Operational Plan of the Commission for Environmental Cooperation 2017–2018

28 June 2017



Commission for Environmental Cooperation

This Operational Plan was approved by the Parties to the North American Agreement on Environmental Cooperation.

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Commission for Environmental Cooperation

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Table of Contents

Foreword from the Council
Our Mission2
Our Work 2
Cooperative Projects
Independent Secretariat Report5
Public and Stakeholder Engagement5
North American Partnership for Environmental Community Action (NAPECA)
Tools and Resources
Budget8
APPENDIX I: Cooperative Projects
APPENDIX II: Ongoing Initiatives
APPENDIX III: Strategic Plan 2015–2020 69

Foreword from the Council

North America is populated by nearly 500 million people in the countries of Canada, Mexico, and the United States. Our national economies are more open and integrated than ever before. Over the past twenty years, regional trade, investment, and economic interdependence between our three countries have surged, making North America one of the world's largest trading blocks.

Our innovation, productivity, and continental and global trade in goods and services are vital to our economic growth and well-being. Healthy environments and ecosystems provide the natural resources—energy, air, water, soil, healthy oceans, flora and fauna—that our citizens and industries rely on for sustenance, growth, and enjoyment of life.

North America is also a region rich in natural resources, which require sustainable use and management because of their importance to present and future generations. Our region is defined and tied together by the migratory pathways of innumerable species of birds and animals (both terrestrial and marine), the migratory route of the iconic monarch butterfly, and the course of rivers that carve our landscapes. Our three governments, together with state and local agencies, dedicated citizens and enterprises, share in the stewardship of our natural resources, environment, and sustainable growth.

It is in this context of intrinsically interconnected ecosystems, resources, energy, infrastructure, innovation and growth, and the health and prosperity of our communities, that we continue to focus our work on making a positive impact on the nexus between trade and the environment in North America.

Our Mission

When our three countries launched North American free trade to foster prosperity and competitiveness through the North American Free Trade Agreement (NAFTA), we also acknowledged the critical link between region-wide economic growth, sustainability, and the North American environment.

To address this nexus between trade and environment, Canada, Mexico, and the United States signed the 1994 *North American Agreement for Environmental Cooperation* (NAAEC). This agreement promotes sustainable development based on cooperation and mutually supportive environmental and economic policies, and fosters the protection and improvement of the environment in the territories of the Parties for the well-being of present and future generations. The NAAEC also established the Commission for Environmental Cooperation (CEC)—the first organization in the world specifically devoted to link cross-border environmental cooperation with the growing trade, economic, and social connections between countries.

The CEC is led by the Council, composed of the highest environmental authorities in each country, and its cooperative work program is supported by numerous trilateral working bodies of government experts, industry, indigenous and local communities, academia, and the public.

Our mission is to facilitate cooperation on shared priorities of the three countries on trade and environment to advance sustainable growth in North America while protecting the environment, ecosystems, and health. The CEC provides a trilateral collaborative forum that brings together national, state, indigenous and local stakeholders, industry, and academia for regional action to achieve sustainable development and to protect and enhance the North American environment.

Our work is focused on actions and results that educate, inform, innovate, enable, and drive action by stakeholders. Over the past 22 years, the CEC has been a catalyst for regional cooperation on trade and environmental sustainability, supporting Canada, Mexico, and the United States with information and tools to protect our environment and the health of our citizens, and enhance the sustainability of our economies and trade.

Our Work

The 2017–2018 Operational Plan includes cooperative projects on trilateral priorities on environment, trade, and sustainability; strategic stakeholder and partner engagement; support for action at the community level, and continued development of innovative tools and information resources for which the CEC is known, and which equip citizens, communities, industry, and governments to take informed and effective action.

These projects and initiatives deliver on our Council's objectives and goals, and support the strategic priorities detailed in our CEC 2015–2020 Strategic Plan.

Cooperative Projects

Monitoring Health Impacts from Extreme Heat Events

Extreme heat weather events can impact human health and lead to school and work absenteeism, productivity losses, and high health costs in local communities. We are sharing tools and lessons learned in our CEC 2015–2016 pilot project to expand capacity in communities and medical education organizations in North America to help

healthcare professionals anticipate, assess, and prevent negative health outcomes from extreme heat events.

Reducing Pollution from Maritime Transport

The marine transport of trade between Canada, Mexico, and the United States, and with global trading partners, supports our economies and well-being. It also produces high levels of pollution that impact our air and water quality and the health of our communities. This project shares capacity to improve efficiency, environmental performance, and competitiveness of this sector and support the anticipated growth in trade and transport while reducing the environmental footprint.

Improving Black Carbon Inventory from Small Scale Biomass

Burning of *biomass*—wood and other organic matter—for heating, cooking, and other purposes, produces emissions that have impacts on air quality, human health, and our climate. This project will develop tools to assess biomass use and its emissions impacts, and provide information for communities and policy makers to improve health and environmental outcomes.

Measuring and Mitigating Food Loss and Food Waste

Food loss and waste, across the entire food supply chain, is an enormous problem that affects our economy, food security and environment. Estimates drawn from the CEC foundational research on food waste calculate the annual quantities of North American food waste at greater than 168 million tonnes, and with a value of food produced but not consumed exceeding US\$278 billion. Beyond the monetary loss, food waste correlates to significant inefficiency in transportation and distribution and waste of water, agricultural land, and other inputs in production. Waste that is disposed of in landfills contributes to the formation and release of methane gas—a potent, short-lived climate pollutant and greenhouse gas.

This project will work to effectively measure food loss and waste in the North American food chain, calculate its environmental and socioeconomic impacts, and provide tools and education to prevent and reduce loss and its impacts on food security, the economy, and the environment in North America.

Increasing Industrial Energy Efficiency through ISO 50001

North American industry relies on raw materials, energy, and supply chains to produce goods. This project is a joint partnership with industry to improve energy management, efficiency, reduce energy costs, and improve competitiveness in select North American industrial sectors through adoption of the international energy management ISO 50001 standard in supply chains.

The CEC engaged nine multinational corporations in key North American sectors to implement ISO 50001 at 19 of their facilities. In 2017–2018 the CEC will pilot an ISO 50001 supply chain deployment model in up to 40 supplier facilities (i.e., auto, steel) across North America. Improving supply chain energy efficiency and costs improves competitiveness and produces significant environmental benefits through decreased pollutant emissions.

Supporting Sustainable Trade of CITES Species

Trade in animal and plant species in North America is a multimillion-dollar business. However, illegal harvesting and trade of wildlife threatens the sustainability of these species and their trade. This project advances implementation of CEC-developed trilateral action plans to achieve legal, sustainable and traceable production and trade of four groups of North American species: sharks, turtles/tortoises, tarantulas and timber. All four are listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Partners in this innovative conservation project include state, provincial and local authorities as well as indigenous communities.

Conserving Shorebirds through Community Engagement

Conservation of habitats and North American fauna provide an opportunity for economic development through tourism and other activities. Thousands of shorebirds stopover at deltas, mudflats and flooded fields in Canada, Mexico and the United States to rest and feed during their epic spring and fall migrations between breeding grounds in the Arctic and overwintering sites in Mexico and further south. This project builds capacity in communities along migration routes to conserve habitat and develop ecotourism linked to bird migration cycles (such as bird watching and conservation/celebratory events.) Incorporating the traditional ecological knowledge of Indigenous communities from north to south, and the efforts of local wildlife, naturalist, and agricultural partners, this project will harness local action, producing habitat conservation and sustainable economic benefits.

Monarch Butterfly and Pollinator Conservation

Monarch butterflies and other pollinators are fundamental to the production of our food crops, as they are to all flowering plants. They are also a significant impetus for tourism in North America. Butterfly and pollinator populations have declined significantly in recent years, triggering an unprecedented international effort to conserve these species: an effort that is itself emblematic of the interconnectedness of the North American environment. Building on past and ongoing initiatives, this project will advance the science and actions to conserve the monarch butterfly and other pollinators by strengthening trinational cooperation and knowledge.

Strengthening Adaptive Capacity of Marine Protected Areas

Our marine environment is inherently connected; effective management of marine species requires cooperation across international boundaries. In recent years, changes to marine habitat, including ocean acidification and the movement of species, has increased the need for cross-border collaboration. Maintaining healthy marine protected areas (MPAs) is critical to ecosystems, fisheries, local communities and tribal nations whose well-being is tied to the services and resources that they provide. Building upon our work to identify vulnerabilities of coastal ecosystems, this project will work directly with communities that depend economically on marine protected areas (MPAs) to help them adapt to changes in the coastal environment.

Building Community Solutions to Marine Litter

North America is a significant contributor of land-based marine litter. Common trash from consumer goods in coastal and inland locations makes up the majority of trash that eventually becomes marine litter, polluting our waterways and oceans. Marine litter has a significant impact on the world's ocean economy, fisheries, marine transport, human health and the environment. This project builds local capacity to prevent, minimize, and manage waste *before* it finds its way to waterways and oceans.

This project is the first regional community-based approach to focus on US-Canada and US-Mexico border watersheds. It will build a network of citizen scientists and engage youth, local, and indigenous communities in refining a common method of collecting data

on marine litter and identifying the main sources, composition, and areas of accumulation. It will engage these stakeholders to develop and refine local action plans for economically sustainable waste prevention and reduction, and implement low-tech, low-cost solutions in shared border watershed areas.

Independent Secretariat Report

The NAAEC allows the CEC Secretariat to prepare for the Council reports concerning any matter within the scope of the annual cooperative program. Over the next two years, bearing in mind the usefulness and the rational use of resources, such a report may be prepared on a subject matter that contributes to advancing trilateral priorities for improving environmental stewardship in the context of trade and sustainable growth.

Public and Stakeholder Engagement

Public and stakeholder engagement is a priority under the NAAEC and essential to achieving our mission. We engage the North American stakeholders through multiple mechanisms, as follows:

Joint Public Advisory Committee (JPAC)

The CEC's JPAC is composed of citizen representatives from each of our three countries that provide advice to the CEC Council. In 2017–2018, JPAC will continue to engage and consult the North American public through its meetings, workshops, and consultations to broaden the scope of participants in CEC activities, and increase public access to and dissemination of North America environmental and trade information. In addition, JPAC will engage in a dialogue with the Parties aiming to enhance the relevance of their recommendations to the Council and identifying novel communication channels for their advices.

Submissions on Enforcement Matters (SEM)

The SEM process is a mechanism within the NAAEC that allows citizens and nongovernmental organizations to raise concerns about alleged failures to enforce environmental law in any of our countries. The process is aimed at promoting transparency and public participation by enhancing understanding of environmental law. In the next two years, the CEC will continue to process SEMs, prepare accessible factual records, as appropriate, and help advance public understanding of the process. CEC bodies will engage in a dialogue to propose to the Council two additional activities to be jointly undertaken over the next two years that will support the work related to SEM.

Traditional Ecological Knowledge

In 2015, the Council established a Roster of experts on traditional ecological knowledge (TEK) to provide advice and recommendations on opportunities to integrate that knowledge into CEC's work. Furthermore, in 2016, the CEC Ministerial Statement expanded Council's commitment to include the engagement of indigenous youth, in relevant areas of CEC work.¹ In accordance with Council's vision, several of our 2017–

¹ See <www.cec.org/about-us/council-statements/cec-ministerial-statement-2016>.

2018 cooperative projects include opportunities for including TEK and engaging indigenous communities.

Supporting Youth Engagement and Leadership

Youth are significantly affected by North America's performance on sustainable development and job creation, and they are also drivers of social and environmental innovation, as well as future decision makers. We are increasing youth participation, dialogue and engagement in relevant areas for the CEC, including JPAC. Several of our 2017–2018 cooperative projects include youth engagement through education, citizen science, and other initiatives, such as our youth crowdsourcing contest, to support the CEC's objectives to seek innovative approaches to environmental knowledge-gathering, and enhance the CEC's capacity to reach out to key stakeholders.

North American Partnership for Environmental Community Action (NAPECA)

Since 2010, the CEC's community grants program has been supporting local projects delivered by hands-on, nonprofit, and nongovernmental organizations that build partnerships and drive action at the local level. This program promotes a sense of shared responsibility for the environment and has served as an important mechanism to engage the public in ways that complement the work of the Commission. Based on an assessment of the performance of the program Council will decide on future cycles of NAPECA.

Tools and Resources

The CEC is known for the development and provision of a suite of valuable North American tools and information for governments, the public, industry, nongovernmental organizations, academia, and other institutions. These tools are a resource for policy makers, industry strategists, researchers, students and communities. Our key resources and tools include:

Tracking Pollutant Releases and Transfers in North America

The CEC's long-running industrial pollutant releases and transfers register (PRTR) initiative compiles and analyzes data from the individual PRTRs of Canada, and Mexico and the United States and provides a North American PRTR with enhanced analytics and uses for communities, industry, academia, and policy makers. The PRTR provides information on the amounts, sources and management of industrial pollutants across the region, via the *Taking Stock* report, the *Taking Stock Online* website and searchable database, and stakeholder engagement activities. The next edition of *Taking Stock* (Volume 15) will feature a special analysis of releases and transfers from a key sector.

North American Environmental Atlas

The CEC's North American Environmental Atlas is an interactive mapping tool to research, analyze, and manage environmental issues in Canada, Mexico and the United States. It assembles seamless, accurate cartographic data, including maps, documentation, and interactive map layers that are used by decision makers, land managers, nongovernmental conservation organizations, scientific researchers and international organizations.

North American TEK Atlas

Through the expanded engagement and participation of indigenous and local communities, and building from previous trilateral work with the CEC Roster of Experts on TEK, a project on TEK is being be developed for implementation over the next two years.

North American Land Change Monitoring System

The North American Land Change Monitoring System (NALCMS) is an ongoing collaborative initiative—facilitated by the CEC—between Canada, Mexico, and the United States, to monitor land cover (the observed physical cover on the terrestrial surface of North America—i.e., forests, rivers, soil, permafrost) and its change over time. NALCMS is an integral part of the CEC's North American Environmental Atlas, which provides a valuable land change indicator for North America and its changing environment. NALCMS products are used for a variety of applications, including land-use planning, ecosystem monitoring following natural and anthropogenic events, wildlife habitat mapping, and water quality assessments.

