Recommendations for proponents to improve, create and enhance the assessment of positive effects based on the study are as follows. These could be captured in a guidance document.

- Ensure that discussions around positive effects are incorporated into the planning/early engagement process to help identify and document local community aspirations, fears, wants and needs, including opportunities to collaborate in advancing positive effects during the project design, assessment and permitting processes.
- Proponents should be encouraged to look for opportunities to create positive effects and practically extend the scope or extent of project-specific mitigation, restoration, and enhancement measures to produce net project benefits.

- Different methods for the assessment of positive effects may be required from the traditional assessment method used for characterizing adverse effects. For example, methods requested by Indigenous groups based on community-specific values and assessment techniques. If methods differ, an appropriately robust assessment method should be identified during the IAAC's planning phase to seek agreement through early engagement.
- An Indigenous-led assessment is an important element in ensuring rights and obligations articulated in UNDRIP are met. Further guidance is needed on how to engage Indigenous Knowledge holders and obtain meaningful input beyond baseline and land use data, addressing Indigenous culture, spirituality and Aboriginal rights in a more fulsome way.
- Leverage opportunities to identify positive effects and enhancements during the analysis of alternatives ("alternatives to" and "alternative means"), during an impact assessment. The benefits of the alternatives, including risks associated with the "do nothing" scenario, should be identified and evaluated concurrently with the evaluation of relative potential adverse effects across the alternatives. Although the IAAC's Practitioner's Guide to the Impact Assessment Act clearly identifies positive effects as an important part of the analysis of alternatives, the emphasis and more detailed guidance is still focused on adverse effects.
- Better integrate other permitting processes with project impact assessments to realize and reinforce positive effects and enhance opportunities. The Tailored Impact Statement Guidelines template specifically identifies this requirement, for example in relation to habitat offsetting under the *Fisheries Act* so the next step is practical implementation.
- Include positive effects in approval conditions and require follow-up monitoring and adaptive management, with the potential to balance adverse effects.
- Proponents should be given the opportunity to modify and adaptively manage "Benefit Plans" as a project evolves in collaboration with local communities and regulators to address new issues, changing conditions and avoid missed opportunities.
- Creating an incentive for proponents to identify project options that have inherent benefits (i.e., remediation of brownfield sites, rather than greenfield), including management initiatives to assess beneficial results.
- Compliance and enforcement reporting should include opportunities to highlight targeted and/or unexpected positive project effects to acknowledge the proponent's efforts, support communication and engagement activities, and document lessons learned that could benefit other projects.
- Additional research and more comprehensive guidance should be completed to support the GBA+ methodology and implementation.
- Additional research should be completed to assess how positive effects can be addressed in regional assessments focussed on existing or future physical activities carried out in a region, and strategic assessments that examine the Government of Canada's existing or proposed policies, plans, or programs relevant to impact assessment.

9.0 CLOSURE

We trust the above information meets the objective of providing the IAAC with definitions and a broad inventory of positive effects and how these have, could or should be, created, enhanced, assessed, measured and monitored during various phases of a project. If you have any questions or comments, please contact the undersigned.

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APPENDICES

Appendix A1

Interview Guide