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EVALUATION OF THE FISHERIES AND AQUACULTURE CLEAN TECHNOLOGY ADOPTION PROGRAM

Final Report

Project number 96395

November 2020



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Evaluation Context

Purpose

- This evaluation assessed the relevance, effectiveness and efficiency of Fisheries and Oceans Canada's (DFO) Fisheries and Aquaculture Clean Technology Adoption Program (FACTAP).
- The evaluation was conducted as required by the Policy on Results (2016) and the *Financial Administration Act (1985)*. The purpose of the evaluation was to provide senior management with information for decision-making and to identify lessons learned and good practices that may be applied to other grant and contribution programs within DFO.

Scope

- This is the first evaluation of the FACTAP. It covers the three-year period **December 2017** through **March 2020** and included all DFO regions: Newfoundland and Labrador, Maritimes, Gulf, Quebec, Ontario and Prairie, Pacific, Arctic¹, and National Headquarters.
- The evaluation was conducted by DFO's Evaluation Division between January 2020 and November 2020.

Methodology

- The evaluation was designed to respond to the questions listed in **Table 1**. Information gathered from multiple lines of evidence was triangulated to address the evaluation questions. The methodology included interviews, document review, literature review, a survey to recipients, and documented examples.
- The **evaluation methodologies, limitations and mitigation** strategies are discussed in **Annex A**.

Table 1: Evaluation questions

Relevance

1. To what extent does the FACTAP address ongoing needs?

Effectiveness

2. To what extent are operators in the Canadian fisheries and aquaculture sectors aware of the FACTAP?
3. To what extent is clean technology being adopted by operators in the Canadian fisheries and aquaculture sectors?
4. To what extent does the FACTAP contribute to the environmental performance of the fisheries and aquaculture sectors?

Efficiency

5. To what extent is the FACTAP efficient?
6. To what extent are Gender-based Analysis Plus (GBA+)² considerations included?
7. To what extent does the FACTAP address challenges and explore opportunities for improvements?

¹ The creation of a DFO Arctic Region was announced in October 2018 and is under development.

² [GBA+ analysis](#) explores how population groups are differentially affected by policies and programs based on identity factors such as gender, sex, race, ethnicity, and age.

Program Context

At the Federal level:

- The FACTAP is part of the Government of Canada's **Clean Growth Hub (CGH)**,³ a federal ecosystem of support for clean technology across **six stages of an Innovation Spectrum** (Figure 1). Cleantech refers to any process, product, or service that reduces negative environmental impacts.
- Sixteen federal departments and agencies form the Hub and allocate program funds. Of these, DFO's FACTAP budget represents **0.8% of CGH funding**.⁴
- The Hub also advances the Clean Technology and Innovation pillar of the **Pan-Canadian Framework on Clean Growth and Climate Change (PCF)** and is part of the Innovation and Skills Plan.

At the Departmental level:

- The FACTAP supports the **Clean Technology Adoption Stage** of the Innovation Spectrum by funding projects to implement **market-ready clean technologies, processes and sustainable practices**⁵ into the day-to-day operations of operators in the fisheries, aquaculture and processing sectors. The fund is intended to improve industry environmental performance, reduce negative impacts on aquatic ecosystems, and contribute to sustainability management.
- The FACTAP reports to the CGH on environmental results and the information is collected as part of the **Clean Technology Data Strategy**.⁶
- **Eligible groups** under the FACTAP include: commercial enterprises, such as companies and individuals; Indigenous organizations, such as groups, associations or communities; non-profit organizations; and industry or professional association.
- The FACTAP falls under the Aquaculture Management Program within DFO's Departmental Results Framework.

Figure 1. The stages of the Clean Growth Hub's Innovation Spectrum



³ <https://www.ic.gc.ca/eic/site/099.nsf/eng/home>

⁴ Since 2017, the Government of Canada has invested over \$2.3 billion to support the innovation, commercialization and adoption of clean technology.

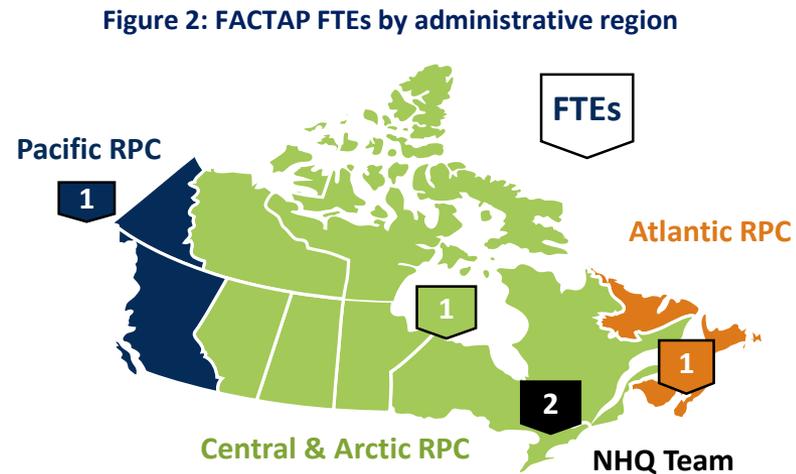
⁵ Sustainable practices includes protocols and harvesting techniques aimed at improving the day-to-day environmental performance operations of wild capture harvesting, aquaculture facilities, and fisheries processing plants.

⁶ This Strategy aims to ensure data is available to understand the economic and environmental contribution of clean technologies in Canada

Program Context

Program Governance

- The FACTAP is a grant and contribution program that was established in 2017-18 and is set to sunset in 2020-21. The program is administered by **five FTEs**. This includes **one regional program coordinator (RPC)** per FACTAP administrative region (**Pacific, Central & Arctic, Atlantic**), as well as a **National Program Manager** and a **National Program Officer** located in the national headquarters (NHQ) (Figure 2).
- Similar to other programs in DFO and CCG, there is no line reporting between FACTAP's administrative regions and the NHQ. This team is supported by **two levels of decision-making committees**:



Financial Summary

- The FACTAP will receive a total budget of **\$19 M** over the lifespan of the program. This includes **salaries** for 5 FTEs, operations and maintenance (**O&M**), and grants and contributions (**Gs&Cs**) (Figure 3).
- The FACTAP **contributes up to 75%** of eligible project costs. All projects must also include a recipient contribution and a **minimum 10%** provincial and territorial (P/T) government funding (see page 15 for further details).