Budget

Commission for	r Environmental Cooperatio	n				
Budgets for 2017	' and 2018 (in Canadian dolla	ars)				
	2016 Budget	%	2017 budget	0/	2018 budget	0/_
Description	2010 Duuget	70	2017 buuget	70	2010 Duuget	70
Description						
<u>REVENUES</u>						
Parties' Contributions	\$ 228 EUU		9 562 500		0 562 500	
	0,550,500		5,502,500		5,502,500	
Carry Over of Unspent Contributions from Previous Years	1 787 500		1 687 500		1 687 500	
	10 126 000		11 250 000		11 250 000	
	10,120,000		11,200,000		11,200,000	
FXPENSES						
DFLIVERABLES						
Cooperative Projects	3.170.000		2.865.000		3,190.000	
Traditional Ecological Knowledge (TEK) Initiatives	-		300.000		300.000	
North American Partnership for Environmental Community Action (NAPE	CA) 600,000		600,000		600,000	
Submissions on Enforcement Matters (Articles 14 & 15)	231,000		150,000		150,000	
Communications and Outreach	145,000		145,000		145,000	
Independent Reports (Article 13)	180,000		0		0	
Tracking Pollutant Releases and Transfers in North America (PRTR)	150,000		100,000		100,000	
Results-Based Management	80,000		80,000		80,000	
CEC Interactive Platforms	55,000		50,000		50,000	
	4,611,000	45%	4,290,000	38%	4,615,000	41
INSTITUTIONAL SUPPORT AND MAINTENANCE						
Council Support	228,500		270,000		250,000	
JPAC Support	293,200		290,000		300,000	
TEK Roster Support	67,500		50,000		50,000	
Operational Support	-		14,000		14,000	
Mexico Liaison Office	211,000		183,400		158,000	
Youth Fellowship and Short Term Educational Program	-		60,000		60,000	
Managing CEC Environmental Information	81,000		76,000		76,000	
	881,200	9%	943,400	8%	908,000	8
ADMINISTRATIVE AND MANAGEMENT						
Salaries. Benefits and Professional Development	3.420.000		3,700,100		3,745,500	
Operating Expenses	770,000		810,100		831,400	
(telecommunications, rent, operating equipment, office supplies)			,		,	
External Administrative Support	195,000		207,000		207,000	
(insurance, audit, fiscal expertise, banking, legal)						
Relocation/Orientation, Recruitment	183,800		73,000		73,000	
Executive Director's Office	65,000		65,000		65,000	
	4,633,800	46%	4,855,200	44%	4,921,900	44
Contingency Fund			1,161,400	10%	805,100	7
TOTAL EXPENSES	10,126,000	100%	11.250.000	100%	11,250,000	100

APPENDIX I: Cooperative Projects

Monitoring Health Impacts From Extreme Heat Events	10
Reducing Pollution from Maritime Transport	15
Improving Black Carbon Emissions Inventories Data for Small Scale Biomass Combustion	21
Measuring and Mitigation of Food Loss and Food Waste	24
Increasing Industrial Energy Efficiency through ISO 50001	28
Supporting Sustainable Trade of CITES Species	33
Conserving Shorebirds through Community Engagement	36
Science for Monarch Butterfly and Pollinator Conservation	40
Strengthening Adaptive Capacity of Marine Protected Areas	45
Building Community Solutions for Marine Litter	49

Project: Monitoring Health Impacts from Extreme Heat Events

- 1. Two-year budget: C\$600,000
- 2. Short statement of the need identified (including current status), the project objective and outcomes (achievable by June 2019) to address it:

Climate projections indicate that extreme heat events (EHEs) will increase in frequency and severity in the coming years in North America. These events already result in a large number of deaths and illnesses, especially among vulnerable populations, and will continue to increase public health risks. Only a few health agencies incorporate real-time health data to adequately prepare for and respond to EHEs. This project aims to fill this gap by supporting additional communities (e.g., in Manitoba (Canada), Chihuahua (Mexico), Arizona (United States)) to implement syndromic surveillance (SyS) systems to monitor heat-related health outcomes, and by developing evidence-based tools for the identification, prevention and treatment of heat-related illnesses among the most vulnerable populations. The project will provide essential decision-making tools to public health professionals and emergency management officials for early detection of heat-related illness and enhance preparedness and response during EHEs. This project builds upon the successful results of work completed under the CEC's 2015–2016 Operational Plan (OP): establishment of the first pilot SyS system in Mexico, the automation of the State of Michigan's system, the addition of Tele-health data to Ottawa's system, and development of a guidance document on SyS systems for EHEs. Based on guidance and lessons learned from these communities, this project will expand the establishment and use of SyS systems in North America targeting new pilot communities, promote awareness and use of the guidance document, develop an evidence-based framework for evaluating SyS systems, and develop an online training course that will respond to the needs of public health practitioners across North America in terms of surveillance of health outcomes from EHEs.

3. Explain how the project can achieve more impact by working trinationally and why the CEC is the most effective vehicle to undertake this work:

While public health risks from extreme heat events are a transboundary issue, the capacity of public health agencies to prepare for, prevent, and respond to these events varies widely. This CEC project fosters sharing of information, expertise and resources across the three countries to enhance public health agencies' efforts to address the impact of EHEs, protecting particularly vulnerable populations in North America. Under the 2015-16 OP, scientific collaboration between public health and environmental agencies resulted in the establishment of the first North America-wide community of practice, whose goal is a better use and integration of weather and climate data in SyS systems to achieve efficiencies and enhanced public health outcomes. In this project, the expansion of syndromic surveillance to other communities will leverage these efforts and will maximize the benefits of lessons learned from the pilot communities.

4. Describe how the project may capitalize on, or advance, the relationship between ecosystems, job creation, gender impacts, and income generation:

Extreme heat can have debilitating health impacts, ranging from illnesses that require hospitalization, to mortality, in particular for vulnerable populations. These adverse outcomes have significant economic implications, including absenteeism in school and work, loss of employment, and lower family income from the hospitalization or death of a family member. Response to heat stress is also influenced by gender. SyS systems can detect the risk from extreme heat early enough to protect the lives and livelihood of vulnerable populations. They can also be a valuable source of information for gender-based analyses to assess the impacts of heat on women and men, while factoring in their socio-economic and occupational statuses.

5. Describe how the project complements or avoids duplication with other national or international work:

This project is a continuation and expansion of efforts made under OP 2015-16, where a literature review on the use of SyS systems has shown a strong need to either develop real-time SyS for heat, or adapt existing systems to effectively detect, and thereby help prevent and treat, heat-related illness and deaths. The outcomes from this project will fill this gap and will complement the work being done by North American public health authorities and other national and international organizations such as the Council for State and Territorial Epidemiologists (CSTE) and the International Society for Disease Surveillance (ISDS). This project complements the activities of the North American Working Group on Climate Change and Human Health, established under an agreement between Health Canada, the US Centers for Disease Control and Prevention (US CDC), and Mexico's Federal Commission for the Protection Against Sanitary Risk (*Comisión Federal para la Protección contra Riesgos Sanitarios*—Cofepris).

6. Describe opportunities for inclusion of traditional ecological knowledge (TEK), if applicable, and how these opportunities are incorporated into the project:

The project will involve collaboration with indigenous health authorities or public health authorities serving indigenous communities, in order to establish or enhance a pilot SyS system. This will provide the opportunity to include TEK in adapting heat-health messaging and raising awareness among indigenous populations, considering their local knowledge about climate and culture.

7. Describe opportunities for youth engagement, if applicable, and how these opportunities are incorporated into the project:

Youth engagement is key to help local communities achieve the project objectives. For example, health sciences and medical students in Hermosillo, Mexico, were directly involved in data collection activities at local hospitals, to support the State of Sonora's pilot syndromic surveillance system. This project will also offer similar opportunities for students from relevant disciplines in the three countries, as well as direct involvement in analyses of relevant health and environment data (and in the development of an evaluation framework). The online course will be a unique opportunity to raise awareness among health-care

workers, including medical residents and public health professionals, of the health risks from extreme heat, and to provide technical guidance on how heat-related illnesses can be diagnosed, coded, treated and prevented.

- 8. List significant involvement of other levels of government, Indigenous groups, local communities, experts, private sector, civil society and others, as applicable:
 - Michigan Department of Public Health
 - Manitoba Health
 - Department of Health of the State of Sonora
 - Coesprison—*Comisión Estatal de Protección Contra Riesgos Sanitarios en Sonora* (Commission for the Protection against Sanitary Risk of the State of Sonora)
 - Department of Health of the State of Chihuahua
 - Department of Health of the State of Tamaulipas
 - Ottawa Public Health
 - KFL&A Public Health
 - Public Health Ontario
 - Institut national de santé publique du Québec (National Institute for Public Health of Quebec)
 - Arizona Department of Health
 - Council for State and Territorial Epidemiologists
 - International Society for Disease Surveillance

9. Identify relevant committee members and their federal agencies in each country committed to developing this project and implementing it, if approved:

Canada: Abderrahmane Yagouti, Health Canada.

Mexico: Matiana Ramírez and José Herrera, Cofepris—Federal Commission for the Protection against Sanitary Risk **United States:** Shubhayu Saha, US Centers for Disease Control and Prevention

10. List the objectives and activities to be conducted to achieve measurable results:

Objectives	Main activities to achieve objectives	Measurable results
By 30 June 2019, real-time SyS systems for heat are implemented or enhanced in additional regions /	Activity 1 Final selection of additional pilot communities and/or regions	4 new agencies (and/or communities) agreed to develop a SyS system based on guidance document and advice from pilot communities from OP 2015-16 (Phase I)
America.	Activity 2 Design, develop, and implement real-time SyS systems for heat using lessons learned and guidance	Real-time SyS systems for heat in use, increased capacity to monitor and respond to adverse health outcomes resulting from extreme heat
By 30 June 2019, an evaluation framework is available to agencies and used to assess the performance of SyS systems, including the pilot systems undertaken in Phase- I of the project.	Activity 1 Develop a framework to evaluate the implementation and performance of SyS systems for EHEs	Health agencies have the capacity to assess the performance of SyS systems for EHEs and to demonstrate their utility to detect heat-related illnesses
	Activity 2 Collect and analyze relevant health and population data from the pilot communities;	Pilot communities have a better understanding of the health impacts from extreme heat.
	Activity 3 Collect and analyze information from partner health agencies participating in the project	Lessons learned from these case studies are shared with other health agencies and communities including stakeholders from academia
By 30 June 2019, an online interactive training course on SyS systems is available for	Activity 1 Develop the content material to be	Public health professionals and clinical practitioners have access to evidence-based information on the use of SyS systems for EHE

Objectives	Main activities to achieve objectives	Measurable results
public health professionals and clinical practitioners.	included in the interactive training course	
	Activity 2 Design the structure of the online course	Public health professionals and clinical practitioners have access to a user-friendly platform for training on SyS for EHE
	Activity 3 Host the online course by a third party (e.g., university or NGO)	Public health professionals and clinical practitioners are better trained to use SyS systems for EHE
	Activity 4 Promote the online course among the public health community	Public health stakeholders in North America are aware of the online course
	Activity 5 Host a final workshop to share and disseminate the final deliverables from the project	Information and lessons learned from the project are available to key public health stakeholders

Project: Reducing Pollution from Maritime Transport

- 1. Two-year budget: C\$440,000
- 2. Short statement of the need identified (including current status), the project objective and outcomes (achievable by June 2019) to address it:

Maritime transport of passengers, goods, and materials among Canada, Mexico, and the United States, as well as trade with other global trading partners, supports North American economic growth, jobs, and standards of living. However, emissions from the maritime transport sector significantly impact air quality, climate, the environment and ecosystems, as well as human health in port cities, inland, and along transportation routes. Maritime transport is defined for this project as inclusive of vessels, ports infrastructure and operations, trucks and rail. Canada, Mexico and the US have evaluated emissions and their environmental, health and economic impacts. Modeling and analysis demonstrate that the overall benefits (health, economic, productivity, and environment) significantly outweigh the costs of emissions mitigation in this sector, and also ease the challenge that states/provinces/local communities and other industry sectors face in meeting air quality objectives. The United States and Canada have adopted cost-effective strategies and practices to mitigate emissions from vessels, through the establishment of the North American Emissions Control Area (ECA) and complementary policies, practices and technologies at ports to further reduce emissions related to the movement of goods. Mexico is working to address emissions from the goods movement sector as well. Collaboration through this project has several objectives:

- a. It will achieve a consistent North American approach to reduce emissions of air pollutants (such as SOx, NOx, PM, and greenhouse gases) from vessels through adoption of a Mexican Emissions Control Area, and build upon Mexico's compliance and enforcement capacity required for Marpol Annex VI and the ECA to achieve the desired emissions reductions results. This objective also follows up work completed under the projects in the CEC's 2014–2015 and 2015–2016 Operational Plans, demonstrating the environmental, health, and cost benefits of adopting an ECA in Mexico, and advancing compliance and enforcement capacity to achieve results and consistent enforcement in North America.
- b. It will build on existing activities of Canada, Mexico, and the United States to green ports, exchange knowledge, expertise, and experience among ports; and support consistent/coordinated adoption by environmental, transport and marine authorities, and other stakeholders of environmental best practices in the goods movement sector. This objective adds to ongoing North American efforts to address pollution sources and achieve benefits in air/climate/water quality, environmental and ecosystem protection, and community health. This effort will also leverage existing expert networks, such as the Pacific Ports Clean Air Collaborative, the US-China green Ports and Vessels Initiative, and others, as appropriate.

These objectives promote enhanced environmental protection and regional competitiveness through greater certainty and a level playing field for the goods movement sector in North America as Canada, Mexico, and the United states and achieve more

consistent application of standards, enforcement, best practices and technologies that are consistent with internationally accepted standards and practices already in place.

Outputs:

- 2017–2018: Strengthen the existing network of entities involved in ECA implementation/compliance and expand it to include North American stakeholders, to share and implement best practices to reduce emissions and pollution from both ports and vessels. Capitalize on existing networks of stakeholders and associations conducting similar and relevant work, such as the Pacific Ports Clean Air Collaborative (PPCAC), Green Marine, the US-China Green Ports and Vessels Initiative (US-China GPVI), the Sulphur Regulation Meetings hosted by Canada, the International Association of Ports and Harbors (IAPH), and others to maximize capacity-building and results. Key stakeholders and decision makers may include:
 - National/local government—environment, transport, port authorities, coast guard/naval agencies;
 - o Industry—shipping, shippers, environmental services, technology/equipment providers, fuel supply/testing;
 - Academia, NGOs, and communities.
- Workshops and actions in 2018 and 2019
 - Complete work to develop Mexico's Emissions Control Area proposal to the International Maritime Organization
 - o Share best practices and build/enhance capacity on:
 - Implementation, compliance, and enforcement of Marpol Annex VI and ECA;
 - Coordination among Canada, Mexico, and the United States on enforcement of Marpol Annex VI and ECA in support of industry's request for uniform and consistent enforcement to provide a level playing field for competitiveness;
 - Technology, operations, incentives, fuels, efficiencies to reduce energy use, costs, emissions and pollution to air/water from land-side equipment, trucks, trains, vessels and reduce environmental, ecosystem and human health impacts from the sector;
 - Air quality monitoring, modeling, and measurement of results and sharing experience among Canada, Mexico, and the United States.