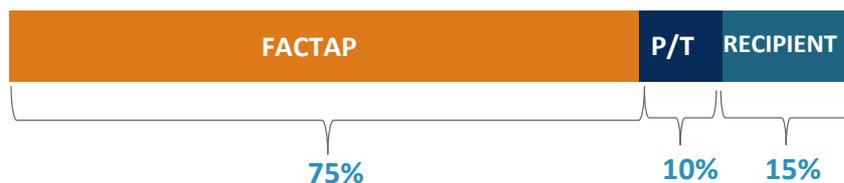
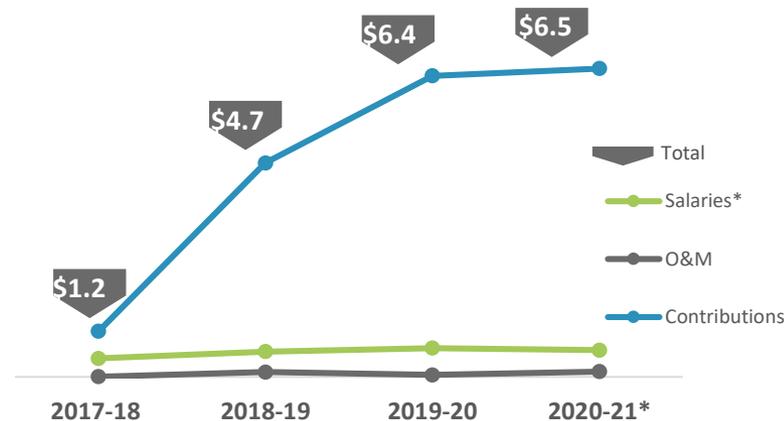


Figure 3. Actual Expenditures (\$ in Millions) for salaries, O&M, and contributions



* Only planned information is available for 2020-21

Evaluation Findings



Summary of Key Findings

Under its current mandate and design, the **FACTAP performs well**. However, FACTAP regional program coordinators face **administrative workload** that limits the ability of the program to pursue improvements that might **generate broader adoption and improvements in environmental performance** within the fisheries and aquaculture sectors.

The FACTAP contributes to federal and departmental priorities

- The FACTAP supports the adoption of clean technology within the fisheries and aquaculture sectors, particularly among **small and medium enterprises**, and the number of signed contribution agreements have **increased yearly**. Through the program's current activities, the FACTAP contributes to **federal and departmental priorities such as promoting clean growth, reducing greenhouse gas (GHG) emissions and, addressing marine pollution**.
- In addition to funding the adoption of market-ready cleantech, there is a need in the fisheries and aquaculture sectors to support cleantech at other, early, stages of the Clean Growth Hub's Innovation Spectrum. Most notably, the **Research and Development, Pilot and Demonstration and Growth and Scale-up stages**.

The FACTAP can achieve greater impacts at the sector level

- Through the program's current activities, the FACTAP is supporting improvements in the environmental performance of the recipients it funds. For example, by reducing energy consumption and greenhouse gas emissions.
- Generating **broader adoption and improvements in environmental performance among operators at the sector-level remains a challenge**. Operators lack of knowledge of available cleantech and of funding opportunities. Also, the FACTAP largely funds projects that are less than \$100,000 which limits the program's impact at the sector level. The FACTAP can engage in a **proactive and strategic funding approach** to increase the program's impact on operators' environmental performance.

There are factors that limit the FACTAP's ability to generate program awareness

- Overall, the FACTAP is administered efficiently. Nevertheless, FACTAP regional program coordinators face a significant **administrative workload** due to the effort required to see applicants through the project application, evaluation of proposals, establishment of contribution agreements, distribution of funds, and reporting processes. This is particularly true given the **size of FACTAP's administrative regions and the limited technical capacity of applicants to fulfill application and reporting requirements**, such as proposals. As a result, program promotion is not a priority for regional program coordinators and this contributes to a low awareness of the program among operators.

The FACTAP addresses ongoing needs

Finding: By supporting the adoption of market-ready technologies, the FACTAP contributes to a number of federal and departmental priorities. There is evidence of a need to support cleantech in the innovation spectrum, including ‘Research and Development’, ‘Pilot and Demonstration’ and ‘Growth and Scale-up’ stages.

- **The FACTAP addresses Government of Canada priorities and issues of importance to Canadians.** Survey respondents and key informants interviewees said that the FACTAP addresses their business needs by supporting improvements of environmental performance (e.g. reductions in GHG emissions, energy efficiency).

Pan Canadian Framework for Clean Growth and Climate Change	Ocean Plastics Charter	Ghost Gear Reduction	Supporting the protection of sensitive marine areas
The FACTAP is helping Canadian companies deliver on greenhouse gas emissions reductions beyond 2030 and meet current commitments to invest in technology that bends the cost curve on GHG reductions.	The FACTAP supports reductions in marine pollution. Under the Ocean Plastics Charter , Canada commits to taking concrete and ambitious action to address marine plastic litter.	The FACTAP contributes to Departmental and Federal commitments towards the Global Ghost Gear Initiative⁷ and to the United Nations’ Sustainable Development Goal 14 – Life Below Water .	The FACTAP supports efforts to protect sensitive marine areas , such as Marine Protected Areas, where the Government of Canada, provinces and First Nations are working to minimize impacts to ecologically sensitive areas .



- Most survey respondents and key informants also mentioned that **there is a need to support cleantech across some stages of the innovation spectrum**, specifically **Pilot and Demonstration, Research and Development, and Growth & Scale-up**.
 - Notably, there is strong support for the FACTAP to be expanded to include Pilot and Demonstration. According to interviewees, it would be an opportunity to identify excellent pilot projects, and funding those activities would align with the original purpose of the program.
 - There is also a need to fund the most applied stages of Research and Development.

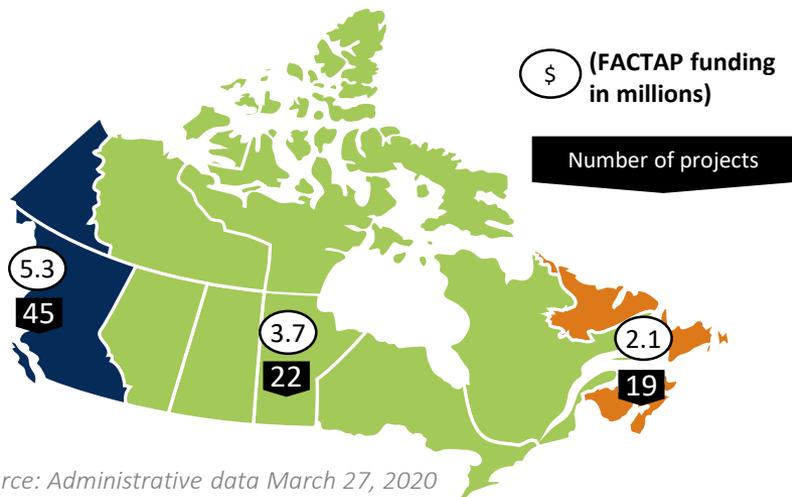
⁷Ghost gear is a gear that is abandoned, lost, or discarded and harmful to the marine environment.

Contribution agreements have been signed

Finding: The FACTAP has signed contribution agreements equally among fisheries and aquaculture sectors, the majority of which have a total project value of less than \$100,000.