Short-, Medium-, Long-term outcomes:

- 2017 Expected Marpol Annex VI Accession by Mexico
- 2019 Expected ECA designation proposal submission to IMO by Mexico
- 2020-2021 Expected entry into force and implementation/enforcement of Mexican ECA;
- 2020-2021 Expected Consistent network of emission control areas (ECAs) in North America.
- 2018- forward Adoption/expansion of port and vessel practices to improve efficiency and reduce emissions, pollution and human health and environmental impacts

Post-project impacts:

- Estimated emission reductions from ships in Mexican waters achieved through adoption of Mexican ECA: nitrogen oxides [NO_x] reduced by 80%, sulfur oxides [SO_x] by over 90%, and particulates by over 80%
- Reduction in emissions from port activities (cargo handling equipment, energy, dray trucks, rail, other) and vessels
- Promote/assure compliance and achieve improved air and environmental quality in Mexico, US, Canada's port communities and coastal areas and support for economic growth and expansion of North American ports and port community industries

3. Explain how the project can achieve more impact by working trinationally, and why the CEC is the most effective vehicle to undertake this work:

This project provides a trilateral North American forum to collaborate and coordinate on reducing pollution and enhancing competitiveness in goods movement between the US, Canada, and Mexico, and with the countries' global trading partners, Trade of goods and materials is transported through an interconnected <u>global</u> network of ports, vessels, trains, and trucks. While this trade supports economic growth, jobs, and standards of living, the emissions resulting from the transport of trade impact the environment and human health at port cities and far inland. Because vessels, trains and trucks transport goods between Canada, Mexico, and the US, and vessels also transport goods between the three countries and global trading partners, this project aims to reduce pollution and promote competitiveness through two main activities:

- Build upon previous CEC work addressing emissions from maritime transport (2014–2015 and 2015–2016 Operational Plans) supporting Mexico to develop, submit, and adopt an IMO ECA consistent with the North American Emissions Control Area (US-Canada);
- Share knowledge and experience and facilitate coordination and harmonization of ongoing efforts in Canada, US, and Mexico to reduce emissions and pollution from activities that support shipping at ports and other sources not addressed by the ECAs.

This coordinated approach through the CEC is designed to achieve environmental and competitive benefits because:

- The freight transport industry, and particularly the maritime shipping industry, faces economic challenges as well as patchwork of varying requirements at ports of call in all continents. Through this project, the US, Canada, and Mexico can provide the shipping community with a consistent regulatory approach through a North America/Mexican ECA. The implementation and enforcement to reduce emissions will enhance consistency, certainty and competitiveness for the shipping sector.
- Ports are hubs and play a large role in addressing emissions from all transportation sectors and impacts to communities. Sharing best practices within North America will allow for coordinated initiatives to attract the most efficient/lower emissions vessels; provide greater consistency in environmental requirements for shipping, trucking, trains (such as shore power, incentives for vessels speed reduction or engine types); and reduce emissions and impacts to communities.

Because the US, Canada, and Mexico, also trade globally with other countries that have, or are implementing vessel and ports best practices (ECAs, policies, incentives, technologies), this project also intends to capitalize on similar efforts by major trading partners and existing initiatives on this topic, such as the Pacific Ports Clean Air Collaborative (PPCAC), Green Marine, and the US-China Green Ports and Vessels initiative to network, share experience on these consistent/complementary practices, technologies, standards. The PPCAC is a network of stakeholders (ports, environmental and marine agencies, industry, NGOs, communities, academia, and international associations) established in 2006 by the Port of Los Angeles, Port of Shanghai, US EPA and the US Maritime Administration to share challenges, best practices and solutions/lessons learned in addressing air quality and health challenges in ports/cities along the Pacific Rim. The US-China Green Ports and Vessels initiative to share best practices among the US and China to address emissions from ports and vessels between these two major trading partners. Because the goods movement sector involves a broad set of stakeholders (i.e., environmental and maritime authorities; ports, shipping, fuel suppliers, cargo owners, academia, communities, others), collaboration through the CEC forum among the US, Canada, and Mexico, and with other initiatives, capitalizes on other resources and advances sustainability of trade transport on a North American scale and with other trading partners. This collaboration is intended to take place through parallel or joint workshops or sessions.

4. Describe how the project may capitalize on, or advance, the relationship between ecosystems, job creation, gender impacts, and income generation:

Around 90% of world trade is carried by the international maritime shipping industry. World seaborne trade is projected to grow by approximately 25% from today to 2025.² In order to grow operations to handle growth in trade, most ports must minimize the impacts to air quality—to meet local and national air quality standards—and to protect the environment and health of the communities near the ports. National governments must work to reduce emissions from shipping to protect their citizens in communities from human health impacts from ship emissions. Port communities are usually a partner and provide a significant portion of the port's labor force but they also sustain the environmental and health impacts from port operations. This project seeks to help North American ports and the maritime shipping industry meet the projected trade growth in a sustainable way by promoting best practices to reduce the environmental, ecosystem, and human health impacts while growing shipping throughput. Adoption of Mexico's ECA is estimated to reduce vessel emissions of nitrogen oxides (NO_X) by 80%, sulfur oxides (SO_X) by over 90%, and particulates by over 80%. Such reductions would improve ambient air quality and lead to fewer adverse impacts on environmental quality and human health (including an estimated 35,000 lives saved annually by 2030). In the United States the health cost benefits from the US ECA are US\$190 billion annually by 2030 (as compared to a cost of US\$4.5 billion). In Mexico, the annual health cost benefit of an ECA in 2030 is estimated to be US\$58 billion (as compared to a cost of US\$4.8 billion). In addition to the reductions from an ECA designation, Mexico's current Green Ports program has resulted in the designation of the Port of Ensenada in Baja California, and Lázaro Cárdenas, Michoacán, Mexico, as Green Ports by the European Maritime Ports

² International Chamber of Shipping; <http://www.ics-shipping.org/shipping-facts/shipping-and-world-trade/predicted-increases-in-world-seaborne-trade-gdp-and-population>.

Organization. It is expected that Ensenada's freight transportation will increase internationally to four times its current size by 2050 and the potential in both job creation and also emissions promoted spurred Mexico to be proactive in addressing port activities. Further developing Mexico's Green Ports program will both address potential emissions increases and also result in job creation and income generation, while taking into consideration impacts on the environment.

The avoided adverse human health impacts from reducing air quality impacts of maritime shipping and emissions from ports and vessels would enhance productivity by reducing work and school absences, as well as lower health care expenses. Reduced emissions from ports and vessels would also lessen impacts on ecosystems (e.g., coral reefs), moderate the burden imposed by poor air quality on low income communities, pregnant women and people with health issues, create employment and income generation opportunities (e.g., related to ship services, tourism, potential entry of Mexico into the market for compliant marine fuels), and support other national efforts to improve air quality.

5. Describe how the project complements or avoids duplication with other national or international work:

This project is the only trilateral effort to advance coordination of best practices in sustainable goods movement among Canada, Mexico, and the United States. This project also intends to capitalize on other efforts, as appropriate, such as the Pacific Ports Clean Air Collaborative, the US-China Green Ports and Vessels Initiative, and relevant work by nongovernmental organizations and associations (such as the International Association of Ports and Harbors, the American Association of Port Authorities, and others). Coordination of green ports efforts between Mexico, the United States and Canada facilitates consistency and harmonization of practices as appropriate to achieve results in North America.

6. Describe opportunities for inclusion of traditional ecological knowledge (TEK), if applicable, and how these opportunities are incorporated into the project:

The components of this project focused on ports may be able to identify opportunities for TEK engagement.

7. Describe opportunities for youth engagement, if applicable, and how these opportunities are incorporated into the project:

Some ports in North America already reach out and engage communities as partners and may serve as a model for community/youth engagement in education, awareness, and other forms of participation.

8. List significant involvement of other levels of government, Indigenous groups, local communities, experts, private sector, civil society and others, as applicable:

The project will engage key decision makers and stakeholders, including national/provincial government, ports, industry, and communities in the United States, Canada, and Mexico.

9. Identify relevant committee members and their federal agencies in each country committed to developing this project, and implementing it, if approved:

Mexico	US	Canada
Lead: Salomón Díaz, Semarnat	Lead: Luis Troche, EPA	Lead: Naomi Katsumi, Transport Canada
Valeria Muriel Dosal, SCT TBC	Angela Bandemehr, EPA	Canadian Ports
	Brian Muehling, EPA	
Profepa TBC	John Sedlak, USCG (TBC)	TBD
	Lisa Wunder, Port of Los Angeles (TBC)	

10. List the objectives and activities to be conducted to achieve measurable results:

Objectives	Main activities to achieve objectives	Measurable results
Achieve continental network of vessel emission control areas in North America (pending Mexico's accession to Marpol Annex VI)	Activity 1 Mexico submits ECA designation proposal to the IMO	 Expected approval of ECA Proposal by IMO at MEPC 73 (Marine Environment Protection Committee) Expected establishment of Mexican ECA Mexican ECA expected to be in force by 2020
Coordinate best practices to reduce emissions pollution and achieve benefits in air quality, community health, environmental quality, ecosystems and climate in North America	Activity 2 Exchange Best Practices on Green Ports and Vessels	 Enhance capacity and coordination of efforts and compliance in Mexico, Canada, US on: Policies Technologies Operations Incentives Fuels Efficiencies Implementation and enforcement of Marpol Annex VI and ECAs

Project: Improving Black Carbon Emissions Inventories Data for Small Scale Biomass Combustion

1. Two-year budget: C\$625,000

2. Short statement on the need identified (including current status), the project objective and the outcomes (achievable by June 2019) to address it:

Quantification of emissions is key to the development of emission reductions initiatives in support of air quality targets and climate change mitigation. Black carbon (soot) is an important air contaminant and climate pollutant, and emissions estimation methodologies are not consistent across North America, and other parts of the world. Biomass combustion is a significant source of black carbon, but is less well characterized than other sources. This project would design and implement a survey in North America to collect data on residential and other small-scale (non-utility) use of wood or other biomass, such as agricultural waste. This includes local-scale counts of appliances and profiles and quantities of wood/biomass burned) to support improved estimation of PM_{2.5} (particulate matter) and black carbon emissions in North America. The objective of this project is to use the data gathered through this survey to refine inventory estimates of emissions from small-scale biomass combustion sources. These data would be incorporated into the development of future national emission inventories in the three countries, and used to inform policies that will lead to improved health and environmental outcomes.

3. Explain how the project can achieve more impact by working trinationally, and why the CEC is the most effective vehicle to undertake this work:

This project addresses a key recommendation from the CEC 2015 report, *North American Black Carbon Emissions: Recommended Methods for Estimating Black Carbon Emissions*, to conduct research to improve data from residential and other small-scale wood/biomass combustion sources, including conducting surveys on use of these fuels, in place of current statistics. Working trinationally will allow experts from each country to lend perspectives, share information on existing work in this area, and contribute to the development of a more robust and adaptable survey instrument to gather data on a wide range of biomassburning appliances and practices, than any actively in use in any single country.

4. Describe how the project may capitalize on, or advance, the relationship between ecosystems, job creation, gender impacts, and income generation:

The survey could be designed to include questions related to social aspects of residential and other small-scale biomass use (e.g., farms, maple syrup production facilities, hospitals, cultural/ceremonial practices). For example, it may be useful to understand whether certain communities rely on gathered wood and whether this disproportionately affects women's health in those communities, as well as if it affects the economic growth of those communities. While these data would not have a direct impact on inventory development, the emissions information could be of use to inform policies addressing public health and economic development.

- 5. Describe how the project complements or avoids duplication with other national or international work: This work is complementary to ongoing efforts to improve inventories of PM_{2.5} and black carbon. Existing tools used by the three countries could be used as a starting point for the input variables needed to build a robust residential wood/biomass combustion inventory. Information from Canada's current efforts to enhance an existing household survey with additional questions on the use of biomass for residential heating will inform the survey design. The three North American countries will have the flexibility to adapt the survey questions to their own circumstances. In addition to residential biomass burning, the survey design could cover other small-scale sources of combustion, as appropriate in each country, such as agricultural, light commercial and institutional use. Large-scale biomass combustion by electric utilities would not be covered, given the readily available information on these sources in North America. The data gathered under this project will also inform the countries about areas where black carbon emission factor development for residential and other small-scale biomass combustion could be improved. This project is also consistent with a recommendation from the Arctic Council's Expert Group on Black Carbon and Methane to expand the detail available on residential wood combustion in Arctic State inventories (report not yet public).
- 6. Describe opportunities for inclusion of traditional ecological knowledge (TEK), if applicable, and how these opportunities are incorporated into the project:

TEK and, specifically, knowledge of the types of biomass used in cultural practices in certain communities, may be pertinent to the design of a survey on residential and other small-scale combustion.

7. Describe opportunities for youth engagement, if applicable, and how these opportunities are incorporated into the project:

In-person and telephone survey data collection activities for portions of the project will provide an opportunity to engage university students

8. List significant involvement of other levels of government, Indigenous groups, local communities, experts, private sector, civil society, and others, as applicable:

In each country, state, local and indigenous communities will be involved in providing and reviewing survey information. This project is of particular pertinence to small communities (i.e., local/municipal level). However, it will also complement/support national efforts (e.g., Canada's survey currently being developed; US Environmental Protection Agency's (EPA's) Residential Wood Combustion Tool).