- As of March 2020, the FACTAP has signed **86 contribution agreements** totalling **\$20,882,275 in total project value** to support improvements in clean technology for the fisheries, aquaculture and fish processing sectors. This includes **Total FACTAP contributions of \$11,324,970** (Figure 4).
- For every **\$1.00 of FACTAP funding, \$0.84 is invested through** private sector and provincial investments.
- The FACTAP funds the same number of projects between fisheries and aquaculture sectors. A few projects target processing operators (Figure 5).

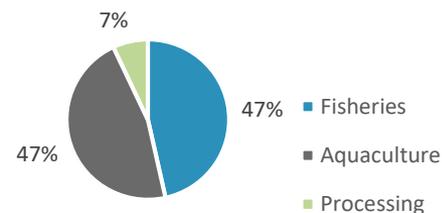
Figure 4: FACTAP Projects and Dollar Value (Millions), by Region



Source: Administrative data March 27, 2020

- The majority (52%) of projects were funded in the Pacific administrative region, followed by the Central and Arctic (26%) and Atlantic (22%) (Figure 4). No projects have been funded in the Territories.

Figure 5. Distribution of signed contribution agreements by sector



- The majority (58%) of contribution agreements focus on projects less than <\$100,000 in total project value. In three cases, the FACTAP funded large projects >\$1M in total project value in each sector, including two individual recipients and one industry association (Figure 6).

Figure 6: Number of contribution agreements by project value



Cleantech is being adopted by recipients

Finding: The FACTAP supports the adoption of cleantech in the fisheries and aquaculture sectors and the program is on track to achieve performance targets. However, in line with current literature, respondents perceived that cleantech is being adopted by fisheries and aquaculture operators to a limited extent.

- The FACTAP has met some of its performance targets.⁸

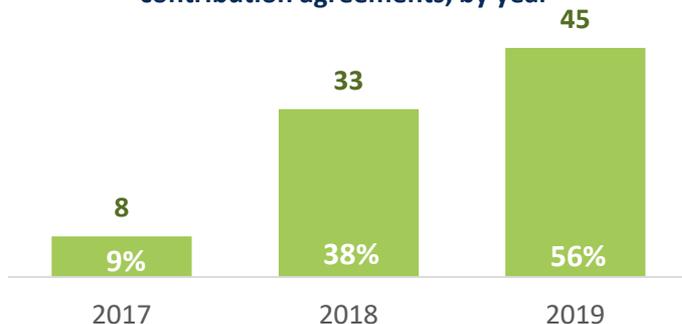
>100% 57/54 aquaculture/processing sites have adopted clean technology funded by contribution agreements.

>100% 310/54 fishing vessels have adopted clean technology funded by contribution agreements.

Data not available 108 additional businesses or sites should be adopting cleantech funded by the FACTAP through self-funding or other mechanisms by March 31, 2021. However, there is no evidence yet that this is taking place.⁹

- The number of signed contribution agreements has **increased** over the span of the program (Figure 7).

Figure 7. Number and proportion of signed contribution agreements, by year



- Nevertheless, interviewees and survey respondents perceive that cleantech is only being adopted to a **limited and moderate extent by fisheries and aquaculture operators**. For example, cleantech is costly, particularly for small enterprises with limited profitability and resources. Also, **sector-wide knowledge and communication of cleantech** and of **available funding opportunities** is lacking.

Potential technology users have noted a lack of information about clean technology innovations and little or no knowledge of or access to providers. A lack of technical knowledge was identified as a significant deterrent to the adoption of aquaculture technologies in the US, as well as in developing countries.

Source: Long 2017; Kumar et al. 2018.



Fluidized Bed Reactor being airlifted into position at a wastewater treatment plant.

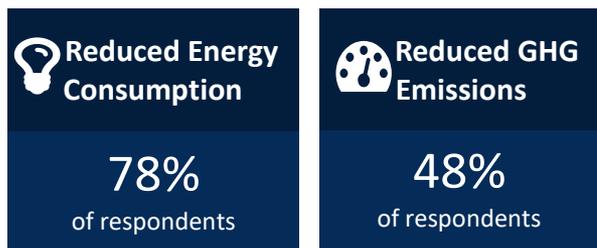
⁸ The FACTAP performance targets for adoption of clean technology by sector are to be achieved by March 31, 2021.

⁹ The FACTAP program management has requested to replace this indicator with "# of fisheries/aquaculture businesses who report a greater awareness of the benefits associated with the adoption of clean technologies that were funded by the FACTAP".

The FACTAP contributes to environmental performance

Finding: The FACTAP contributes to the environmental performance of funding recipients. Perceptions of the FACTAP's broader environmental impact at the sector-level indicate there is room for improvement by adopting a proactive strategic approach.

- A majority of survey respondents and interviewees experienced **positive environmental impacts** since **implementing cleantech**,¹⁰ as demonstrated in the administrative data review. The greatest environmental impact of cleantech adoption across the sectors has been a reduction in energy consumption and greenhouse gas (GHG) emissions.



- Survey respondents and interviewees also indicated that FACTAP-funded cleantech generated a **variety of additional environmental impacts** including improved waste management, reduced use of water, plastics, chemicals, and impacts on marine life and surrounding ecosystems.



100%

The FACTAP has exceeded its environmental performance target of 90% of stakeholders, or recipients, that report a reduction in environmental impact.¹¹

Challenge: Evidence suggests that the FACTAP is contributing to the environmental performance of the fisheries and aquaculture sectors to a **moderate extent**. Generating sector-wide impacts is challenging because the FACTAP mostly funds many small-value projects targeting **small and medium enterprises (SMEs)**. SMEs tend to be geographically dispersed and face challenges to the adoption of cleantech, as discussed on the previous page.

A proactive and strategic funding approach may be needed to generate sector-level improvements in environmental performance. For instance, by selecting projects that target a greater number of operators (i.e. through industry associations) or can address pain-points for the sectors.

The FACTAP is **somewhat** beginning to apply strategic funding strategies on an **ad-hoc basis**. For example, to generate significant reductions in plastic marine pollution, the FACTAP funded the BC Shellfish Growers Association (BCGSA) to **replace 50% of members' exposed styrofoam rafts with plastic-free alternatives**. The BCGSA represents approximately 150 shellfish farmers in BC.

¹⁰ Performance information was complemented by survey and interview data due to the limited availability of final reports at the time of the review. Final reports were due at the end of FY 2019-20.

¹¹ Stakeholder refers to program clients. The FACTAP has indicated it would like to replace stakeholder with recipient in performance targets.

The FACTAP contributes to environmental performance

Examples of projects funded by the FACTAP that contribute to the environmental performance are listed below:

Aquaculture

Photobioreactors

The FACTAP funded **six projects** to support the acquisition of energy efficient photobioreactors for algae production in aquaculture hatcheries. Older models are energy inefficient and are associated with high energy costs.

Reduced Energy Consumption

Reduced Water Use

Reduced Plastic Use



Top and side view of installed photobioreactor used for phytoplankton production.