9. Identify relevant committee members and their federal agencies in each country committed to developing this project, and implementing it, if approved:

Canada: David Backstrom, Mathilde Brodeur (ECCC)

Mexico: Rafael Martínez Blanco, Diana Guzmán Torres, Ana Patricia Martínez, Daniel López Vicuña (Semarnat); Abraham Ortínez Álvarez, Iris Jiménez Castillo (INECC)

- United States: Rich Mason, Amanda Curry Brown (US Environmental Protection Agency Office of Air Quality Planning and Standards).
- 10. List the objectives and activities to be conducted to achieve measurable results:

Objectives	Main activities to achieve objectives	Measurable results
By June 2019, improve the accuracy of inventories of black carbon and PM _{2.5}	Activity 1 Design trilateral survey on small-scale biomass combustion	Survey design is completed and ensures the collection of relevant local information on small-scale biomass combustion
scale biomass fuel combustion	Activity 2 Implement survey	Number of geographic areas surveyed to be decided Number of surveys completed by geographic area to be decided
	Activity 3 Analyze survey results and incorporate into inventories	Inventory completed

Project: Measurement and Mitigation of Food-Loss and Waste

- 1. Two-year budget: C\$850,000
- 2. Short statement of the need identified (including current status), the project objective and outcomes (achievable by June 2019) to address it:

This project builds upon outcomes of the foundational research from the first stage of work under CEC projects related to food waste reduction and recovery, and organic waste processing and diversion (i.e., during CEC Operational Plan 2015–2016).³ This previous work identified gaps in knowledge and opportunities for trinational benefits to a consistent regional approach to measurement of food loss and waste, and the development of youth education programs. The project seeks to achieve the following objectives:

- Improve measurement of food loss and waste (FLW)⁴ across the food supply chain, including approaches to correlate food loss and waste prevention, recovery and recycling with associated environmental and socio-economic impacts.
- Communicate practical measures and activities that facilities, organizations, and governments can take to prevent, recover and recycle FLW across specific segments of the food supply chain.
- Engage youth to raise awareness of food loss and of waste-prevention, recovery and recycling opportunities and to empower them to take action to reduce food waste at schools and in homes.
- 3. Explain how the project can achieve more impact by working trinationally, and why the CEC is the most effective vehicle to undertake this work:

Previous work related to food waste under CEC Operational Plan 2015–2016 has already demonstrated the value of trinational cooperation in this area, through elevating domestic visibility of the work, and enhancing the ability to enlist key expertise of North America and other countries of added value to CEC Parties. Such cooperation helps in leveraging resources, expands/broadens experience, creates broader potential market opportunities for technology solutions, and expands the audience for the CEC outcomes developed.

³ Previous CEC projects in this area included: (1) North American Initiative on Food Waste Reduction and Recovery; and (2) North American Initiative on Organic Waste Diversion and Processing. These projects separately addressed the upper tiers (wasted food prevention and recovery for human consumption or animal feed), and lower tiers (food recycling option—e.g., anaerobic digestion and composing) of the Food Recovery Hierarchy (<<u>www.epa.gov/sustainable-management-food/food-recovery-hierarchy</u>>). Note that this new project will collectively tackle food waste prevention, recovery and recycling.

⁴ Food loss: Any edible and inedible parts of food that are removed from the food supply chain to be recovered, recycled or disposed of. Food waste: Losses occurring at retail, food-service and consumer stages are termed food waste in order to factor in behaviour at those stages.

4. Describe how the project may capitalize on, or advance, the relationship between ecosystems, job creation, gender impacts, and income generation:

This work area is a natural fit for promoting and capitalizing on the mutually reinforcing economic, environmental and social benefits associated with food waste prevention (e.g., mitigating environmental impacts related to inefficient use of economic, human and natural resources along the food chain), recovery programs (e.g., donation programs addressing food security needs in disadvantaged communities), and recycling programs (e.g., mitigating GHG emissions by reducing organic waste that ends up in landfills). A growing body of analysis strongly demonstrates this multi-pronged stream of inter-related benefits. This work promotes efficiencies and reduced waste throughout the food production chain, encouraging more-sustainable food systems that include social, economic and environmental benefits, including opportunities for small and medium-size enterprises.

5. Describe how the project complements or avoids duplication with other national or international work:

Measurement expert group enlists major national and international experts to define synergies and avoid duplication; guidance resources to be developed collaboratively with targeted sectors; and youth outreach emphasized, engaging existing networks and leaders.

6. Describe opportunities for inclusion of traditional ecological knowledge (TEK), if applicable, and how these opportunities are incorporated into the project:

The project engages indigenous and local communities in the assessment of food waste measurement and the development of a practical guide(s) that can be used to measure FLW (including how to correlate outputs with associated environmental and socioeconomic impacts. In addition, the project engages youth from urban, local and indigenous communities to raise awareness of FLW issues through the development of learning tools and resources to prevent, recover, and recycle food waste.

7. Describe opportunities for youth engagement, if applicable, and how these opportunities are incorporated into the project:

Activity 2 of this project calls for the development of learning tools and resources targeted at youth to help them understand and be empowered to take action to prevent, recover and recycle food waste in their homes, schools, and communities (see complete description in table below).

8. List significant involvement of other levels of government, Indigenous groups, local communities, experts, private sector, civil society, and others, as applicable:

Engagement with experts from many different stakeholder organizations (e.g., governments, community experts, private sector, civil society and academic institutions) is foreseen, to achieve the objectives and outcomes identified under this project.

9. Identify relevant committee members and their federal agencies in each country committed to developing this project, and implementing it, if approved:

Canada: Michael VanderPol (ECCC, Project Lead), Véronic Pichard; others tbd **Mexico**: Edda Fernández (Semarnat, Project Lead), Claudia Sánchez, Ricardo Ríos Díaz **United States**: Ted MacDonald (US EPA, Project Lead); Claudia Fabiano; Swarupa Ganguli; Brianna Besch; Krystal Krejcik; others tbd

10. List the objectives and activities to be conducted to achieve measurable results:

Objectives	Main activities to achieve objectives	Measurable results
Improve measurement of food loss and waste (FLW) across the food supply chain, including approaches to correlate FLW prevention, recovery and recycling with associated environmental and socio- economic impacts (e.g., GHG reductions, wasted resources; habitat loss, landfill space conserved, meals recovered, etc.). Help decision makers identify quantities and types of food waste generated and diverted (from landfill disposal) from the various stages of the food supply chain	Activities—1 st group Identify, review and assess existing methods and approaches used to measure FLW, including approaches to quantify various environmental and socio-economic benefits associated with FLW prevention, recovery and recycling. This includes efforts to characterize how FLW is currently measured across various stages of the food supply chain, how effective these approaches have been in practice, and specific implementation challenges and key areas of needed improvement related to FLW measurement	Identified methods/approaches provide information on environmental and socio- economic impacts associated with FLW allowing for informed decision making for government, industry, business and other organizations to address the issue of FLW Relevant information/knowledge assists national, state, and local governments, industry, business, local and indigenous communities, and households to measure FLW data
NB: Stages of the food supply chain to be examined could include manufacture, processing, retail, food service and households	Develop practical guide(s) on how to measure FLW (including how to correlate outputs with associated environmental and socio-economic impacts)	

Objectives	Main activities to achieve objectives	Measurable results
	The guide(s) will build upon current guidance where it may already exist, and identify how to overcome specific measurement challenges faced by various entities across the food supply chain	
	Establish a multi-stakeholder expert- group to support the above activities	
Engage youth from urban, local/rural and indigenous communities to raise awareness of FLW issues through the development of learning tools and resources to prevent, recover and recycle food waste <i>NB: Age-appropriate learning and communication tools and resources</i> <i>can be used to foster activity in a</i> <i>variety of youth-oriented settings,</i> <i>including: youth-based organizations</i> <i>(clubs, schools) and community-</i> <i>based programs (e.g., youth</i> <i>volunteer and leadership programs,</i> <i>youth award and recognition</i> <i>programs, youth recreation, etc.)</i>	Activities—2 nd group Work with stakeholders to develop communication and learning tools and resources that target youth to raise awareness, share information, and promote FLW prevention, recovery and recycling, and promote adoption of the FLW learning tools and resources in North America to empower youth to take action to prevent, recover and recycle food waste in their homes, schools, and communities	Youth organizations, youth leaders, and educators are engaged in the development of learning and communication tools and resources Adaptable and transferable learning tools and resources are developed, and disseminated to a wide variety of youth organizations, including clubs, schools and local communities, to complement existing or support development of new programs, activities, and events, by incorporating learning materials or activities related to FLW prevention, recovery and recycling
Translate and disseminate CEC project outputs	Activity—3 rd group Translate and publish CEC project outputs for public dissemination	Project outputs are translated and posted on CEC website and other knowledge sharing platforms so organizations interested in measuring FLW have access to relevant and practical information

Project: Increasing Industrial Energy Efficiency through ISO 50001

1. Two-year budget: C\$600,000

2. Short statement on the need identified (including current status), the project objective and the outcomes (achievable by June 2019) to address it:

Increased energy productivity in North America will contribute to national and regional energy, economic and sustainability goals. This project will promote greater energy productivity and competitiveness in the industrial sector in North America by promoting widespread adoption of the ISO 50001 international standard in industrial supply chains. ISO 50001, published in 2011, represents cutting-edge energy-efficiency policy and practice that will drive energy performance improvement through a comprehensive organizational change model to manage energy. Tackling supply chain–related energy efficiency and costs will not only help regional companies maintain a competitive global edge, but also will produce significant environmental benefits (see picture below.)

While a previous CEC project has helped companies adopt ISO 50001 as a key strategy for their operations, few original equipment manufacturers (OEMs) in the region have integrated ISO 50001 throughout their supply chains. Working closely with OEMs and suppliers in key sectors (e.g., automotive, food/beverage, home appliances) this project will pilot an ISO 50001 supply chain deployment model, resulting in approximately 40 supplier facilities reporting significant and measurable economic, energy and GHG benefits from implementation. Project results will also create the foundation for increased national program deployment of ISO 50001 as a supply chain solution. Results will be benchmarked against a facility's own energy use baseline, normalized for key variables such as weather and production, to ensure a robust assessment of energy and carbon impacts from ISO 50001 implementation. Overall project results are difficult to estimate because they will be dependent on a number of characteristics of project pilot facilities (e.g., size, age of facility, current energy efficiency practices, etc.) but we expect participating facilities to see an average of 5–10 percent improvements in energy performance or more from ISO 50001 implementation.⁵

⁵ Case studies have demonstrated the clear business value of implementing energy management systems, showing energy performance improvements of 10 percent and more. See http://www.cleanenergyministerial.org/Our-Work/Initiatives/Energy-Management/Case-Studies.

3. Explain how the project can achieve more impact by working trinationally, and why the CEC is the most effective vehicle to undertake this work:



Through this project, the CEC will play a key role in supporting the North American governments and industry by: 1) ensuring critical coordination among national program staff; 2) engaging and recruiting supply chain partners (the participants) with facilities across the three countries; 3) providing highly skilled energy management professionals from the three countries as trainers to participants as well as the tools and guidance to translate the standard into actionable steps; 4) reducing the cost of ISO 50001 implementation for companies through a cohort training model and by cost-sharing the training with companies; 5) providing training for new energy management experts in each country to meet the growing demand for ISO 50001; and 6) ensuring a continued dialogue between government and industry to identify needs for additional technical tools and resources and promote corporate acceptance of ISO 50001 as international best practice.

4. Describe how the project may capitalize on, or advance, the relationship between ecosystems, job creation, gender impacts, and income generation:

Sustainable energy use is central to sustainable development's affecting communities, countries and people, through support for key societal functions such as health, education, economic growth and employment.

The ISO 50001 international energy management system standard is a key tool for sustainable energy, production and consumption. Analysis shows that implementation of ISO 50001 across the commercial and industrial sectors globally could drive cumulative energy savings of approximately 62 exajoules by 2030, saving over \$600 billion in energy costs and avoiding 6,500 Mt of CO_2 emissions. The projected annual emissions savings in 2030 are equivalent to removing 215 million passenger

vehicles from roads.⁶ In addition, the project will support job creation and skills development by training new energy management experts and exposing university students to the ISO 50001 standard and practices.

5. Describe how the project complements or avoids duplication with other national or international work:

- <u>National:</u> This project would be led by and coordinated with national government programs to promote ISO 50001 and energy efficiency in the industrial and commercial sectors. Thus this project would be well integrated with the work of a wide range of partners involved at the national and subnational levels, to support national government program implementation.
- <u>Regional:</u> This proposal would help fulfill high-level regional commitments announced at the 2016 North American Leaders' Summit and North American Energy Minister's meeting. In addition to piloting a supply chain effort, North American leaders committed to setting a regional target for ISO 50001 adoption, positioning ISO 50001 as a key energy efficiency strategy for all three countries.
- <u>International:</u> This project would be conducted in close coordination with the Energy Management Working Group (EMWG) initiative. EMWG was launched in 2010 by the <u>Clean Energy Ministerial</u> (CEM) and the International Partnership for Energy Efficiency Cooperation (IPEEC). Through the EMWG, government officials worldwide share best practices and leverage their collective knowledge and experience to create high-impact national programs that accelerate the use of energy management systems in industry and commercial buildings. *Canada, Mexico, and the United States* are key partners in EMWG's work, including in a global campaign to recruit private-sector commitment to implement ISO 50001—the Energy Management Campaign. Private-sector leaders involved in this proposed project, therefore, have the additional incentive of receiving international recognition for their actions. This could motivate them to consider implementation of ISO 50001 beyond their North American facilities, extending to their global carbon footprint.
- 6. Describe opportunities for inclusion of traditional ecological knowledge (TEK), if applicable, and how these opportunities are incorporated into the project: Not applicable
- 7. Describe opportunities for youth engagement, if applicable, and how these opportunities are incorporated into the project:

The project will provide opportunities for youth engagement through engineering universities, where students can engage in the technical aspects of ISO 50001 implementation. This engagement can be modeled on the US program where 26 engineering universities provide local industry with energy efficiency support, resulting in raised youth capacity and awareness of energy environmental issues.

⁶ Clean Energy Ministerial, Energy Management Working Group. Global Analysis of ISO 50001 Potential, 2016, <<u>http://www.cleanenergyministerial.org/Our-Work/Initiatives/Energy-Management/ISO-50001-Global-Impact</u>>.

8. List significant involvement of other levels of government, Indigenous groups, local communities, experts, private sector, civil society and others, as applicable:

- <u>Private Sector</u>: Major multinational corporations in the manufacturing sector are the primary targets through this project. These facilities mostly have extensive experience and knowledge navigating the world ISO Standard certification, and most will have certification to other ISO management systems such as 90001 and 140001, which are similar to ISO 50001. Thus, for these experienced facilities, ISO 50001 implementation will involve incremental work most significantly focused on the unique energy-related requirements. More so then other ISO management system standards, ISO 50001 presents a clear business case for investment and contribution to the bottom line. A previous phase of this work through CEC engaged nine multinational corporations to implement ISO 50001 at 19 of their facilities; progress through this project is building a business case to expand ISO 50001 to their supply chain.
- <u>Experts</u>: Experts engaged, trained and certified by the previous CEC project will be re-engaged in this project as part of continued capacity building of national ISO 50001 experts.
- <u>Other</u>: This project will also engage local communities and civil society, including, but not limited to, accreditation, certifications and standards bodies (American National Standards Institute, ANSI-ASQ National Accreditation Board (ANAB), *Entidad Mexicana de Acreditación*, Standards Council of Canada); manufacturing trade associations; and utilities and other energy efficiency–incentive providers.

9. Identify relevant committee members and their federal agencies in each country committed to developing this project, and implementing it, if approved:

Canada: <u>Bob Fraser</u>, Natural Resources Canada; Mexico: <u>Israel Jáuregui Nares</u>, <u>Noé Villegas Alcántar</u>, <u>Sergio A. Segura Calderón</u>, CoNUEE; United States: <u>Paul Scheihing</u>, <u>Lindsay Parker</u>, <u>Graziella Siciliano</u>, DOE

10. List the objectives and activities to be conducted to achieve measurable results:

Objectives	Main activities to achieve objectives	Measurable results
By June 2019, increase regional integration of ISO 50001 into supply chain	Activity 1 Reach out to and recruit industry to participate in a ISO 50001 training	Availability of technical guidelines for robust ISO 50001 implementation
strategies in at least one economic sector	program and to develop a supply chain model for ISO 50001 implementation	Private sector partners are engaged to develop tools and models, and to participate in training program

By June 2019, expand ISO 50001 supply chain experts and services availability in all three countries	Activity 2 Provide training and engagement of local workforces to build national and regional capacity for long-term ISO 50001 promotion and deployment	Increase in number of experts and other partners available to support ISO 50001 implementation in each country
By June 2019, support approximately 40 regional supply chain partners in implementing the requirements of ISO 50001 and reporting results	Activity 3 Deliver ISO 50001 training program for companies within the same supply chain in all three countries and disseminate results	Increase is energy savings, non-energy benefits and decrease in GHG emissions of participating facilities

Project: Supporting Sustainable Trade of CITES Species

- 1. Two-year budget: C\$800,000
- 2. Short statement on the need identified (including current status), the project objective and the outcomes (achievable by June 2019) to address it:

This project aims to implement priority actions developed under the Operational Plan (OP) 2015-2016 project Strengthening Conservation and Sustainable Production of Selected CITES Appendix II Species in North America. The 2015–2016 project identified 56 priority species from 5 groups—parrots, sharks, tarantulas, turtles/tortoises, and timber—and resulted in a set of SMART action plans for each of them (including ballpark cost estimates). The aim of this project is to implement the most trinationally relevant actions (with emphasis on those of high priority) for four of the five species groups (sharks, tarantulas, turtle/tortoises, and timber), and thus contribute (on a long-term basis) to their legal, sustainable and traceable production and trade. Implementation of action plans will focus on those opportunities most relevant to national governments, but these efforts will necessarily engage a broad set of stakeholders—including state, provincial, and local levels of government.

3. Explain how the project can achieve more impact by working trinationally, and why the CEC is the most effective vehicle to undertake this work:

The action plans delivered by the previous project are of trinational interest, and address the main challenges of the North American region regarding CITES implementation. The CEC's lead throughout this process was crucial to achieving the list of priority species, and to coordinating the consultants and workshops that resulted in the priority species list, and action plans to be implemented through this new project. Given its experience and background on the project, the CEC is ideal to coordinate the next "volume" of this regional initiative.

4. Describe how the project may capitalize on, or advance, the relationship between ecosystems, job creation, gender impacts, and income generation:

CITES Appendix II provides a window to achieve long-term conservation of wild species by means of their sustainable, legal and traceable trade. Specifically, the action plans to be implemented will contribute to provide (economic) incentives to local communities and other relevant actors of the value chain.

5. Describe how the project complements or avoids duplication of other national or international work:

This project will set the standard for trinational collaboration for recent and future CITES listings of North American species by strengthening the three pillars of CITES provisions for Appendix II: sustainability, legality and traceability. Furthermore, it complements the implementation of the Convention on Biological Diversity agenda on mainstreaming biodiversity, particularly in the fisheries and forestry sectors.
6. Describe opportunities for inclusion of traditional ecological knowledge (TEK), if applicable, and how these opportunities are incorporated into the project:

The action plans take TEK-based elements (whenever applicable) and in particular those related to improving sustainability throughout the value chain. In particular, most action plans, specifically those related to objective 1 above, will be implemented in line with CITES provisions such as Res. Conf. 16.6 on CITES and livelihoods as well as Res. Conf. 16.7 on non-detriment findings.

7. Describe opportunities for youth engagement, if applicable, and how these opportunities are incorporated into the project:

Recognizing the concentration of expertise and interest in the local community, the initiative will focus on developing partnerships with up to three universities in implementing action plans. This could include identifying and inviting relevant youth representatives to all workshops that will be developed within the framework of the project (also taking into account CITES guidelines on "Youth Engagement" established in Res. Conf. 17.5).

- 8. List significant involvement of other levels of government, Indigenous groups, local communities, experts, private sector, civil society and others, as applicable:
 - North American CITES authorities, as well as forestry and fisheries authorities in the region.
 - Stakeholders of the priority-species value chains (which vary from case to case), including but not limited to: local communities, Indigenous peoples, producers, consumers, relevant researchers, etc.
- 9. Identify relevant committee members and their federal agencies in each country committed to developing this project, and implementing it, if approved:

Canada	Environment and Climate Change Canada – Canadian CITES lead: Carolina Cáceres, carolina.caceres@canada.ca
Mexico	 Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (Mexican CITES scientific authority): Paola Mosig Reidl, pmosig@conabio.gob.mx, and María Isabel Camarena Osorno, icamarena@conabio.gob.mx Procuraduría Federal para la Protección al Ambiente (Profepa) (Mexican CITES enforcement authority): Francisco Navarrete Estrada, <u>fnavarrete@profepa.gob.mx</u> Dirección General de Vida Silvestre (DGVS) (Mexican CITES management authority): José Luis Pedro Funes Izaguirre, josel.funes@semarnat.gob.mx
United	US Fish and Wildlife Service (USFWS): Craig Hoover (management authority), craig_hoover@fws.gov, and Rosemarie Gnam (scientific authority),
States	Rosemarie_Gnam@fws.gov

Objectives	Main activities to achieve objectives	Measurable results
Support long-term regional collaboration to implement priority actions from the 2015–2016 action plans for sharks, tarantulas, timber and turtles/tortoises	Activity 1 Identify and promote outreach to implement the project, and identify funding opportunities for implementation of action plans post- CEC	Increased engagement of partners, experts, and other stakeholders (including Indigenous peoples, when applicable) in the project, and funding opportunities are identified for long-term implementation of the action plans
Implement priority actions from the 2015–2016 action plans for sharks, tarantulas, timber and turtles/tortoises	Activity 2 Identify and implement a subset of actions ("priority actions") from each action plan	Increased knowledge, tools and coordination to support conservation and sustainable trade in priority species
Support and build regional enforcement capacity for trade in priority shark, tarantula, timber and turtle/tortoise species	Activity 3 Provide in-person training, training material and outreach to support enforcement capacity and awareness	Increased ability of enforcement officers to ensure legal, traceable and sustainable trade in priority species

Project: Conserving Shorebirds through Community Engagement

1. Two-year budget: C\$570,000

2. Short statement of the need identified (including current status), the project objective and outcomes (achievable by June 2019) to address it:

A recent "State of North America's Birds" report highlighted shorebirds as priority species in great conservation need and identified habitat degradation at migratory stopover sites as a key reason for declines. Over the 2015-2016 Operational Plan (OP) period (Phase I), communities were engaged to identify threats and conservation actions for protection of eight sites used by priority shorebirds in Canada, Mexico and the United States (Bay of Fundy, James Bay, Alto Golfo de California/Delta del Río Colorado, Bahía de Todos Santos, Delaware Bay, Copper River, Georgia Barrier Islands, Willapa Bay). As a result, human disturbance was identified as the main threat to shorebird conservation at several sites, leading to the prioritization of actions to reduce this threat through raising awareness and demonstrating the local benefits of conservation. At more remote sites, conservation actions would greatly benefit from having more data on the use of the sites by the migratory birds. Building on these results, which provided a path for effective conservation at each site, this project (Phase II) will implement the actions that were identified for each site, use Traditional and Local Ecological Knowledge to augment conservation actions of priority species throughout their annual cycle, and capture best practices for selected actions. It will also monitor the effectiveness of selected actions and provide an analysis of the economic incentives and key considerations of ecotourism.

3. Explain how the project can achieve more impact by working trinationally, and why the CEC is the most effective vehicle to undertake this work:

North American shorebirds use a set of stopover sites in middle North America to refuel during their biannual migrations between breeding grounds in the Arctic and wintering grounds in Mexico. In each country, the federal government has a mandate for the conservation and protection of shorebirds. However, to help ensure that national investments are protected and result in the most effective shorebird conservation, there are two key factors to address: 1) cross-border cooperation is essential, since the loss of a site anywhere along the migratory flyway will severely impact the survival of the birds; and 2) engagement of the local community is critical to successfully conserve specific sites. The CEC's history and experience in facilitating coordinated action across the three countries and of engaging local communities in multi-sectoral activity makes it the most effective vehicle to help accomplish the proposed objectives.

4. Describe how the project may capitalize on, or advance, the relationship between ecosystems, job creation, gender impacts, and income generation:

The large flocks of shorebirds that congregate at stopover and overwintering sites are a spectacle that can attract visitors in large numbers. Studies have shown that economic incentives are crucial for sustained community engagement in conservation, and that birdwatching and ecotourism can be significant sources of additional income. The project will support the development of the local ecotourism economy by fostering and introducing shorebird festivals at key sites, through site exchanges where key

partners from sites that already hold successful festivals can share experience and 'know-how' with people from other sites. It will also support an analysis of the linkages between tourism, local benefits and conservation, using data from the selected sites if possible. This will provide valuable information to decision-makers and to communities hosting key migratory bird habitat, including economic value and factors to consider when planning ecotourism development (e.g., tourist preferences and specialization, local participation modes, and impacts on local development and local conservation). In addition, TEK studies in Nunavut will train local researchers in study methods and TEK data analysis. This skill is 'marketable' in the Arctic, as TEK is used more frequently to make resource management decisions. Indigenous communities in Alaska and Mexico will participate in festivals to celebrate the importance of shorebirds on the breeding grounds and to help inform the importance of the Gulf Grunion (spawning fish) and reduce human disturbance to shorebirds from recreation visitors.

5. Describe how the project complements or avoids duplication with other national or international work:

This project helps meet habitat conservation objectives identified by the Atlantic and Pacific flyway shorebird initiatives, the Arctic Council's Arctic Migratory Birds Initiative, and the Western Hemisphere Shorebird Reserve Network. Each of these groups strives to protect and monitor migratory shorebirds and habitats through the protection of key sites and is linked to this proposal. The project provides a community-based, citizen-science approach that will build local support for the preservation of the sites, while the aforementioned initiatives focus on large-scale conservation goals aimed at protecting shorebirds more globally.

6. Describe opportunities for inclusion of traditional ecological knowledge (TEK), if applicable, and how these opportunities are incorporated into the project:

As part of the nomination process and management of the Western Hemisphere Shorebird Reserve Network (WHSRN), representatives of the sites will include, where relevant, consideration of traditional and local ecological knowledge. This could include: 1) combining Indigenous knowledge with increasing participation in monitoring at the James Bay, Ontario, site (Moose Cree First Nation); 2) collecting Inuit traditional knowledge to manage the shorebird habitat at two communities in Nunavut, Canada, and prevent their destruction by overabundant snow geese; (3) having representatives from Indigenous communities in western and northern Alaska participate in festivals to learn of the economic and traditional strength that could come from hosting similar events in their communities (Yupik and *Iñupiat*); 4) learning from TEK from local fishermen and Indigenous people harvesting grunion (spawning fish) that produce eggs used by wintering shorebirds at Colorado River Delta, Mexico (Cocopah Indigenous community); and 5) engaging youth, local women, and Indigenous groups that participate in bird and grunion festivals, shorebird monitoring, and other actions to reduce or mitigate human disturbance during shorebird staging in Mexico.

7. Describe opportunities for youth engagement, if applicable, and how these opportunities are incorporated into the project:

Youth will be engaged during community activities to build a diverse constituency of support for shorebird conservation at sites, including citizen science such as the LEO Network, eBird and INaturalist, sign development, slogan/theme creation, integration of shorebird education materials into schools, beach cleanups, and incorporating shorebird components into major area events and festivals. In addition, actions to collect Inuit traditional knowledge will engage youth as study videographers and elder assistants.

Youth will also be engaged to monitor shorebirds and human recreational use, and provide outreach to reduce disturbance by tourists visiting sites in Mexico during Easter when birds are there for their spring migration.

8. List significant involvement of other levels of government, Indigenous groups, local communities, experts, private sector, civil society and others, as applicable:

Western Hemisphere Shorebird Reserve Network, Arctic Migratory Birds Initiative, Atlantic Flyway Shorebird Initiative, Pacific Americas Shorebird Conservation Strategy, Mushkegowuk Council, Moose Cree First Nation, Mi'kmaq First Nation, Nature Canada, Nature Conservancy of Canada, Bird Studies Canada, Eastern Habitat Joint Venture, Town of Dorchester (New Brunswick), Point Blue, Manomet Center for Conservation Science, Washington Department of Fish and Wildlife, Pacific Birds Habitat Joint Venture, US Forest Service, Prince William Sound Science Center, Washington Audubon, Terra Peninsular, Arviat and Coral Harbour Hunters and Trappers Organization, Regional Alaska Native organizations, schools and youth groups in communities, Nunavut General Monitoring Program, Alaska Migratory Bird Co-Management Council, Alaska Department of Fish and Game, Bird Festival coordinators in Cordova, Willapa Bay, Bahía de Todos Santos, *Centro de Investigación Científica de Educación Superior de Ensenada* (CICESE), *Comisión Nacional para el Conocimiento y Uso de la Biodiversidad* (National Commission for the Knowledge and Use of Biodiversity —Conabio), *Comisión Nacional de Áreas Naturales Protegidas* (National Commission for Protected Natural Areas—Conanp)

9. Identify relevant committee members and their federal agencies in each country committed to developing this project, and implementing it, if approved:

Canada: Garry Donaldson, Vicky Johnston (Environment and Climate Change Canada) Mexico: Humberto Berlanga (*Comisión Nacional para el Conocimiento y Uso de la Biodiversidad*) United States: Richard Lanctot, Gilbert Castellanos (US Fish and Wildlife Service, Department of the Interior)

Objectives	Main activities to achieve objectives	Measurable results
By June 2019, communities at the selected sites will be engaged in new or enhanced shorebird conservation	Activity 1 Build and enhance shorebird science and community engagement at sites along both flyways	A more diverse and larger group of people from the local communities are actively involved in shorebird habitat conservation
		Shorebird conservation actions are informed by new data

Objectives	Main activities to achieve objectives	Measurable results
By June 2019, sites will be organized as knowledge-action networks of shared experiences and best practices (in outreach and research) for conservation of shorebird habitat	Activity 2 Link sites to share experiences and develop best practices for shorebird conservation, including ecotourism and monitoring effectiveness	Successful community-based outreach activities, research projects and ecotourism development options are identified, shared and implemented through cross-site collaboration
By June 2019, local and traditional ecological knowledge will be shared and used to inform conservation actions at sites	Activity 3 Use local and traditional ecological knowledge to improve understanding of the value of migratory birds, assess and remedy site threats, and implement conservation actions	Stakeholders along flyways gain greater appreciation of each other's value systems with regard to shorebirds Site management is informed by TEK

Project: Science for Monarch Butterfly and Pollinator Conservation

1. Two-year budget: C\$520,000

2. Short statement on the need identified (including current status), the project objective and the outcomes (achievable by June 2019) to address it:

Monarch populations have declined significantly, triggering an unprecedented international effort to conserve this flagship species. The monarch butterfly represents a broad group of pollinators critical to our food security (including other butterflies and moths, honey bees, other bees and some wasps, and certain beetles) and as well, the flowering grassland habitat these pollinators need in order to thrive. Policy makers are engaged in pollinator conservation at all levels—federal, state, provincial and local. Filling priority science gaps will inform policy-making and targeted conservation actions, while enhancing public knowledge and support for conservation. Significant gaps in scientific knowledge on monarchs include a full understanding of their migration, demography, use of and need for nectar resources, and the impact of changing conditions on the population. Because of the monarch's charismatic nature, monarch scientific work receives high levels of interest from the media and the public. Monarchs are also featured in many educational programs in classrooms and other formal and informal learning environments (e.g., botanical gardens, zoos). In this respect, they are a gateway to learning about science, biodiversity, insect life cycles and conservation.