Fisheries

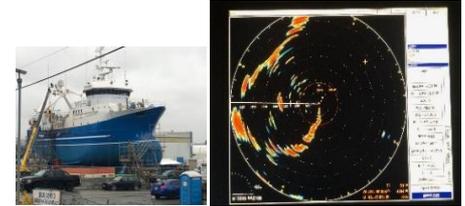
Mapping Cameras

The FACTAP funded **10 projects** to support the acquisition of mapping cameras for commercial trap fisheries to reduce negative impacts on sensitive marine ecosystems and the incidence of ghost gear.

Reduced GHG Emissions

Reduced Energy Consumption

Reduced marine ecosystem impacts



Installation of sonar technology and imaging software used to map the benthic seafloor.

Aquaculture

Styrofoam Replacement

The FACTAP funded **five projects** for the replacement of exposed styrofoam used in aquaculture rafts with durable alternatives to reduce plastic marine pollution.

Reduced Plastic Use



Collection of replaced styrofoam rafts going to disposal and installed durable alternatives.

Processing

Effluent Treatment Equipment

The FACTAP funded **a number** of projects to improve waste management across all sectors. For instance, by supporting the acquisition of effluent treatment equipment to improve waste water discharge from a fish processing plant.

Improved Waste Management



Installation of an advanced oxidation process to remove color and solids from wastewater and the clear effluent discharge.

The role of the FACTAP is unique

Finding: Compared to other federal funding programs, the FACTAP supports cleantech adoption in small and medium enterprises. Funding recipients also experience a range of socio-economic benefits, such as cost savings and improved productivity.

- Evidence suggests that the FACTAP **funds small and medium enterprises (SMEs)** in the fisheries and aquaculture sectors that tend to **lack alternative funding opportunities** for cleantech. Indeed, **95% of contribution agreements** have been established with SMEs and a majority of survey respondents and key informants said that the **FACTAP mitigates financial risks** associated with the adoption of new cleantech for recipients.
- A majority of recipients stated that, in the absence of the FACTAP funding, **they either would not have implemented their cleantech** projects or would have done so but across a longer time-frame.
- **In theory**, fisheries and aquaculture operators are also eligible to apply to federal fisheries funds such as the **Atlantic Fisheries Fund (AFF)**, **Quebec Fisheries Fund (QFF)**, and **British Columbia Salmon Restoration and Innovation Fund (BCSRIF)**. Fisheries funds¹² provide funding to support growing market demands and sustainable industry growth. **However, in practice** the FACTAP collaborates with the AFF, QFF, and BCSRIF to **avoid duplication of funding efforts** (See page 19 for more details on provincial collaboration).
- **83% of interviewees said they were not aware** of any other programs that also provided funding for cleantech.

While technology providers may focus on environmental benefits, **economic benefits are more important in increasing the adoption of technology innovations.** Aquaculture operators tend to adopt technologies that are easy to implement and manage; are cost-efficient, and offer productivity and profit advantages.



Source: Literature Review; Kumar et al. 2018

- Committee members said **that the FACTAP also generates socio-economic impacts for funding recipients to a moderate extent.** The greatest socio-economic impact experienced by survey respondents was related to **cost savings associated with lower electricity and fuel use.**



- Survey respondents indicate that additional socio-economic benefits include: **increased production**, and **business competitiveness** as well as **improved productivity**, **ability to continue operations**, and **social license to operate.**



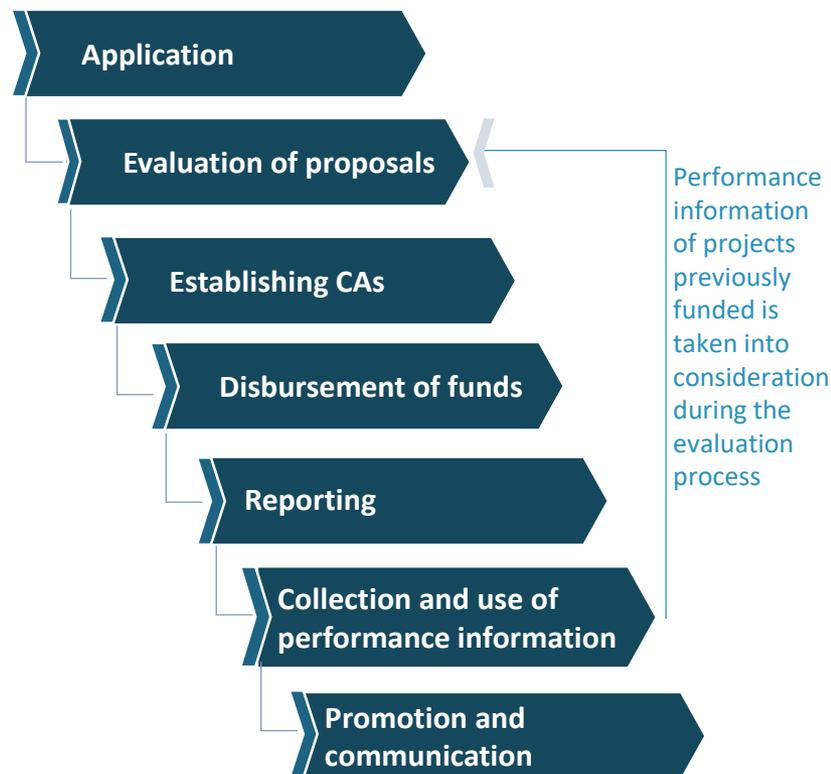
¹² Unlike the AFF and the QFF, the BCSRIF specifically supports protection and restoration activities for priority wild fish stocks, including salmon.

Recipients receive support during the application process

Finding: FACTAP project application processes are managed efficiently, although there are still areas for improvement with regards to delays and technical difficulties.

FACTAP applications are accepted based on an **continuous intake process** by each regional program coordinator.

Figure 8: FACTAP Activities



Application

91% A majority of interviewees and survey respondents consider the submission of proposals (i.e. application requirements) to be efficient.¹³

Challenge: FACTAP applicants face capacity and technical challenges when filling out proposal and application requirements.

- While application requirements are sometimes viewed as complicated and the application process lengthy, regional program coordinators **provide support to applicants before, during, and after** proposals have been submitted.
- There is a significant time investment required during the application stage. Regional program coordinators' involvement varies from one day in the best-case scenario (e.g. if the applicant works with a consultant) to a full week of work in the worst-case scenario (e.g. when the project is highly technical or when communication is complicated). (See page 20 for additional details on the support provided by RPCs).

Mitigation Strategy: The FACTAP updated their proposal and evaluation forms to address challenges with completing application requirements.

¹³ Efficient includes “somewhat efficient or very efficient”.

Evaluation of proposals is efficient

Finding: Both the evaluation of proposals and the establishment of contribution agreements are carried out efficiently. Nevertheless, recipients did mention that the selection of eligible activities for projects could be clarified. The FACTAP gives consideration to applications submitted by indigenous recipients when proposals are evaluated.