Ten years ago, a project with the Commission for Environmental Cooperation (CEC) led to the publication of the *North American Monarch Conservation Plan*, and more recent CEC projects have supported trilateral collaboration for monarch conservation in the areas of habitat and outreach/education. This recent work has laid a strong foundation for continental conservation of the species, by setting up processes for trinational work, identifying trinational priorities and initiating the coordination of communications and on the ground actions across the three countries. Building on this work, the current project focuses on one of the identified priorities, the need to implement cohesive coordination of monitoring and research that will contribute to adaptive conservation actions for monarchs, by leveraging the Trinational Monarch Conservation Science Partnership (T-MCSP) to give it a lasting impact.

The project will focus on: 1) coordination (e.g., working groups and work plan for the trinational science partnership); 2) implementation of a trinational monitoring strategy with shared protocols and integrated data; 3) research to address shared priorities (i.e., overwintering density, natal origins, nectar resources, and climate change) and dissemination of results to assist planning, management and actions (e.g., geospatial habitat mapping). Project results will support broader knowledge and action for pollinator conservation, particularly to better understand nectar resources and climate impacts, since monarchs and pollinators depend on the same habitat and nectar resources. Through this work, national agencies and conservation organizations will be able to prioritize their actions for more effective science-based conservation results.

3. Explain how the project can achieve more impact by working trinationally, and why the CEC is the most effective vehicle to undertake this work:

The monarch's unique migratory nature makes working trinationally an imperative, the necessity to coordinate and leverage national efforts to help ensure that national investments are protected and result in more effective monarch conservation. The CEC's experience in facilitating coordinated action across the three countries makes it the most effective vehicle to help accomplish this. This project provides a unique and timely opportunity to highlight and empower a new and innovative model for international scientific collaboration in order to conserve a shared migratory species. The CEC has created forums to enhance these types of collaborations in the past, providing a value-added support structure to enhance such an effort that will continue on after this project is completed.

4. Describe how the project may capitalize on, or advance, the relationship between ecosystems, job creation, gender impacts, and income generation:

Pollinators are vital to food security because most fruit, vegetable, and seed crops are pollinated by animals. Numerous species of North American pollinators are in decline, including managed honey bees. In addition to the economic value of pollinators' contribution to our food supply, animal pollination provides essential functions for a wide range of other natural communities in North America. The monarch butterfly serves as a flagship for the flowering grassland habitat these pollinators need to thrive. Investing in science and conservation in the monarch's migratory route and overwintering grounds provides multiple economic benefits, including job opportunities, e.g., reforestation and monitoring efforts. For example, monitoring efforts in Mexico involve 42 protected areas and dozens of employees and volunteers. The Monarch Butterfly Biosphere Reserve (MBBR) in central Mexico provides a protected winter home for the monarchs, as well as a means for local communities to generate revenue from tourism. More than 150,000 tourists visit the overwintering colonies every year. Investing in enhanced science, which includes monitoring, will support adaptive management of the MBBR and other key resources across the monarch's range that will also directly inform broader pollinator research and conservation.

5. Describe how the project complements or avoids duplication with other national or international work:

This project focuses on value-added integration of ongoing efforts in Canada, Mexico, and the United States. Collaborative efforts are coordinated through the Trilateral Committee for Wildlife and Ecosystem Conservation and Management (Trilateral Committee), under the leadership of the US Fish and Wildlife Service, Environment and Climate Change Canada, and Mexico's National Commission of Protected Natural Areas. The CEC has played a critical role in serving as a launching pad for implementation, convergence, and expansion of previous and similar ongoing efforts. This project fills a critical gap in achieving trinational objectives under the 2008 North American Monarch Conservation Plan, which the CEC published, in the area of applied science needed to drive conservation action and decision-making. The Trilateral Committee endorsed the Trinational Monarch Conservation Science Partnership (T-MCSP) in 2016. The Trilateral Committee continues to serve as a forum for monitoring T-MCSP progress and avoiding duplication with other international work, while linking coordinated and focused science and research with action and implementation.

6. Describe opportunities for inclusion of traditional ecological knowledge (TEK), if applicable, and how these opportunities are incorporated into the project:

Past CEC efforts included a study to identify TEK related to monarch conservation in Canada, Mexico and the United States. The report, based on a review of publicly available literature, found very little monarch-specific TEK throughout the migratory corridor. However, recent work has highlighted an interest from local and Indigenous communities in monarch and pollinator habitat creation and conservation, as one way to build on or renew with a traditional role as stewards of nature. The project will consider local and traditional knowledge under its monitoring work along the migration route; local and Indigenous communities from the areas around monitoring sites will be invited to the workshops and to citizen science monitoring efforts.

7. Describe opportunities for youth engagement, if applicable, and how these opportunities are incorporated into the project:

Monitoring for monarch conservation relies heavily on citizen-science programs in all three countries, which provides incredible opportunities to engage young people. Participating partners in the T-MCSP work with university students and community members (including kids and families) to recruit, train, and deploy volunteer citizen-scientists to collect important data on monarch butterflies, milkweed, and nectar plants to engage thousands of young people. The integrated monitoring strategy called for in this proposal will support those programs. Additionally, the monitoring work involves different land-cover types while engaging those sector-specific stakeholders, including rights-of-ways, and urban, agricultural, and protected areas.

8. List significant involvement of other levels of government, Indigenous groups, local communities, experts, private sector, civil society and others, as applicable:

This effort encompasses broad trinational collaboration of government agencies, academic institutions, and nongovernmental organizations. It builds upon their existing work and capacities, including research sponsored by both government and universities. The T-MCSP brings together the leading experts on monarch science in all three countries, acting as a "think tank" for monarch conservation, and this project would benefit directly from that expertise. The leading targeted partners for this project include:

- Government US Fish and Wildlife Service, US Geological Survey, and Natural Resources Conservation Service (US Department of Agriculture) from the US; Environment and Climate Change Canada, Canadian Wildlife Service, and Parks Canada from Canada; and *Comisión Nacional de Áreas Naturales Protegidas* (Conanp), *Comisión Nacional para el Conocimiento y Uso de la Biodiversidad* (Conabio), and the *Instituto Nacional de Ecología y Cambio Climatico* (INECC) from Mexico.
- Academia University of Guelph, University of Western Ontario, University of Ottawa, and University of Calgary from Canada; University of Minnesota, University of Kansas, and University of Arizona from the US; *Instituto de Biología, Universidad Nacional Autónoma de México* (UNAM) from Mexico.
- Nongovernment *Insectarium de Montréal* from Canada; Monarch Joint Venture (a partnership of over 54 organizations in the United States, including Xerces Society for Invertebrate Conservation and Monarch Watch) from the United States;

CEC Operational Plan 2017-2018 - Cooperative Projects

World Wildlife Fund-Mexico, Fondo Mexicano para la Conservación de la Naturaleza, Ecosistémica and Pronatura México from Mexico.

By working together with such diverse and engaged partners, this project will make the most effective and efficient use of resources for better informed decision-making. The project also engages local communities, Indigenous groups, and local civil society groups in the monarch's migratory route by leveraging them as citizen scientists and collaborators on monitoring and research projects.

9. Identify relevant committee members and their federal agencies in each country committed to developing this project, and implementing it, if approved:

Canada: **Gregory Mitchell** (Environment and Climate Change Canada), <u>gregory.mitchell@canada.ca</u> Mexico: **Ignacio March Misfut** (*Comisión Nacional de Áreas Naturales Protegidas*), <u>ignacio.march@conanp.gob.mx</u> United States: **Ryan Drum** (US Fish and Wildlife Service), <u>ryan drum@fws.gov</u>

In collaboration with: Víctor Sánchez-Cordero (*Instituto de Biología*, UNAM), <u>victor@ib.unam.mx</u>; Michael Gale (US Fish and Wildlife Service), <u>Michael_gale@fws.gov</u>; Holly Holt (Monarch Joint Venture), <u>hholt@umn.edu</u>; Keith Hobson (Environment and Climate Change Canada), <u>khobson6@uwo.ca</u>; Maxim Larrivée (*Insectarium de Montréal*), <u>maxim.larrivee@ville.montreal.qc.ca</u>; and other members of the T-MCSP.

10. List the objectives a	nd activities to b	e conducted to a	achieve measurable	e results:
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Objectives	Main activities to achieve objectives	Measurable results
By June 2019, the current status of monarch science in the three countries is known and cohesive trinational coordination of monarch science has been achieved through the Trinational Monarch	Activity 1 Coordinate monarch science based on trinationally-agreed priority areas	Trinational monarch science efforts are coordinated across the three countries
Conservation Science Partnership (1-wCSP)		Monarch experts, policy-makers, NGOs, and the public are informed on the status of the science
By June 2019, a trinational monitoring strategy is in place that integrates biological monitoring protocols and databases across the three countries to support	Activity 2 Development of trinational	A trinational monitoring strategy that integrates biological monitoring protocols and databases across the

Objectives	Main activities to achieve objectives	Measurable results
monarch conservation efforts	monitoring strategy	three countries is implemented
Pilot studies contribute to addressing knowledge gaps in four priority areas for research (overwintering density, natal origins, nectar resources for monarchs and pollinators, and climate change)	Activity 3 Produce original research and demonstrations focused on knowledge gaps in four priority areas	Reports and demonstration studies on the four research priorities are completed and made available to monarch experts

Project: Strengthening Adaptive Capacity of Marine Protected Areas

1. Two-year budget: C\$350,000

2. Short statement on the need identified (including current status), the project objective and the outcomes (achievable by June 2019) to address it:

Marine Protected Areas (MPAs) are key tools for fostering ocean health, but need to be effectively and adaptively managed to help respond to threats such as ocean warming, species' shifts, and ocean acidification. Building on the OP 2015–2016 project focused on identifying vulnerabilities in coastal ecosystems and communities, using pilot MPAs (Pacific Rim, El Vizcaino, Isla Guadalupe, Channel Islands and Olympic Coast), this project will develop a coastal adaptation toolkit applicable to any MPA, based on input from the same pilot MPAs and a broad set of experts. It will address a key need of MPA practitioners for practical guidance and hands-on training in developing adaptation strategies in response to identified vulnerabilities and integrating them into management plans. It will develop MPA capacity for adaptation planning through the toolkit; training in its use for MPA practitioners; identifying trinational expert teams (scientists, MPA practitioners, Indigenous and local people, stakeholders) to advise on priority topics; and identifying actions across shared seascapes to support implementation of management strategies. Implementing adaptation strategies will help MPAs control the local impacts of global and regional changes and promote healthier, more resilient marine ecosystems.

3. Explain how the project can achieve more impact by working trinationally, and why the CEC is the most effective vehicle to undertake this work:

The CEC has a unique role in providing the framework to gather and share knowledge concerning MPA adaptation strategies across the network of North American MPAs; building on previous projects and collaborations (e.g., Channel Islands/Isla Guadalupe, Coastal British Columbia/Olympic Coast) to support strategy implementation. The marine environment is inherently connected, and effective management of marine species requires cooperation across international boundaries. Climate impacts have increased this need for collaboration, as they affect the distribution and movement of species and habitats. Moreover, as information on coastal adaptation strategies is not readily available, there is an urgent need to pool and build our knowledge together to effectively manage our changing MPAs and minimize negative impacts to local communities.

4. Describe how the project may capitalize on, or advance, the relationship between ecosystems, job creation, gender impacts, and income generation:

Coastal ecosystems and communities are among those most affected by climate change, and require proactive planning to minimize negative impacts of change. Adaptation planning can help to build resilience of marine/coastal ecosystems, helping maintain the economic activities and uses that depend on the marine ecosystem (e.g., marine ecotourism, natural infrastructure), and contributes to the social, cultural and economic well-being of coastal communities. The results of the project will be shared with coastal indigenous and local communities across the three countries, so that they are aware of practices related to coastal

habitat restoration, management of ocean acidification impacts, species' movements, and invasive species and can engage in discussing and prioritizing these issues in terms of their ecological, social and economic impacts.

5. Describe how the project complements or avoids duplication with other national or international work:

This work builds on previous work by the CEC, published in *Scientific Guidelines for Designing Resilient Marine Protected Area Networks in a Changing Climate* (CEC 2012), and on the Rapid Vulnerability Assessment Tool developed and applied during the 2015–2017 project period. This was the first rapid vulnerability assessment tool developed and applied for marine protected areas in the three countries. The three countries have begun to identify vulnerabilities at their MPAs but are still in the early stages of identifying and applying adaptation options for MPAs. The toolkit will compile existing guidance on coastal and marine adaptation in the three countries and fill gaps through the scientific literature and interviews with MPA practitioners. Training at the pilot sites will build capacity to manage shared resources in a changing climate and provide opportunities for expanded managerial collaboration among the network of North American MPAs. Coastal and marine adaptation strategies are also a significant priority and gap for MPAs globally and there is potential for this project to make a major contribution at the international scale. The CEC's earlier work on scientific guidelines for MPA networks has already made an important contribution to dialogue on MPA networks in the Arctic and other regions. Disseminating the work of this project to international audiences will continue to make the North American MPA network part of this conversation. The project will also build in long-term sustainability as MPA agencies incorporate the identified adaptation strategies into their MPA management plans, which will guide long-term (~10-year) management of these areas.