Evaluation of proposals

92% A majority of interviewees consider the evaluation and ranking of proposals to be efficient.¹⁴

- Proposals are screened through the RPC, RPRC, and NSC committees prior to approval. Committee members and senior managers agree that committee **decision-making, composition, joint provincial and territorial governance, frequency of meetings, and recommendations to the Director-General** are somewhat efficient or very efficient.

Challenge: Recipients perceived the communication related to the FACTAP's selection of eligible activities as ambiguous. Once funds have been allocated to a particular type of project or the cleantech is out in the industry (i.e. engine replacements or semi-closed containment systems), the **likelihood of funding for similar projects diminishes**. This creates **uncertainty**, both for regional coordinators and applicants, and can result in negative perceptions of the program by clients.

- The FACTAP **informs recipients of a funding decision within 90 business days in 97% of the cases**, exceeding the departmental service standards.

Challenge: Interviewees said that **delays in the evaluation of proposals process can take place**, for example, if supporting documents are missing.

^{14,15} Efficient includes "somewhat efficient or very efficient".

GBA+

The FACTAP gives consideration to proposals submitted by indigenous recipients during the evaluation of proposals process. Most interviewees indicated that **informal acknowledgement** of Indigenous applications takes place. No other consideration or formal scoring is given to other diverse population groups recognized under GBA+, such as women operators and operators in remote communities.*

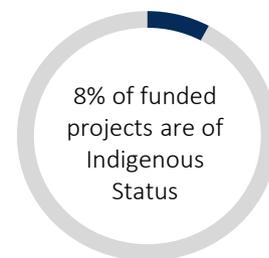
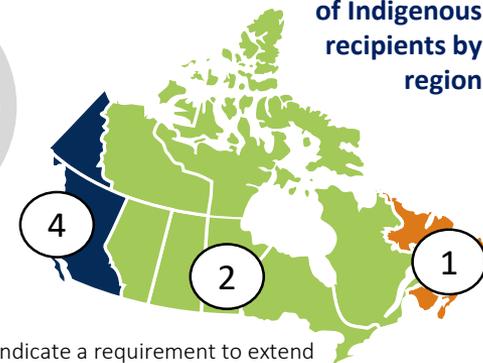


Figure 9: Number of Indigenous recipients by region



*Departmental documents indicate a requirement to extend consideration to indigenous and women participants.

Establishing contribution agreements

96% A vast majority of interviewees and survey respondents consider that contribution agreements are established efficiently.¹⁵

Challenge: Interviewees said that the internal approval process causes delays.

The FACTAP leverages provincial government funding

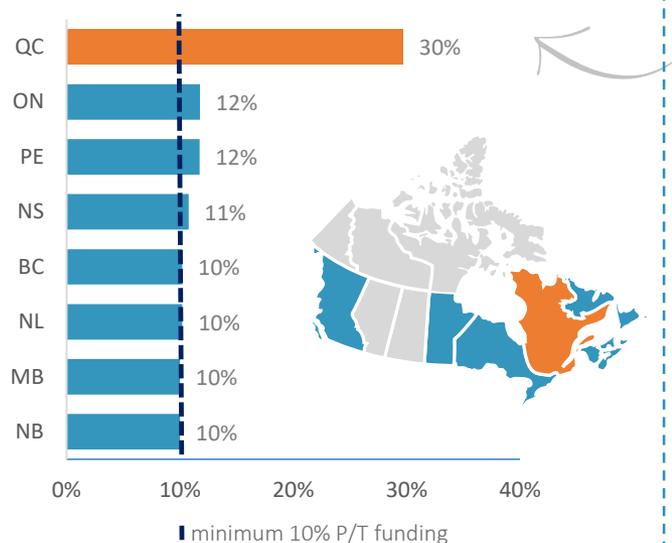
Finding: The FACTAP successfully leveraged provincial support in all eight provinces. Support provided by provinces varied and caused some challenges, most notably in the Atlantic region where the Atlantic Fisheries Fund attracts most Atlantic provincial funding.

- **All provinces** provided the mandatory 10% financial contribution towards FACTAP projects. This includes total **P/T contributions of \$2,951,229**. **Quebec provided the highest proportion of P/T funding, on average** (Figure 10).
- Most respondents do not perceive the provincial financial leveraging as an issue, yet **program staff and committee members indicate this has been a challenge for the program, to different extent across provinces.**

62%

Most survey respondents said it was either easy or very easy to receive financial or in-kind support¹⁶ from provinces.

Figure 10: Proportion of provincial support, by province



Certain provinces have created dedicated funds to support clients' access to funding through the FACTAP:

- **Quebec** applicants benefit from the support of three provincial ministries¹⁷, including a funding program dedicated to developing SMEs in the commercial fisheries and aquaculture sector.
- **BC** provides dedicated funding through the Ministry of Agriculture.
- **P.E.I.** created a dedicated funding program called PEI-FACTAP in 2019.

Recipients in provinces lacking a dedicated fund faced challenges obtaining P/T contributions:

- In the Central and Arctic region, in-land provinces (i.e. **Manitoba and Ontario**) have relied on **in-kind contributions** to meet this requirement.
- In the Atlantic region, **New Brunswick, Nova Scotia, and Newfoundland and Labrador** also faced challenges receiving provincial support due, in part, to provincial funding being dedicated towards the **Atlantic Fisheries Fund**. The Atlantic Fisheries Fund requires that 30% of the funding comes from participating provinces. It has attracted most Atlantic provincial funding, and it has been a barrier for FACTAP applicants in obtaining funding.

- Although most surveyed recipients **do not think the FACTAP should make any change to the minimum contribution requirement**, four out of six survey respondents in the Atlantic region would like to see some changes to the provincial funding requirement. Changes could take the form of a **transition to a letter of support** rather than a financial contribution from the province.

¹⁶ Provincial in-kind support included equipment rentals and provisions, relevant training, consulting services and engineering technical support.

¹⁷ Support comes from the Ministère de l'Agriculture, des Pêcheries et de l'Alimentation, the Ministère de l'Économie et de l'Innovation, and the Secretariat aux Affaires Autochtones

Funds are distributed to recipients efficiently

Finding: The vast majority of recipients are satisfied with the distribution of funds process. Holdbacks are often provided later than expected since more than half of completed reports are received late. Financial holdbacks increased from 10% to 20% to mitigate this challenge.

Distribution of funds

96%

A vast majority interviewees and survey respondents consider the distribution of payments to be efficient.¹⁸

- In 2017-18 and 2018-19, **100% of FACTAP payments were made in accordance to the payment schedules.** During this period service standard targets for requisition for payment within 30 days were also exceeded.
- Recipients receive **90% of project funding** once contribution agreements are signed. The remaining **10% percent is held back until final reports have been approved**, which happens in the next fiscal year.