6. Describe opportunities for inclusion of traditional ecological knowledge (TEK), if applicable, and how these opportunities are incorporated into the project:

Indigenous people have inhabited coastal areas in North America for thousands of years and have a long history of adapting to changes in the marine and coastal environment. Building on existing structures, mechanisms and processes where applicable, this project will engage local and Indigenous communities in a participatory relationship to gather and synthesize knowledge on adaptation options for MPA management, involving these communities in the process from the first scoping exercise through to distribution of the final product. Where applicable, it will coordinate with Indigenous and local community authorities. The project also provides an opportunity for collaboration among Indigenous peoples involved in coastal management and adaptation across the three countries.

7. Describe opportunities for youth engagement, if applicable, and how these opportunities are incorporated into the project:

Youth are key stakeholders in MPA management, and are the focus of many education and citizen-science efforts at MPAs. The project would identify opportunities for youth engagement in adaptation strategies, including through volunteer work and community engagement. Organizations working with youth would be invited to participate in the project scoping exercise, the stakeholder workshop and training.

8. List significant involvement of other levels of government, Indigenous groups, local communities, experts, private sector, civil society and others, as applicable:

The three countries have laws, practices and cultures of strong stakeholder engagement in MPA management—including government agencies at all levels, scientists, ocean users, local communities, Indigenous peoples and others who care about our oceans. This project would continue that approach by involving a diverse group of stakeholders in project scoping, development and review of the Coastal Adaptation Toolkit, and in identifying opportunities for collaboration in implementing adaptation strategies. Many such stakeholder groups have already been engaged in the rapid vulnerability assessment process completed during the 2015–2017 project period, and are eager to participate in next steps (e.g., local business owners involved in ecotourism, MPA citizen advisory councils, Indigenous governments and organizations, universities and nongovernmental organizations).

9. Identify relevant committee members and their federal agencies in each country committed to developing this project, and implementing it, if approved:

Canada: Chantal Vis, Marine ecosystem specialist, Parks Canada, <u>chantal.vis@pc.gc.ca</u>, Marlow Pellatt, Ecological restoration specialist, Parks Canada, marlow.pellatt@pc.gc.ca

Mexico: Fernando Camacho Rico, *Comisión Nacional de Áreas Naturales Protegidas*, fernando.camacho@conanp.gob.mx Pilar Jacobo Enciso, *Comisión Nacional de Áreas Naturales Protegidas*, pilar.jacobo@conanp.gob.mx

United States: Lauren Wenzel, Director, National Marine Protected Areas Center, lauren.wenzel@noaa.gov.

10. List the objectives and activities	s to be conducted	to achieve measura	able results:
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Objectives	Main activities to achieve objectives	Measurable results
By 30 June 2019, communities and MPA practitioners have access to practical guidance to better address coastal vulnerabilities	Activity 1 Develop a coastal impact mitigation and adaptation toolkit	A coastal impact mitigation and adaptation toolkit developed with stakeholders and experts is available to coastal MPA practitioners and communities in the three countries to offer guidance on mitigating the impacts of and adapting to climate change

Objectives	Main activities to achieve objectives	Measurable results
By 30 June 2019, impact mitigation and adaptation management strategies can be integrated into MPA management planning and projects in the three countries.	Activity 2 Build capacity to develop and apply impact mitigation and adaptation strategies based on the toolkit	MPA practitioners and their partners have been trained on the use of the toolkit to develop and apply coastal impact mitigation and adaptation strategies
By 30 June 2019, collaboration across MPAs is in place through memorandums of understanding (MOU), action plans or informal partnerships	Activity 3 Develop collaborative partnerships in the shared seascapes to address priority issues related to impact mitigation, adaptation and management effectiveness (e.g., shared monitoring protocols; international adaptation plans for shared species, such as whales; approaches for evaluating actions)	MPA practitioners and their partners have entered into collaborative partnerships that allow them to coordinate coastal impact mitigation and adaptation actions according to their shared priorities

*Note: The United States and Mexico have a formal partnership on MPAs through MOUs for sister sites in the Gulf of Mexico, and Canada and the United States have a formal partnership on MPAs through the Arctic Council. The United States, Canada and Mexico also have ongoing informal MPA collaborations in many areas that will be expanded.

Project: Building Community Solutions for Marine Litter

- 1. Two-year budget: C\$700,000
- 2. Short statement on the need identified (including current status), the project objective and the outcomes (achievable by June 2019) to address it:

Marine litter is a global problem that affects economies, coastal environments, ecosystems and human health. This project aims to address the lack of trilateral, intergovernmental coordination that could effectively prevent and reduce land-based sources of litter from entering the marine environment through a community-driven, stakeholder-based, solutions-focused approach. To achieve this, the project will work with local stakeholders, including youth and Indigenous communities, to:

- 1) describe the marine litter issue at pilot sites within shared-border watersheds;
- 2) identify/implement feasible solutions to address local challenges;
- 3) communicate results and provide recommendations to decision makers.

Through this stakeholder-based approach at the selected pilot shared-border watershed sites, the project will help improve local assessment, decision-making and networking processes for implementing and monitoring local initiatives. The approach will use a trash-free waters framework, adapted to local and national circumstances, which uses stakeholder engagement to focus on reducing and preventing land-based sources of marine-litter from entering waterways. The aim is to build capacity through awareness and engagement, via a coordinated multi-jurisdictional approach, to develop lasting solutions for local stakeholders and their communities. The case studies will be shared with federal decision-makers and interested communities for them to replicate, and be communicated through public outreach across North America to raise public awareness of community-based solutions for marine litter.

3. Explain how the project can achieve more impact by working trinationally, and why the CEC is the most effective vehicle to undertake this work:

Marine litter in border waterways is a transboundary issue involving many governments and diverse stakeholders that can benefit from improved coordination and action. This project contributes to the CEC strategic plan to: support the establishment of collaborative networks, with youth and indigenous communities, so as to share knowledge and experience; undertake conservation efforts to protect and restore ecosystems; identify beneficial practices; and increase awareness, engagement and capacity in communities. The CEC is an effective vehicle to undertake this work because there is not an existing intergovernmental mechanism either to address marine litter from a continental perspective or the movement of trash between the member countries and their common waterways. This problem affects shared waterways, but also has broader impacts on the world's ocean economy, fisheries, maritime transport, human health and the environment. In 2010, Canada, Mexico and the United States together contributed about 384,726 tons of land-based plastic waste into the world's oceans; this statistic makes

North America a significant contributor of land-based marine debris, and left unchecked, this amount is estimated to increase exponentially in the near future (Jambeck et al. 2015).

4. Describe how the project may capitalize on, or advance, the relationship between ecosystems, job creation, gender impacts, and income generation:

Marine litter is the result of human activities through the direct or indirect deposit of waste in the aquatic environment. This upsets the sensitive balance of ocean and coastal ecosystems that threatens livelihoods by directly affecting fishing industries, tourism, national economies, and trade. This project heightens awareness about the relationship between land-based activities and the environment. The proposed work also identifies relevant, applicable low-cost, low-tech solutions to reduce and prevent marine litter, which in turn could provide opportunities to: improve local waste management; lessen impacts related to tourism (aesthetics) and to livelihoods and trade dependent on fishing; and improve ocean/coastal ecosystems.

5. Describe how the project complements or avoids duplication with other national or international work:

This proposed project is complementary to the work undertaken by local, regional, national and international efforts to address this transboundary issue. These activities, at best, operate piecemeal across the countries and this project provides an opportunity for a coordinated effort in North America that will improve comparability of sites and the adoption of a standard approach that can be taken up by others. This project is the first North American project that uses a transferable and standard community-based approach to find solutions for marine litter in border watersheds.

6. Describe opportunities for inclusion of traditional ecological knowledge (TEK), if applicable, and how these opportunities are incorporated into the project:

This project has a citizen-science characterization component that could include the sharing of TEK by indigenous communities in the specified watersheds. Specifically, TEK could inform a greater understanding of watershed characteristics (e.g., water flows, flora/fauna, history of pollution, etc.) that are part of implementing solutions to the marine litter problem.

7. Describe opportunities for youth engagement, if applicable, and how these opportunities are incorporated into the project:

This project has a citizen-science component that includes youth (e.g., schools, Scouts, environmental clubs, etc.) in the specified watersheds. Youth will be trained as citizen scientists, to collect marine litter data that will inform the project process and ultimate implementation activities. This project recognizes that youth are excellent ambassadors for the environment and a fitting demographic to advocate for upstream source reduction and a shift from "throw-away" to "reduce/reuse" cultures. Effective youth engagement both generates creativity and inspires communities. Youth will be involved throughout the entire project and, as a result, will gain awareness of the issue and become empowered to address local and shared border challenges.

8. List significant involvement of other levels of government, Indigenous groups, local communities, experts, private sector, civil society and others, as applicable:

In addition to a trilateral approach, this project will involve at least two shared watersheds (e.g., Salish Sea, Gulf of California/Tijuana River Watershed, Rio Grande/Río Bravo Watershed/Gulf of Mexico, St. Lawrence River/Great Lakes Watershed) that involve multiple stakeholders, such as local and state/provincial governments (Semarnat, US EPA, ECCC), indigenous groups, local communities, local and national experts, NGOs, public institutions, members of the public, and the private sector. The success and sustainability of this project depends upon the active coordination among these stakeholders to identify and implement relevant marine litter solutions, as well as to provide recommendations to decision makers.

9. Identify relevant committee members and their federal agencies in each country committed to developing this project, and implementing it, if approved:

Canada: Sarah DaSilva, Jacinthe Séguin—Environment and Climate Change Canada **Mexico:** Salomón Díaz Mondragón—Semarnat **United States:** Andrew Horan, Janice Sims, Bob Benson, Margaret McCauley—US Environmental Protection Agency

Objectives	Main activities to achieve objectives	Measurable results
Understand the status of marine litter at selected pilot sites in at least two shared watersheds, for use as a basis for identifying local solutions	Activity 1 Conduct a study at each pilot site within the watershed to identify main sources, composition and areas of accumulation of marine litter	The key sources of marine litter in the selected pilot sites are known to help inform local litter reduction efforts
Local citizens are engaged in local marine litter issues through community networks at selected pilot sites	Activity 2 Identify relevant stakeholders, including youth groups, and local and indigenous communities, to establish a network of citizen scientists to implement a common method for data collection among all of the identified communities	A network of citizen scientists in each of the specified watersheds is actively collecting data on marine litter to help inform marine litter reduction solutions

Objectives	Main activities to achieve objectives	Measurable results
Communities have the capacity and the tools to develop community-based marine litter reduction and prevention solutions	Activity 3 In each pilot site, develop a stakeholder advisory team and convene stakeholder meetings to prioritize actions that reduce marine litter	Projects that will be implemented by stakeholders in specified watershed areas
Communities have implemented marine litter prevention and reduction solutions, and public awareness of community- based solutions to marine litter is raised through outreach	Activity 4 Implement the low-tech, low-cost solutions in the pilot sites through sustained collaboration with stakeholders, and summarize and share process and pilot projects, identify lessons learned and challenges to improve the approach while highlighting successes	Completion of low-tech, low-cost solutions that reduce marine litter in the specified watershed areas

APPENDIX II: Ongoing Initiatives

Joint Public Advisory Committee (JPAC) 54
Submission for Enforcement Matters and Legal Affairs 50
Supporting Youth Engagement and Leadership toward Addressing North America's Shared Environmental Priorities 57
CEC Interactive Platforms 59
Tracking Pollutant Releases and Transfers in North America (PRTR) 63
Communications and Outreach 65
Results-Based Management 6

Joint Public Advisory Committee (JPAC)

1. Two-year budget: C\$590,000

2. Description:

The Joint Public Advisory Committee (JPAC) is the trilateral advisory committee to the CEC Council. Composed of representatives of civil society (including academia, private sector, nongovernmental organizations, etc.), JPAC provides a forum for North American stakeholders to participate in the work of the CEC through workshops, meetings, consultations and social media. JPAC advises the Council with stakeholder input on any matter within the scope of the NAAEC, as CEC thematic areas under the 2017–2018 Operational Plan, Strategic Priorities under the 2015–2020 Strategic Plan, as well as other topics identified by its members based on public feedback at their sessions.

3. Partners:

Academia, private sector, nongovernmental organizations, indigenous and local organizations, etc.

Objectives	Main activities to achieve objectives	Measurable results
Provide meaningful recommendations to the Council and information to the Secretariat through their formal Advices and official letters as well as through novel communication channels	Prepare meaningful Advices to Council based on recommendations from the public Engage on a dialogue with the Parties in order to enhance the relevance of the recommendations to the Council and finding novel communication channels to provide advice	Number of Advices sent to Council Participation of JPAC members in CEC initiatives under the Operational Plan 2017–2018
	Identify potential new areas of work for the CEC and provide recommendations to enhance current initiatives	
Increase public participation in CEC initiatives and promote greater dissemination of North America environmental information and CEC work	Engage a larger number of stakeholders through JPAC initiatives (public meetings, public consultations, webinars, etc.), and broaden the scope of participants in CEC activities	Number of participants attending JPAC public sessions and other public meetings/activities (in- person or online) Number of distinct JPAC press

	Align the topics of JPAC public forums with CEC initiatives to create synergies under the Operational Plan 2017–2018 Continue providing updates on CEC initiatives during JPAC public meetings, as well as on the Submissions on Enforcement Matters (SEM) process and reports by the National and Governmental Advisory Committees	releases and social media announcements Number of questions from the public sent through social media during meetings
Contribute to the CEC Communications Strategy 2015–2020 through a specific role for 2017–2018	Create specific social media strategies for every JPAC activity, as well as JPAC-led surveys to gather additional public input Develop a targeted outreach strategy for JPAC activities to attract new participants and speakers, both in-person and online (indigenous people, youth, rural and remote communities, etc.)	Number of distinct JPAC press releases and social media announcements

Submission for Enforcement Matters

1. Two-year budget: C\$300,000

2. Description:

Since the CEC's inception, the SEM process has served as a mechanism that allows North American residents and nongovernmental organizations to file submissions with the Secretariat regarding the failure to effectively enforce environmental laws by the Parties. The 2015–2020 Strategic Plan seeks to advance public understanding of the SEM process by directing the Secretariat to make factual records more accessible to the public and expanding outreach efforts throughout North America. The SEM Unit will continue to process submissions and focus on outreach efforts and, as appropriate, may develop proposals to study the impact of factual records, update the CEC North American environmental law database, and the establishment of a CEC fellowship for recent law school graduates, consistent with the CEC's focus on engaging youth. The SEM Unit's work will endeavor to better support the CEC and its strategic and operational plans.

3. Partners:

Partners include universities and legal experts.

Objectives	Main activities to achieve objectives	Measurable results
Expand outreach to new stakeholders and educate the public about the SEM process	Continue to work with interested stakeholders across the North American and international legal community, including law schools in the three countries and the North American Consortium for Legal Education, NGOs, and the Center for International Sustainable Development Law	More inquiries about submissions process from public; filed submissions
Gain a better understanding of the impacts of factual records prepared under the SEM process	Submit a detailed project proposal to the Parties regarding this study Undertake an analysis of factual record data	Develop a report that lead to more inquiries about SEM process
Update the CEC's North American database of environmental law	Submit a detailed project proposal to the Parties regarding this project Update the North American database of environmental law	Database updated

Supporting Youth Engagement and Leadership toward Addressing North America's Shared Environmental Priorities

1. Two-year budget: C\$120,000

2. Description:

Youth are significantly affected by North America's performance on sustainable development and job creation, and they are also drivers of social and environmental innovation and the decision makers of the future. Youth engagement will support the CEC's objectives to seek innovative approaches to gathering environmental knowledge and will enhance the CEC's capacity to reach out to key stakeholders.

Building on the Short-Term Educational Program (STEP), the CEC's 12-week internships and 4–6 month fellowships provide unique learning and professional development opportunities in a trinational environment. Youth involvement in the cooperative work program, with JPAC and SEM, and in Secretariat initiatives, such as independent reports, facilitates the integration of youth perspectives on the shared environmental agenda of Canada, Mexico and the United States. Such CEC-led social networking initiatives as crowdsourcing also provide a unique opportunity to broaden public participation in CEC work, and add value to it by generating new ideas and seeking input on CEC priority areas.

3. Partners:

The CEC will work with Environment and Climate Change Canada (ECCC), the *Secretaría de Medio Ambiente y Recursos Naturales* (Semarnat), and the US Environmental Protection Agency (US EPA) to increase outreach to youth about youth engagement efforts by the CEC and the national governments and share youth perspectives and solutions with the three national governments.

Objectives	Main activities to achieve objectives	Measurable results
Increase youth engagement	- Build on the CEC's existing STEP program, 12-week internships	3-5 STEP internships per year
in and awareness of CEC	and 4-6 month fellowships to involve assignments within	and intern
work	Secretariat units	reports/presentations
	- Use CEC-led social networking initiatives such as crowdsourcing	
Build capacity among North	and idea jams to broaden public participation in, and add value	1-2 fellowships per year and
American youth to tackle	to, CEC work by generating new ideas and seeking youth input	fellow reports/presentations
and address environmental	on CEC priority areas	
challenges and issues of	- Partner with existing programs and organizations within the three	2-3 social networking activities

regional concern	countries to leverage opportunities for engagement, participation	per year and increased youth
	and dialogue with youth and youth networks	engagement in CEC activities

CEC Interactive Platforms

Two-year budget: C\$100,000

CEC tools and resources include three online interactive platforms: the North American Environmental Atlas, the North American Land Change Monitoring System, and the North American Portal on Climate Pollutants.

A. North American Environmental Atlas

1. Description:

The North American Environmental Atlas (the Atlas) provides a framework for geo-spatial environmental data and a tool for rapidly integrating important socio-economic and environmental information fundamental to decision making for sustainable development in North America. The Atlas is an interactive mapping tool to research, analyze and manage environmental information in Canada, Mexico and the United States. It assembles seamless, accurate cartographic data, including maps, documentation, and interactive map layers at a scale of 1:10,000,000. Thematic map layers allow for the visualization of various environmental topics such as the impact of economic activities and transfers of pollutants on ecosystems and communities.

2. Partners:

Natural Resources Canada (NRCAN), Environment and Climate Change Canada (ECCC), the United States Geological Survey (USGS), the *Instituto Nacional de Estadística y Geografía* (INEGI), *Secretaría de Medio Ambiente y Recursos Naturales* (Semarnat) and members from specialized governmental and nongovernmental partner agencies that may contribute data to the Atlas base maps and thematic map layers.

Objectives	Main activities to achieve objectives	Measurable results
Produce thematic map layers to show environmental information at the continental scale, including that stemming from CEC projects	Update or complete map layers and geospatial datasets and integrate them into the Atlas, such as the 2016 updated data on terrestrial and marine protected areas in North America, to be available in 2017 Conduct ongoing maintenance of geospatial data, map layers and metadata on the CEC website	Thematic map layers, as well as harmonized and updated data sets at the continental scale, are accessed on the CEC website and are referenced in scientific publications

B. North American Land Change Monitoring System

1. Description:

The North American Land Change Monitoring System is an integral part of the CEC's North American Environmental Atlas. It provides valuable land cover change indicators for North America to help the three countries better understand the dynamic of land cover and its change in time, and can be used in analyses for decision making with regards to, for example, ecosystem management and conservation, climate change mitigation and adaptation, and urban sprawl. The NALCMS is an ongoing collaborative initiative between Canada, Mexico and the United States to monitor land cover and its change over time. The NALCMS depicts information about land cover and land cover change in a seamless, consistent and automated way across North America at regular intervals.

NALCMS is unique in that the entire system was developed to meet the collective needs of the three North American countries and users of North American data. It is accurate, of known quality and is being developed with expertise from government agencies in the three countries. The NALCMS and Atlas use a common strategy and framework to generate consistent data and results across North America, facilitating continental applications and monitoring.

2. Partners:

The NALCMS is a collaboration, facilitated by the CEC, between Natural Resources Canada/Canada Centre for Remote Sensing (NRCan/CCRS); the United States Geological Survey (USGS); and three Mexican organizations: *Instituto Nacional de Estadística y Geografía*—Inegi; *Comisión Nacional para el Conocimiento y Uso de la Biodiversidad*—Conabio); and *Comisión Nacional Forestal*—Conafor.

Objectives	Main activities to achieve objectives	Measurable results
Produce improved and updated land cover and land cover change maps and data sets	Produce, during the summer of 2017, the world's first land cover map of North America using Landsat data at 30m resolution and 19 land cover classes, based on the Land Cover Classification System (LCCS) standards developed by the United Nations Food and Agriculture Organization (FAO). This map will be made available on the CEC website and will be promoted at relevant events to reach out to a broad audience.	The 30m land cover and land cover change maps are accessed by the NALCMS audience and are referenced in scientific publications.

Objectives	Main activities to achieve objectives	Measurable results
	Produce an updated 2010–2015 land cover change map of North America at 30m resolution. For this map, partner agencies will establish the path forward to complete this work by June 2019.	
Strengthen and facilitate collaboration among partner agencies on an ongoing basis, to produce harmonized North American data for decision-makers and researchers	Hold monthly conference calls and annual face-to- face meetings, and support partner agencies to present at relevant events to raise awareness about the NALCMS and Atlas products	All partner agencies participate in conference calls and annual meetings The NALCMS and Atlas products are promoted at relevant events

C. North American Portal on Climate Pollutants

1. Description:

The North American Portal on Climate Pollutants (the Portal) is an ongoing initiative to provide enhanced access to comparable North American pollutant emissions inventory data and information for policy-makers and experts. It brings together data on emissions of greenhouse gases (GHG), black carbon (BC), and short-lived climate pollutants (SLCP) from seven different inventories across North America.

2. Partners:

Environment and Climate Change Canada (ECCC), *Instituto Nacional de Ecología y Cambio Climático* (INECC), *Secretaría de Medio Ambiente y Recursos Naturales* (Semarnat), and the United States Environmental Protection Agency (US EPA).

Objectives	Main activities to achieve objectives	Measurable results
Enhance the completeness, relevance, and understanding of	Integrate annual updated data from the GHG, BC, and SLCP inventories in Canada, Mexico and the United States, including	Data in the Portal are as up-to-date as the

GHG, BC, and SLCP data for North America	data provided through the UNFCCC	source datasets
Improve the user-friendliness, analytical rigor, and functionality of the Portal in order to ensure it is meeting the needs of the intended target audience	 Survey user community to identify necessary improvements to the Portal's user interface Engage data providers and users in order to acquire feedback on the tool by answering the following questions: a) Are there specific features of the site that are currently not being used? If so, how can they be improved? b) What new features would the stakeholders find useful? 	Increased awareness and use of the Portal by stakeholders (measured by page visit statistics)

Tracking Pollutant Releases and Transfers in North America (PRTR)

1. Two-year budget: C\$200,000

2. Description:

The Parties have expressed their commitment to ongoing collaboration to improve the completeness, comparability and quality of Pollutant Release and Transfer Registers (PRTR) data in order to effectively track releases of industrial pollutants across North America, and promote the use of this information to develop sound pollution prevention and reduction initiatives. To this end, the PRTR initiative compiles, analyzes and disseminates information on the amounts, sources and management of industrial pollutants across the region, via the *Taking Stock* report, Taking Stock Online website and searchable database, and stakeholder engagement activities.

The *Taking Stock* report series and the Taking Stock Online website and searchable database add value to national PRTR data through analyses and added context to enhance understanding of reported data (e.g., addition of watersheds search function in Taking Stock Online; publication of *Taking Stock* report). Furthermore, engagement of the national PRTR programs and other stakeholders has continually improved the quality, completeness, comparability and use of pollutant releases and transfers data and information.

3. Partners:

- Canada: Environment and Climate Change Canada (ECCC) / National Pollutant Release Inventory (NPRI)
- Mexico: Secretaría de Medio Ambiente y Recursos Naturales (Semarnat) / Registro de Emisiones y Transferencia de Contaminantes (RETC)
- United States: Environmental Protection Agency (EPA) / Toxics Release Inventory (TRI)

Objectives	Main activities to achieve objectives	Measurable results
Enhance the quality, completeness and comparability of North American PRTR data through ongoing collaboration	 a) Collaborate with national PRTR officials and other stakeholders, including industry, to identify data outliers, gaps in program coverage, and accessibility issues. 	Increased quality, completeness and comparability of North American PRTR data and information.
with the three national PRTR programs.	 b) Exchange information about national efforts involving the use of PRTR data to promote pollution prevention and reductions, improved 	Increased use of North American PRTR data, tools and information

Promote increased access to, and use and understanding of, North American PRTR data via the <i>Taking Stock</i> report, Taking Stock Online searchable	c)	chemicals management, and environmental sustainability. Integrate and harmonize data and related information for <i>Taking Stock Online</i> in a format suitable for web and mapping applications; develop the data management infrastructure to	(Taking Stock Online and <i>Taking</i> <i>Stock</i> report) by stakeholders. New policies, regulations, programs and decisions by government or industry are in place
database, and stakeholder engagement activities.		improve the compilation and accessing of PRTR data to increase their usefulness in various applications (e.g., Atlas mapping) and accommodate changes in national PRTR database structures.	relating to the reporting, management and prevention of industrial pollution.
	d)	Produce, translate and publish the next edition of <i>Taking Stock</i> (Volume 15), featuring a special analysis of releases and transfers from the mining sector.	
	e)	Conduct consultations of stakeholders (governments, industry, NGOs, academia, media and the public) on project activities, including analyses for the <i>Taking Stock</i> report.	
	f)	Increase outreach via enhanced access to the Taking Stock Online website and tools, webinars for data users, and participation in national and international PRTR efforts (e.g., OECD PRTR Task Force meeting in New York City, 27-28 June 2017; partnership with the US TRI 2017 University Challenge) to increase awareness and use of PRTR data.	
	g)	Ensure specific engagement of industry sectors relative to assessing PRTR reporting levels and gaps, and promoting environmental sustainability efforts within industry.	

Communications and Outreach

1. Two-year budget: C\$290,000

2. Description:

The CEC strives to inform, educate, and engage the public and stakeholders to advance sustainable growth and environmental and ecosystem preservation in North America. We achieve this through technical and other publications, press releases, web presence, audiovisual products and social media. Communications activities for the Operational Plan 2017–2018 will focus on the activities and outputs of the cooperative projects, ongoing initiatives, submission of enforcement matters, Council actions and events.

3. Partners: ECCC, Semanat and the US EPA

Objectives Main activities to achieve objectives Measurable results Raise general awareness of the CEC as Develop a comprehensive communications By June 2019, achieve a 25% an important agent in protecting the plan associated with the OP 2017-2018. To increase in year-over-year traffic to North American environment and the CEC website lay a solid foundation for this plan, the CEC supporting sustainable development will: - Conduct research to identify a broad range By June 2019, achieve a 25% of key stakeholders in the region related to Build support for the CEC, the role it increase in audience on our social core topic areas of the OP plays in North America, as well as for the media channels implementation of its Operational Plan - Create a calendar of communications opportunities at North American and By June 2019, conduct at least two international events and associated key Strengthen the CEC's relevance among messaging to continue to position the CEC joint outreach campaigns with a influencers and opinion leaders in major partner organization as a leader and model for the management Canada, Mexico and the United States of environmental issues at a regional scale - Analyze all OP outputs intended for the By June 2019, increase the number public and determine the most effective of news stories featuring CEC work Position the CEC as the go-to communications vehicle to reach the desired organization for information on the North by 20% audience (e.g., an infographic, video, event,

American environment	etc.)	
	-Produce a short 'corporate video' about the CEC including history, mission and value of organization in North America	By June 2019, the number of views on our Virtual Library will have increased by 20%

Results-based Management

1. Two-year budget: C\$160,000

2. Description:

Results-Based Management (RBM) applies a performance measurement framework to the overall planning, monitoring, evaluation and reporting of CEC work. The RBM system establishes a process to evaluate and demonstrate progress in meeting the CEC's environmental goals and objectives, showing how these achievements have helped the Parties in pursuing their national and international priorities.

The CEC's performance measurement framework ensures that project-level measures undertaken through our trilateral cooperative work program are tied to clear objectives and targets. The framework enhances CEC performance, accountability, and reporting ability, and re-directs actions to meet goals and objectives more effectively. Although performance measurement and reporting is now well integrated at the CEC, a number of objectives have been set for the next two years to continue enhancing the system.

3. Partners:

CEC constituents (including Parties' technical experts) will play a key role in defining performance measures and targets under each project, reporting progress, and assessing project results.

Objectives	Main activities to achieve objectives	Measurable results
Strengthen CEC ability to measure performance and generate reliable data and information during and after project implementation	Use the performance measurement framework to stimulate concrete results at the project level and across the organization	Project plans formulated to generate concrete results, with reliable data and information that will be useful during and after project implementation
Demonstrate evidence-based progress in meeting the CEC five-year goals and objectives	Prepare an Operational Plan 2015–2016 performance report	Performance reports contain reliable data and are viewed by the Parties as useful in demonstrating project progress and results, as well as contributing to the strategic goals and objectives

Gain a better understanding of the impact of past work and contribution to the Parties' national and international commitments	Evaluate the impact of projects from the Operational Plan 2013–2014.	Based on a sound methodology, evaluation reports reflect the medium-to-long-term impact of selected past projects and/or initiatives and their contribution to Council priorities

APPENDIX III: Strategic Plan 2015–2020

CEC's Strategic Plan 2015–2020