Challenge: Anecdotal evidence suggests that **there is low incentive for recipients to submit their final reports**, based on the scheduled release of payments, particularly for lower-value projects.



Mitigation Strategy: To address reporting challenges, the FACTAP increased the financial holdback applied to projects **from 10% to 20%**. This approach was previously taken when necessary and based on the project value to the completion of final reports. The strategy has now been formalized by the National Steering Committee.

Reporting

83%

A majority of interviewees and survey respondents consider the final reporting to be efficient.¹⁹

- A review of administrative data shows that **69% of completed reports in 2018-19 were delayed** by anywhere from one month in the Atlantic region, to three months in the Central and Arctic region.
- Interim and final reports from funded recipients can be delayed due to missing deliverables, signatures, required documentation, or requests for extensions. As well, **fisheries operators prioritize their activities** over reporting requirements when they coincide with the fishing season.



Challenge: Similar to the challenges with completing application forms, anecdotal evidence suggests that **some small operators who are not tech-savvy lack the capacity to complete reporting templates and financial expense sheets.** This becomes a greater challenge if recipients are not members of an association or are not working with a consultant and requires additional support from regional program coordinators.

^{18,19} Efficient includes “somewhat efficient or very efficient”.

Use of FACTAP performance information is limited

Finding: Reporting on environmental impacts has been challenging as there are different reporting requirements, some of which occurred after the FACTAP was implemented. Some performance information is used for decision making at the program, departmental, and federal level.

Collection and use of performance information

- The main sources through which the FACTAP collects performance and financial information are **project interim and final reports**.

Challenge: The collection of performance information across all projects is challenging as **recipients capture environmental impacts across many metrics**, such as energy savings, water or chemical use, and waste avoided.

Moreover, the FACTAP does not have an overall view of the program's environmental impacts, for instance, when estimating reductions in GHG emissions across multiple projects. This is a challenge when reporting to the Clean Growth Hub, whose requirements came in effect after the FACTAP's data collection strategy was in place.

At the Program level:

- Notwithstanding delays in the collection of reports, **performance information of successful cleantech that has been previously funded** is taken into consideration when proposals are evaluated.

At the Departmental level:

- Within DFO, anecdotal evidence suggests that performance information from **FACTAP-funded semi-closed containment systems** was used to support policy development related to the responsible **plan to transition from open net-pen salmon farming in British Columbia**.

At the Federal level:

- Areas of improvement remain with regards to how overall performance information could be used to support reporting and decision-making outside DFO. **There is no evidence that other departments are using overall FACTAP performance information to support decision-making**.
- While the FACTAP reports to initiatives under the Pan-Canadian Framework on Clean Growth and Climate Change, **the primary recipient of FACTAP information is the Clean Growth Hub (CGH)**. As part of the Clean Technology Data Strategy (CTDS), the **CGH gathers information that is already collected by the FACTAP** since the program's data collection strategy predates the CTDS. Part of the information on the environmental benefits collected by the FACTAP is qualitative. The CGH is developing guidance focused on estimating GHG reductions to help support the collection and reporting of quantitative data.

Promotion, communication and awareness of the FACTAP is limited

Finding: Program staff engages in a number of promotional activities and program promotion is considered to be somewhat efficient. However, promotion is not a priority for regional program coordinators and this contributes to a low awareness of the program among operators. Communication to the public about FACTAP projects is limited and the website is underutilized.

Promotion and communication to the public

59% More than half of interviewees and survey respondents said the promotion of the FACTAP is somewhat efficient.

The FACTAP carries out various promotional activities:



Challenge: Promotion of the FACTAP has been difficult due to the **turn-over of RPCs** and **size of program administrative regions**, particularly the C&A region, where the annual O&M budget amounts to \$20,000. The **administrative workload** caused by the continuous intake of projects also takes priority over promotion activities.

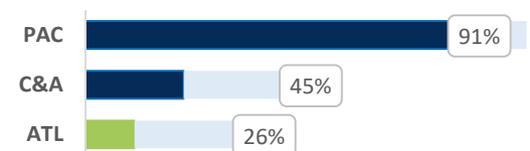
- Fisheries and aquaculture operators are, in general, **somewhat aware** of the FACTAP. Survey respondents strongly indicated that **the program can raise awareness** of the FACTAP among businesses in the fisheries and aquaculture sector **through more direct outreach**. Other ways to raise awareness include more involvement in association meetings and more public announcements.

- Survey respondents reported having learned about the FACTAP through **industry associations, conference events** and **DFO's Notice to Fishers**. An additional venue was through **word-of-mouth** as news is shared by FACTAP recipients among their networks. Federal program websites, like the **FACTAP website** and the **Clean Growth Hub website** are the **least used sources** through which operators learn about the program.



- Program staff and survey respondents consider **public announcements and description of projects on the FACTAP's website somewhat to not very efficient**. Due to delays in internal processes, a number of projects have not been announced; therefore, the FACTAP website is underutilized as a communication tool. Only 56 projects have been posted on the FACTAP website, of which 41 are from the Pacific region (73%). In addition, of all 19 FACTAP projects in the Atlantic region, 26% are posted online (Figure 11).

Figure 11: Percentage of projects posted on the FACTAP website per region



The FACTAP applies good practices in program delivery

Finding: A number of good practices related to the FACTAP's delivery, support to clients, collaboration with provincial representatives have been identified. However, the administrative workload remains a burden for regional program coordinators.

The FACTAP staff developed multiple good practices in delivering the program.

Flexibility in program delivery

- Thanks to the training received from the G&C Centre of Expertise, **program staff demonstrated more flexibility in program delivery**. For instance, the eligibility criteria for cleantech are flexible to some extent, as are the deadlines, which are adjusted to fit the reality of the recipients.
- In addition, the FACTAP created a second regional committee in the Central and Arctic region to address language diversity. Specifically, the FACTAP oversees one Anglophone and one Francophone committee in the C&A region.

Collaboration with provincial representatives

- There is evidence of good collaboration with the provincial representatives. The **FACTAP is working hand to hand with provincial representatives** who often sit on the RPRC. They bring their experience and network and facilitate the promotion of the program in the regions.
- Provincial representatives support committee decision-making. There is evidence of **provincial input being key for assessing management risk** based on previous experiences working with the applicant.

Regional coordinators provide support to clients

- FACTAP staff are available **to provide guidance and answers to clients** throughout the application process. There is a significant time investment required during the application stage, especially at the regional level. The time invested was hard to quantify as it can differ from project-to-project.
- Nevertheless, most FACTAP recipients are positive about **the support they have received during different phases** of the funding cycle.
 - Regional coordinators reached out to recipients when guidance or clarification needed during the application stage
 - **90% of survey respondents felt that staff provided direction and clarification** on the type of information that is expected
 - They received clarification regarding contribution agreements, workplans, budget adjustments, and amendments



Challenge: evidence points to an operational challenge regarding the **administrative workload for program staff**. The following issues were identified:

- The administrative burden for RPCs can take precedence over other program activities.
- This issue is intensified by the lack of line reporting, as regional coordinators report to a regional manager and not to the FACTAP national manager.

Conclusions

Conclusions

The FACTAP is a relevant and well-performing program and is supporting the adoption of clean technology in eight provinces to improve the environmental performance of the operators it funds. The FACTAP has facilitated access to funding, but there are some limitations concerning the environmental impact the FACTAP has at the sector level. Moreover, the FACTAP is unable to quantify improvements in environmental performance at the program level. Specifically, the FACTAP's performance indicators do not measure quantified outcome-specific metrics, but rather rates of adoption by operators and whether operators experienced environmental impacts.

Evaluation findings showed that the FACTAP is generally administered efficiently. However, interviewees commented this results from the efforts of RPC's leading applicants through the various FACTAP processes, which results in internal challenges associated with the delivery of the FACTAP. For instance, the administrative workload caused by the continuous intake of projects takes priority over promotion activities. Overall, the FACTAP promotion has been difficult for a number of reasons, including limited O&M funding, the turn-over of regional program coordinators and the size of program administrative regions, particularly the Central and Arctic region. As a result, there is a lack of awareness and understanding of the types of cleantech that are eligible.

According to the evaluation evidence, **the FACTAP's contribution could be strengthened** by three means:



Taking a proactive and strategic approach towards project selection, so as to fund projects that will maximize the FACTAP's impact on cleantech adoption at the sector level;



Expanding FACTAP activities by making cleantech at other stages of the Innovation Spectrum eligible; and,



Increasing FACTAP marketing and promotion activities to target a broader audience of fisheries and aquaculture operators.

Recommendations

Recommendations

Recommendation #1: Strategic Funding

It is recommended that the Senior Assistant Deputy Minister, Strategic Policy work with fisheries, aquaculture and processing operators and associations to **adopt a more proactive and targeted approach** to address key environmental issues associated with these industries thus increasing the overall impact and reach of the Program.

Rationale: Establishing a proactive and targeted funding approach should address outcome-specific challenges, for example, by demonstrating reduced greenhouse gas emissions or reduced marine plastic pollution. This could be done by addressing industry pain-points or reaching a larger number of operators, for example through industry associations to realize even greater improvements in environmental performance.

Recommendation #2: Eligible Activities

It is recommended that the Senior Assistant Deputy Minister, Strategic Policy, consider **expanding the range of eligible FACTAP activities** to include additional stages of the cleantech Innovation Spectrum beyond funding of market-ready technologies.

Rationale: Expanding the range of eligible FACTAP activities was raised throughout this evaluation as important to recipients and program managers. For example, the program would benefit from supporting cleantech proposals at the **Research and Development**, and **Pilot and Demonstration** stages of the Innovation Spectrum as such projects are currently ineligible.

Recommendation #3: FACTAP Promotion

It is recommended that the Senior Assistant Deputy Minister, Strategic Policy, engage in additional promotional activities for the FACTAP including direct outreach activities to potential recipients of the program and collaboration with industry associations.

Rationale: There is a low awareness of the FACTAP among operators at the sector-level despite the FACTAP's promotional efforts. **The FACTAP can raise awareness** among businesses in the fisheries, aquaculture and processing sectors through more **direct outreach** and **greater involvement in association meetings and industry-led events**.

Annexes



Annex A - Methodology, Limitations and Mitigation Strategies

Although the evaluation encountered some methodological challenges, **methodological limitations** were mitigated, where possible, through the use of multiple lines of evidence and the triangulation of data. This approach was taken in order to establish the reliability and validity of the findings and to ensure that conclusions and recommendations were based on objective and documented evidence.



Administrative Data

A review of the FACTAP administrative documents was undertaken to understand the FACTAP funding process. This review focused on Contribution Agreement process, on how the program supports funded recipients to adopt of the cleantech, on monitoring and reporting processes. A sample of 22 projects (7 in Atlantic, 7 in Pacific and 8 in Central and Artic) was used to analyze the above aspects.

Given that the program started in 2017-2018, **not all interim or final reports were available for review** at the time of the evaluation. The reports also used various metrics to report on project results. This meant that information on project results was not available for all projects.

To mitigate that limitation, the evaluation used a combination of available year-end reports, and information gathered through discussions with project recipients to develop findings related to the impact of FACTAP projects. The information was also used with other data collection methods (e.g. interviews and survey) and triangulate findings from other lines of evidence.



Interviews

A total of 33 FACTAP Program Management, Regional Proposal Review Committee (RPRC), National Steering Committee (NSC) Members, Senior Management, Recipients and a Clean Growth Hub representative were interviewed. By conducting those interviews, the goal was to gather the view of the interviewees on the need of the program, on how the funded projects impacted the environment by adopting the clean technology in fisheries and aquaculture sectors, and if the program activities are provided efficiently.



Observations

In March 2020, the Evaluation Team participated in a National Steering Committee (NSC) Meeting as observers to understand the NSC evaluation process. In addition, during the data collection phase, the Evaluation Team planned to do some sites visits, but **due to COVID-19, the sites visits were not possible**. To mitigate this limitation, the Evaluation Team asked more detailed questions while doing the interviews for the documented examples. The information was used to triangulate findings from other lines of evidence.

Annex A - Methodology, Limitations and Mitigation Strategies



Survey

A survey with FACTAP's recipients provided an understanding of their perceptions of cleantech adoption and environmental impacts. They also expressed their perspective on the support supplied by the FACTAP and on the program's relevance and performance.

The survey was made available online to 72 FACTAP recipients, and 30 completed survey responses were received, representing a 42% response rate. The survey was administered online between June 15 and August 8, 2020, and the responses were used to triangulate findings from other lines of evidence.



Literature Review

A two-part literature review on cleantech and innovation was completed. The first part focused on the connections between governmental investment, innovation and economic growth. The second part highlighted the role of long-term government support and networks in adopting cleantech in the Fisheries and Aquaculture sectors. The information generated by the literature review was used to triangulate findings from other lines of evidence.



Documented Examples

A brief, focused analysis was undertaken on four examples, which contributed to emphasize our findings of some environmental and socio-economic impact, success factors such as awareness, degree of innovation, DFO support, provincial contributions, as well as FACTAP challenges and lessons learned. Nine interviews were conducted with recipients and program managers.

The examples analyzed were:

1. Reduction of plastic marine pollution
2. Implementation of clean-technology in an Indigenous community
3. Adoption of innovative clean-technologies
4. Environmental and economical impacts of a waste treatment system



Document Review

The evaluation team reviewed DFO and external documents to understand the context and background of the FACTAP, also to assess the general need of the program, and best practices.

Annex B: Management Action Plan (MAP)

Evaluation of the Fisheries and Aquaculture Clean Technology Adoption Program (project #996395)

PMEC Date: November 2020

MAP Completion Target Date: March 2022

Lead ADM/DC: Jean-Guy Forgeron, Senior Assistant Deputy Minister, Strategic Policy

Recommendation 1: Strategic Funding

Recommendation: It is recommended that the Senior Assistant Deputy Minister, Strategic Policy work with fisheries, aquaculture and processing operators and associations to adopt a more proactive and targeted approach to address key environmental issues associated with these industries thus increasing the overall impact and reach of the Program.

Rationale: Establishing a proactive and targeted funding approach should address outcome-specific challenges, for example, by demonstrating reduced greenhouse gas emissions or reduced marine plastic pollution. This could be done by addressing industry pain-points or reaching a larger number of operators, for example through industry associations to realize even greater improvements in environmental performance.

Management Response

Note: The Fisheries and Aquaculture Clean Technology Adoption Program is currently scheduled to sunset on March 31, 2021. Should the Program be renewed, the following actions will be taken:

The Senior Assistant Deputy Minister, Strategy Policy will direct Program staff to engage and work with fisheries, aquaculture and processing operators and associations to identify key environmental issues to be addressed and to develop new internal and external guidance materials to aid in the development of appropriate applications to the program. Established environmental priorities will further guide future decision making processes to ensure that funds are allocated towards environmental issues of importance to Canadians with a focus on expanding the overall impact and reach of the Program beyond single operators where applicable.

Program coordinators will work directly with industry associations to guide their members towards the development of individual and larger group proposals aimed at addressing priority environmental issues identified by the Government of Canada as well as issues affecting the long term sustainability of the fisheries and aquaculture sectors.

Annex B: Management Action Plan

Link to larger program or departmental results (if applicable)			
2020-2021 Departmental Results Framework <ul style="list-style-type: none"> Result 1.1: Canadian Fisheries are sustainably managed Result 1.2: Canadian aquaculture is sustainably managed 			
MAP Results Statement <i>Result to be achieved in response to the recommendation</i>	MAP Milestones <i>Critical accomplishments to ensure achievement of result for PMEC's approval</i>	Completion Date <i>Month, Year</i>	Director General Responsible
1. Program funding allocated to projects addressing priority environmental issues that expand the reach and overall impact on fisheries, aquaculture and fish processing sectors in Canada.	1.1 Priority environmental issues to be targeted are identified in collaboration/consultation with Canada's fisheries, aquaculture and fish processing sectors.	June 2021	DG, Aquaculture Policy Directorate
	1.2 Guidance material developed for program coordinators and prospective applicants outlining priority environmental issues.	September 2021	DG, Aquaculture Policy Directorate
	1.3 Targeted meetings with industry associations to promote development of proposals aimed at addressing mutually identified priority environmental issues completed.	December 2021	DG, Aquaculture Policy Directorate
	1.4 Initial intake of project proposals targeting key environmental issues completed.	March 2022	DG, Aquaculture Policy Directorate

Annex B: Management Action Plan

Recommendation 2: Eligible Activities

Recommendation: It is recommended that the Senior Assistant Deputy Minister, Strategic Policy, consider expanding the range of eligible FACTAP activities to include additional stages of the cleantech Innovation Spectrum beyond funding of market-ready technologies.

Rationale: Expanding the range of eligible FACTAP activities was raised throughout this evaluation as important to recipients and program managers. For example, the program would benefit from supporting cleantech proposals at the Research and Development, and Pilot and Demonstration stages of the Innovation Spectrum as such projects are currently ineligible.

Management Response

Note: The Fisheries and Aquaculture Clean Technology Adoption Program is currently scheduled to sunset on March 31, 2021. Should the Program be renewed, the following actions will be taken:

The Senior Assistant Deputy Minister, Strategic Policy will seek to expand the range of activities eligible for contribution support to include specific portions of the Innovation Spectrum including Research and Development and Pilot/Demonstration for aquaculture projects.

Link to larger program or departmental results (if applicable)

2020-2021 Departmental Results Framework

- Result 1.2: Canadian aquaculture is sustainably managed

Annex B: Management Action Plan

MAP Results Statement <i>Result to be achieved in response to the recommendation</i>	MAP Milestones <i>Critical accomplishments to ensure achievement of result for PMEC's approval</i>	Completion Date <i>Month, Year</i>	Director General Responsible
2. Program able to provide funding to an expanded range of eligible activities including innovation projects within the Aquaculture sector.	2.1 New Program Terms and Conditions developed and approved allowing contribution support for innovation projects.	September 2021	DG, Aquaculture Policy Directorate
	2.2 Specific criteria for innovation project eligibility developed and incorporated into program application packages.	December 2021	DG, Aquaculture Policy Directorate
	2.3 Initial intake of aquaculture innovation project proposals completed.	March 2022	DG, Aquaculture Policy Directorate

Annex B: Management Action Plan

Recommendation 3: FACTAP Promotion

Recommendation: It is recommended that the Senior Assistant Deputy Minister, Strategic Policy, engage in additional promotional activities for the FACTAP including direct outreach activities to potential recipients of the program and collaboration with industry associations.

Rationale: There is a low awareness of the FACTAP among operators at the sector-level despite the FACTAP's promotional efforts. The FACTAP can raise awareness among businesses in the fisheries, aquaculture and processing sectors through more direct outreach and greater involvement in association meetings and industry-led events.

Management Response

Note: The Fisheries and Aquaculture Clean Technology Adoption Program is currently scheduled to sunset on March 31, 2021. Should the Program be renewed, the following actions will be taken:

The Senior Assistant Deputy Minister, Strategy Policy will direct Program staff, with the support of Communications, to enhance efforts, including more direct outreach and strengthened collaboration with industry associations using a targeted engagement plan, updated program website and other communication products to increase awareness of federal funding available to support the adoption of clean technologies by Canada's fisheries aquaculture and fish processing sectors.

Link to larger program or departmental results (if applicable)

2020-2021 Departmental Results Framework

- Result 1.1: Canadian Fisheries are sustainably managed
- Result 1.2: Canadian aquaculture is sustainably managed

Annex B: Management Action Plan

MAP Results Statement <i>Result to be achieved in response to the recommendation</i>	MAP Milestones <i>Critical accomplishments to ensure achievement of result for PMEC's approval</i>	Completion Date <i>Month, Year</i>	Director General Responsible
3. Greater awareness of federal funding available to support the adoption of clean technologies by Canada's fisheries, aquaculture and fish processing sectors.	3.1 External engagement plan developed to improve outreach to Canada's fisheries, aquaculture and fish processing sectors.	June 2021	DG, Aquaculture Policy Directorate (lead) DG, Communications
	3.2 Internal engagement plan developed to improve awareness of the Program throughout the Department.	June 2021	DG, Aquaculture Policy Directorate
	3.3 New communications products developed providing details on available funding and eligibility requirements.	September 2021	DG, Aquaculture Policy Directorate
	3.3 Targeted outreach with industry associations and participation in industry-led events completed.	December 2021	DG, Aquaculture Policy Directorate